

Multiple Collaborative Service Model and System Construction Based on Industrial Competitive Intelligence

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Abstract

This paper constructs a multiple collaborative service model of industrial competition intelligence with the main purpose of promoting the development of regional industries. The multiple service subjects include enterprises, governments, colleges and universities, scientific research institutes, industry associations and for-profit institutions. This article starts from the overall development of regional industrial economy, weighs the mutual relationship between the elements of the service model, and promotes multiple service subjects such as enterprises, governments, universities, research institutes, industry associations, and profit-making organizations to realize the collaborative service of resource intelligence, demand intelligence and data intelligence provides linkage intelligence service for the development and innovation of regional industries. This service model can improve the efficiency of industrial competitive intelligence services and the overall competitiveness of regional industries.

Keywords

Industrial Competitive Intelligence, Multiple Collaborative Services, System Construction

1. Introduction

Enterprises exist in industrial chains and industrial clusters. The current economic situation has shifted from the competition of a single enterprise to industrial competition. Under the industrial driven environment, the study of meso industrial competitive intelligence has become an important part of competitive intelligence research. The focus of industrial competitive intelligence is not li-

mitted to industry, technology and talents, but includes essential elements of industrial activities such as competitive market, intellectual property, common technology, regional resources, laws and regulations [1] [2] [3]. The ultimate purpose of industrial competitive intelligence service is to enhance industrial competitiveness and increase economic benefits. Collaborative innovation effectively gathers innovation resources and innovation elements. According to the goal of innovation driven development, it eliminates obstacles for innovation subjects, realizes the cooperation, integration and complementarity of multiple elements and multiple subjects, fully demonstrates the innovation vitality of multiple subjects, and seeks for in-depth cooperation between multiple subjects. With the concept of competitive intelligence, it is the new mission of competitive intelligence work given by the concept of collaborative innovation in the new era to stimulate innovation vitality, release innovation demand, open up new patterns, and guide industrial transformation and upgrading development.

As for the research on the construction of industrial competitive intelligence service model, most domestic scholars pay attention to the research on multi-agent supply and the construction of industrial competitive alliances. Zheng Rong organically combines national competitive intelligence, industrial competitive intelligence and enterprise competitive intelligence based on the synergy theory to build a competitive intelligence alliance system [4]. Zhao Jie took the strategic emerging industry as an example to analyze the demand for competitive intelligence services from the three levels of government, industry and enterprise, and built a "133" system [5]. Chen Jiefeng [6] and others proposed an industrial competitive intelligence service model based on the triple helix hybrid organization of government, industry and university. Yang Caixia [7] explored the operation process of HTIC's technical competitive intelligence service system and pointed out that it was achieved through the cooperation of the government, industry associations, industrial clusters and other multi supply entities. After discussing the basic issues of industrial competitive intelligence services, relevant research teams began to carry out research on practical activities in specific industries or regions. Li Weisi built a characteristic industrial database and information service system on the basis of the technological innovation needs of SMEs [8]. He Yirigui discussed the supply system of multiple subjects of competitive intelligence in the pharmaceutical industry [9]. Gao Shilei has designed corresponding industrial competitive intelligence service models from the perspective of industrial chain and industrial cluster [10]. Liu Peng elaborated on the basic mode of three-level competitive intelligence agencies providing competitive intelligence services for enterprise development, and explored the new mode and new ideas of regional competitive intelligence services for industrial development [11]. In addition to leading enterprises, the industrial intelligence supply and demand chain also includes information consulting institutions, colleges and universities and other relevant subjects. In the existing research, enterprises are only regarded as the demander of industrial competitive intelligence, ignor-

ing the information supply capacity of enterprise subjects, and non enterprise subjects are regarded as the supplier of industrial competitive intelligence, ignoring the demand of non enterprise subjects for industrial competitive intelligence.

On the theory and practice of industrial competitive intelligence service, domestic and foreign scholars have carried out a lot of research. However, the current fierce international economic competition situation, the new technological environment, and the new background of collaborative innovation require that the industrial competitive intelligence service must be constructed in a systematic way. The current research on this aspect is very few. The construction of multiple collaborative service mode of industrial competitive intelligence constructed in this paper provides new ideas for optimizing industrial competitive intelligence services. This paper combines the theory of coordination with the theory of industrial competitive intelligence. Starting from the interrelationship between the elements of the service model, it constructs a multi collaborative service model of industrial competitive intelligence oriented to regional industrial development, and promotes enterprises, governments, colleges and universities, scientific research institutes, industry associations, for-profit institutions and other multi service subjects to realize the collaborative services of resource intelligence, demand intelligence, and data intelligence in the development of industrial economy, Provide linkage information services for regional industrial development and innovation.

2. The Principle of the Construction of the Multivariate Collaborative Service Model of Industrial Competitive Intelligence

2.1. Systematic Principle

In the context of multiple data, each service subject of industrial competitive intelligence cannot independently complete the comprehensive and efficient industrial competitive intelligence support work, which requires the cooperation of multiple elements. The multiple collaborative services of industrial competitive intelligence depend on the joint action of multiple service subjects, multiple service approaches, multiple service modes and multiple service contents. The construction of the multi collaborative service model of industrial competitive intelligence should adhere to the principle of systematization, reduce the business of each other, emphasize the collaborative relationship between various elements in the organization, and jointly implement the task of industrial competitive intelligence service.

2.2. Demand Oriented Principle

The multi collaborative service mode of industrial competitive intelligence must closely focus on the current industrial form, take the actual demand of industrial intelligence as the guidance, and help to obtain the industrial competitive ad-

vantage of sustainable development. The multiple collaborative services of industrial competitive intelligence change with the change of demand, and the multiple collaborative services of industrial competitive intelligence are restricted by space, time, technology and other factors, which requires the multiple collaborative service model to flexibly respond to various emergencies, and continue to maintain a high sensitivity to emerging technologies and the latest changes.

2.3. Principle of Clarity of Rights and Responsibilities

In order to better realize the multi coordinated service of industrial competitive intelligence, scientific responsibility distribution should be carried out within the service mode, and the rights and obligations of each service subject in the whole service mode should be clarified. In the whole service model, the role and function of the service subject can be transformed under specific conditions. Enterprises are both recipients and service providers of industrial competitive intelligence services. The traditional industrial competitive intelligence service providers such as governments, research institutes and consulting institutions can be transformed into service recipients to a certain extent.

3. General Structure of Industrial Competitive Intelligence Multi Collaborative Service Model

On the basis of analyzing the necessity and feasibility of multi collaborative service of industrial competitive intelligence, this paper will take meeting the needs of regional industrial competition development as the goal of building a multi collaborative service model of industrial competitive intelligence, and systematically and deeply carry out relevant research work. The purpose of constructing the multi collaborative service mode of industrial competitive intelligence is to improve the efficiency of industrial competitive intelligence service and ensure the high-quality supply of industrial competitive intelligence. According to the systematic principle, the demand oriented principle and the clear principle of power and responsibility, the multi collaborative service mode of industrial competitive intelligence is constructed, which provides effective reference for the development of industrial competitive intelligence and the guarantee of regional economic vitality. According to synergetics theory, information service theory and industrial competitive intelligence theory, based on the era background of collaborative innovation and big data technology, this paper constructs a multi collaborative service model for industrial competitive intelligence, as shown in **Figure 1**.

Industrial competitive intelligence is an important support for industrial competitive activities, and industrial competitive intelligence multi coordinated service is an important means to adapt to industrial competition. The multiple cooperative service subjects of industrial competitive intelligence have always maintained a mutually independent and equal relationship. The leading enterprises in the industrial chain are generally leading enterprises. When the non

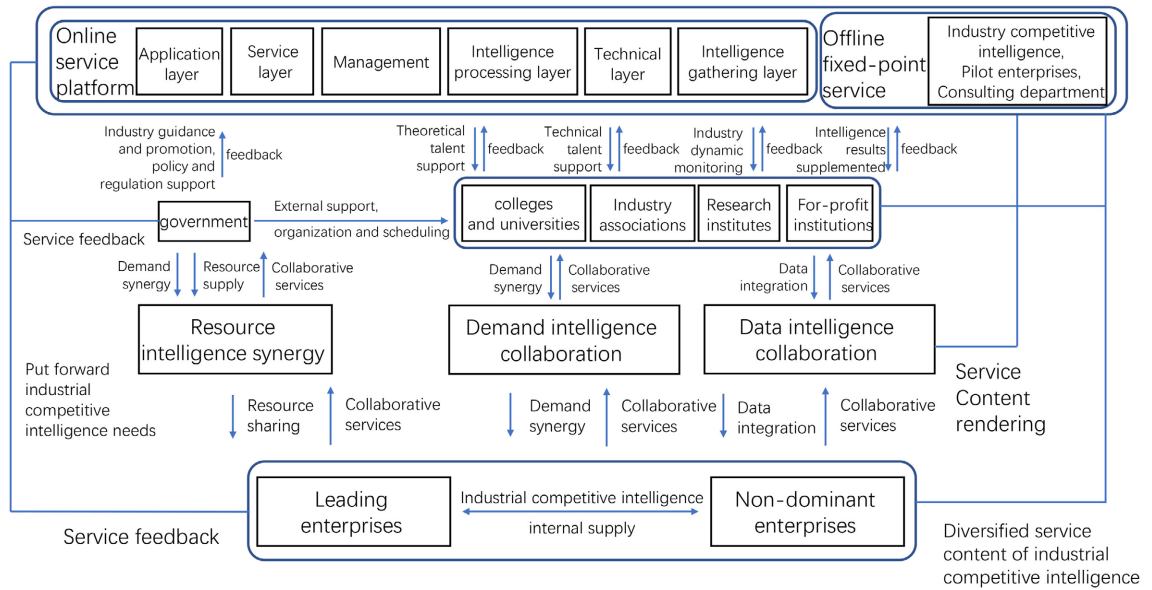


Figure 1. Schematic diagram of industrial competitive intelligence multiple collaborative service mode.

leading enterprises encounter industrial competition difficulties, they can apply to the leading enterprises for demand. The leading enterprises can realize the internal supply of industrial competitive intelligence for the non leading enterprises according to the agreement of both parties. The non leading enterprises can also provide information feedback for the leading enterprises to promote their development. In the non enterprise subjects, the role orientation and specific functions of each service subject are different. The government mainly provides policy guidance to provide industrial competitive intelligence in terms of policies and resources. Other non enterprise entities except the government conduct industrial competitive intelligence activities under the guidance of policies and can provide specific information services, such as talents, technology, reports, etc. The government actively guides the industrial development mainly in the way of policy preference, organizes and mobilizes other service subjects to actively participate in the diversified and collaborative services of industrial competitive intelligence, uses industrial competitive intelligence to formulate and adjust industrial policies in a timely manner, and supports the industry to effectively respond to regional competition. Colleges and universities focus on theory communication and talent transfer, mainly providing support for professional theories and talents. Scientific research institutes focus on the transfer of advanced production technology and intellectual capital. The industry association pays attention to the industrial development trend, scans the latest industrial trend in time, and ensures real-time monitoring of industrial development.

The diversified collaborative services of industrial competitive intelligence mainly take online service platforms, offline fixed point services and “online + offline” joint services as the main approaches. Each service approach has its inherent characteristics and advantages. After receiving the demand for relevant industrial intelligence, the multiple collaborative service subject of industrial

competitive intelligence conducts analysis and discussion within the service subject to select the best multiple service mode. Multi service modes mainly include resource intelligence collaborative service, demand intelligence collaborative service and data intelligence collaborative service. Various feedback information generated in the process of multiple collaborative sharing of industrial competitive intelligence can optimize the entire service model, upgrade industrial competitive intelligence resources according to the needs of industrial development, and achieve direct or indirect improvement of the effectiveness of industrial competitive intelligence collaborative services. Economic development will breed more new demands for industrial competitive intelligence, making the whole service model form a cycle. All elements of the multi collaborative service model of industrial competitive intelligence promote each other, feed back each other, and link departments to form a circular structure, so as to achieve the goal of collaborative development.

4. Industrial Competitive Intelligence Multiple Cooperative Service Subject

According to the role orientation and specific functions of the multiple cooperative service subjects of industrial competitive intelligence in the industrial development, this paper divides the multiple service subjects into two categories: first, the enterprise subjects include leading enterprises and non leading enterprises; second, the non enterprise subjects include the government, universities, research institutes, industry associations, and for-profit institutions. In the multi collaborative service mode of industrial competitive intelligence, leading enterprises put forward corresponding industrial intelligence demands, and are also obligated to provide corresponding information related to production. Non leading enterprises follow leading enterprises in the production of related products on the industrial chain. They can obtain information services related to production from leading enterprises, and they are also obligated to provide corresponding information feedback.

The government needs to formulate industrial development plans, regional development plans, development strategies and directions to provide basis for industrial competitive intelligence activities of other service subjects. Colleges and universities can support the promotion of multiple collaborative services of industrial competitive intelligence by relying on multi-level discipline structure, compound professional talents, perfect theoretical knowledge and sound research equipment. While colleges and universities are shouldering the burden of cultivating talents and helping to build a high-quality talent team, they can also promote the application of theoretical knowledge to enterprise subjects and enhance the information awareness and related skills of information practitioners. Scientific research institutes are the backbone of independent research and development, holding the latest industrial technology and intellectual property information. Scientific research institutes mainly provide industrial competitive intelligence for technical guidance. The application of the multi collaborative

service model reduces the problems of too wide service objects and low conversion rate of scientific and technological achievements, and enables scientific research institutions to accurately grasp the key needs of enterprise development. Based on the current situation and future development trend of the industry, the industry association provides decision-making suggestions for enterprise operation, production and management. In the multi collaborative service mode of industrial competitive intelligence, industry associations can accept the entrustment of the government, supervise the service behavior of the multi service subjects, and coordinate the business activities among the enterprise subjects in the industry. In the multi collaborative service model of industrial competitive intelligence, profit-making institutions use the results of industrial competitive intelligence to improve and optimize the multi collaborative service of industrial competitive intelligence based on the specific needs of enterprises, so as to make the service more targeted.

The subject of industrial competitive intelligence multi synergy service is both the information service provider and the service recipient. The multiple service subjects cooperate with each other, closely contact each other, and establish an organizational collaboration network. Under the guidance of government policies and regulations, multi service subjects actively participate in collaborative service activities, fully demonstrating the service enthusiasm of multi service subjects. The interrelationship between multiple cooperative service subjects of industrial competitive intelligence is shown in **Figure 2**. Leading enterprises in the industry are successful representatives in this field. The problems and specific measures they encounter in their daily management can provide applicable suggestions for other small and medium-sized enterprises in the industry, and non leading enterprises can also provide feedback information for them. From this point of view, the enterprise subject can realize the internal supply of industrial competitive intelligence. According to the different functional orientations of the government, colleges and universities, scientific research institutes, industry associations, and for-profit institutions, these institutions need to collect a

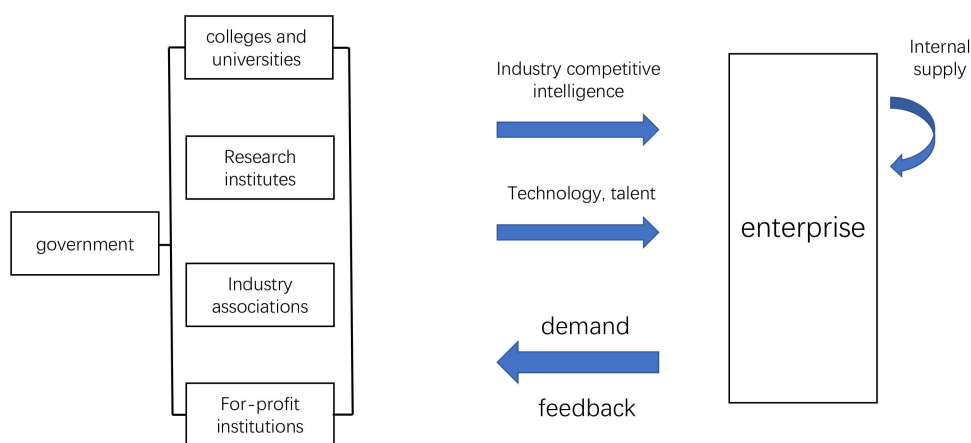


Figure 2. Interrelationship between multiple cooperative service subjects of industrial competitive intelligence.

large amount of industry related information to provide information support for policy formulation, auxiliary decision-making, and so on. From this perspective, these institutions can be transformed into recipients of industrial competitive intelligence services.

5. Guarantee Measures for Industrial Competitive Intelligence Multiple Collaborative Services

Efficient and sustainable multiple collaborative service mode of industrial competitive intelligence is the premise to provide effective industrial competitive intelligence support. The multiple collaborative service mode of industrial competitive intelligence not only includes multiple service subjects, multiple service approaches, multiple service modes and multiple service contents, but also includes the communication and coordination modes between multiple service subjects and specific measures to ensure the whole collaborative service mode, so as to standardize the management of the whole service mode. The multiple cooperative service subjects of industrial competitive intelligence have different social attributes, organizational structure, cultural orientation and resource advantages. The construction and maintenance of the multiple cooperative service mode need to rely on sound and effective safeguards to constrain the behavior of the multiple service subjects. Safeguard measures help to improve the efficiency of industrial competitive intelligence multi collaborative service, reduce the resistance in the service process, and strive to ensure the efficient and stable operation of the multi collaborative service model.

6. Conclusion

This paper first explores the construction principles of the multi collaborative service model of industrial competitive intelligence, including the systematic principle, the demand oriented principle and the principle of clarity of rights and responsibilities, and then puts forward the general structure of the multi collaborative service model of industrial competitive intelligence. Finally, it expounds the multi service subject, multi service approach, multi service mode and multi service content respectively. The multiple service subjects include enterprises, governments, colleges and universities, scientific research institutes, industry associations and for-profit institutions. The multiple service subjects are both information service providers and service recipients. The service model focuses on the information supply capacity of enterprise subjects and the industrial competitive intelligence demand of non enterprise subjects in the process of industrial competitive intelligence services.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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