

Analysis of Low-Carbon Independent Innovation Model

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Abstract. The development of China 's low-carbon economy must be based on independent innovation. The choice of innovation model has a significant impact on the success or failure of independent innovation. The original innovation, the introduction of innovation and innovation is the mainstream of the three innovative models, the three have their own unique characteristics, applicable to different environments with different innovative resources endowment of the main innovation. Under the premise of comprehensively analyzing the innovation foundation of innovation, combining with the analysis of the characteristics of low-carbon independent innovation, the paper explores the innovative resources and conditions needed for different innovation models and designs a low-carbon independent innovation model which is in line with the reality of China's innovation. Improve the efficiency of innovation and promote the development of low-carbon economy has important theoretical and practical significance.

Introduction

It is not only the inherent requirement of China to realize its own sustainable development, but also the inevitable choice of China to obtain favorable position in the new round of international economic competition. To promote the development mode of transformation, to achieve low-carbon economic development must be based on low-carbon independent innovation. It is difficult to make significant progress in carrying out low-carbon independent innovation through traditional innovation mode. With the openness, low input, high yield and high efficiency, the cloud innovation model becomes the inevitable choice of China's low-carbon independent innovation.

Low-Carbon Independent Innovation of the Main Body

The selection principle of innovation subject. Independent innovation is the high risk and high yield coexistence of production and business activities. This essential feature of independent innovation puts forward the higher requirements to the innovation subject, which must have the following characteristics:

First, the initiative of innovation. The main body of independent innovation must have the inherent demand of independent innovation, hoping to obtain the economic profit through the commercialization of independent innovation achievements. Only with the inherent requirements of independent innovation, we hope that through the independent innovation to obtain economic profits of the main innovation in order to pay close attention to changes in market conditions, grasp the market opportunities for innovation, developed in line with market demand for innovation.

Secondly, the funding for innovation is sufficient. The main body of independent innovation must have a certain financial basis or financing capacity, to protect the independent innovation of capital investment. Independent innovation of technology originality and long periodics need independent innovation subject to continuous capital investment. If the main body of innovation does not have a certain financial basis or financing capacity, may not be able to provide the entire process of independent innovation required financial support.

Third, anti-risk ability. Independent innovation subject must be able to take risks, can face the failure of independent innovation activities bring significant losses and unfavorable situation.

According to Mansfield's investigation and research on three major companies in the United States, the technological success rate, commercial success rate and economic success rate of technological innovation projects are only 60%, 30% and 12% respectively. That is, the failure rate is as high as 40% , 70%, 88%. Under normal circumstances, independent innovation subject to face a very high probability of failure, if the innovation of the main risk tolerance is weak, the failure of innovative projects may be the normal operation of the main innovation caused great negative impact.

Comparative Analysis of Three Innovative Subjects. .

(1) the government. The efficiency of the government as the main body of independent innovation is low. The government, as an organization for the provision of public goods and public services for the community, has the main responsibility of pursuing social welfare and guiding the development and progress of society. The economic resources of its social activities are derived from the tax provided by social organizations and social citizens, rather than the result of their own economic activities.

(2) colleges and universities and scientific research institutions. Lack of market sensitivity constraints colleges and universities and research institutions to become the main independent innovation. Financial allocation system for scientific research institutions to provide a stable source of funding at the same time, also led to its long-term departure from the market, the development of the market changes in the lack of sensitivity, highlighting the low conversion rate of innovation results. China's national institutions of higher education each year the national scientific and technological innovation results of more than 6000-8000, but the real effective transformation and industrialization of less than 10%.

(3) business. "China Science and Technology Statistics Yearbook" data show that from 2002 to 2010 China's corporate research and experimental development spending to grow faster, from 70.8 billion yuan in 2002 to 506.31 billion yuan in 2010, its share of China's research and The ratio of total expenditure on trial development increased gradually from 55% in 2002 to 71.7% in 2010. Science and technology activities funded mainly by three sources: government funds, corporate funds and financial institutions loans. The absolute amount of funds from the three sources has increased, but the relative proportion of government funds to the total amount of loans to financial institutions has declined significantly.

Analysis of Traditional Independent Innovation Model

Analysis of Original Innovation Model. .

Original concept of the concept of innovation

One of Original concept is to emphasize the originality of the original innovation, the first systematic introduction of new concepts, new basic theory and technical methods, major scientific discoveries. The second is to emphasize the original innovation of the results in the world of breakthrough. Based on the above analysis, this paper argues that the definition of Li Hongze and Zhu Konglai is more comprehensive, they think: "the so-called original innovation refers to through scientific experiments and theoretical research to explore the phenomenon of affairs, structure, movement and the law of interaction, or the use of scientific theory The process of key scientific and technological problems in the development of economic and social development is characterized by significant scientific discoveries, technological inventions, theoretical innovations and inventions of experimental methods and apparatus.

Analysis of the characteristics of the original innovation model

First, the results of the novelty and breakthrough. The original innovation connotation mainly includes two aspects, one is to emphasize the first system of the proposed new concepts, new basic theory and technical methods, major scientific discoveries. These findings are previously non-existent, is a research field of new research results, which highlights the original innovation results of the

novelty. The second is to emphasize the original innovation as a starting point, open up a new field of research. Second, the high internal income and external income. Once the original innovation is successful, the results of its innovation will be at the same time for the main innovation and external stakeholders to bring high returns. The original innovation can lead the innovation main body to accumulate the production technology and management experience, obtain the experience of product and quality control before the competition, and the innovation subject is completely monopolized to the original innovation product in a certain period of time, which is beneficial to the innovation main body earlier. The establishment of the principle of supply network and a solid sales channels, access to excess profits. Third, higher risk. Relative to the integration of innovation and the introduction of digestion and absorption of innovation, the original innovation has a higher risk. The risk is mainly from two aspects, one is the uncertainty of the research goal, it is the natural, social and human thinking of all aspects of complex issues, is based on the curiosity of innovators caused by exploratory research, randomness, Non-logical, non-procedural more obvious. Second, the uncertainty of the innovation process and the results.

Analysis on the Re-innovation Model of Digestion and Absorption. .

The introduction of digestion and absorption of the concept of re-innovation

Alexander. Gerchenkron in his published "economic backwardness of the historical review" article for the first time put forward the advantages of late theory. The theory mainly includes two connotations: First, through the introduction of technology can save innovation costs, including time costs and capital costs; the second is through imitation, digestion, absorption can be obtained after the proceeds. The theory of late-developing advantage provides the theoretical basis for the economic and technological backward countries to introduce the technology through the introduction of technology and on the basis of digestion and absorption and innovation.

Table 1 stage of re-innovation

mode	stage of re-innovation			
tradition	Technology introduction	digestion and absorption	re - innovation	
deepen	Imitation Innovation	Creative Imitation	Improved nnovation	second nnovation

With the deepening of theoretical research and the development of enterprise practice, the introduction of digestion and absorption of the connotation of innovation has been expanding, basically including the following three aspects: First, based on the introduction of a technical paradigm; Second, the technological capacity of enterprises continue to evolve. The process of response to the technical capacity of enterprises from weak to strong response to the accumulation process: the introduction of advanced technology and production equipment-skilled operation of the use of production equipment-to learn and understand the master of advanced technology and its principles-master the technical design and its principles and preliminary. The formation of independent research and development capabilities - to achieve product and process improvement - independent research and development platform for a variety of innovations; Third, enterprises take the initiative to seek to change the process of technological innovation model, that is, technological innovation with the technological innovation capability and gradually change the upgrade Business behavior adjustment process.

The introduction of digestion and absorption of the new characteristics of the analysis

First, the dependence on external technology sources. The introduction of digestion and re-innovation is the innovation of the main body in the introduction of external technology on the basis of further through the extension of technological innovation chain to obtain a relatively advanced technology innovation model. External technology is the basis of innovation to carry out innovation, this innovative model of external technology has a strong dependence.

Second, the time required for innovation is short. Due to the existence of many previous research results and mature research methods for reference, through this innovative way can be achieved in a

shorter time results. At the same time, because the innovation results in line with the original technical paradigm, its value is accepted by the market to accept the required time is shorter.

Third, the lower risk. Relative to the original innovation, in the process of innovation and the results of two aspects, the introduction of digestion and absorption and re-innovation are facing a lower risk. Innovation is based on the original mature technology, only after the innovative ideas and research methods, in the process of innovation encountered difficult to overcome obstacles or other uncertainties less likely.

Choice of Low-carbon Independent Innovation Model. .

Based on the basic conditions of internal and external innovation, the scientific and rational choice of innovation model is the initial step of the successful development of low-carbon independent innovation. This section analyzes the incompatibility of traditional innovation model in low-carbon independent innovation, and designs a new innovation model which adapts to the foundation of low-carbon innovation in our country - cloud innovation.

The inadaptable traditional innovation model

First of all, the characteristics of the original innovation model determines the need for a strong innovation in the main technical foundation and financial strength. China's enterprises, whether technical or financial strength are difficult to support the large-scale low-carbon technology innovation required for the original investment. Second, due to a variety of historical factors and the reasons for the conflict of real interests, the US government has developed a strict policy of embargo on China, Europe, Japan in the United States and its own interests in the interests of China's technology to take a conservative policy. China and the developed countries of the special international relations of China's difficult to obtain advanced low-carbon technology from the international market, this reality makes it difficult for Chinese enterprises through the introduction of digestion and absorption of innovation and innovation to carry out low-carbon independent innovation.

Cloud innovation model is an inevitable choice

The core of the cloud innovation model lies in breaking the organizational boundaries and geographical boundaries, the largest possible integration of the use of scattered around the world of various types of innovative resources. In the cloud innovation model, low-carbon independent innovation through the self-built private cloud service platform (such as IBM's innovation jam) and the use of public cloud services platform (such as the pig network, InnoCentive) integration of global innovation and technical personnel to serve their own Low-carbon independent innovation. The development stage of the cloud innovation is in table 2.

Table 2 stage of cloud innovation

	1	2	3
stage	cloud innovation1.0	cloud innovation2.0	cloud innovation3.0
name	Generalized cloud innovation, open innovation	Relative cloud innovation, network innovation	Narrow cloud innovation

The low input characteristics of cloud innovation model help to overcome the problem of insufficient funds to overcome the shortage of funds. In the cloud innovation mode to carry out low-carbon independent innovation on the main requirements of the lower funding, low-carbon innovation in China generally face the problem of innovative funds will be alleviated.

The Low Risk Characteristics of Cloud Innovation Model Mitigate the Difficulties of Anti - risk Ability of Innovative Subject in China. The innovative, open, low-cost, and efficient features of the cloud enable organizations to integrate resources across time and space across the region in the process of innovation, saving significant manpower, material, financial and time investment,

maximizing To avoid the uncertainty brought about by innovation, the technical and product markets in two aspects of the most difficult to predict the risk of innovation at a low level.

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