WEP Warwick Evans Publishing

International Journal of Social Sciences and Public Administration

ISSN: 3005-9836 (Print), ISSN: 3005-9585 (Online) | Volume 8, Number 1, Year 2025
DOI: https://doi.org/10.62051/ijsspa.v8n1.04
Journal homepage: https://ijsspa.org

Visualization and Analysis of the Dynamics of Domestic and International Data Asset Research Hotspots

Song Wang[1,*], Yijun Chen[2,3], Yu Gan[1]

[1] School of Management Science, Sichuan University of Science & Engineering, Zigong, China
[2] School of Economics and Management, Leshan Normal University, Leshan, China
[3] Sichuan Liquor Development Research Center, Zigong, China
[*]Corresponding Author: Song Wang

ABSTRACT

Data assets have become an important strategic resource in the context of digital economy, and it is of great significance to improve the hot research on data assets to promote data management and application. Based on the research literature of data asset category included within CNKI and Web of Science databases between 2014 and 2023 as the data source, CiteSpace software was used for visualization and analysis. The study shows that (1) the number of domestic literature increase is slower, and the growth of foreign literature is higher than domestic. (2) The cooperation between domestic issuing institutions tends to be fragmented, and the behavior of foreign cooperative research is close and stable. (3) Domestic research hotspots focus on the background perspective of data assets, statistical accounting, and planning and management research; foreign research focuses on data application, assessment models, and performance value research.

KEYWORDS

Data Assets; Digital Economy; CiteSpace; Visual Analytics; Cluster Mapping.

1. INTRODUCTION

As a new type of production factor, data assets have become the core driving force for social progress and economic development. In the era of digital economy, the right to use data and data-based algorithms and models can bring more economic benefits to enterprises, data assets have become an important part of the data factor market, and the use of data has been integrated into all aspects of social reproduction [1-3]. Data can be used to empower the high-quality development of enterprises through the optimization mechanism of traditional factors of production, and the increase in data assets can improve the structure of the workforce, raise the level of technology, inhibit inefficient investment, reduce the cost of management, and then lead to the high-quality development of the economy [4-6]. Therefore, how to maximize the benefits of data assets to achieve the enterprise has become an important issue that needs to be explored in depth in the context of the digital economy. For data asset statistics and accounting, Xu Xianchun (2022), based on the research paradigm of national economic accounting, proposed a data value chain containing four stages of data collection, data storage, data analysis and data application, and explored the concept of data and its production attributes based on this [7]. For data asset collection, management and application, McMahon (2022) takes the railroad industry as an example, emphasizes the necessity and importance of big data analysis in asset management, and believes that big data analysis should be applied for asset management [8-10].

In summary, scholars at home and abroad have paid increasing attention to data asset-related research and achieved a series of remarkable results. However, the current research is still in a state of domain fragmentation, lacking a systematic induction and comprehensive overview of the core hotspots and cutting-edge trends of data asset research. In order to systematically sort out the whole history of data assets from its origin to its evolution, this paper takes the literature on data assets included in CNKI and Web of Science (later called WOS) between 2014 and 2023 as the object, and conducts a visual analysis of the knowledge maps of the number of articles, issuing institutions, keywords, etc., so as to sort out the current status quo of the research on data assets, and further reveal the related core research hotspots and cutting-edge trends, and provide a comprehensive overview for the future research on data assets. We will analyze the current research status of data assets, further reveal the related core research hotspots and cutting-edge development trends, and provide directional guidance and theoretical support for the future research on data assets.

2. ORGANIZATION OF THR TEXT

2.1. Variable Definition

The White Paper on Data Asset Management Practices (Version 6.0) published by the Institute of Cloud Computing and Big Data of the China Academy of Information and Communications Research in 2023 defines data assets as: data assets are data that are legally owned or controlled by an organization (government agencies, enterprises, institutions, etc.), recorded electronically or by other means, such as text, images, voice, video, webpages, databases, sensing signals, and other structured or non structured data, which can be measured or traded and can directly or indirectly bring economic and social benefits [11]. The definition of the meaning of data assets further standardizes the theoretical research on data assets and promotes the research process of the forward development of data assets.

2.2. Data Sources

The Chinese literature was searched from CNKI database, and the time span was set from 2014 to 2023, with “data assets” as the subject term, and the source categories were selected from Peking University Core, CSSCI, CSCD, and AMI, and the non-academic literature such as publication terms, activity records, and journal and conference solicitation were excluded, so that 756 valid papers were obtained as the sample data. 756 valid papers as sample data. For foreign language literature, WOS (SCI, SSCI, A&HCI) was used as the search source, and “Data Assets” was searched as the subject word, and non-academic and invalid literature was also filtered out, and 4,417 valid papers were obtained as sample data.

2.3. Research Methodology

Visual analysis is a data analysis method that presents features and trends in data with the help of graphs, tables and other elements to reveal a deeper logical lineage of research content [12]. In this paper, we screened the literature in CNKI and WOS databases through CiteSpace visual analysis software, and performed a complete analysis of the number of articles, issuing institutions, keywords, etc., to visualize the current research status, development dynamics, and cutting-edge trends of data assets by using knowledge mapping.

3. DOMESTIC AND INTERNATIONAL BIBIOMETRIC ANALYSIS

3.1. Comparison of Domestic and International Publications

By systematically analyzing the number of publications in the field of data assets in a specific time period, the development pulse and trend characteristics of the field can be revealed [13]. Based on the collected literature data and research information, this paper produces a statistical chart of the number of domestic and international publications (Fig. 1), and uses time series analysis to compare the number of domestic and international publications year by year, and analyze their trends and differences. As shown in the figure, from 2014 to 2023, the number of domestic and international publications shows a year-by-year growth trend, indicating that academics are paying more and more attention to the research of data assets. Among them, the domestic growth from 10 articles in 2014 to 223 articles in 2023, with an increment of 213 articles; the highest growth in the number of foreign publications from 185 articles in 2014 to 697 articles, with an increment of 512 articles, showing a significant growth rate, and a slight decline after reaching the peak in 2021, but the base of foreign publications is large, and the overall increment of publications abroad is much larger than that of the domestic.

Based on the year-by-year incremental number of literature, 2016 and 2019 can be taken as the time nodes, and the relevant research in the field of data assets can be divided into three stages: the starting stage (2014-2015), the incremental stage (2016-2018), and the mature stage (2019-2023). The first stage is the research start-up stage (2014-2015), this stage just emerging research on data assets, the number of domestic and foreign publications is small, but the number of domestic research is even lower than that of foreign countries. The second stage is the research incremental stage (2016-2018), the number of domestic and foreign publications show growth, in which the number of domestic studies in 2018 to achieve a leap, because in 2017, China held the Data Asset Management Summit, which aims to promote the development of China's data asset management industry, and set off a research boom in the academic community on data asset management [14-16]. The third stage is the research maturity stage (2019-2023), in which the number of domestic and foreign publications shows a spurt of growth, in which foreign countries reach the peak in 2021 and then decline slightly. Overall, the growth trend of the number of domestic and foreign articles has a certain synchronization, but the average annual growth rate of foreign is higher than domestic.

Figure 1. Comparison of Domestic and International Publication Volume

3.2. Comparison of Domestic and International Issuing Organizations

Through the analysis of data asset issuing institutions, we can find out the cooperation network among different institutions and show the cooperation trend and characteristics of frontier institutions in the

field. In this paper, with the help of CiteSpace visualization and analysis software, the node type is set to “Institution”, and the visual analysis of Chinese literature and English literature is carried out in turn, which generates the mapping of domestic issuing institutions (left) and foreign issuing institutions (right) in turn, and the more nodes in the map, the more issuing institutions. The higher the number of nodes in the graph, the higher the number of issuing organizations; the higher the number of connecting lines, the higher the number of cooperative research organizations.

As can be seen from Fig. 2, there are 123 nodes of domestic issuing organizations, 47 connecting lines, and the network density is 0.0063; there are 198 nodes of foreign issuing organizations, 933 connecting lines, and the network density is 0.0478. The number of domestic issuing organizations is not low, but the connecting lines are fewer and more dispersed, which indicates that a wide range of research cooperation has not been formed in China. Although there are also cooperation phenomena, for example, the School of Information Resource Management of Renmin University of China has a high number of articles and close cooperation with other institutions, but compared with the cooperation network of the University of California and the University of London in foreign countries, there is more frequent cooperation and more exchanges between foreign institutions. Overall, the number of domestic institutions issuing papers is less than that of foreign countries, and the density of the network is low and the connection points are scattered, indicating that a large-scale cooperation network has not been formed in China.

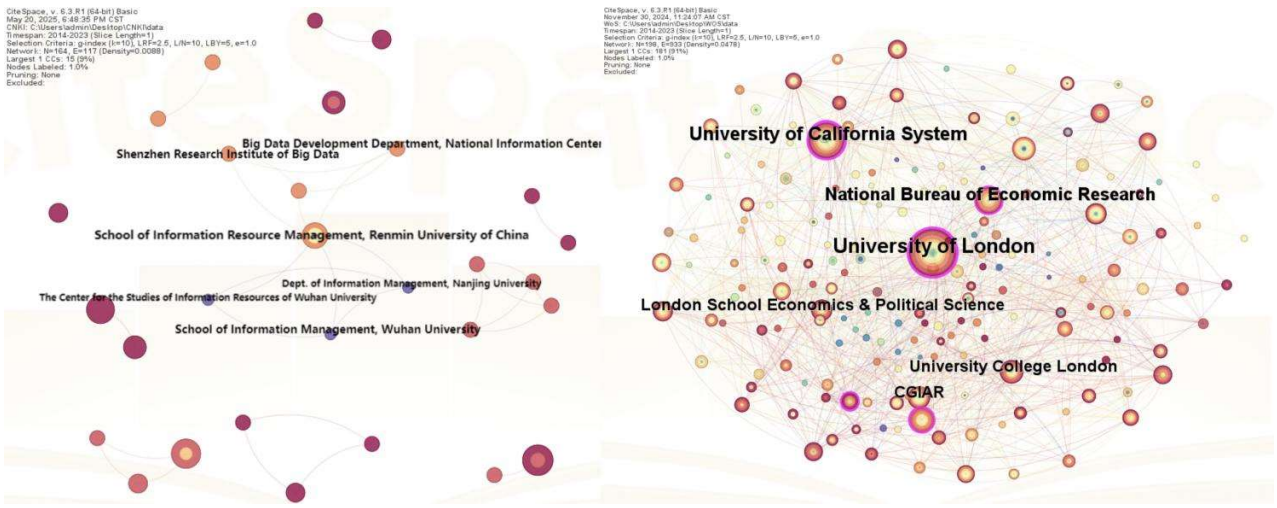

Figure 2. Mapping of domestic and international issuing organizations

3.3. Comparison of Domestic and International Authors

By visualizing and analyzing the authors of the selected sample literature, the maps of authors of domestic publications (left) and foreign publications (right) are generated. The font size of authors in the graph is proportional to the number of articles issued, and the connecting line indicates that there is research cooperation between authors.

As can be seen in Figure 3, there are 164 nodes and 117 connecting lines in the co-occurrence graph of domestic authors, with a network density of 0.0088, indicating that domestic authors have formed several collaborative networks. The larger connection is the team represented by Lili Wang, Jie Huang, and Jicang Xu, whose main research focuses on data governance and sharing [17-18]; followed by the team represented by Chunhong Hao, Yu Dong, and Cheng Qian, whose main research focuses on data asset management [19]; in addition, Xiaomi An has a larger number of publications and works closely with other scholars, connecting multiple field groups, indicating that domestic has sprung up cross-field research cooperation. Foreign authors co-occur with 178 nodes in the graph, 103 connecting lines, and a network density of 0.0065. The more connected authors, Ssewamala, Fred

M and Neilands, Torsten B focus on investigating predictive modeling of data [20]; and Byansi, William and Bahar, Ozge Sensoy mainly used data analysis methods to examine practical problems [21]. Compared with domestic authors, foreign authors have a relatively low degree of scientific cooperation, and have not yet constructed a close cooperation network system, and there is a general phenomenon that more authors conduct academic research independently, but the density of cooperation is low at home and abroad, indicating that neither domestic nor foreign has formed a stable and durable core author group.

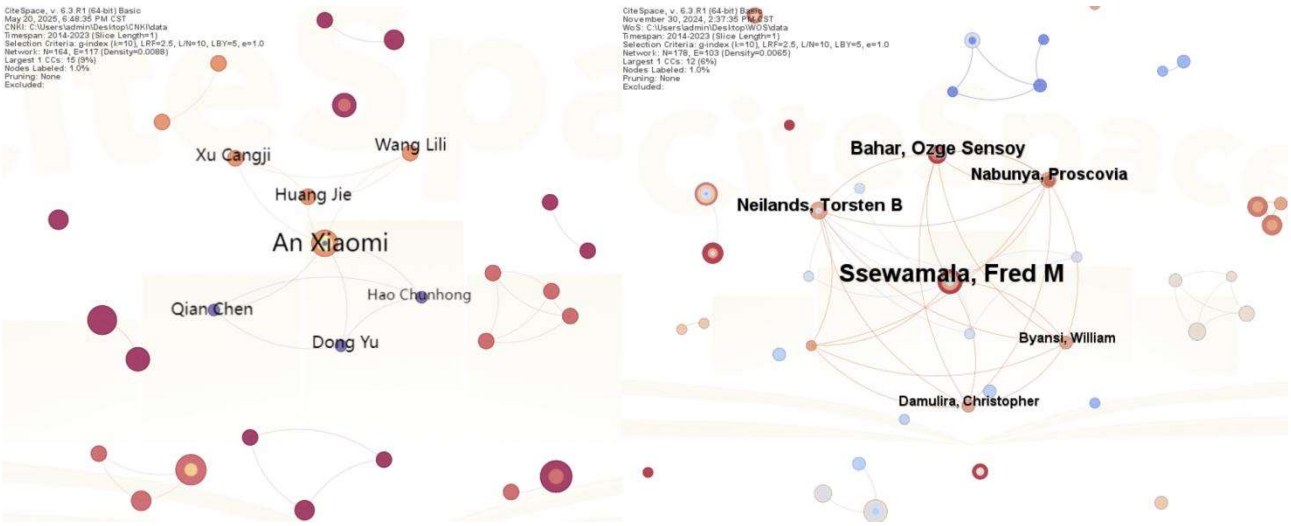

Figure 3. Author Mapping for Domestic and International Publications

4. ANALYSIS OF DOMESTIC AND INTERNATIONAL RESEARCH HOTSPOTS

4.1. Keyword Co-occurrence Analysis

Keywords are important features to describe an article, and keyword co-occurrence reflects the relationship between the literature; keywords can also represent the research field and research direction of the literature [22]. The keyword co-occurrence network of domestic literature (left) and keyword co-occurrence network of foreign literature (right) are generated by CiteSpace software. The size of the node is proportional to the size of the co-citation frequency, the larger the node, the higher the citation frequency, and the larger the centrality means that the node has a greater connectivity role in different fields of research.

As can be seen from Figure 4, the five domestic keywords with the highest citation frequency: “digital economy”, “big data”, “data governance”, “data elements “ and “blockchain”, the digital economy is the general framework of data asset research, the digital economy has given rise to data assets, making the management of data assets a real problem facing the development of enterprises [23]. Data governance, the optimal allocation of data elements, can promote the transformation and upgrading of data management, the data assetization process to drive management change, and ultimately create a shared value model [24-25]. And based on data element reconstruction, element creation and element innovation drive is the realization path of enterprise digital transformation, blockchain data assets play an important role in empowering enterprise high-quality development, reflecting the reliability of data asset function [26]. The five foreign keywords with the highest co-citation frequency: “impact” “risk” “performance” “model” ‘determinants’, data is an important strategic resource in the information age, the impact of data across all dimensions and levels, effective data analysis not only helps managers and operators to make decisions, but also to reduce failures and

other risks [27]. Risk identification and assessment is the most important and complex part of the asset management process, Shakibazad (2020) proposed an approach on risk identification for each asset, analyzing the sensitivity of the asset, establishing the risk of the asset and designing a solution [28]. Whereas assessment models have a significant impact on enterprise data management and decision making, Marquez (2020) investigates the methodology of application data modeling with the help of energy companies as an example and proposes a data model for developing the process of criticality analysis of assets [29].

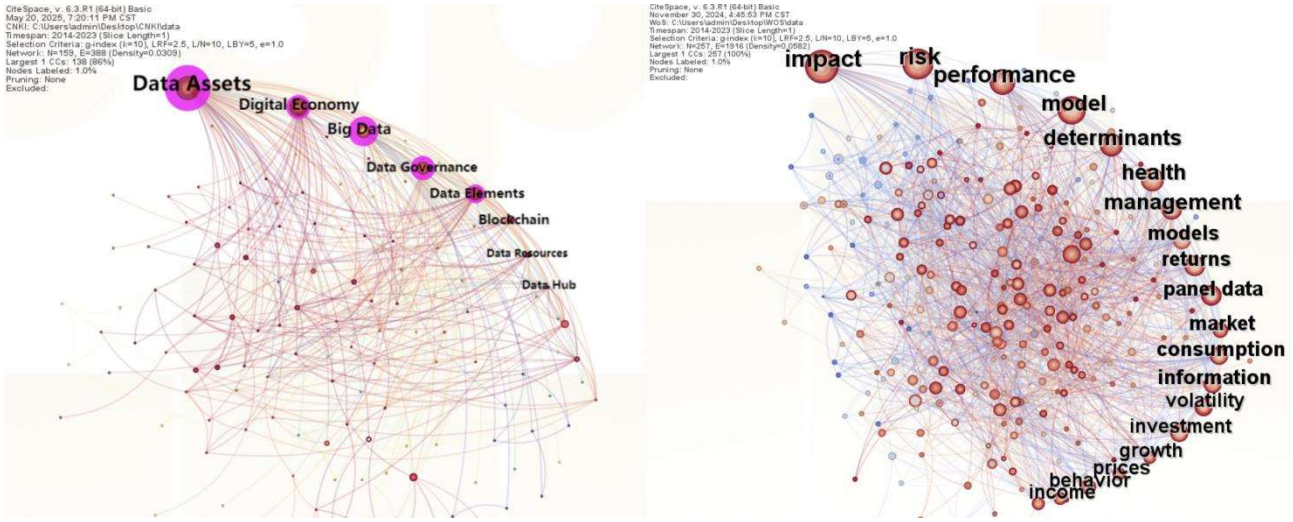

Figure 4. Keyword co-citation network of domestic and international literature

As can be seen from Table 1, the five words with the highest domestic centrality: “big data” “data governance” “digital economy” “data elements “ and “blockchain”, and the keyword co-citation frequency is basically the same, but the big data centrality is greater, indicating that big data plays a better role as a central bridge in the study of data assets [30-31]. From Table 1, the five words with the highest foreign centrality: “impact” “dynamics” “country” ” consumption” ‘information’, indicating that foreign data assets are more focused on applied research. country has greater centrality, and the differences in the data collection process and data delivery methods in different countries are impediments to data access, indicating that the differences in experience, policies and other differences between different countries are important factors in data access. experience, policy and other differences between countries is one of the consideration focuses of data application research [32].

Table 1. Top 5 keywords for domestic and international centrality

Centrality	Frequency	Years	Keywords	Centrality	Frequency	Years	keywords
0.50	75	2014	big data	0.07	388	2014	impact
0.21	73	2015	data governance	0.07	74	2014	dynamics
0.20	78	2019	digital economy	0.07	56	2014	country
0.11	46	2021	data elements	0.06	135	2014	consumption
0.09	27	2018	blockchain	0.06	126	2014	information

To summarize, domestic research mainly focuses on the background perspective research of data assets, followed by statistical accounting research, and finally planning and management research. Overseas research mainly focuses on data application research of data assets, followed by assessment modeling application, and finally performance value research.

4.2. Keyword Highlighting Mapping Analysis

The highlighted words can more clearly reflect the main research content in the field, as well as the evolution of research in different periods, and more intuitively highlight the research hotspots and development trends [33]. In this paper, we analyze the keyword highlighting of the domestic and foreign sample literature, and make the domestic keyword highlighting map (Figure 5) and foreign keyword highlighting map (Figure 6), in which "strength" represents the strength of the highlighting, and the red line segment represents the duration of the research hotspot.

As can be seen from Figure 5, the domestic keyword highlighting map gets eleven keywords. I. Strength: Since 2014, "big data" has the highest strength and the longest duration of research. Big data contains huge social, scientific research and economic value, which has attracted a high degree of attention and attention from all walks of life at that time. The economic benefits of enterprises are the main driving force of big data research, and the huge economic benefits drive large enterprises to continuously expand the scale of data processing, prompting the development of big data research and application in the direction of strategic layout [34]. Second, the time of prominence: the era of big data research, the study of data assets is in its infancy, more tends to theorize the research, its duration is long; and then after the Fourth Session of the Nineteenth Central Committee, data assets have become a new type of production factors, the digital transformation boom is emerging, "data middleware", "blockchain " and other keywords have become research hotspots, which indicates that the research on data assets has shifted from theoretical research to application research. If enterprises want to obtain significant improvements in production and organizational efficiency in the process of digital transformation, they must fully understand and deeply explore the value of data [35]. Third, duration: the average duration of different aspects of research is about two years, indicating that the domestic data asset research is updated and iterative speed. Nowadays, "data sharing" and "data trading" are still being researched, indicating that the current research trend in China is focused on the data factor market.

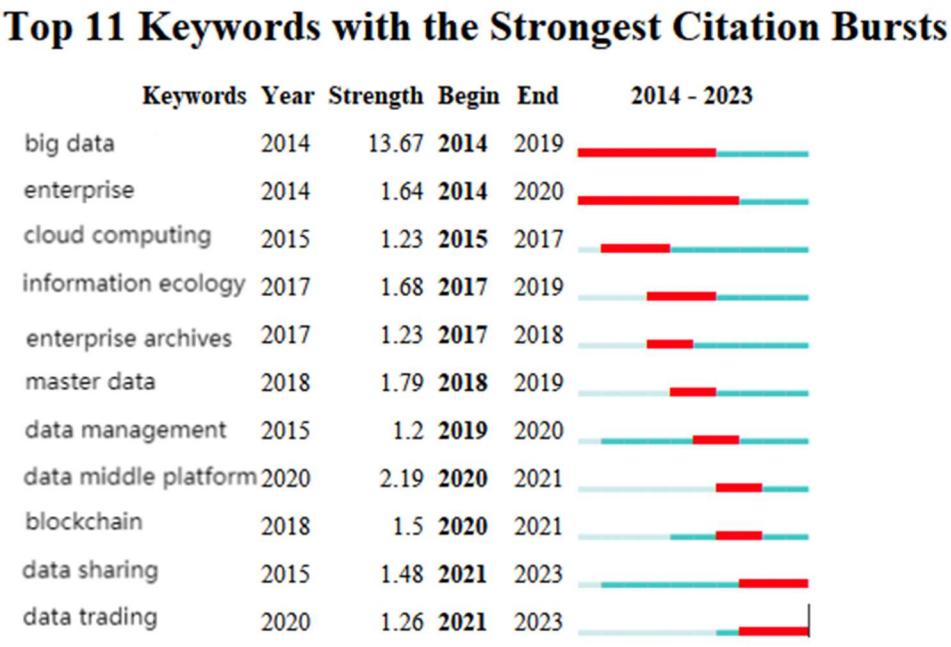

Figure 5. Domestic keyword highlighting mapping

As can be seen from Figure 6, foreign data asset research is relatively mature and started early. First, the intensity of highlighting: “asset returns (asset returns)” has a high intensity of highlighting, and an early start, indicating that foreign data assets from the theoretical research into the application of research at an early stage, and focus on the creation of asset returns. For example, Brous (2015) proposed early that more and more asset management organizations rely on trusted data to drive the decision-making process and meet user expectations [36-38]. Second, the time of prominence, the keyword “risk aversion” appeared in 2016, indicating that the application of enterprise data assets, risk aversion for enterprise data management and decision-making provided by the impact of the role of the excavation of the specific risk assessment model has an important role for the enterprise's asset management. Third, duration: the duration of foreign research is about two years, the keywords are updated and iterative speed, indicating that the rate of foreign data assets research is faster, although the domestic research speed is also the same, but the incremental increase in the issuance of documents is lower, and the output efficiency is lower than the level of foreign research. Nowadays, the trend of foreign data asset research is focused on performance value research.

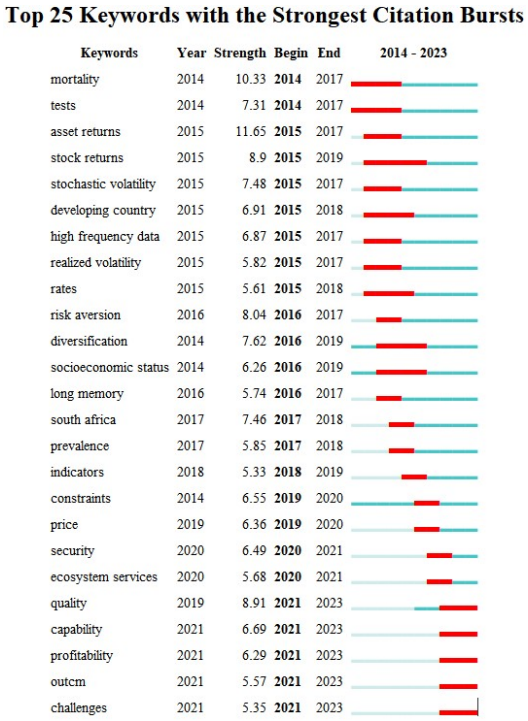

Figure 6. National Keywords Highlighted Mapping

5. CONCLUSION AND OUTLOOK

5.1. Conclusion of the Study

By using 796 and 4417 literatures screened within the CNKI and WOS databases between 2014 and 2023, respectively, as the data source, CiteSpace software was used for in-depth visualization and analysis. The following conclusions were drawn: (1) In terms of the trend of growth in the number of studies, the number of additional domestic literature is relatively flat, and the growth rate and speed of foreign literature is higher than that of domestic. (2) In terms of research institution cooperation network, no large-scale cooperation network has been formed among domestic issuing institutions, and the cooperative research behavior among foreign institutions is more durable and significant. In terms of research authors' cooperation network, no stable and lasting core author group has been formed both at home and abroad. (3) Through the visualization of time series, in terms of research

hotspots, domestic research hotspots focus on the data element market, such as: background perspective, statistical accounting, planning and management research; while foreign research focuses on the application of data, assessment models, performance value research.

5.2. Research Outlook

Based on the clustering mapping analysis of CiteSpac software, data asset research has made remarkable progress, and scholars at home and abroad have conducted a large number of studies on the definition, assessment and application of data assets and achieved a series of important results; however, there are still some aspects of future research on data assets that are worth in-depth discussion.

1) Deepen domestic and international cooperation and exchange. In view of the fact that the cooperation network among domestic research institutions has not yet formed a large scale, and that the cooperative research behavior among foreign institutions is persistent, the future cooperation and exchange in the field of data assets should be strengthened at home and abroad. By building an international exchange platform, we can promote the sharing and mutual learning of academic achievements and jointly promote the development of data assets research. To build a cross-field cooperative research system, a more stable and close cross-field cooperative research system should be built in the future to address the fragmentation of cross-field cooperative research by domestic authors. By integrating the advantageous resources of different disciplines, an interdisciplinary research team should be formed to jointly explore new fields and new issues of data assets.

2) Expand the research hotspots of data assets. While maintaining attention to traditional areas such as background perspective of data assets, statistical accounting, planning and management, research hotspots should be further expanded in the future. For example, in-depth research on data asset assessment model, data application practice, performance value assessment and other areas should be strengthened to enrich the theoretical system and practical application of data asset research. Increase investment in research on performance value of data assets, and assess the contribution of data assets to economic growth and social progress by constructing a scientific evaluation index system, so as to provide a scientific basis for the rational utilization and effective management of data assets. Meanwhile, expanding the research on data asset market, the research on data asset market should be strengthened in the future as the domestic research trend gradually focuses on the data factor market.

3) Strengthen the application of mathematical tools in research methods. In view of the fact that advanced assessment models have been widely used in foreign countries to deeply explore the value of data and flexibly use all kinds of applications to effectively avoid data risks, China's exploration and practice in this field urgently need to accelerate the pace of research. At the same time, we should deepen the research and application of cutting-edge technologies such as data mining and artificial intelligence, establish a more perfect system in data governance, strengthen the application of mathematical tools in research methodology, continuously narrow the gap with the international advanced level, and help China's data factor market research make breakthrough progress.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest regarding the publication of this paper.

REFERENCES

[1] Pan, A. L., & Li, G. P. (2024). Paths, challenges, and countermeasures for the release of enterprise data value in the digital economy era. Theory and Reform, *4*(4), 163–174.

[2] Li, Y. X., & Ni, S. (2017). Research on accounting recognition and measurement of data assets. Journal of Hunan University of Finance and Economics, *33*(4), 82–90.

[3] Wang, Y. S., & Li, X. X. (2022). Discussion on the definition, accounting recognition, and accounting treatment of data assets. Finance & Economics World, (22), 138–140.

[4] Yuan, Z. M., Yin, Q., & Yu, X. (2024). How data assets empower high-quality enterprise development: Optimization mechanisms for traditional production factors. West Forum, *34*(3), 54–73.

[5] Yang, Z. (2023). How does the digital economy drive high-quality enterprise development? Core mechanisms, mode selection, and implementation paths. Shanghai Journal of Finance and Economics, *25*(3), 92–107.

[6] Tian, X. J., & Li, R. (2022). Digital technology empowering the transformation of the real economy: An analytical framework based on Schumpeterian endogenous growth theory. Management World, *38*(5), 56–73.

[7] Xu, X. C., Zhang, Z. W., & Hu, Y. R. (2022). Research on statistical and accounting issues of data assets. Management World, *38*(2), 16–30+2.

[8] McMahon P, Zhang T, Dwight R. Requirements for big data adoption for railway asset management[J]. Ieee Access, 2020, 8: 15543-15564.

[9] Gavrikova E, Volkova I, Burda Y. Strategic aspects of asset management: An overview of current research[J]. Sustainability, 2020, 12(15): 5955.

[10] Hanski J, Ojanen V. Sustainability in strategic asset management frameworks: a systematic literature review[J]. International Journal of Strategic Engineering Asset Management, 2020, 3(4): 263-294.

[11] Big Data Technology Standards Promotion Committee. (2024). White Paper on Data Asset Management Practices [Report/Online]. Retrieved December 13, 2024, from http://221.179.172.81/images/20230104/12651672818383015.pdf

[12] Chen, B. K., & Zhao, R. Y. (2015). Theoretical research on knowledge visualization analysis in disciplinary fields. Information Studies: Theory & Application, *38*(11), 23–29.

[13] Liu, F. (2013). Research on information visualization technology and its applications [Unpublished master's thesis]. Zhejiang University.

[14] Wang, S., & Li, B. Y. (2024). A review of theories and methods for valuing data assets. Statistics and Decision, *40*(20), 43–48.

[15] Sun, L. L., & Yuan, Q. J. (2019). Research on the evaluation index system of e-commerce data quality from the perspective of data asset management. Journal of Modern Information, *39*(11), 90–97.

[16] Zhu, Z. L., & Ni, S. (2018). Research trends and future directions of data asset management: Analysis based on CNKI literature from 2002 to 2017. Journal of Hunan University of Finance and Economics, *34*(6), 105–115.

[17] An, X. M., Xu, J. C., Huang, J., et al. (2021). Government data governance and utilization capabilities: Current status, challenges, and recommendations. Documentation, Information & Knowledge, *38*(5), 20–33.

[18] An, X. M., Xu, J. C., Wang, L. L., et al. (2021). Data governance in international standards: Concepts, perspectives, and collaborative pathways. Journal of Library Science in China, *47*(5), 59–79.

[19] Hao, C. H., An, X. M., Qian, C., et al. (2014). Digital scientific archives as assets: Case analysis and implications from the UK Data Asset Framework. Beijing Archives, (1), 13–16.

[20] Brathwaite R, Ssewamala F M, Neilands T B, et al. Development and external validation of a risk calculator to predict internalising symptoms among Ugandan youths affected by HIV[J]. Psychiatry research, 2021, 302: 114028

[21] Cavazos-Rehg P, Byansi W, Doroshenko C, et al. Evaluating potential mediators for the impact of a family-based economic intervention (Suubi+ Adherence) on the mental health of adolescents living with HIV in Uganda[J]. Social science & medicine, 2021, 280: 113946.

[22] Wu, X. Q., & Lyu, N. (2012). Research on hotspot analysis methods based on keyword co-occurrence frequency. Information Studies: Theory & Application, *35*(8), 115–119.

[23] Yang, C. H. (2024). Research on enterprise data asset management in the digital economy era. Foreign Economics & Trade, (10), 57–60.

[24] Wang, Y., & Yang, D. (2024). Chinese-style management accounting system reform: From data elements to data assets. Management World, *40*(10), 171–189.

[25] Xu, Z. Y., & Zheng, H. J. (2024). Empowering new quality productivity: Legal configurations for data element assetization. Journal of Hubei University (Philosophy and Social Sciences), *51*(5), 136–146, 179.

[26] Liu, G. Q., Gan, S. D., & Wang, X. Y. (2024). Research on the reliability of blockchain data assets. Finance and Accounting Monthly, *45*(11), 26–32.

[27] Consilvio A, Vignola G, López Arévalo P, et al. A data-driven prioritisation framework to mitigate maintenance impact on passengers during metro line operation[J]. European Transport Research Review, 2024, 16(1): 6.

[28] Shakibazad M, Rashidi A J. New method for assets sensitivity calculation and technical risks assessment in the information systems[J]. IET Information Security, 2020, 14(1): 133-145.

[29] Crespo Marquez A, Gomez Fernandez J F, Martínez-Galán Fernández P, et al. Maintenance management through intelligent asset management platforms (IAMP). Emerging factors, key impact areas and data models[J]. Energies, 2020, 13(15): 3762.

[30] Liu, J. L., Wang, D. L., Zhao, W. J., et al. (2016). A discovery algorithm for degree centrality and overlapping network communities. Computer Science, *43*(3), 33–37, 71.

[31] Liu, X. Y. (2019). Analysis and system construction of data ownership in the big data era. Journal of Shanghai University (Social Sciences Edition), *36*(6), 13–25.

[32] Van Der Wel K A, Östergren O, Lundberg O, et al. A gold mine, but still no Klondike: Nordic register data in health inequalities research[J]. Scandinavian Journal of Public Health, 2019, 47(6): 618-630.

[33] Liu, Z. Y. (2010). Scientific knowledge mapping: Methods and applications. In *Compilation of Award-Winning Achievements in Philosophy and Social Sciences of Liaoning Province (2007-2008)* (pp. 493–496).

[34] Li, G. J., & Cheng, X. Q. (2012). Big data research: A strategic field for future technological and socio-economic development-Current status and scientific reflections. Bulletin of the Chinese Academy of Sciences, *27*(6), 647–657.

[35] Shi, Y. P., Wang, Y., & Zhang, W. T. (2021). Digital transformation of Chinese enterprises: Current status, challenges, and prospects. Economist, (12), 90–97.

[36] Brous P, Herder P, Janssen M. Towards modelling data infrastructures in the asset management domain[J]. Procedia Computer Science, 2015, 61: 274-280.

[37] Koziel S, Hilber P, Westerlund P, et al. Investments in data quality: Evaluating impacts of faulty data on asset management in power systems[J]. Applied Energy, 2021, 281: 116057.

[38] Aremu O O, Cody R A, Hyland-Wood D, et al. A relative entropy based feature selection framework for asset data in predictive maintenance[J]. Computers & Industrial Engineering, 2020, 145: 106536.