

China's Supply Chain Security Policy Content: X-Y Dual-Dimensional Analysis

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ABSTRACT

This article establishes a dual-dimensional X-Y analysis framework, examining policy tools (supply-side, demand-side, environmental) and policy objectives (addressing the "bottleneck" issue of core technology, improving the modernization level of the supply chain, perfecting the ecological system, promoting enterprise transformation and upgrading, and strengthening international cooperation). A coding analysis was conducted on 118 Chinese supply chain security policy texts within these dimensions. The results reveal imbalances in both policy tools and objectives, suggesting a need for further optimization and improvement. In response to this issue, the article recommends that the government coordinate planning, scientifically allocate policy tool combinations, clarify the synergistic relationships of each objective, and construct a comprehensive policy system. This research provides a novel and effective analysis framework and theoretical reference for optimizing supply chain security policies.

KEYWORDS

Policy Tools; Policy Objectives; Supply Chain Security Policy; Policy Analysis Framework.

1. INTRODUCTION

In today's globalized and digitized business environment, the risks to supply chain security are increasing. Supply chains involve multiple organizations, geographical locations, and workflows, exposing them to various potential threats, including natural disasters, cyber attacks, and geopolitical issues [1-2]. These threats can lead to severe business disruptions, financial losses, and damage to reputation. Therefore, the development of timely and effective supply chain security policies is crucial to ensure the continuity, reliability, and sustainable development of supply chains.

In recent years, governments and industry organizations worldwide have recognized the urgent need to establish comprehensive supply chain security frameworks. For instance, the U.S. Department of Homeland Security released the "Comprehensive National Cybersecurity Initiative" in 2018, aiming to strengthen the overall security of the U.S. supply chain. The European Union also passed the "Network Security Act" in 2020, specifying that critical infrastructure operators must take appropriate measures to manage their supply chain risks.

The academic community is increasingly focusing on supply chain security issues. Researchers have explored risk assessment, threat modeling, preventive measures [3-5], and proposed various analysis frameworks and best practices. However, due to the complex and dynamic nature of supply chains, efforts from a single organization or industry are insufficient. Cross-organizational and cross-domain

collaboration is necessary to build effective supply chain security policies [6]. Ensuring supply chain security has become a crucial goal in the advanced manufacturing policies of the United States [7], and China highly values the long-term strategic value of the supply chain in the new energy industry, researching and formulating measures to ensure its security [8].

Studying policies through policy tools is a valuable approach. Jorund Buen [9] conducted a comparative study of wind energy industry policies in Denmark and Norway using content analysis, basing the comparison on policy tools, with results showing the superiority of Denmark's policy tool combination. Zhang [10] conducted an in-depth study of logistics policy implementation in the United States and Japan, providing valuable insights for China in formulating logistics policies. Wang Chang [11] and others used content analysis to establish a two-dimensional model of "policy tools and policy intervention," systematically studying the evolution characteristics of urban mining policies. Peter [12] analyzed the complementary nature of policy tools, emphasizing the need for appropriate organizational structures and management procedures to support policy implementation. Zhang Guiqun [13] constructed a two-dimensional crossover model based on policy tools and policy content orientation, analyzing 73 rural talent revitalization policy texts at the central level in China using literature measurement and content analysis. Zhou Ying [14] built a three-dimensional analysis framework of policy tools, policy subjects, and policy themes, quantitatively evaluating 126 new energy vehicle policy texts released by the central government of China from 2009 to 2022 using content analysis, social network analysis, and LDA topic modeling.

In summary, existing research has extensively studied the effectiveness and impact of supply chain security policies from various perspectives and methods. However, there may still be shortcomings, such as a focus on tracking and evaluating policy execution and implementation processes, overlooking the quantitative evaluation of the supply chain security policy texts themselves at the policy content level. Additionally, existing research mainly uses single methods like comparative analysis and indicator system, lacking a comprehensive policy evaluation framework, making it challenging to fully reflect the scientific and rational aspects of supply chain security policy texts. Therefore, this paper takes new energy vehicle policy texts as the research object and constructs a policy text analysis framework from the dimensions of policy tools and policy objectives. This approach allows for a more comprehensive understanding of the strengths and weaknesses of supply chain security policies and provides targeted recommendations for subsequent policy adjustments and improvements.

2. DATA SOURCES AND RESEARCH METHODS

2.1. Data Source

This text focuses on the research subject of supply chain security policies. It retrieves publicly released policies from the Beida Fabao database by combining keywords such as supply chain, industry chain, security, resilience, and flexibility. The time span for this study is set from 2017 to 2023. To ensure the relevance of policy content to the research theme, the selection is based on the following criteria: (1) Policy content or part of it is directly related to supply chain security policies; (2) Policy types should have binding force, such as notifications, opinions, plans, methods, proposals, and detailed rules, while excluding reports, letters, and other documents without substantive content. A total of 118 effective Chinese policy texts have been sorted out according to these criteria.

2.2. Research Methods

The method of quantified analysis of policy texts involves transforming policy texts presented in language into data files for display. After statistical processing, research results are presented in numerical form. Generally, the research steps include determining research questions, selecting samples, defining and encoding the analysis framework, defining analysis units, conducting reliability

tests, and analyzing and interpreting results. This method focuses on policy intent and the policy process as research subjects, overcoming the subjectivity of qualitative research. It possesses characteristics of both quantitateness and objectivity. The required literature data can usually be obtained through public channels, and the analysis process is repeatable. It can effectively handle unstructured, large-sample policy documents. This article follows the relevant research steps of policy content quantified analysis and conducts a quantified analysis of the policy tools in supply chain security policies.

3. DESIGN OF A FRAMEWORK FOR ANALYSIS OF SUPPLY CHAIN SECURITY POLICIES

3.1. Dimension X: The Dimension of the Policy Instrument

Rothwell and Zegveld conducted a detailed categorization of corresponding policy tools in the process of policy analysis, including supply-side, demand-side, and environmental tools [15]. Among them, supply-side policy tools play a direct role in promoting rural logistics development, demand-side policies have a pulling effect, and environmental policy tools have an indirect impact [16].

This study combines the characteristics of the industrial chain in supply chain security policies with an in-depth analysis of relevant policy texts, drawing inspiration from Rothwell and Zegveld's thoughts on policy tool classification. The policy tools of supply chain security policies are divided into supply-side, demand-side, and environmental categories, and they are subordinated to the X and Y dimensions of the policy tools.

In this framework, supply-side policy tools refer to the government's support through various top-down means, expanding the supply of labor, land, information, technology, and funding, among other production factors, to increase effective supply and promote the depth and breadth of the development of the industrial chain's supply chain security. According to production theory, this study further subdivides supply-side policy tools into infrastructure, talent support, technology support, information support, and funding support. Supply-side policy tools are conducive to proactive resource allocation, providing basic support.

Demand-side policy tools refer to the government directly affecting the market dimension, supporting the development of the industrial chain's supply chain security through economic and political policies, preventing and controlling risks in the development of the industrial chain's supply chain security, increasing market demand, and driving the development of the industrial chain's supply chain. This includes enterprise support, market cultivation, service outsourcing, and demonstration promotion. Demand-side policy tools are beneficial for promoting market stabilization and reducing uncertainty in the supply chain market.

Environmental policy tools refer to the government influencing the development environment of the industrial chain's supply chain through macro development goals, finance, taxation, and regulatory control. Therefore, environmental policy tools include target planning, financial support, tax incentives, regulatory control, environmental protection, and organizational leadership.

In summary, supply chain security policies are mainly divided into three major categories at the level of policy tools, namely supply-side policy tools, demand-side policy tools, and environmental policy tools. The secondary classification refers to the articles of some scholars, combined with an understanding of the connotations of supply chain security policies and policy text analysis, dividing the secondary classification into 14 major categories. Table 1 lists the types of policy tools used in this article and their definitions.

Table 1. Types and definitions of policy instruments

Tool classification	The name of the tool	Tool description
Supply-oriented	Talent support	Ensure the professionalism of the supply chain workforce by training, introducing and rewarding professional talents
	Technical support	Enhance supply chain security and monitoring capabilities through the introduction of advanced technology and the provision of training to ensure security and effectiveness at the technical level
	infrastructure	Improve the transportation efficiency and overall security of the supply chain by investing in and building modern logistics, transportation, communications and other infrastructure
	Information support	Provide technical information and technical consulting services, technical exchange platform and digital platform construction for the domestic supply chain industry chain industry
	Financial support	The government provides financial support to supply chain enterprises such as incentives, subsidies, and the establishment of special funds
Demand-oriented	Market nurturing	Cultivate and expand the supply chain market by setting up pilot projects, supervising the market environment, and encouraging diversified business models
	Service Outsourcing	Stimulate industrial demand through policy procurement, outsourcing, crowdsourcing and other means
	Enterprise support	The government supports enterprises to set up branch structures, extend services, integrate functions, and merge and reorganize to promote the development of supply chain security
	Demonstration and promotion	The government promotes wider application and promotion through the publicity and promotion of projects such as demonstration projects
Environmental	Financial support	The government encourages financial institutions to provide financial products and financial services to promote the development of industrial and supply chains
	Public services	The government provides various supporting measures and services for the development of the industrial chain and supply chain industry, such as information sharing services and platform support
	Organizational leadership	Promote the construction of supply chain industry organizations, actively play the role of industry organizations, strengthen industry self-discipline, standardize enterprise behavior, and promote the healthy development of the industry
	Regulatory Regulation	The government has formulated a series of laws and regulations to strengthen market supervision and regulate market activities, and improve the system of laws, regulations and policies for supply chain security
	Preferential policies	The government encourages and supports the development of the supply chain industry through tax exemptions and incentives

3.2. Y dimension: The Policy Objective Dimension

In the 19th National Congress of the Communist Party of China, General Secretary Xi Jinping explicitly stated the need to "focus on enhancing the resilience and security levels of industrial and supply chains," emphasizing its critical significance for the modern economy of China. To achieve this goal, China will concentrate on accelerating the resolution of technological "bottleneck" issues, enhancing the level of supply chain modernization, constructing an ecological system, promoting corporate transformation and upgrading, and deepening international cooperation in five key areas. This underscores China's determination to address risks and challenges, committed to improving the resilience and security levels of industrial and supply chains, thereby promoting the stability and sustainable development of the modern economic system. Based on the above analysis, and to ensure the comprehensiveness and differentiation of policy goals, this article combines an in-depth understanding of policy texts with the analysis results of keywords and theme sets. It concludes that the goals of supply chain security policies include resolving critical core technological "bottleneck" issues, enhancing the modernization of China's industrial and supply chains, improving the ecological system of industrial and supply chains, promoting the transformation and upgrading of enterprise industrial and supply chains, and deepening international cooperation for the stability and security of industrial and supply chains.

Based on the research and compilation of the characteristics of supply chain security policies, this paper adopts the X dimension as the policy tool dimension and the Y dimension as the policy objective dimension, forming an X-Y dimensional policy analysis framework. The specific content of the analysis framework can be referred to in Figure 1.

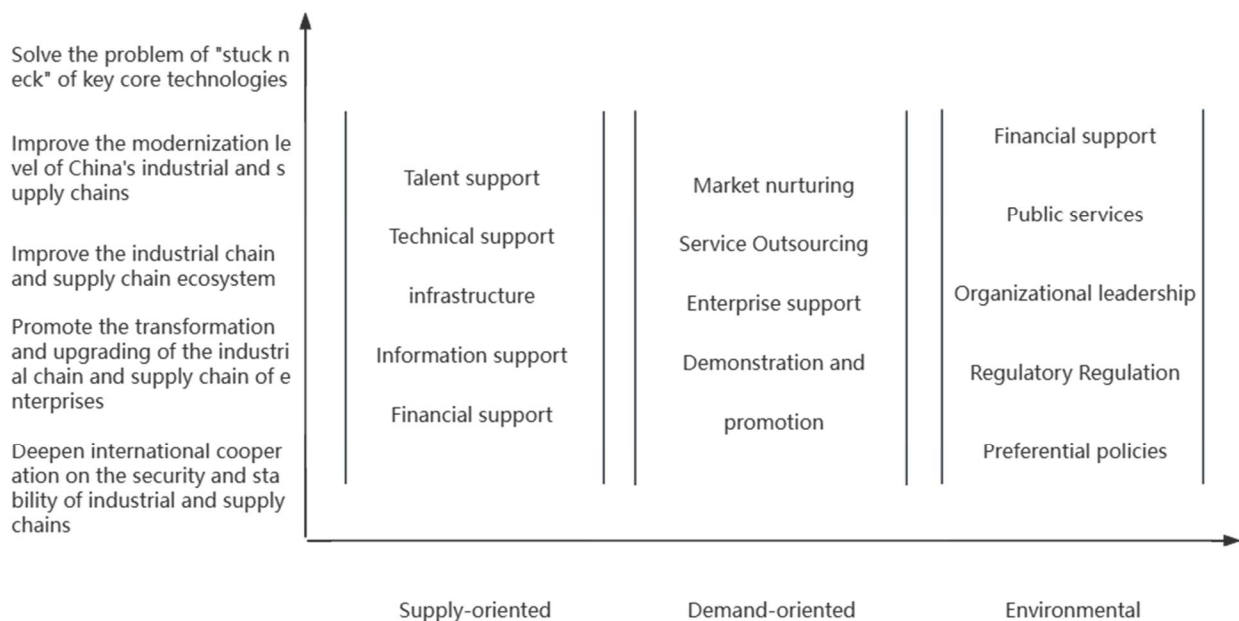


Figure 1. Two-dimensional Policy Tool Analysis Framework

4. POLICY TEXT ENCODING

This study utilized NVIVO 12 software to meticulously import 118 domestic supply chain security policy texts, aiming to delve more deeply into the policy texts regarding supply chain security in China. Through systematic coding of domestic supply chain security policy texts, along with policy text numbers and specific document content, a comprehensive coding table containing 774 effective

coding nodes was successfully constructed. This extensive coding work provided robust data support for subsequent analyses.

In this study, a policy text coding approach was adopted to conduct in-depth analyses of supply chain security policy texts. The main steps of the research included: firstly, systematically numbering the 118 policy texts, laying the foundation for subsequent coding work. Secondly, clearly defining the text analysis units for supply chain security policy texts in this study. In the content analysis coding, sentences were chosen as the basic units, defining sentences related to specific categories as analysis units. The numbering system used chapter numbers and sequence numbers within that chapter for coding, forming a unit numbering system of "Policy Number-Chapter Number-Sequence Number." Thorough coding was carried out for all 118 policy texts, sentence by sentence, through careful examination of supply chain security policy texts. This process involved fine classification of two major dimensions, namely policy objectives and policy tools. The coding method took into account the hierarchical structure of policy content, providing strong support for subsequent analyses. Lastly, based on the adjusted two-dimensional analysis framework, we conducted detailed coding and classification for each analysis unit. The coding method used was "Policy Number-Unit Number-Policy Objective Number/Policy Tool Number".

5. SUPPLY CHAIN SECURITY POLICY ANALYSIS

5.1. X-dimensional Result Analysis

Table 2. Dimension coding and statistics of policy instruments

Parent node	Child nodes	reference point
Supply-oriented	Talent support	56
	Technical support	61
	infrastructure	16
	Information support	22
	Financial support	29
Demand-oriented	Market nurturing	25
	Service Outsourcing	10
	Enterprise support	35
	Demonstration and promotion	50
Environmental	Financial support	38
	Public services	45
	Organizational leadership	82
	Regulatory Regulation	55
	Preferential policies	20

In the exploration of the utilization of policy tools, the classification method proposed by scholars such as Li Pengli [17] was adopted, combined with a preliminary study of 230 policy texts. Policy tools were categorized into "supply-side," "demand-side," and "environmental" as high-level parent nodes. Subnodes were gradually established through keywords. By conducting in-depth analyses of policy regulations, relevant provisions were organically integrated under the corresponding nodes, forming a concise hierarchical structure, namely parent node-subnode-reference point. This coding

hierarchy reflects the professionalism of policy tools, providing a powerful analytical tool for more in-depth research and policy formulation, laying the foundation for further policy analysis.

A detailed analysis was carried out for each of the 118 policy texts, associating regulations related to subnodes with their respective nodes. In the end, 544 policy provisions were classified, and the coding results, as well as the final statistical outcomes, are presented in Table 2.

Through counting and organizing the data, the proportions of three types of policy tools were obtained, as shown in Figure 2. From the figure, it can be observed that the respective proportions of the three policy tools are: supply-side policy tools 34%, demand-side policy tools 22%, and environmental policy tools 44%. Looking at the data from the chart, there is an imbalance in the use of policy tools in China's supply chain security policies, and there has not been a rational allocation of resources in policy formulation. There is little difference in the use of environmental policy tools and supply-side policy tools, but there is a significant gap in the proportion of demand-side policy tools.

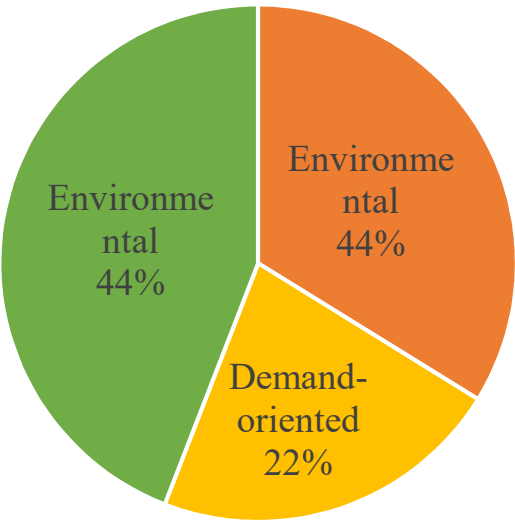


Figure 2. The overall proportion of each node under the policy instrument

1) Analysis of the results of supply-oriented policy instruments

Table 3. Distribution of the internal structure of supply-oriented policy instruments

The type of tool	The name of the tool	Frequency	Proportion within the type
Supply-oriented	Talent support	56	30.43%
	Technical support	61	33.15%
	infrastructure	16	8.70%
	Information support	22	11.96%
	Financial support	29	15.76%

Receive support in terms of talent, technology, funds, information, and infrastructure. An analysis of Table 3 reveals that the Chinese government primarily emphasizes talent and technology support in the application of these tools, with relatively balanced support for funds and information, while infrastructure support lags behind.

Talent support and technology support are the government's main focus, accounting for a high proportion of 63.58%. The government emphasizes that talent is the cornerstone of supply chain security, making the cultivation and introduction of professional talents a key policy focus.

Simultaneously, due to the widespread application of new technologies, technical support has also become a key area of government support to enhance the level of supply chain security.

Funds support and information support are relatively balanced, accounting for 27.72%. The government provides financial support through subsidies, rewards, investment funds, and other forms to alleviate the financial pressure on enterprises during transformation. Information support is mainly achieved through the construction of a unified supply chain information platform, enhancing the transparency and warning capabilities of the entire supply chain, as well as providing professional technical consultation and training services.

Infrastructure construction lags behind, accounting for only 8.7%. This indicates that there is room for increased government investment in infrastructure, especially in the construction of logistics, transportation, and modern information facilities. Infrastructure is crucial for the smooth operation of supply chain security and requires strengthened investment.

Overall, the government's investment in talent, technology, funds, and information is relatively balanced, but infrastructure construction lags behind. In the future, the government needs to optimize the allocation of policy tools, continue to emphasize the leading role of talent and technology support, and increase investment in infrastructure construction. This will create a diverse and mutually supportive combination of policy tools, providing comprehensive support for the sustainable development of supply chain security.

2) Analysis of the results of demand-based policy instruments

Table 4. Distribution of the internal structure of demand-based policy instruments

The type of tool	The name of the tool	Frequency	Proportion within the type
Demand-oriented	Market nurturing	25	20.83%
	Service Outsourcing	10	8.33%
	Enterprise support	35	29.17%
	Demonstration and promotion	50	41.67%
	Market nurturing	25	20.83%

Demand-oriented policy tools play a crucial driving role in supply chain security policies, aiming to stimulate the endogenous motivation of market entities to construct a secure supply chain through government-guided market cultivation, enterprise support, demonstration promotion, and other means. The analysis results in Table 4 show that demonstration promotion and enterprise support are the two most frequently used categories among demand-oriented tools, highlighting the government's recognition of the importance of placing corporate development at the core of supply chain security construction.

Demonstration promotion tools have the highest frequency of use in demand-oriented policies, accounting for a significant 41.67%. Their primary function is to promote a batch of demonstration projects and typical cases in supply chain security construction through publicity, thereby demonstrating the effect and encouraging more enterprises and regions to join the ranks of security transformation. Through demonstration promotion, the government can maximize the utility of limited resources and achieve overall promotion of supply chain security construction.

Enterprise support tools closely follow demonstration promotion in terms of policy frequency of use, accounting for 29.17%. Enterprises are the mainstay of supply chain security construction, and the government views them as a key focus for support. Enterprise support tools reflect the government's efforts to directly empower enterprises, helping to enhance their capabilities in supply chain security construction. This includes supporting enterprises in functional integration and mergers and acquisitions to create globally competitive leading enterprises in the supply chain. Meanwhile,

providing support in terms of funds, talent, technology, and other aspects helps enterprises enhance their core competitiveness.

Market cultivation tools have a frequency of use of 25 times in demand-oriented policies, accounting for 20.83%, reflecting the government's role in guiding market development. Market cultivation policies mainly involve establishing a secure supply chain standard system, guiding diverse operating models, and creating a favorable market environment. Through market cultivation, the government will further improve the top-level design of supply chain security construction, create a more favorable institutional environment, and inject new vitality into the development of market entities. The introduction of market cultivation policies reflects the government's emphasis on creating a standardized, orderly, prosperous, and active supply chain industry ecosystem, laying a solid foundation for the sustainable development of supply chain security.

Service outsourcing is a category with a relatively low frequency of use in demand-oriented policies, accounting for only 8.33%. This indicates that the government's policy support in this area needs to be strengthened, as its potential role in supply chain security governance has not been fully realized. The development of service outsourcing contributes to improving the overall efficiency of the supply chain and reducing operating costs, especially in specialized services such as security testing and risk assessment. In the future, the government can consider promoting the development of the supply chain security service outsourcing model through policy procurement, information platform construction, talent cultivation, and other means to stimulate the vitality of market entities.

In summary, the government has adopted a diverse strategy in formulating demand-oriented policy tools, including market cultivation, enterprise support, and demonstration promotion. Although market cultivation and enterprise support are frequently used, and demonstration promotion has achieved results, the policy usage in service outsourcing is relatively low, indicating a need for further research. It is recommended that the government continue to strengthen market cultivation and enterprise support, evaluate the effectiveness of demonstration promotion, and explore more effective policies for service outsourcing to comprehensively enhance the level of supply chain security, creating a more stable and secure economic environment.

3) Analysis of the results of environmental policy instruments

Table 5. Distribution of the internal structure of environment-based policy instruments

The type of tool	The name of the tool	Frequency	Proportion within the type
Environmental	Financial support	38	15.83%
	Public services	45	18.75%
	Organizational leadership	82	34.17%
	Regulatory Regulation	55	22.92%
	Preferential policies	20	8.33%

Environmental policy tools play a crucial role in supply chain security policies, with a high usage frequency of 44%, highlighting the government's emphasis on the importance of promoting the development of supply chain security through the improvement of the institutional environment. The analysis in Table 5 reveals that organizational leadership, regulatory control, and public services are the primary areas of application for environmental policy tools, while financial support and policy incentives are relatively low.

Organizational leadership policy tools have the highest usage frequency, reaching 82 times, accounting for 34.17%, reflecting the government's coordinating and organizing role in supply chain security governance. The government places high importance on strengthening organizational leadership to ensure clear division of responsibilities and orderly task execution, building an efficient departmental coordination mechanism. This commitment is evident not only at the central level but

also at the local level, with the active establishment of leadership groups to comprehensively coordinate supply chain security work in each region, forming a comprehensive organizational structure. In the future, the government will further strengthen organizational leadership, optimize work mechanisms, and fully leverage its strategic guidance role in supply chain security governance.

Regulatory control policy tools have a usage frequency of 55 times, accounting for 22.92%, highlighting the foundational role of the rule of law in supply chain security governance. The government is committed to establishing a comprehensive regulatory system, including regulations for the entire supply chain security management, policies for industry promotion, and data regulation, to constrain and regulate the behavior of market entities, ensuring the order of supply chain security. In the future, the government will accelerate the construction of the regulatory system to provide institutional guarantees for the high-quality development of the supply chain.

Public services policy tools have a usage frequency of 45 times, accounting for 18.75%, becoming an integral part of environmental policies. The government provides support and guarantees for supply chain enterprises through the construction of information platforms and the provision of technical training and consulting services. Public services will become a key direction of government functions, supporting businesses for safe and efficient operations.

Financial support and policy incentives tools are relatively lagging behind, with usage frequencies of 38 times and 20 times, respectively, both accounting for less than 20%. The government should intensify efforts to provide more development incentives for enterprises through financial support and preferential policies. In the future, the government can encourage financial institutions to innovate product models, broaden corporate financing channels, and simultaneously increase efforts to reduce taxes and fees, easing the burden on enterprises and stimulating the vitality of market entities. Only in this way can more momentum be injected into the sustainable development of supply chain security.

In summary, environmental policy tools play an important role in strategic design and institutional guarantee. The interconnection and positive interaction of organizational leadership, regulatory control, and public services lay a solid foundation for supply chain security governance. However, financial support and policy incentives are areas that need strengthening in future policy formulation. Only with a well-designed top-level structure and robust foundational support can supply chain security construction remain stable, achieve long-term success, and sustainably develop.

5.2. Y-dimension Result Analysis

Table 6. Coding and statistics of policy target dimensions

Parent node	Child nodes	Frequency	Percentage
Policy Objectives	Solve the problem of stuck neck of key core technologies	18	7.83%
	Improve the modernization level of China's industrial and supply chains	69	30.00%
	Improve the industrial chain and supply chain ecosystem	47	20.43%
	Promote the transformation and upgrading of the industrial chain and supply chain of enterprises	36	15.65%
	Deepen international cooperation on the security and stability of industrial and supply chains	60	26.09%

In NVivo12, a "Policy Objectives Dimension" was established as the parent node, and subnodes were created based on keywords, including "addressing critical core technological bottlenecks,"

"enhancing the modernization level of our country's industrial chain and supply chain," "improving the ecological system of industrial chain and supply chain," "promoting the transformation and upgrading of enterprise industrial chain and supply chain," and "deepening international cooperation for the security and stability of industrial chain and supply chain." After analyzing 118 policy texts item by item, detailed classification of 230 policy provisions was successfully achieved, resulting in a satisfactory coding effect. For specific statistical results, please refer to Table 6.

Supply chain security, as a crucial cornerstone of modern economic development, has become a strategic priority highly emphasized by the central government. Therefore, related policy objectives cover multiple dimensions such as enhancing the modernization level of industrial chain and supply chain, improving the ecological system, promoting enterprise transformation and upgrading, and strengthening international cooperation. This reflects a strategic approach with comprehensive planning. Analysis of Table 6 reveals certain differences in the emphasis of different policy objectives.

Among the various policy objectives, the elevation of the modernization level of industrial chain and supply chain is undoubtedly a keystone, with a high frequency of 69 occurrences, accounting for 30%. This underscores its status as a top strategic deployment. Currently, China's supply chain development faces severe challenges that traditional models cannot adapt to. Modernization transformation is imperative, aligning with new trends such as intelligence, networking, and digitization. Through technological innovation, efficiency and added value must be comprehensively improved to maintain and expand the competitive advantage of the industrial chain and supply chain. The modernization process is expected to span a considerable period in the future. The government will not only formulate policies conducive to promoting modernization but also provide comprehensive support in terms of funds, talent, and technology, facilitating the accelerated construction of a modern supply chain system.

Deepening international cooperation for the security and stability of the industrial chain and supply chain, accounting for 26.09% of the policy objectives, reflects the importance of safeguarding global industrial chain and supply chain security. In the era of economic globalization, the development of any country's industrial chain and supply chain relies on external support. Open cooperation not only promotes the efficient flow of resource factors, achieving complementary advantages but also enhances the synergy of development, avoiding malignant "decoupling." The government places high importance on this objective, driven by an inclusive philosophy to promote mutual benefit and sharing, as well as safeguarding China's own interests by ensuring the smooth functioning of the global supply chain, reinforcing international support for the construction of a modern economic system. It is foreseeable that the government will continue to intensify efforts in this area, leveraging mechanisms such as the "Belt and Road Initiative" to strengthen alignment and communication with an increasing number of countries and regions in supply chain security, jointly addressing global challenges.

Although the improvement of the industrial chain and supply chain ecological system accounts for a relatively lower percentage of 20.43% among policy objectives, its systemic engineering and supporting role should not be underestimated. The resolution of supply chain security issues fundamentally requires consideration from the perspective of the overall ecosystem. Improving the security ecological system of the supply chain involves solidifying infrastructure, perfecting regulations and policies, cultivating new models and formats, and strengthening industry collaboration, among other aspects. Only when the entire ecosystem forms a systematic development pattern can supply chain security work be effective and sustainable. In the future, the government needs to further intensify efforts in this area, continually optimizing policy design, coordinating the interests of various aspects of the ecosystem, and enhancing the systematic nature of development. Only through ecosystem construction can a favorable external environment be created for the realization of other policy objectives.

The policy objective of promoting the transformation and upgrading of enterprise industrial chain and supply chain accounts for 15.65%, although it is lower than other objectives, it remains a key focus

of reform efforts. The modernization of supply chain security will ultimately rely on enterprises as the main actors. Currently, enhancing the core competitiveness of large enterprises and increasing sustainable development capabilities are crucial. Large enterprises need to strengthen and optimize to lead development, while small and medium-sized enterprises must accelerate their transformation, enhancing their capabilities for specialized development and playing crucial roles in the division of labor in the industrial chain. The government will use means such as financial support, talent cultivation, and mergers and acquisitions to drive the transformation and upgrading of enterprises, especially small and medium-sized enterprises. At the same time, continuous support will be provided to leading enterprises to become bigger and stronger, reinforcing the development power of dominant industries. It is foreseeable that future policies will focus more on the actual needs of enterprises, concentrating reform efforts on the fundamental unit of enterprises.

Although addressing the "bottleneck" issue of critical core technologies appears the least frequently in policy objectives, with only 18 occurrences, its strategic significance should not be overlooked. Autonomous controllability is a prerequisite for the modernization of the industrial chain and supply chain. For a long time, China's industrial development has been constrained by the dilemma of core technology dependence on others, becoming a severe development weakness. Solving this problem is essential to completely avoid the risk of being "choked" and effectively seize control of development. The key to breaking the "bottleneck" lies in intensifying independent innovation efforts, concentrating forces to overcome a batch of core critical technologies, forming the technical support for the security of the industrial chain and supply chain. In the future, the government needs to highly prioritize this area, continuously increase policy support, and effectively escort the resolution of the "bottleneck" issue. It is evident that while different policy objectives have different tasks and emphases, they are not isolated but mutually supportive and complementary. Enhancing supply chain modernization is the main thread, while improvements in the ecosystem, enterprise transformation, international cooperation, etc., are all essential components of the modernization process. Simultaneously, resolving the "bottleneck" issue is a prerequisite and foundation for modernization.

Further analysis reveals that supply-side policy tools such as talent cultivation and financial support primarily serve to address the "bottleneck" issue and drive the achievement of modernization goals. Demand-side policies such as enterprise support and market cultivation more effectively support enterprise transformation and upgrading and the construction of the industrial chain ecosystem. Environmental policy tools such as regulatory control and organizational leadership play a role in escorting and supporting the achievement of multiple objectives.

It is evident that different policy tools do have varying degrees of impact on the realization of different objectives. In the future, the government needs to strengthen the coordination between policy supply and target demand, optimize the configuration of different tool combinations, so that different policy tools can play their maximum utility, thereby promoting the efficient realization of various goals.

In conclusion, the use of various policy tools in China's supply chain security policy reflects targeted development but still faces issues of tool imbalance and differential target focus. In the future, the government should continuously optimize policy tool configurations based on an accurate understanding of the development environment and real needs, improve the efficiency of the coordinated implementation of different policy objectives, and promote the construction of a comprehensive and efficient supply chain security system.

6. SUMMARY

This chapter provides an in-depth analysis of the content and characteristics of China's supply chain security policies in recent years. In order to comprehensively assess the strengths and weaknesses of these policies, the article constructs a dual-dimensional analysis framework with an X-Y axis. The X-axis represents the policy tool dimension, categorized into supply-side, demand-side, and

environmental policy tools. The Y-axis represents the policy objective dimension, including addressing the "bottleneck" issue of critical core technologies, enhancing the modernization level of the supply chain, improving the ecological system, promoting enterprise transformation and upgrading, and strengthening international cooperation. Through coding analysis of 118 policy documents, the article finds that environmental policy tools are the most frequently used, but supply-side and demand-side policies also have a certain proportion. Regarding policy objectives, elevating modernization levels and strengthening international cooperation are prioritized, while addressing the "bottleneck" issue and other goals also receive high attention. The analysis indicates that China's supply chain security policies exhibit a certain imbalance in both the dimensions of policy tools and objectives, requiring further optimization and improvement. In light of these findings, the article recommends that the government coordinate planning, scientifically allocate policy tool combinations, clarify the synergistic relationships among various objectives, and establish a comprehensive policy system to effectively support the modernization of supply chain security.

In general, the research reflects the current state of China's supply chain security policy layout, which has taken initial shape. However, it also reveals shortcomings in the balance of policy tools and objectives, highlighting the need for better equilibrium in future optimization and improvement. In future policy formulation, it is necessary to consider strengthening the use of demand-oriented policy tools, improving the level of infrastructure development, and paying more attention to financial support and preferential policies. This ensures a more comprehensive and balanced supply chain security policy system that better adapts to the practical needs of China's economic development.

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