Asia Pacific Science Press

Research on the Current State of Supply Chain Finance: CiteSpace-Based Analysis and Bibliometric analysis

Shuijing Wang, Zheng He*

School of Management, Xi'an Polytechnic University, Xi'an, 710048, China

Corresponding author: Zheng He, heehzheng_128877@163.com

Abstract: In order to explore the current research status of supply chain finance and its development trend, this study uses CiteSpace software and bibliometric methods to visualise and analyse the core journal literature in Chinese and English for the period from 2008 to 2024, and combines bibliometric and knowledge graph analysis methods. The results of the study show that the research attention continues to rise, and the research hotspots gradually shift from basic theories to innovative applications, such as blockchain and fintech. The focus of domestic and foreign research is different, with domestic research focusing more on SME financing issues, while foreign research focuses more on operational decision-making. In addition, research cooperation is insufficient, and cross-regional and cross-institutional cooperation needs to be strengthened. Future research should deepen ecosystem research, promote technological innovation and application, strengthen internationalization research, explore inclusive applications, and focus on the combination of policy and practice to promote the wide application of supply chain finance in the real economy.

Keywords: Supply Chain Finance; Literature Measurement; Knowledge Atlas

Introduction

In the context of economic globalization, supply chain, as an important carrier for optimizing resource allocation and promoting market competition, has a direct impact on the competitiveness of enterprises and the vitality of the economy in terms of its level of development. Supply chain finance, as an innovative financing method, optimizes working capital management as well as liquid investment funds in supply chain processes and transactions by adopting financing and risk mitigation strategies and techniques. This model effectively responds to the problem of information asymmetry, opening up broader financing avenues for the demand side of funds, and promotes the expansion of the scale of enterprise transactions and the improvement of transaction efficiency, thus providing solid support for the development of the real economy.

In recent years, supply chain finance has been strongly supported by national policies. Various ministries and commissions of the State, including the State Council, the People's Bank of China, and the Ministry of Commerce, have issued a series of policies and guidelines aimed at incentivizing financial institutions to promote the development of innovative businesses such as accounts receivable financing, chattel financing and supply chain financing. These measures aim to improve the financing ecology of MSMEs, steadily promote the progress of supply chain finance, and support MSMEs to meet their funding needs through accounts receivable financing and other means, thereby serving enterprises in all links of the industry chain. Under this policy environment, the role of supply chain finance in promoting the real economy has become increasingly prominent

and continues to be the focus of academic research and discussion.

1.Overview of the study

Research in the field of supply chain finance has achieved fruitful results, and many scholars have conducted in-depth discussions on its development and core issues from different perspectives. In terms of qualitative research, Zhou and other scholars systematically analyzed the positive effects of the integration of the four streams (logistics, business flow, information flow and capital flow) on reducing the operating costs and capital risks of enterprises, and put forward optimization proposals on risk control, the construction of the information feedback mechanism, and management informatization[1]. In terms of development history, Li et al. used bibliometric tools to summarize the evolution of supply chain finance into four progressive stages: initial stage, deepening stage, diversification stage and technology integration stage, and point out that the focus of the research has gradually shifted from the exploration of the basic model to the deeper issues such as risk management, operational decision-making and coordination mechanism[2]. In terms of research methodological innovation, Lu and Zeng systematically sorted out the research methodology, core conclusions and future development direction of this field from three levels of operational decision-making, supply chain coordination and risk control[3]. on the other hand, Wang and Du used a combination of co-occurrence analysis and literature review to reveal the evolutionary characteristics of domestic supply chain finance research, pointing out that financing risk control, model innovation and SME credit assessment have become the focus of current research[4]. Based on the literature of CSSCI journals, Song and Huang used the method of combining content analysis and bibliometrics to propose that basic theory research, empirical research and innovative research should be strengthened in the future[5]. In terms of theoretical framework construction, Yan and Xu focued on the core concept and characteristics of supply chain finance, stressing that it breaks through the traditional single enterprise credit model and realises the extension of risk management to the supply chain as a whole[6]. Zhu mapped the research hotspot knowledge mapping and evolution path through the big data analysis of CNKI core journals, revealing five core themes and four development stages in the field[7]. These studies have laid a solid foundation for the theoretical deepening and practical innovation of supply chain finance.

In summary, domestic scholars have rich research results in the field of supply chain finance, covering various aspects such as theory and practice, model and risk, qualitative and quantitative. However, the theoretical system of supply chain finance needs to be improved, practical experience needs to be further accumulated, and the impact of new technologies needs to be deeply explored. ① Most of the existing review-type studies are based on qualitative analyses. ② Research using bibliometric software such as CiteSpace is not yet sufficient. Therefore, this paper uses CiteSpace software to analyse the core journal literature included in CNKI between 2008 and 2024, aiming to comprehensively and accurately reflect the current research status in the field of supply chain finance.

2.Analysis of Supply Chain Finance Research Developments

2.1 Data sources

In order to deeply analyse the development of supply chain finance, this study selects the CSSCI core journals in the China Academic Journal Network Publishing Database (CNKI) and the Web of Science core database as the basic platform for data retrieval, and makes use of its advanced search function to carry out precise literature screening. The specific screening criteria are as follows: in the Chinese literature, the keyword is set as "supply chain finance", the time range is set as 2008 to 2024, and the source of journals is limited to China Social Science Citation Index (CSSCI). The search strategy of exact matching was adopted to complete the collection of literature. During the screening process, the literature that did not match the research topic was eliminated, and finally 470 highly relevant academic papers were screened out; in English, WoS core set was selected, with "supply chain finance" as the main vocabulary, and "English" as the language. In English, WoS core collection was chosen, with "supply chain finance" as the main term, "English" as the language, "Article" as the article type, 225 articles were collected, and 200 valid articles were finally obtained after CiteSpace de-weighting. CiteSpace software was used for the visualisation and analysis of the literature in the subsequent study. In order to enhance the accuracy and depth of the analysis, the time segmentation unit was set as yearly. During the data processing stage, the threshold was adjusted to 20

to ensure the validity and specificity of the analyses.

2.2 Research methodology

Bibliometric analysis is a comprehensive research method that integrates the principles of information visualisation technology and bibliometrics. Through in-depth excavation and analysis of literature data in specific disciplinary fields and the use of multi-dimensional visualisation technology, the technique clearly shows the network structure relationship and the path of knowledge evolution in the field, providing a solid theoretical foundation and direction guidance for academic research. Through systematic statistics and in-depth analysis of the literature data, this method can accurately reveal the academic development trend and knowledge dissemination mode of a specific research field, so as to grasp the current development status, core issues and other key information of the field. In this study, CiteSpace software was used to visualise and analyse the literature in the field of "supply chain finance development", which helps scholars and policy makers to gain insights into the development history of supply chain finance, research priorities, and the changing trends of academic co-operation, and thus provides scientific academic references and practical guidance for the progress of supply chain finance. This helps scholars and policy makers to understand the development history of supply chain finance and the trend of academic cooperation.

3.Basic status of supply chain finance research

3.1 Statistics on annual distribution of papers

The number of published subject literature is a key indicator to assess the distribution, development dynamics, research depth and change of research interest in a particular research area. After combing 470 Chinese and 200 English literatures in the field of supply chain finance, the trend of change in the number of publications on the topic of supply chain finance can be analysed. The following is a description based on the data in Figure 1:

1. Overall development trend: Observing the period from 2008 to 2024, the number of Chinese and English literature published on the topic of supply chain finance generally shows an upward trend. This phenomenon reflects the continuous increase in academic and industry attention to the field of supply chain finance.

2. Chinese-language publications: The number of Chinese-language publications was low in 2008, but has gradually increased over time, especially after 2015. This reflects that the Chinese language is strengthening in supply chain finance research.

3. The number of English language articles: the number of English language articles grew more slowly from 2008 to 2017, but grew faster in 2018, especially the latter can be basically comparable to the number of Chinese language articles, which reflects that the research on supply chain finance in the international academic community is also gradually increasing.

Figure 1 Trends in the timing of supply chain finance research publications
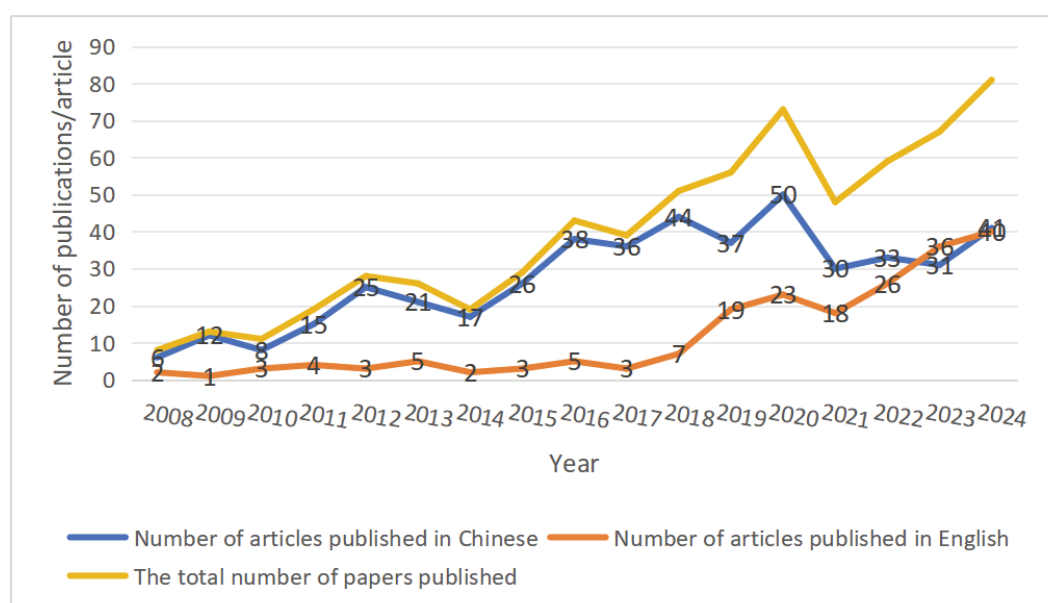
4. Total number of publications: The total number of publications (the sum of Chinese and English language publications) was low in 2008, but has grown steadily over time, and especially rapidly after 2015. This indicates that research and discussion on supply chain finance is also increasing globally.

In summary, the number of articles on the topic of supply chain finance has experienced a shift from low to high and from slow growth to rapid growth over the past decade or so. Especially after 2015, the growth in the number of publications has accelerated significantly, indicating that supply chain finance has become an important research area in academia and industry during this period. This trend is expected to continue in the coming years.

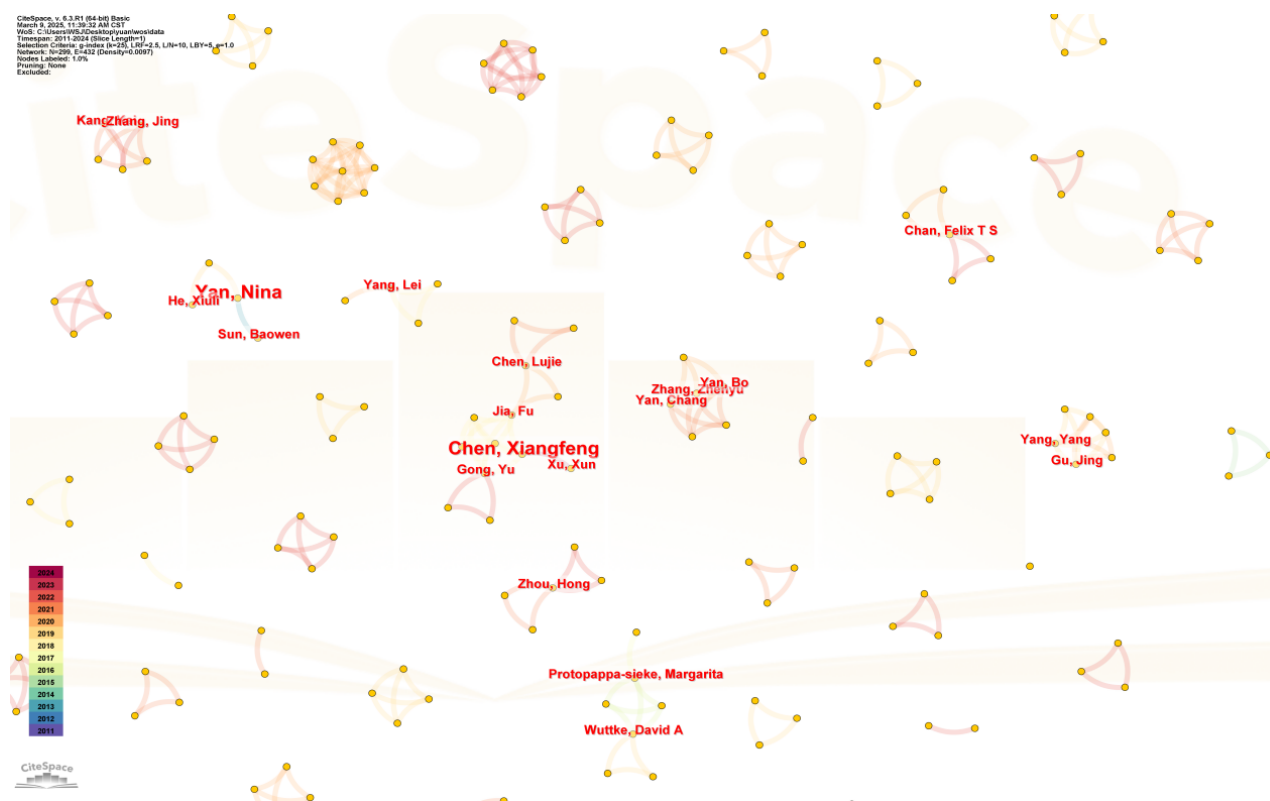## 3.2 Author co-occurrence mapping analysis

The number of academic papers published is an important indicator of scholars' contribution and influence in a particular field [8]. Visualising the study through the co-authorship analysis function of Citespace software can effectively identify the core researchers and their activity in the field of supply chain finance, so as to gain a deeper understanding of the research progress and trend evolution in the field. As shown in Figure 2, the node size and the font thickness of the authors' names increase according to the number of their publications, with larger nodes and bolded fonts indicating an increase in the number of publications; the thickness of the connecting lines show the degree of close cooperation, with thicker lines implying higher frequency of cooperation; the colour of the connecting lines on the left side of the figure distinguishes between different years or periods of time, demonstrating the development of the time-series of the core literature in the field of supply chain finance in China from 2008 to 2024. The analyses show that Song has the highest number of publications, and such as Lu and Xu also have more prominent publications. The top ten Chinese core authors in terms of publication volume include Song from Renmin University of China, Xu from Southwest University of Political Science and Law, Lu from Beijing Technology and Business University, Yang from Renmin University of China, Shi from City University of Hong Kong, and Yu from Chongqing University. There are a total of 286 nodes and 143 links in the graph, with a network density of 0.0035, indicating a large number of researchers; however, the number and density of links show that although there are collaborative relationships between some of the researchers, the overall frequency of interactions is low, revealing a lack of collaborative relationships.

Figure 2 Co-occurrence of domestic authors in supply chain finance, 2008-2024
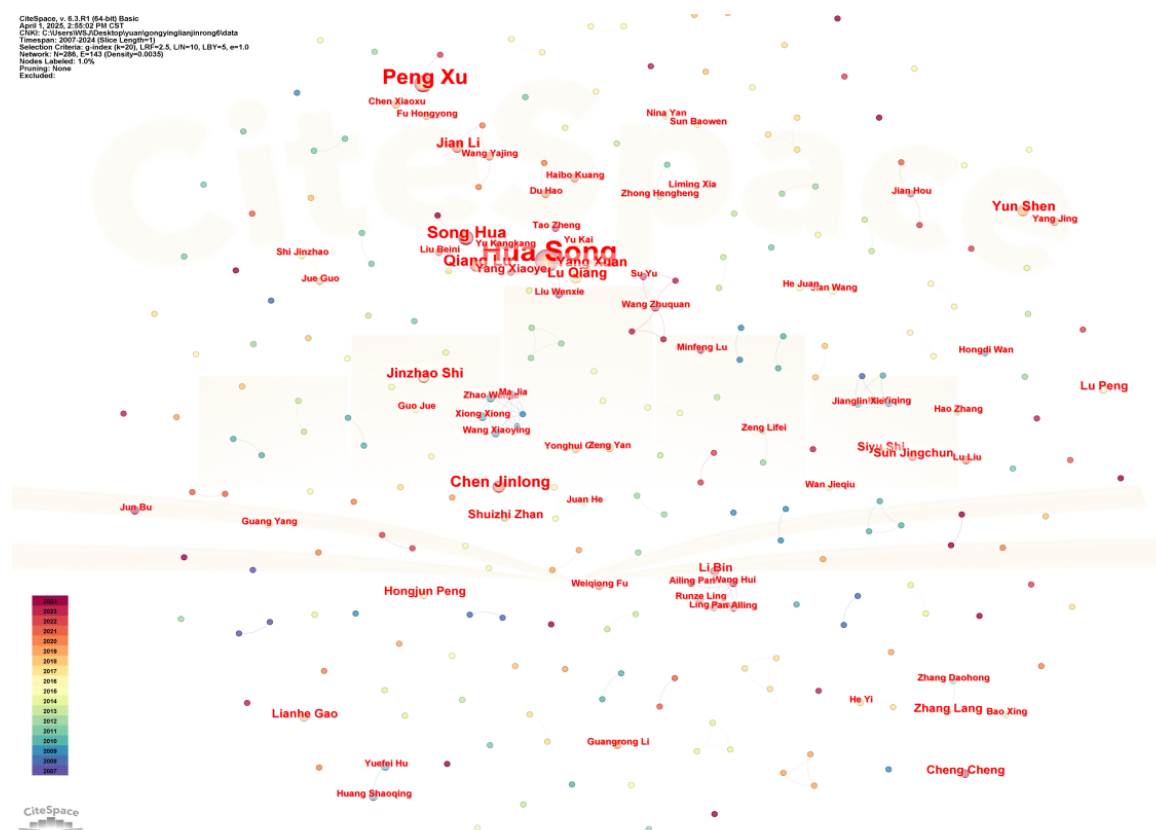
Through the knowledge map of foreign authors (Fig. 3), it can be observed that the co-operation between authors is loose and no obvious core author group has been formed. Existing collaborative relationships are mainly confined to intra-country regions, and there is a lack of cross-border co-operation and exchanges. A similar situation occurs in the national author collaboration networks, where the collaboration between authors is also not strong enough and the main links are confined within the same institution. Further, the density of domestic collaborative networks is 0.0033, while the density of foreign collaborative networks is 0.0097, which suggests that overall the level of collaboration between domestic and foreign researchers is low, and influential research communities have not yet been constructed. Despite this difference, foreign researchers collaborate more frequently with each other relative to domestic.

Figure 3 Co-occurrence of foreign authors in supply chain finance, 2008-2024

3.3 Institutional mapping analysis

The in-depth analysis of the co-occurrence of research institutions can provide a comprehensive picture of the structure of the collaboration network and its geographic distribution characteristics within a specific academic field, thus identifying the key research institutions in the field. The distribution pattern of key research entities can be effectively assessed using the institutional collaboration visualisation mapping. In the graphical analysis of inter-institutional collaborations, the time span is set as an annual unit to ensure the clarity of the graphical presentation. In Figure 4, each node corresponds to a research institution in the field of supply chain finance, the node size and font thickness are positively correlated with the amount of its academic output, and the connecting lines between the nodes reflect the intensity of inter-institutional collaboration. It is found that research institutions are widely distributed; only a few institutions have sparse connections, indicating weak collaboration. Overall, most of the research institutions in China are isolated, indicating a low degree of inter-institutional collaboration in the field. In order to examine the academic output of each institution in depth, the top 10 institutions in terms of the number of articles published are selected as research objects. Statistics show that these 10 institutions have accumulated 88 papers, accounting for 18.7% of the total number of publications. Among them, Renmin University of China ranked first with a centre frequency of 39 times, accounting for 8.2% of the total number of publications and 44.31% of the top 10 institutions; followed closely by Xi'an Jiaotong University with a centre frequency of 10 times, accounting for 2.1% of the total sample and 11.36% of the top 10 institutions. These data indicate that the research results of these institutions have continued to grow in recent years, showing significant development potential.

Figure 4 Map of domestic institutional sources of supply chain finance, 2008-2024

As can be seen from Figure 5, the top 5 foreign institutions in terms of the number of articles are Hong Kong Polytechnic University (10 articles), South China University of Technology (6 articles), Southwestern University of Finance & Economics-China (6 articles), Shanghai Maritime University (5 articles), and Central University of Finance & Economics (5 articles). Economics-China (6 articles), Shanghai Maritime University (5 articles), and Central University of Finance & Economics (5 articles), and there are fewer mesh cooperation clusters among the nodes of each institution, which indicates that there is less cooperation among foreign institutions.

Figure 5 Source of foreign institutions in supply chain finance, 2008-2024
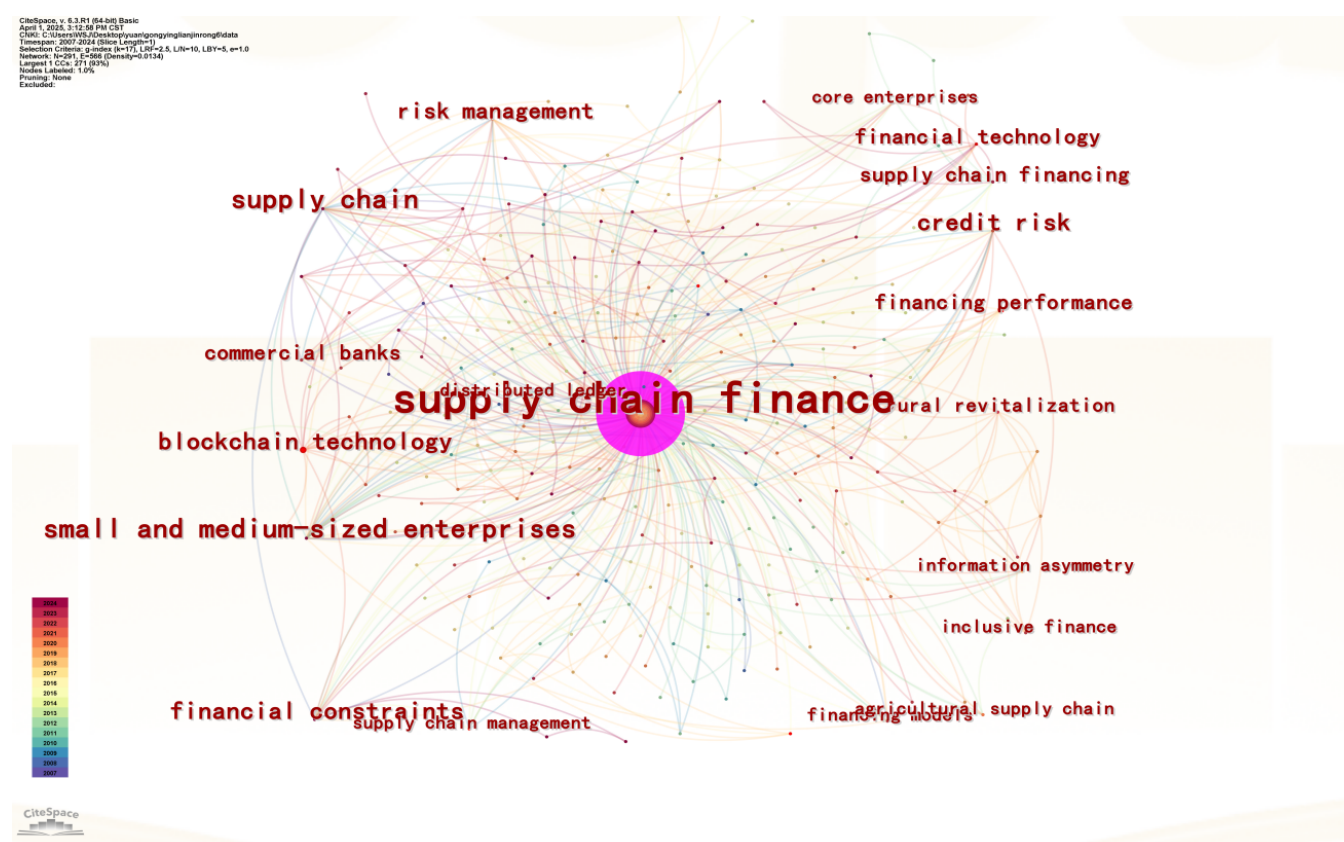
4.Supply Chain Finance Research Hot Spots

4.1 Comparative analysis of the co-occurrence of keywords in domestic and overseas supply chain finance research

A collection of keywords in academic literature can reflect the core topic of the research. In scientometrics research, co-occurrence analysis of sample data using mathematical statistics can mine and classify the data to reveal the focus of research in a particular research area. In this study, keyword co-occurrence analysis was carried out on supply chain finance research samples from CNKI and Web of Science (WoS) databases using Citespace software. In the process of analysis, "Keyword" was used as the node to generate a graph showing the co-occurrence of keywords in supply chain finance research in domestic and international journals, which are shown in Figures 6 and 7, respectively. 0.0338; in contrast, the mapping of Chinese keywords contains 291 nodes and 566 connecting lines, with a network density of 0.0134. In the mapping, the colour saturation of the connecting lines reflects the temporal attributes of the keywords, with lighter hues implying stronger time sensitivity; meanwhile, the size of the nodes is directly correlated with their frequency of occurrence, with larger nodes indicating a higher frequency of occurrence. Through comparative analysis, it can be seen that international studies show more focused attention and consistency of research in the field of supply chain finance innovation driven by fintech.

Figure 6 Domestic Supply Chain Finance Keyword Co-occurrence Map, 2008-2024


Combined with the comparative analysis of knowledge mapping, this study reveals the commonalities and differences between domestic and international research in the field of supply chain finance. In terms of commonality, scholars at home and abroad generally pay attention to trade credit (trade credit, 63 citations, centrality 0.05) and risk management (risk, 20 citations, centrality 0.09), of which the Chinese keyword "credit risk" has 16 citations, centrality 0.02, while "risk management" has 7 citations, centrality 0.01, and "risk management" has 7 citations, centrality 0.01, respectively. 0.02, while "risk management" has a total of 7 citations with a centrality of 0.01. However, judging from the total number of citations and the centrality of the keywords, foreign studies have explored the credit and risk management aspects of trading in greater depth.

In terms of differences, the following three points are particularly significant:

1. foreign studies have focused more on operational decision-making in supply chain finance, such as supply chain

performance (performance, 31 total citations, centrality 0.09), modelling (model, 31 total citations, centrality 0.12) and coordination (coordination, 27 total citations, centrality 0.23) and other topics, while domestic studies have not shown the the same degree of centrality.

Figure 7 Co-occurrence of foreign supply chain finance keywords, 2008-2024
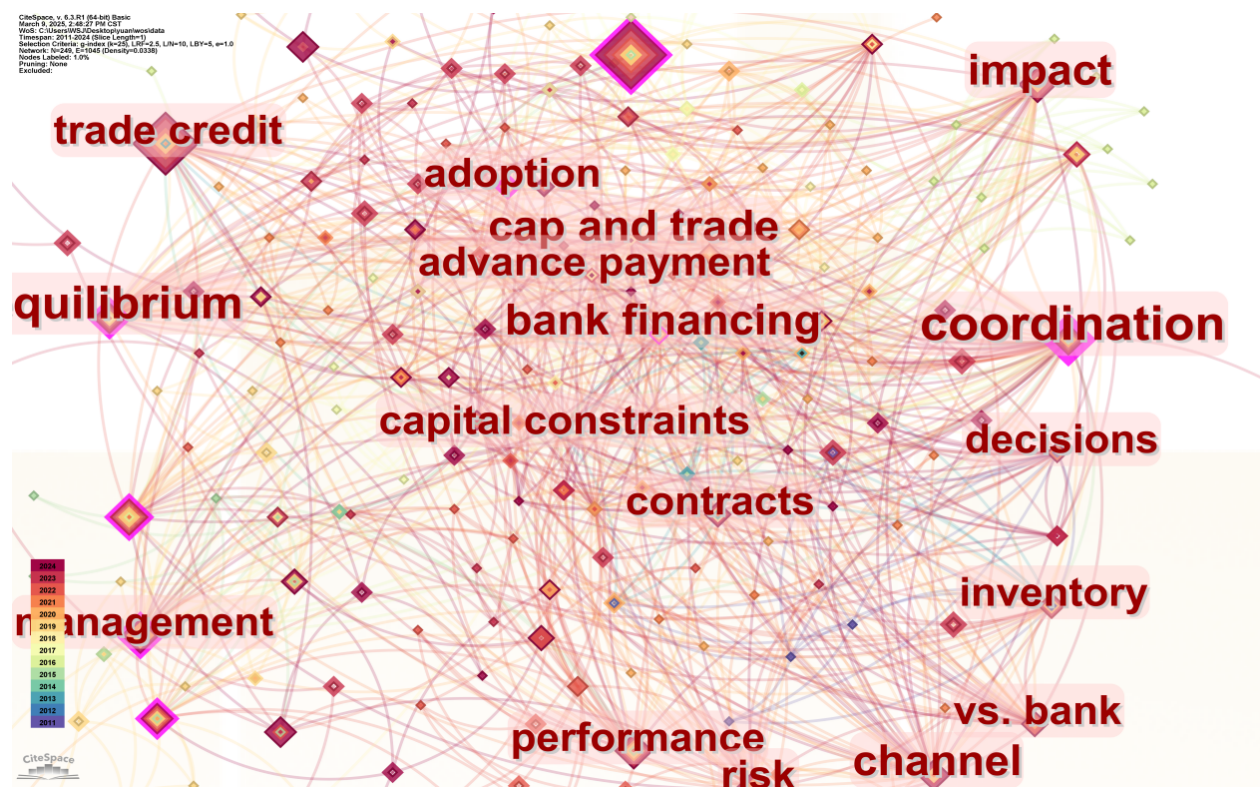
2. Domestic research pays more attention to the optimisation of new modes of supply chain finance, especially in the areas of blockchain (total citations 24, centrality 0.05), small and medium-sized enterprises (total citations 11, centrality 0.01), supply chain (total citations 11, centrality 0.03), and fintech (total citations 11, centrality 0.02), which reflects domestic scholars' financing of SMEs' Practical needs of the attention of domestic scholars.

The specific keyword co-citation times and centrality data are detailed in Table 1, from which we can clearly see the current status and trend in supply chain finance research at home and abroad.

Table 1 Summary of supply chain finance keywords

form	English keywords (co-citation/centrality)	Chinese keywords (co-citation/centrality)
similarities	trade credit (63/0.05), management (32/0.18), risk (20/0.09),	Credit risk (16/0.02), risk management (7/0.01)
difference	performance (31/0.09), model (31/0.12), coordination (27/0.23)	Blockchain (24/0.05), SMEs (11/0.01), supply chain (11/0.03), fintech (11/0.02)

4.2 Keyword clustering mapping analysis

The clustering analysis of keywords in the research field can clearly show the aggregation characteristics of the research topic. In this study, keywords in the field of supply chain finance were analysed by clustering using CiteSpace tool. In the cluster analysis, each cluster is assigned a label and the decreasing cluster number indicates an increase in the number of keywords. According to the LLR algorithm, the cluster labels represent the keywords in the analysis, but not all the labels are displayed in the case of a large sample size or too many cluster categories. In the Chinese data, a total of 13 clusters were identified with a Modularity Q value of 0.5689, which exceeds the threshold of 0.3, indicating a significant clustering structure, and a Mean Silhouette value of 0.9522, which is higher than the threshold of 0.5, suggesting that the clustering results are valid and highly reliable. In the English data, 10 clusters were identified with Modularity Q value of 0.4743 and Mean Silhouette value of

0.7812. These metrics exceeded the threshold value, which verified the reasonableness of the clustering. Further arranged in descending order of cluster size, the top 12 categories with the most clustered keywords in Chinese data include "blockchain", "commercial credit", "rural revitalisation", "blockchain technology", etc., while in the English data, the top 9 categories with the most keyword clustering are "supply chain finance", "financing strategy", "capital constraint" and so on.

Table 2 Clustering summary of supply chain finance keyword

Cluster serial number	S value	name	Cluster serial number	S value	name
#0	0.98	Blockchain	#0	0.718	supply chain finance
#1	0.916	Commercial credit	#1	0.748	financing strategy
#2	0.928	Rural revitalization	#2	0.69	capital constraint
#3	0.949	Blockchain technology	#3	0.72	finance
#4	0.867	Credit risk	#4	0.791	sales effort
#5	0.935	Core enterprises	#5	0.768	bank financing
#6	0.923	Relationship embedding	#6	0.992	credit risk
#7	0.946	Enterprise innovation	#7	0.877	supply chain management
#8	0.965	Text analysis	#8	0.888	technology innovation
#9	0.977	Green supply chain	#9	0.957	fashionable products
#10	0.982	New development pattern			
#11	0.962	Empirical analysis			
#12	0.971	Internet Finance			

4.3 Keyword emergence analysis

Keyword emergence analysis can reveal changes in the level of attention paid to a topic in the research field over a specific time period. By analysing the keyword emergence mapping, it is possible to clearly identify the research directions that have suddenly emerged in the field at different stages. Combined with the changes in current research dynamics, it is possible to make reasonable predictions about future research trends. Specific keyword emergence data and related analysis results are shown in Table 3 and Table 4, respectively.

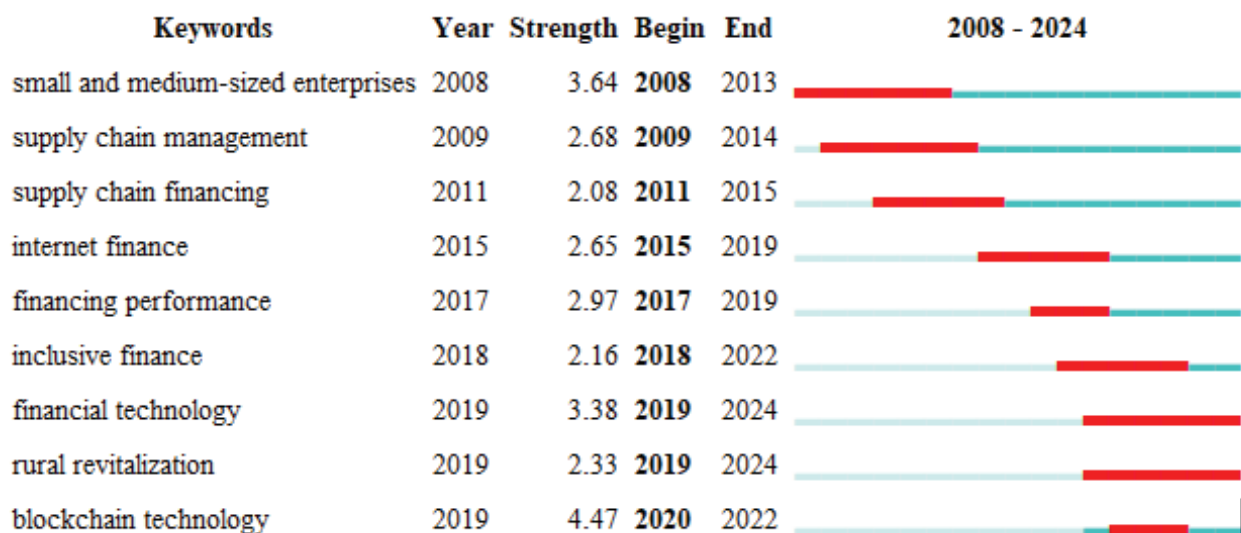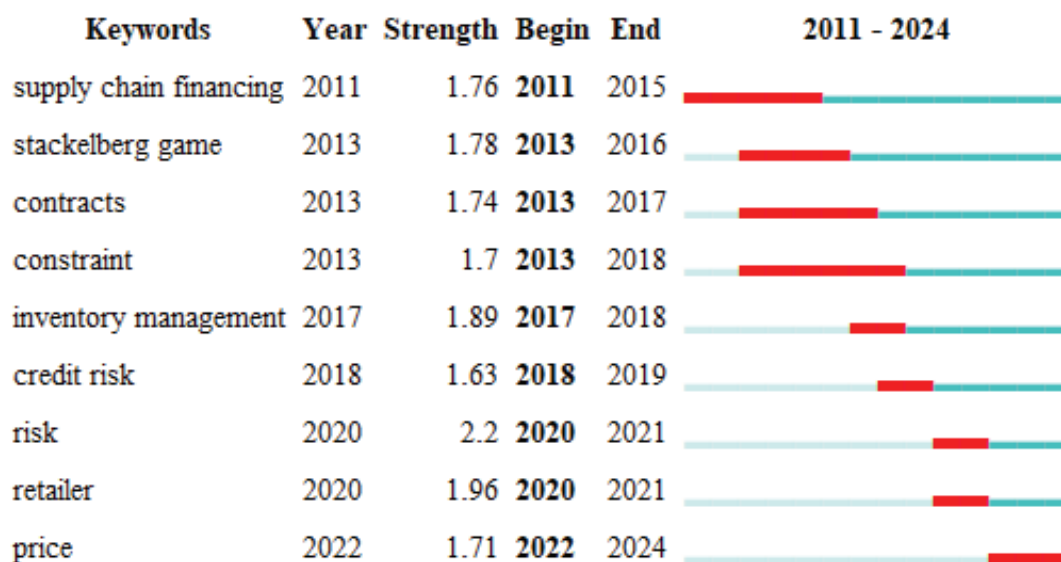*Figure 8 Keyword bursting in Chinese literature*

Keywords	Year	Strength	Begin	End	2008 – 2024
small and medium-sized enterprises	2008	3.64	2008	2013	
supply chain management	2009	2.68	2009	2014	
supply chain financing	2011	2.08	2011	2015	
internet finance	2015	2.65	2015	2019	
financing performance	2017	2.97	2017	2019	
inclusive finance	2018	2.16	2018	2022	
financial technology	2019	3.38	2019	2024	
rural revitalization	2019	2.33	2019	2024	
blockchain technology	2019	4.47	2020	2022	

Figure 9 Keyword highlighting in English literature

Keywords	Year	Strength	Begin	End	2011 – 2024
supply chain financing	2011	1.76	**2011**	2015	
stackelberg game	2013	1.78	**2013**	2016	
contracts	2013	1.74	**2013**	2017	
constraint	2013	1.7	**2013**	2018	
inventory management	2017	1.89	**2017**	2018	
credit risk	2018	1.63	**2018**	2019	
risk	2020	2.2	**2020**	2021	
retailer	2020	1.96	**2020**	2021	
price	2022	1.71	**2022**	2024	

According to the data in Figures 8 and 9, we can observe that there are 9 burst keywords in both Chinese and English literature. By comparing the quantity and categories of these burst terms, it can be seen that the research hotspots in both Chinese and English literature are relatively concentrated, with a comparatively small number of prominent keywords.

4.4 Supply Chain Finance Research Trend Analysis

Based on the above keyword emergence analysis, it can be seen that supply chain finance research has gone through the following two main stages of development.

In the first time period (2008-2018), Chinese and English literature studies focus on the basic theory and application practice of supply chain finance. Keywords in this phase mainly include financing model [9], credit risk [10], industry-finance integration [11], financing performance [12], commercial bank [13], risk management [14], internet finance [15], supply chain financing [16-17], stackelberg game [18-19], contracts [20], constraints [21], inventory management [22] and credit risk [23]. Research at this stage focuses on the basic concepts, operational mechanisms and risk control of supply chain finance, and explores how to enhance the stability and efficiency of the entire ecosystem through effective supply chain governance before risks occur.

In the second time period (2019-2024), Chinese and English literature studies focus on the innovation and development of supply chain finance. The keywords in this phase mainly include blockchain technology [24], agricultural supply chain [25], financial inclusion [26], fintech [27], supply chain governance [28], retailer [29-30], and price [31-32]. Compared with the first phase, the second phase presents a reduction in the number of keyword emergent hotspots and a shorter duration, and researchers in this phase pay more attention to studying the application and development of supply chain finance in the context of new technologies, and how to stabilise supply chain finance through innovation and development after the occurrence of risks in the face of risky processes.

The field of supply chain finance research has shown the following major trends:

1. Research attention continues to grow

From 2008 to 2024, the number of Chinese and English language publications in the field of supply chain finance has shown a general trend of growth, especially after 2015 when the growth was significant. This indicates that supply chain finance has been gaining attention as an important research field in academia and industry. Moreover, the number of English-language publications has grown rapidly after 2018, basically equal to the number of Chinese-language publications, indicating that the research on supply chain finance has not only been paid attention to domestically, but also that the international academic community has gradually increased its attention to this field.

2. Research hotspots shift from basic theories to innovative applications:

In 2008-2018 more emphasis is placed on basic theory and application practice, and early research mainly focuses on

the basic theories of supply chain finance, such as financing mode, credit risk, industry-financing combination, financing performance, etc., and explores the operation mechanism and risk control of supply chain finance. And in 2019-2024 the research hotspot turns to the innovative application of supply chain finance, especially the emerging fields such as blockchain technology, agricultural supply chain, inclusive finance, and financial technology. This indicates that the application and development of supply chain finance in the context of new technology has become a research focus.

3. The focus of research at home and abroad is different:

Foreign research pays more attention to operational decision-making in supply chain finance, such as supply chain performance, modelling and coordination, and other topics, emphasising the optimisation and efficiency improvement of supply chain finance; while domestic research focuses more on the innovation of new modes of supply chain finance, especially in the fields of blockchain, SME financing, supply chain management and financial technology, reflecting the high attention of domestic scholars to the practical needs of SME financing.

4. Research cooperation is insufficient and cross-regional cooperation needs to be strengthened:

Both domestically and abroad, researchers in the field of supply chain finance do not cooperate closely with each other, and there is a lack of cross-regional co-operation and exchange. The density of domestic authors' co-operation network is 0.0033, while that of foreign countries is 0.0097, indicating a low level of overall co-operation. The cooperation between research institutions is also more limited, with most of the institutions showing independent nodes and a clear lack of cross-institutional cooperation. The top 10 domestic research institutions ranked in terms of the number of articles published have published 88 articles, accounting for 18.7% of the total number of articles, of which Renmin University of China tops the list, but the inter-institutional cooperation is still insufficient.

5. Keyword emergence analysis reveals research dynamics:

Chinese literature is rich in research hotspots: the research hotspots in Chinese literature are richer in number and involve a wider range of research, such as blockchain, SME financing, supply chain management, etc. Concentrated research hotspots in English literature: the research hotspots in English literature are more concentrated and relatively few in number, mainly focusing on the basic theories of supply chain finance and operational decision-making.

In summary, the research field of supply chain finance presents trends such as the continuous increase of research attention, the shift of research hotspots from basic theories to innovative applications, the different research focuses at home and abroad, the lack of research cooperation, the concentration of the distribution of research institutes, and the analysis of keyword emergence revealing the research dynamics. These trends provide directions and suggestions for future supply chain finance research.

5.Conclusions and Outlook

5.1 Conclusions of the study

This paper adopts the bibliometric analysis method, combined with CiteSpace software, to systematically analyse the Chinese and English literature in the field of supply chain finance between 2008 and 2024, which visually demonstrates the general trend, developmental vein and cutting-edge progress of Chinese scholars' research in the field, and predicts the direction of future development. The main conclusions are as follows:

1. The multi-level nature of supply chain finance research: Supply chain finance research has expanded from the single issue of enterprise financing to the optimisation of the overall ecosystem of the supply chain. The research not only focuses on the credit risk of core enterprises, but also gradually penetrates into the synergistic mechanism of upstream and downstream enterprises in the supply chain, the innovation of financing mode and the inclusive application of supply chain finance. This multi-level research perspective provides more comprehensive theoretical support for supply chain finance practice.

2. Supply chain finance innovation led by emerging technologies: Driven by the rapid development of blockchain, big data, artificial intelligence and other cutting-edge technologies, the focus of supply chain finance research is shifting from traditional financing methods to technology-driven innovative applications. In particular, the use of blockchain technology has significantly enhanced the transparency and traceability of the supply chain, while opening up new avenues for SME financing. Looking ahead, technology-driven supply chain finance innovation will become an important direction for

research.

3. Trend of globalisation of supply chain finance: Despite the quantitative dominance of domestic supply chain finance research, international academic attention to supply chain finance is gradually increasing. Foreign researches pay more attention to the operational decision-making and efficiency optimisation of supply chain finance, especially in financial coordination and risk management in transnational supply chains. In the future, with the further integration of global supply chains, the globalisation research of supply chain finance will become a trend that cannot be ignored.

4. Diversification of research methods: This paper uses CiteSpace software to conduct a visual analysis of supply chain finance literature, revealing the research hotspots and evolution paths in this field. The introduction of econometric analysis of literature not only provides a new perspective for supply chain finance research, but also promotes the diversification of research methods in this field. In the future, the multidimensional research method combining quantitative and qualitative analyses will further enhance the depth and breadth of supply chain finance research.

5. Close integration of policy and practice: The study of supply chain finance not only has theoretical significance, but also has important practical value. In recent years, with the national attention to the financing difficulties of SMEs, supply chain finance has gradually become a key area of policy support. Future research should pay more attention to the combination of policy and practice, and explore how to promote the wide application of supply chain finance in the real economy through policy guidance and financial innovation.

5.2 Outlook

1. Deepening research on the ecosystem of supply chain finance: Supply chain finance is not only a tool for enterprise financing, but also a core component of the entire supply chain ecosystem. Future research should further explore the role of supply chain finance in supply chain synergy, risk management and sustainable development, and build a more complete supply chain finance ecosystem.

2. Promoting technological innovation and application of supply chain finance: Emerging technologies such as blockchain, artificial intelligence and the Internet of Things (IoT) provide a broad space for innovation in supply chain finance. Future research should focus on the application scenarios and effects of these technologies, especially their role in enhancing supply chain transparency, reducing financing costs and enhancing risk management capabilities.

3. Strengthening international research on supply chain finance: With the increasing complexity of global supply chains, international research on supply chain finance is becoming more and more important. Future research should focus on the operation mechanism, risk management and policy coordination of cross-border supply chain finance, so as to promote the application and development of supply chain finance on a global scale.

4. Exploring inclusive applications of supply chain finance: The problem of SMEs' financing difficulties is a global challenge, and supply chain finance provides new ideas to solve this problem. Future research should further explore how to enhance the accessibility of financing for SMEs through the innovative model of supply chain finance and promote the inclusive development of supply chain finance.

5. Strengthening the combination of policy and practice: Research on supply chain finance should pay more attention to the combination of policy and practice, and explore how to promote the wide application of supply chain finance in the real economy through policy guidance and financial innovation. Future research should focus on the impact of policies on the development of supply chain finance and put forward more operational policy recommendations.

In summary, supply chain finance research is characterised by multi-level, technology-driven, globalisation trend, diversification of research methods and close integration of policy and practice. Future research should deepen the ecosystem research of supply chain finance, promote technological innovation and application, strengthen internationalisation research, explore inclusive application, and strengthen the combination of policy and practice, so as to provide theoretical support and practical guidance for the further development of supply chain finance.

Funding

Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

Reference

[1] Anh, D. P., Vincent, H., & Jean-Laurent, V. (2023). Integrating point-of-sale financing into the coordination of a price and credit dependent e-commerce supply chain. International Journal of Production Economics, 259, 108825.

[2] Chen, C., & Kieschnick, R. (2018). Bank credit and corporate working capital management. Journal of Corporate Finance, 48, 579–596.

[3] Chen, X. X., & He, S. (2022). Research on risk measurement of supply chain finance in commercial banks - based on the perspective of financial technology. Journal of Southwest University for Nationalities (Humanities and Social Sciences Edition), 43(7), 123–128.

[4] Cheng, C., Yang, S. G., & Tian, X. (2024). Impact of supply chain finance on enterprise value empowered by financial technology. Journal of Management Science, 27(2), 95–119.

[5] Fu, H. Y., Zhang, F., Su, Z. Y., et al. (2021). Application of blockchain technology in supply chain finance risk management. *Financial Science, (2), 152–160.

[6] Guo, J. X., & Lu, Y. (2023). Supply chain finance, supply chain concentration and inefficient investment in corporate innovation. East China Economic Management, 37(5), 119–128.

[7] Heng, L., & Qiang, Y. (2024). Revenue-sharing contract in a three-tier online supply chain under EB platform financing. *Finance Research Letters, 59, 104773.

[8] He, T., Pei, P., & Wu, X. H. (2024). Construction, mechanism and application of alliance chain-type supply chain financial system. *Journal of Xi'an Jiaotong University (Social Science Edition), 44(4), 47–61.

[9] Huang, S., Fan, P. Z., & Li, Y. (2024). Financing the retailer in the pharmaceutical supply chain: charge interest or not? *Computers & Industrial Engineering, 196, 110514.

[10] Janan, M., Taleizadeh, A. A., & Jolai, F. (2025). Electric energy supply chain finance and pricing in an energy blockchain environment: sustainable energy bonds and evolutionary game theory. Energy, 320, 135186.

[11] Li, G. L., Huang, D. Y., & Zhu, N. (2023). The impact and mechanism of digital inclusive finance on the transformation and upgrading of small and medium-sized enterprises. Economic and Management Research, 44(8), 38–54.

[12] Li, J., Wang, Y. J., Feng, G. Z., et al. (2020). A review of supply chain finance: current status and future. *Systems Engineering Theory and Practice, 40(8), 1977–1995.

[13] Li, Y. R. (2024). Effective path of digital upgrading of supply chain finance. *Theory Exploration, (4), 122–128.

[14] Li, Y., Zhang, Y., & Geng, L. (2024). Digital finance, financing constraints and supply chain resilience. *International Review of Economics and Finance, 96, 103545.

[15] Liu, C. R., Geng, W. D., Liu, C., et al. (2024). Research on the mechanism and key factors of the interface between small farmers and modern agriculture - based on the perspective of co-operatives and supply chain finance. Management World, 40(10), 103–120.

[16] Liu, L., Rao, W. Z., & Wang, B. C. (2021). How to effectively respond to the competition of other financing models? --The development strategy of supply chain finance based on the perspective of commercial banks. *Research and Development Management, 33(3), 14–29.

[17] Lu, Q. H., & Zeng, L. F. (2014). Research status and review of supply chain finance. Soft Science, 28(4), 131–134.

[18] Lu, Q. H., Zhang, S. L., & Tan, Q. H. (2024). Research on agricultural supply chain financing model based on pre-sale

order of e-commerce platform. *Operations Research and Management, 33(6), 118–124.

[19] Qin, J., Lyu, X., Fu, H., et al. (2024). Carbon emission reduction and financing strategies of capital-constrained supply chains using equity financing under different power structures.Annals of Operations Research Advance online publication.

[20] Song, X. C., & Mao, J. Y. (2022). Research on inter-organisational trust construction process based on blockchain-- taking digital supply chain finance model as an example. China Industrial Economy, (11), 174–192.

[21] Song, Y. F., & Huang, Q. Y. (2018). Progress of domestic supply chain finance research: an analysis based on CSSCI literature from 2005-2017. *China Circulation Economy, 32(1), 47–54.

[22] Sun, F., & Ye, F. (2019). Research hotspots and frontier dynamics of international government performance management-based bibliometric analysis of SCI (2008-2017). *Public Management and Policy Review, (5), 82–96.

[23] Wang, C., Chen, X., Xu, X., et al. (2024). The impact of blockchain technology on equilibrium financing guarantee strategy in a three-tier supply chain. Annals of Operations Research. Advance online publication.

[24] Wang, H., & Liu, M. (2025). Credit risk assessment of green supply chain finance for SMEs based on multi-source information fusion. Sustainability, 17(4), 1590.

[25] Wang, S. J., & Du, Z. P. (2016). A review of domestic supply chain finance literature based on co-occurrence analysis and literature review. Finance and Accounting Monthly, (24), 107–112.

[26] Xin, C., Zhu, R., & Guo, F. (2025). Corporate sustainability and supply chain financing: an analysis of environmental, social, and governance (ESG) consistency. *Journal of Environmental Management, 377, 124688.

[27] Yan, J. H., & Xu, X. Q. (2007). Analysis of the financing model of small and medium-sized enterprises based on supply chain finance. Shanghai Finance, (2), 14–16.

[28] Yang, Y., & Jie, L. (2023). Price timing and financing strategies for a capital-constrained supply chain with price-dependent stochastic demand. *International Journal of Production Economics, 261, 108885.

[29] Zhao, H. D., Liu, J. G., & Zhang, G. Q. (2024). Blockchain-driven operation strategy of financial supply chain under uncertain environment. *International Journal of Production Research, 62(8), 2982–3002.

[30] Zhou, Y. H. (2020). A review of supply chain finance research. *Electronic Commerce, (2), 56–57+84.

[31] Zhu, H. (2020). Analysis of hot topics and evolution paths of supply chain finance research: literature statistics based on CNKI. *Journal of Shanghai Lixin College of Accounting and Finance, (3), 16–29.

[32] Zhu, Y., Jia, R., Wang, G. J., et al. (2023). A review of supply chain finance risk assessment research - based on knowledge mapping technology. *Systems Engineering Theory and Practice, 43(3), 795–812.