

Knowledge Mapping of Supply Chain Safety Research : A Visual Analysis Using CiteSpace

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ABSTRACT

With the development of logistics practice and theory, supply chain safety is becoming more and more prominent. This paper reviews the development and evolution of supply chain safety and systematically reviews the current situation of supply chain safety. We used a visualization tool named CiteSpace to analyze the characteristics of supply chain safety research with the Web of Science database. According to 1871 articles focusing on supply chain safety, we identified the most influential countries, institutions, authors, publications and keywords in this field, and discussed the research hotspots and future trends in the field of supply chain safety, so as to provide reference for future studies in the field of supply chain safety.

Keywords: supply chain, safety, CiteSpaceV

1. INTRODUCTION

With the development of Chinese society, logistics demand expands continuously and the logistics industry develops rapidly. Logistics companies have potential safety hazards in transportation, warehousing, loading, unloading, handling, distribution, circulation processing, packaging and other aspects. Maslow's hierarchy of needs theory believes that security needs will arise when the most primitive and basic needs of human beings to maintain life and continue the race are satisfied. Security is one of the topics that people are most concerned about. From national diplomacy to food, clothing, housing and transportation, logistics services are becoming an indispensable part of people's lives. It is to pack above all, should consider the safety of packaging craft and material. Secondly, transportation should pay attention to avoid collision of objects, traffic accidents, mechanical damage, fire, explosion accidents and deterioration. In addition, fragile items should be handled with care to prevent collision and damage. In the process of warehouse management, we should make a reasonable layout of the warehouse so that the planning and design of the warehouse can meet the national professional

standards. Supply chain safety attaches great importance to people-oriented, modern science and technology, environmental protection, green cycle and harmonious development. Therefore, supply chain safety will make great progress not only in theory but also in practice. Supply chain safety is a huge system engineering, it not only involves all aspects of the logistics system, but also closely related to the social environment, at the same time, it is a final advocate of people-oriented theme, and the call to create a harmonious society coincides with the trend of The Times. As soon as possible so it is necessary to logistics safety consciousness into the layers of the logistics work social workers in each layer of the heart, even its biochemical to the level of the enterprise concept, enterprise culture, at the same time should also have a logistics related laws to protect, real play to the role of the culture of casting the soul, for material system of thrift and made good matting on the consciousness.

The research on supply chain safety started late, and relevant journals appeared in 1996. In recent years, supply chain safety has attracted more and more attention. Prior researchers have contributed to the area of supply chain safety on various aspects.

Klassen, RD(2012) defined the basic concepts related to risks in social problems of supply chain from relevant literatures, and studied how to mitigate risks by referring to the cases of five multinational companies. Aung MM (2014) presented comprehensive information about traceability with regards to safety and quality in the food supply chain. Risk assessment and management was established as a scientific field some 30-40 years ago. Risk assessment and management was established as a scientific field some 30-40 years ago. Aven, T(2016) reviewed recent advances on their foundation for experts with different types of background. Luthra, S (2017) researched an integrated framework for sustainable supplier selection and evaluation in supply chains.

Zhang, YJ (2018) developed an intelligent traceability platform based on HACCP system that integrates wireless monitoring and quality control models. This system can reduce the potential risks. Abdel-Basset, M (2018) presented an integrated method with a neutrosophic analytical hierarchy process (N-AHP) and neutrosophic technique has been demonstrated for this purpose in order to quantify risks in supply chain.

The research on supply chain safety mainly includes two specific aspects: one is to study and build the index system of supply chain safety from the macro perspective; the other is to divide logistics into sub-systems from the micro perspective and consider supply chain safety from various aspects. At present, few scholars use visualized and graphical bibliometric analysis to explore the internal relationship among articles, authors and references in the field of supply chain safety. Based on this, this paper uses the bibliometric analysis to conduct quantitative analysis of the literature of supply chain safety research. The topics included the characteristics of publication outputs and publication distribution or main researchers, journals and the trend shift of the research frontier of literatures, which can help us to better understand the knowledge base and summarize the research hotspots in the field of supply chain security and allows us to deep the understanding and grasp of the field.

2. METHODOLOGY AND DATA

2.1. Data Source

In this paper, “web of science” was used as the general database for searching. The data retrieval method was as follows:

Select a database: Web of Science Core Collection
Topics=“ supply chain “AND” Safety”

The publication period=“1996 to 2018 “(supply chain safety research first appeared in 1996) a total of 1,871 search results were obtained. The reference data from Web of Science included full records and cited references. The retrieval time was November 20, 2018.

2.2. Analytical Methods

Literature measurement method is one of the quantitative methods of literature analysis. It takes the external characteristics of various literature information as the research object, and provides strong analysis support for the links of literature information collection, processing and sorting, analysis and prediction, evaluation and transmission and utilization. Network analysis is a quantitative analysis method from the perspective of structuralism based on graph theory. The combination of the two is a powerful visual analysis tool. The main analysis method was co-occurrence analysis (correlation analysis), including co-occurrence of key words, references and authors. Bibliometrics requires the use of scientometrics software for data collection, data preprocessing and data analysis. In this paper, CiteSpace, developed by Dr. Chaomei Chen, is used as an analysis tool to draw the knowledge map. CiteSpace is a quantitative analysis oriented visualization software running in the Java environment. This software can intuitively analyze and detect the research hotspots and frontiers of the development of knowledge base of related disciplines.

3. CHARACTERISTIC ANALYSIS OF SUPPLY CHAIN SAFETY RESEARCH

3.1. Time Distribution of Supply Chain Research

The change of the number of documents is an important index to measure the development of

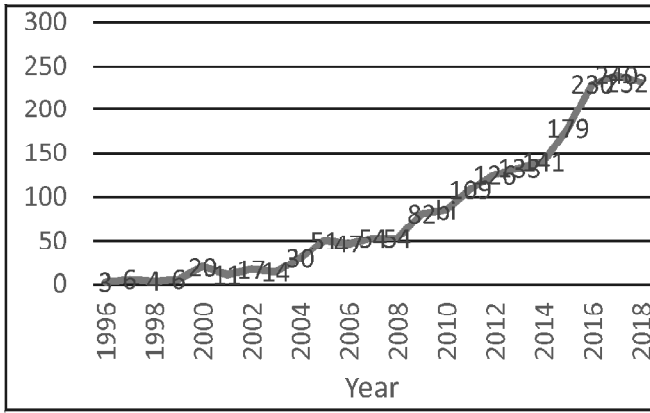


Figure 1: The publication number from 1996 to 2018

supply chain safety. It is helpful to analyze the research progress in this field and predict the future development trend by literature metrology and graph drawing. Figure 1 shows the distribution curve of supply chain safety research literature. It can be seen from the figure that:

The number of publication increased dramatically year by year, from 3 in 1996 to 240 in 2017. From 2005 to 2008, the number of relevant literatures stabilized at about 50. But after 2008, the number of articles published increased. The inquiry can be speculated that it is related to the frequent food scandals in 2008. In 2014, the growth rate of the number of posts increased, which shows that supply chain safety has attracted people’s more and more attention.

3.2. Documents Types Distribution of Supply Chain Research

As shown in Fig. 2, 1870 documents were divided into five parts, of which the largest proportion is article (82%). Followed by review, which accounted

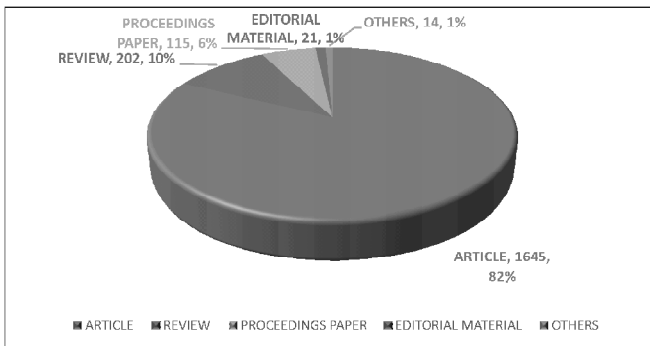


Figure 2: Categorization of supply chain safety by documents types from 1996 to 2018

for approximately 10%. The number of proceeding papers is 115(6%). Editorial material and others accounted for approximately 1%.

3.3. Analysis and Mapping of contribution

3.3.1. Main Countries

Table 1: Top 10 productive countries

Rank	Countries	Publications(%)	Centrality
1	Usa	537(28.56)	0.15
2	England	229(12.18)	0.42
3	Peoples R China	216(11.49)	—
4	Italy	125(6.65)	0.09
5	Netherlands	122(6.49)	0.26
6	Germany	119(6.33)	0.13
7	Australia	104(5.53)	—
8	France	97(5.16)	0.18
9	Belgium	75(3.99)	—
10	Canada	72(3.83)	0.09

As shown in table 1, the countries in the top 10 in terms of Publications are listed in the table. The top ranked item by citation counts is USA, with citation counts of 537. But it only rank fifth in terms of centrality. The top ranked item by centrality is England, which ranks second in terms of the number of publications. This shows that England the has made great contributions to the research of supply chain safety. Peoples R China is third in the number of articles published, but it ranks behind 10 in terms of centrality. Italy ranks 4th, with a global share of 6.65%, followed by Netherlands (6.49%), Germany (6.33%), Australia(5.53%), France (5.16%) and Belgium (3.99%) .The last is Canada ,which is closely followed by Belgium. It is worth mentioning that although France and Canada rank low in terms of output volume, they rank very high in terms of centrality, which should arouse our attention.

3.3.2. Maps of Co-country

According to Figure 3, it shows the international collaboration. The circle size represents the number of publications in that country, and the line thickness represents the strength of cooperation between countries. In general, the cooperation network between countries is close, especially the cooperation

between the USA and England all over the world. As can be seen from the figure, China's cooperation network is relatively sparse. China should actively participate in international exchanges and cooperation, deepen research in the field of supply chain safety, and enhance China's influence in this field.

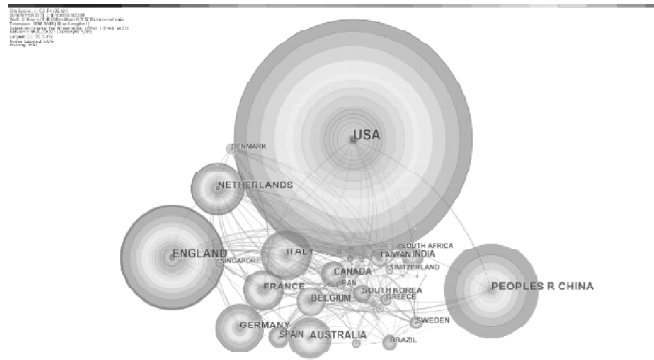


Figure 3: Maps of Co-country

3.4. Analysis and Mapping of the Institute and Co-authors

3.4.1. Maps of Institute

Choose one year as the length of each slice; Sets the node type to "Institute"; Select top 50 levels of most cited or occurred items from each slice. The rest is set to default. The resulting organization cooperation network map is shown in figure3. The chart reflects the number of publications and partnerships of agencies. It can be seen from the figure that there are a large number of supply chain safety research institutions and their distribution is relatively centralized. Most of them converge and intersect in the figure, and only a few of them are scattered in a point-like manner. It shows that supply chain safety research institutions have close cooperative relations. There are more yellow and light green lines than blue lines, indicating that inter-agency cooperation has intensified in recent years. As is shown in Table 2, the top ranked item by citation counts is Wageningen Univ, with citation counts of 39. The second one is Univ Ghent, with citation counts of 27. As can be seen from the figure, there is cooperation between the two agencies. It also reflects the status and advantages of these two institutions in the field of supply chain safety research. The third is Michigan

State Univ, which is the center of many research fields. Katholieke Univ Leuven ranks 4th, followed closely by Hong Kong Polytech Univ(14), Univ Wageningen & Res Ctr(14), Penn State Univ(12), Rutgers State Univ(12), Univ Florida(12), Univ Ljubljana (11).

Table 2: Top 10 productive Institute

Rank	Institute	Citation counts
1	Wageningen Univ	39
2	Univ Ghent	27
3	Michigan State Univ	21
4	Katholieke Univ Leuven	15
5	Hong Kong Polytech Univ	14
6	Univ Wageningen & Res Ctr	14
7	Penn State Univ	12
8	Rutgers State Univ	12
9	Univ Florida	12
10	Univ Ljubljana	11

3.4.2. Maps of Co-authors

Set the node type as author, the threshold as T80, and the rest as the default value to obtain the author cooperative network analysis graph (Figure 4). Choose five year as the length of each slice; A total of 437 nodes and 768 connections were obtained. The node in the figure represents the author, and the node ring represents the annual ring. The larger the node, the more papers the author publishes, and the label font size reflects the centrality. The connection between each node represents the cooperative relationship, and the thickness of the connection reflects the close degree of the cooperative relationship. Co-author analysis can not only help us find the most influential author, but also determine its development path through the core author's attention JACXSENS L is the leading scientist in supply chain safety field who focus on food safety. The second scientist in publication number is UYTTENDAELE M. He studies microbial inactivation, quantitative contamination assessment and analysis of the temperature and storage time distribution of household refrigerators for shelf life studies and food safety risk assessment. The strength of the connection between JACXSENS L and UYTTENDAELE M shows that they have established a strong partnership. There are other

authors who have published more articles LUNING PA and VAN DER FEL S-KLERX HJ.

3.5. The Networks of cited Journals

By studying the literature source journals in the field of supply chain safety, it is convenient for people to understand the distribution of important journals in this field and convenient for scholars to find high-quality literatures. This study adopts the method of periodical co-citation network analysis to explore the journals that contribute the most to the field of supply chain safety (Figure 5). The main journals of supply chain safety research are JNT J PROD ECON, FOOD CONTROL ,SUPPLY CHAIN MANAGand EUR J OPER RES. INT J PROD ECON, EUR J OPER RES, FOOD CONTROL, MANAGE SCI and other journals have the most prominent citation frequency, with 537, 419, 414 and 388, indicating that these journals have published a large number of research papers in the field of supply chain safety, which is an important literature source in this field and plays a supporting role for the research in the field of supply chain safety. Meanwhile, from the perspective of centrality, journals such as FOOD CONTROL, INT J RFOD ECON, SUPPLY CHAIN, INT J FOOD MICROBIOL have high centrality, which is 0.91 and

0.72. This shows that the quality of articles published in these journals in the field of supply chain safety is high, which plays an important role in supporting the research in the field of supply chain safety. Among them, FOOD CONTROL and INT J RFOD ECON are both highly cited journals and high school psychological journals, indicating that the journal occupies a strong core position.

3.6. Fund source analysis

By analyzing the fund sources of supply chain safety research, it is helpful for scholars in this field to have a clear target when applying for project funding and select appropriate project for fund application. The main funding source is the national natural science foundation of China, accounting for 38% of the 1871 literatures. The remaining funding sources include the fundamental research funds for the central universities, the European community, the European commission. The national social science foundation of China accounts for 5%. China’s funds account for 43%, indicating that China has a large investment in supply chain safety, and the country attaches great importance to research in the field of supply chain safety. European investment is also relatively large, accounting for a large proportion. (Figure 6)

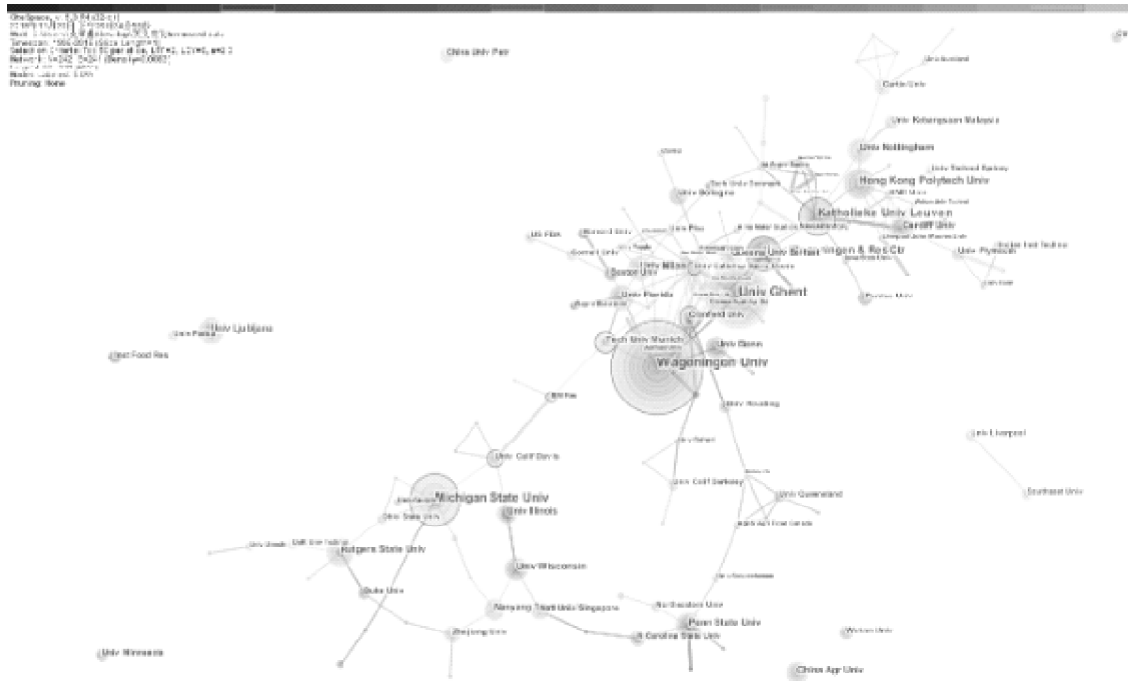


Figure 3: Maps of Co- institute

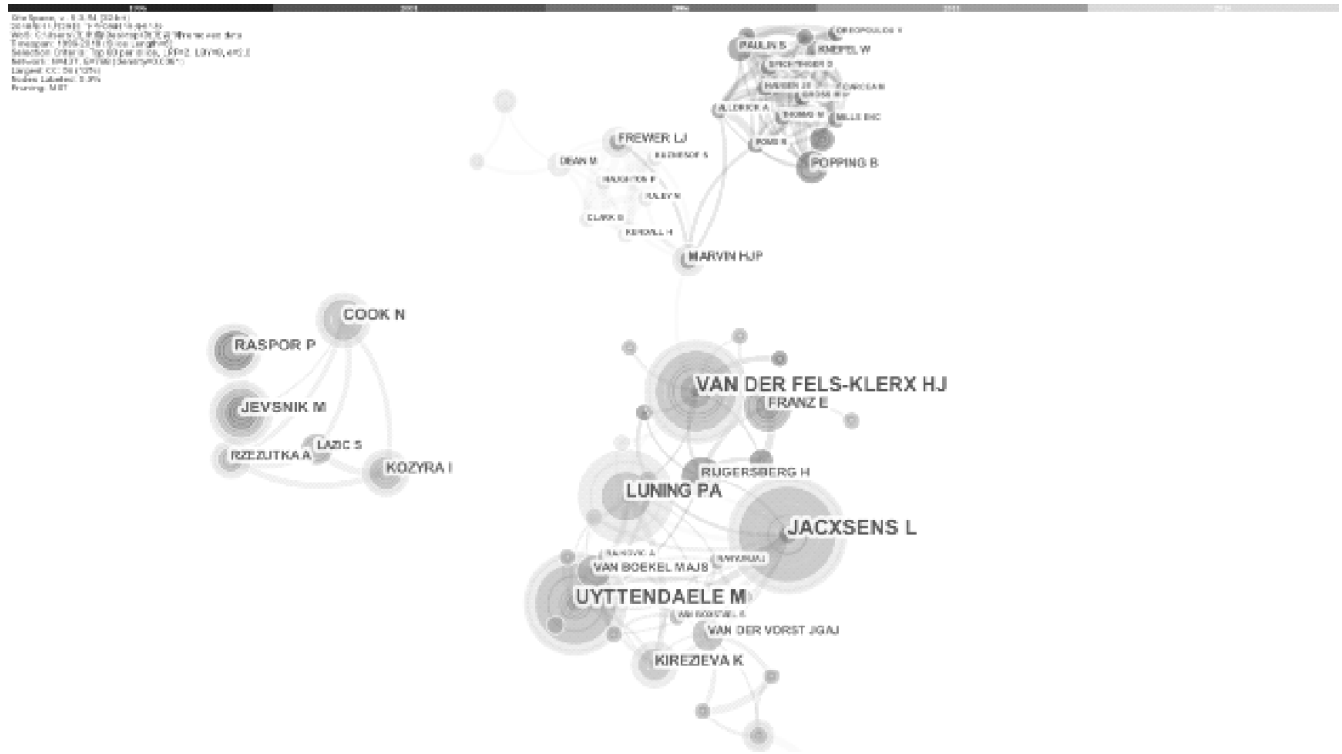


Figure 4: Maps of Co-authors. Different colors in the figure represent different time slices. Deep purple: 1996 to 2000, dark blue : 2001-2005, green: 2006-2010, pink green: 2011-2015, yellow: 2016-2018

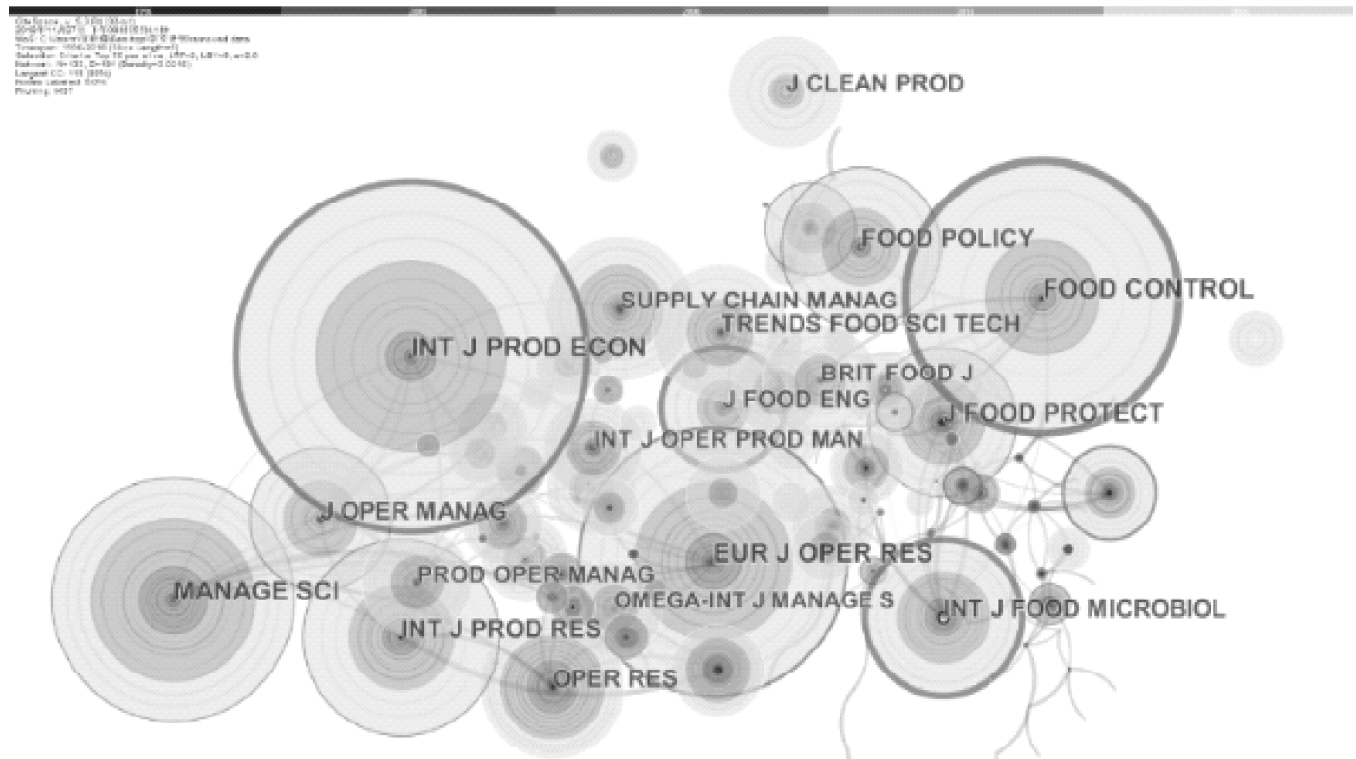


Figure 5: Maps of cited Journals. Deep purple:1996 to 2000, dark blue :2001-2005, green:2006-2010, pink green:2011-2015, yellow:2016-2018

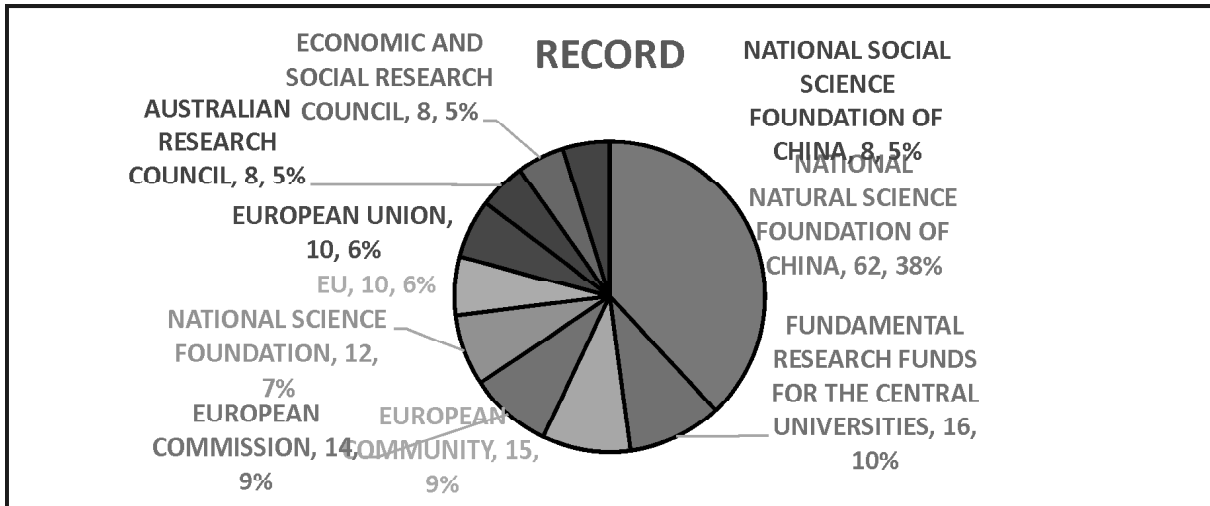


Figure 6: Top 10 funding sources of supply chain safety

3.7. Disciplines distribution

The discipline distribution of supply chain safety research literature is analyzed based on the core database category of Web of Science. Figure 7 shows the distribution of energy-related research in 10 major disciplines from 1996 to 2018. It can be found that the research articles in the field of supply chain safety mainly focus on engineering, food science, technology, operations, research, management, science, and business economics. Engineering has the highest frequency (476 times), followed by food science technology (456 times).

4. RESEARCH HOTSPOT OF SUPPLY CHAIN SAFETY

The research hotspot is the direction that the majority of scholars pay attention to in a certain period, and

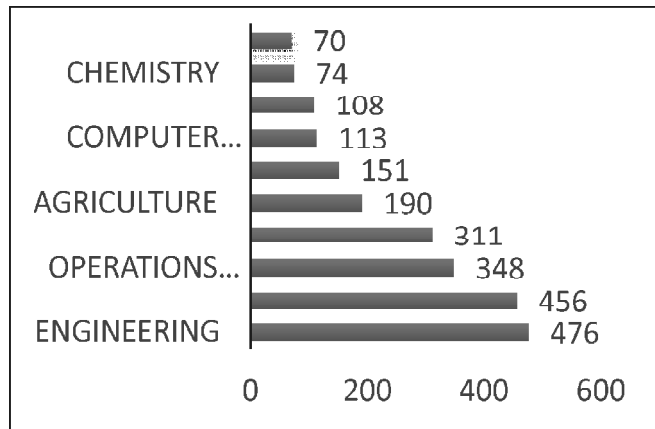


Figure 7: Distribution of major disciplines of supply chain safety research literature in Web of Science database

the research quantity is large, and the scientific problems related to each other are interrelated. The research hotspots of bibliometrics can be determined by analyzing keywords in literatures with CiteSpace. Data of knowledge network statistics were input into CiteSpaceV software, Time Slicing was set to be from 1996 to 2018, Time zone was divided into five years, Node Types were set to Keyword, and threshold was set to T60. The minimum spanning tree and pruning sliced network method was used to cut the network, and the hot map of supply chain safety research was obtained (figure 8). The graph contains 149 keyword nodes and 266 links.

Keywords are the summary and refinement of the core of the article, so high-frequency keywords are often used to determine a hot topic in a research field. The centrality of key words is mainly represented by purple circles in the figure. Keywords with high centrality play a stronger role in the guidance and control of the whole network, and are also paid more attention to. The color and thickness of the circle respectively represent the time and number of keywords; each node represents a key word; the size of the node represents the frequency of keywords; the thicker the connection between nodes, the higher the co-occurrence of keywords. Because the theme of web of science search is “supply chain AND safety”, it is an inevitable phenomenon that “supply chain” AND “safety” appear frequently. Based on the analysis of the remaining high-frequency keywords, it can be seen

that “food safety” is a hot topic in current research, with high publication volume and centrality. The research on food safety first appeared in 1999. In recent years, food safety has been the focus of people’s attention. The possible reasons are as follows: First, food safety is the foundation of health. In recent years, with the improvement of people’s living standards, food safety has attracted wide attention. Food safety is divided into production source safety, logistics and transportation safety, and sales link safety. Therefore, logistics and transportation safety is an important link of food safety. At present, there are many problems in the food logistics process, including the wide range of food logistics is difficult to optimize, logistics and transportation infrastructure is backward, especially the cold chain logistics tools and facilities are not guaranteed, which leads to frequent food quality and safety incidents. “Management” ranks third in frequency and is also a focus of research. The establishment of long-term supply chain safety supervision mechanism and the introduction of advanced logistics management technology can effectively reduce the supply chain safety accident

rate. The research on the hot keyword “model” includes: supply chain safety inventory prediction model, supply chain safety early warning model, supply chain safety resource allocation model, logistics quality safety management model, etc. The hot spot that supply chain safety studies still has system (187) 0 quality (154) 0 supply chain management (141) 0 industry (124) and Performance (123). (Table 3) Supply chain system refers to the integration of key business processes and relationships of enterprises in the whole chain from the original material supplier to the end user, which provides goods, services or information to the end customer. All kinds of security problems may appear in every link of the system; Ensuring the quality of goods in transportation is the premise of logistics safety; Logistics is an important link in the supply chain and also a process inseparable from each enterprise. The security of logistics is directly related to the security of the whole product supply chain. Logistics risks and threats are generally divided into external and internal, external risks include natural disasters, objective matters, threats from relevant parties, such as not meeting the requirements of laws

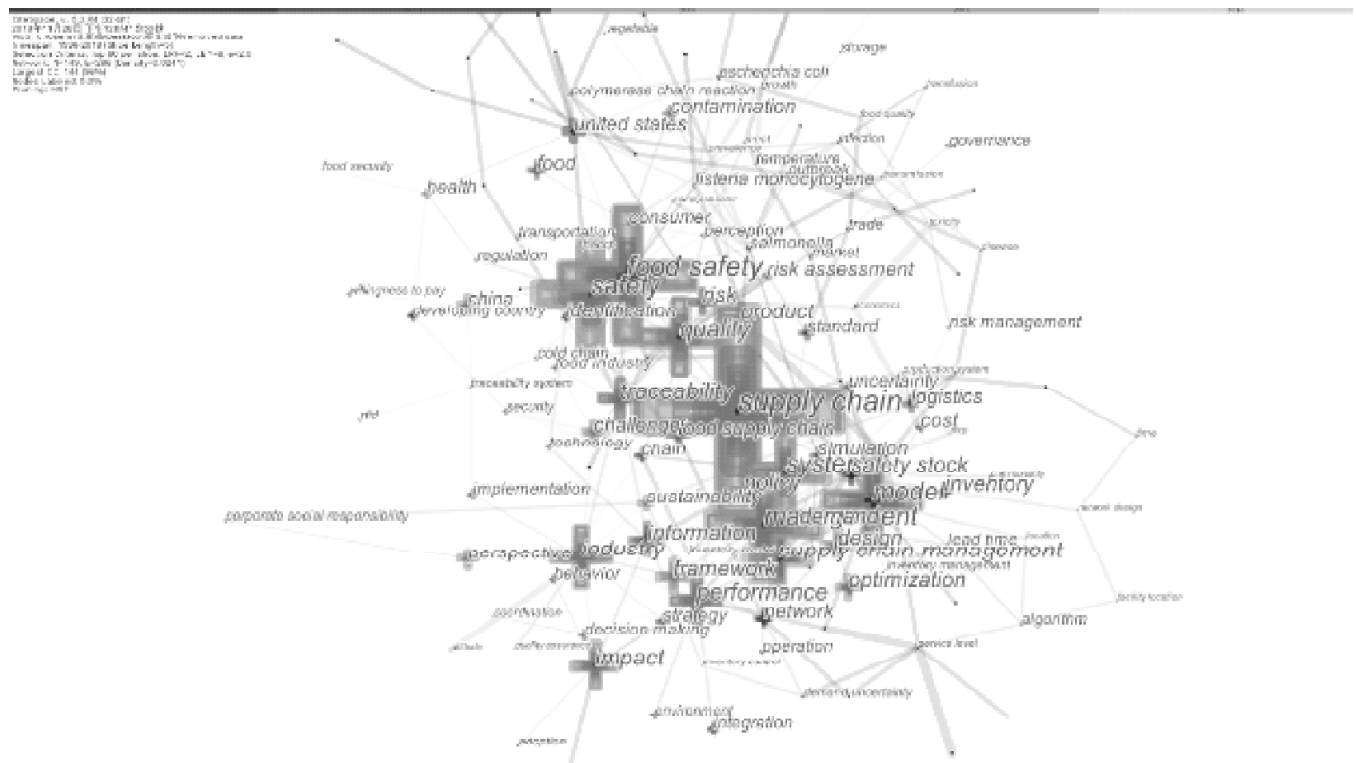


Figure 8: Supply chain safety research hotspot knowledge map. Deep purple: 1996 to 2000, dark blue : 2001-2005, green: 2006-2010, pink green: 2011-2015, yellow: 2016-2018

and regulations. Internal risk mainly refers to the enterprise operating risk, such as personnel, equipment implementation, information, capital, etc. The logistics industry faces a variety of customers, upstream and downstream involving insurance, finance, information and other fields; The industry itself involves loading and unloading, transportation, storage, handling, packaging, circulation processing and other processes. All the above aspects pose different degrees of threats and risks to enterprise operation. Supply chain management includes supply chain security management. Supply chain security management includes the security of commerce, logistics, information flow, capital flow, etc. Therefore, logistics enterprises systematically identify and control risks, eliminate and reduce internal and external threats and risks of logistics, and provide strong guarantee for safe storage and transportation.

4.1. Clustering analysis of hot words

LLR method was used to cluster to obtain the clustering diagram of supply chain safety research hotspots (figure 9). The size of the clustering contour represents the degree of closeness and separation between nodes. The first cluster tag is #0 “demand”, which comes from “inventory demand”. Reasonable inventory arrangement is the first step of good warehouse management and the basis of ensuring supply chain safety. Second clustering tags to # 1 “polymerase chain reaction”. This is a kind of rapid amplification of specific DNA fragments in vitro new method. This method is often used in the study of perishable goods in transit. The technology for the development of cold-chain logistics is most immature, so the “dried meat” is a way to ensure the quality of the meat. Commonality or the use of same components among multiple products can reduce component inventory and simplify processes and logistics while accommodating variations in product demand. Therefore, the clustering word #3“component commonality” appears frequently. The fifth cluster word is “global supply chain”. With the development of economic globalization, the demand of global consumers is upgraded, and the supply chain system extends to the world. With the extension of transportation process and the increase of logistics risk, the security of global supply chain should be paid more attention by workers and

Table 3: Top 10 keywords

Year	Keywords	count	Centrality
1999	Supply chain	369	0.28
1999	Food safety	251	0.37
1999	Management	227	0.12
2001	Safety	223	0.06
1996	Model	190	0.17
2000	System	187	0.08
2003	Quality	154	0.14
1997	Supply chain management	141	0.04
2007	Industry	124	0.17
2004	Performance	123	0.20

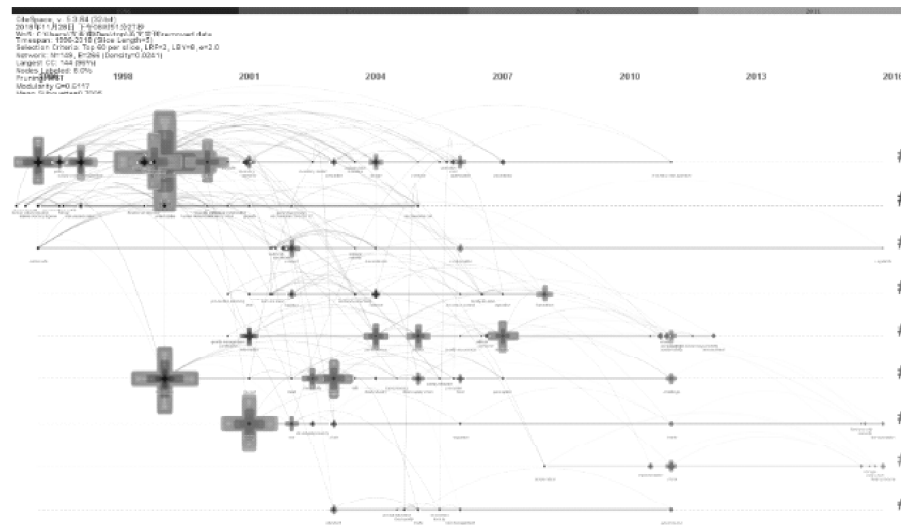


Figure 9: Keyword evolution map related to supply chain safety. Deep purple: 1996 to 2000, dark blue : 2001-2005, green: 2006-2010, pink green: 2011-2015, yellow: 2016-2018

scholars. The sixth clustering word that comes into existence is #5 “traceability.” In recent years, there is a demand for product traceability in the supply chain. Intelligent traceability system can combine wireless monitoring and quality control model to improve the transparency of transportation quality control and safety. Users can inquire transportation information at any time to understand the risks of logistics. The seventh cluster word is #6 “food security”. As mentioned above, food safety is related to people’s physical health, life safety and social economy. Food safety is also an interdisciplinary field that specifically discusses how to ensure food hygiene and food safety in the process of food processing, storage and sales, reduce potential diseases and prevent food poisoning. Therefore, food safety is very important. The eighth clustering word is #7 “storage”. The ninth cluster word is #8 “pharmacy”. Due to the development of the Internet in the past two decades, online shopping has become a popular way of consumption, and buying drugs online is no exception. Internet purchase of drugs has the advantages of convenience and speed, but also brought some security risks. Some patients’ safety risks are related to buying drugs outside the traditional supply chain. In addition, the size and quality of online drugstores are difficult to investigate, so scholars have conducted a lot of research on pharmacies.

5. CONCLUSION

Through the analysis of the characteristics of supply chain safety research, it is found that : (1) the literature related to supply chain safety first appeared in 1996 and has been in a growing state. (2) article accounts for 80% of literature types. (3) according to the country distribution of literatures, it can be seen that the United States has the largest number of publications, while the United Kingdom has the largest influence. China has few cooperation and exchanges with other countries and should strengthen academic discussions with other countries, especially the United States and the United Kingdom. (4) Wageningen Univ and Univ Ghent are the two institutions with the highest output volume in the field of supply chain safety. (5) JACXSENS L and UYTTENDAELE M are influential scholars in the field of supply chain safety.

The hot spots of supply chain safety research are analyzed and found that: (1) the top five supply chain safety keywords are Supply chain, Food safety, Management, safety and Model. (2) the supply chain safety clustering tags for: demand, polymerase chain reaction, dried meat, component commonality, global supply chain, traceability, the food security, storage, and pharmacy.

REFERENCES

1. Abdel-Basset M, Gunasekaran M, Mohamed M.(2018). A framework for risk assessment, management and evaluation: Economic tool for quantifying risks in supply chain. *Future Generation Computer Systems-The International Journal of Esicece*, 90, pp:489-502.
2. Zhang YJ, Wang WS, Yan L .(2018). Development and evaluation of an intelligent traceability system for waterless live fish transportation. *Food Control*, 95, pp: 283-297.
3. Klassen RD, Vereecke A.(2012). Social issues in supply chains: Capabilities link responsibility, risk (opportunity), and performance. *International Journal of Production Economics*, 140, pp: 103-115.
4. Aung MM, Chang YS.(2014). Traceability in a food supply chain : safety and quality perspectives. *Food Control*, 39, pp: 172-184.
5. Aven T.(2016). Risk assessment and risk management: Review of recent advances on their foundation. *European Journal of Operational Research*, 253, pp: 1-13.
6. Luthra S, Govindan K, Kannan D, Mangla SK.(2017). An integrated framework for sustainable supplier selection and evaluation in supply chains. *Journal of Cleaner Production*, 140, pp:1686-1698.
7. Peng Zhao, Natasha Kapoor, Manaswini Thakur, Edward Moskal. (2016). Crime Prediction using public transportation data and random forest algorithm. *International Journal of Decision Science*, 7, pp:14-20.
8. Yi Cui, Jian Mou, Yanping Liu.(2018).Knowledge mapping of social commerce research :a visual analysis using CiteSpace. *Electron Commer Res*, 18, pp:837-868.
9. Borner K, Chen C, Boyack K. (2003).Visualizing knowledge domains .*Annual Review of Information Science and Technology*, 37, pp: 179-255.

10. Chen D., Liu Z., Luo Z., Webber M., & Chen J. (2016). Bibliometric and visualized analysis of energy research. *Ecological Engineering*, 90, pp:285–293.
11. Cui Y., Mou J., & Liu Y. (2017). Bibliometric and visualized analysis of research on e-commerce journals. In *Proceedings of 19th international conference on electronic commerce*.
12. Jacxsens L, Boxstael V, Nanyunja J, Jordaan D.,Luning P.,Uyttendaele M.(2015). Opinions on fresh produce food safety and quality standards by fresh produce supply chain experts from the Global South and North. *J. Food Prot*,78, pp:1914–1924.
13. Chen C. (2006). Citespace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *Journal of the Association for Information Science and Technology*, 57(3), pp:359–377.
14. Li X, Ma E, & Qu H. (2017). Knowledge mapping of hospitality research—A visual analysis using CiteSpace. *International Journal of Hospitality Management*, 60,pp: 77–93.
15. Kirezieva K, Jacxsens L, Hagelaar G.J.L.F, van Boekel, M.A.J.S.,Uyttendaele M,Luning P.A. (2015)Exploring the influence of context on food safety management: Case studies of leafy greens production in Europe. *Food Policy*, 51, pp:158–170.
16. Willems S,Roth E,van Roekel J.(2005).Changing european public and private food safety requirements: challenges for developing country fresh produce and fish exporters; The World Bank: Washington, DC, USA.
17. Hammoudi A,Hoffmann R,Surry Y.(2009). Food safety standards and agri-food supply chains: An introductory overview. *Eur. Rev. Agric. Econ*, 36, pp: 469–478.
18. Codron J.M,Adanacioglu H,Aubert M,Bouhsina Z, Ait El Mekki A, Rousset S,Tozanli S,Yercan, M. (2014).The role of market forces and food safety institutions in the adoption of sustainable farming practices: The case of the fresh tomato export sector in Morocco and Turkey. *FoodPolicy*, 49,pp: 268–280.
19. Hou M.A,Grazia C,Malorgio G.(2015). Food safety standards and international supply chain organization: A case study of the Moroccan fruit and vegetable exports. *Food Control*, 55,pp: 190–199.
20. Long Q., & Zhang W. (2014). An integrated framework for agent based inventory- production-transportation modeling and distributed simulation of supply chains. *Information Sciences*, 277, pp: 567–581.
21. Parreño-Marchante A, Alvarez-Melcon A, Trebar M, & Filippin P. (2014). Advanced traceability system in aquaculture supply chain. *Journal of Food Engineering*, 122, pp:99–109.
22. Pasandideh S. H. R., Niaki S. T. A., & Asadi K. (2015). Bi- objective optimization of a multi-product multi- period three- echelon supply chain problem under uncertain environments: NSGA- II and NPGA. *Information Sciences*, 292, pp:57–74.
23. Pramanik S., Jana D. K., Mondal S. K., & Maiti M. (2015). A fixed- charge transportation problem in two- stage supply chain network in Gaussian type-2 fuzzy environments. *Information Sciences*, 325, pp:190–214.
24. Tsironi T., Giannoglou M., Platakou, E., & Taoukis P. (2016). Evaluation of time temperature integrators for shelf- life monitoring of frozen seafood under real cold chain conditions. *Food Packaging and Shelf Life*, 10, pp: 46–53.
25. Shih C., & Wang C. (2016). Integrating wireless sensor networks with statistical quality control to develop a cold chain system in food industries. *Computer Standards & Interfaces*, 45, pp:62–78.
26. Zhou J X. (2011). Document visualization analysis of information visualization based on the CiteSpace II. *Journal of Information Science*,29, pp: 98–112.
27. Chen C.(2006) CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *Journal of the American Society for information Science and Technology*, 57, pp: 359–377.
28. Chen C, Ibekwe SanJuan F, Hou J. (2010). The structure and dynamics of cocitation clusters: A multiple perspective cocitation analysis. *Journal of the American Society for Information Science and Technology*, 61, pp: 1386–1409.
29. Ziggers G.W,Trienekens J.(1999).Quality assurance in food and agribusiness supply chains: Developing successful partnerships. *Int. J. Prod. Econ.*,60–61, pp: 271–279.
30. Hou M.A, Grazia C, Malorgio G.(2015).Food safety standards and international supply chain organization: A case study of the Moroccan fruit and vegetable exports. *Food Control*, 55,pp: 190–199.