

Research on Information Industry Innovation Model under the Background of Integration of Industrialization and Informatization

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Abstract The development of information industry innovation is an important driving force to promote adjustment of national industrial structure, the integration of industrialization and informatization has brought new opportunities and challenges to the development of information industry innovation. This paper defines the basic content of the information industry innovation, describes the relationship among integration of industrialization, informatization and information industry innovation, based on which analyses main content and models of the information industry innovation.

Key words Integration of industrialization and informatization; Information industry; Innovation

1 Introduction

It is a hot new research on industry innovation. Different scholars from different angles gave various interpretations on the connotation of industry innovation. It is generally believed that the concept of industry innovation was first proposed by the British economist, Freeman (1997)^[1]. He believed that industry innovation including skills and technology innovation, product innovation, process innovation and management innovation and market innovation. Industry innovation includes sub-macro and micro such two levels, the macro level refers to the ability of a country's industrial structure transformation, micro level is that enterprise breaks industry constraints which has been structured, using technology innovation, product innovation, market innovation or a combination innovation to change the existing structure or create a new "industrial" process^[2]. Information industry innovation is an important part of industry innovation, while integration of industrialization and informatization has brought new opportunities and challenges to the development of information industry innovation.

2 The Content of Information Industry Innovation

The information industry innovation is the process designed to enhance industrial competitiveness, with the formation and development of information industry-related factors of production to re-mix and draw into production systems. Gou Zhongwen (2006) believes that the focus of information industry innovation lies in three aspects: First, in order to enhance industrial competitiveness, make efforts to improve the inherent quality of the industry, develop to the direction of high-tech and high value-added products; Second, make enhancing self-regulation and development functions as the goal, explore actively the advantages and features of industrial development, and continuously penetrate to other industries, combined with the general trend of economic development, open up new markets, and strive to nurture and develop promising alternative industries and new industries, so that industrial development can keep long-term vitality; and the third is try to reform intra-industry organization, improve the industrial chain, promote industrial clustering, reduce the cost of industrial development, and enhance anti-risk ability in the process of industrial development^[3].

3 The Relationship Between Integration of Industrialization and Informatization and Information Industry Innovation

3.1 The integration of industrialization and informatization provides new opportunities and challenges for information industry innovation

(1) New opportunities

Seen from large macro-development environment, the information industry is a highly market-oriented industry, which is very sensitive to the macro policy environment. The strategic policy "five simultaneously, integration of industrialization and informatization" proposed in the 17th Party Congress, has opened up tremendous prospects for the development of information industry, which will effectively promote the extensive infiltration of information industry in various areas of other industries, and constantly open up new development space.

(2) New challenges

In the integration of industrialization and informatization, industrialization is the starting point, and informatization is the convergence point. The prominent role of informatization is to enhance the ability of self-innovation, and the application of informatization departed from industrialization will like a river without water, a tree without roots. Under the circumstance of the financial crisis, how to use technology of informatization to achieve product innovation, management innovation, technology innovation, and resource integration is becoming new focus of enterprise in counteracting the crisis, getting through the close siege, and seizing the opportunity for development in the new circumstances.

(3) New requirements

The development of integration of industrialization and informatization is of whole process, wide-area, multi-level and integration. Informatization is not only integrated with an industry, it is integrated with all areas of economic and social development. The integration of industrialization and informatization not only reflects in micro-enterprise level, but also in meso-industry level and macro-social level. This requires the development of China's information industry is the whole process, wide-area, multi-level, requiring the development of information industry can take before the integration of industrialization and informatization; provide a solid foundation for the integration of industrialization and informatization.

3.2 The information industry innovation provides a solid foundation for the integration of industrialization and informatization

Information industry is the technological base to promote the integration of informatization and industrialization. The level of development of information industry directly affects the degree of integration of informatization and industrialization. Information industry with advantages will provide important guarantee for building high quality information network, accelerate the development of low-cost, high performance, applicable information technology equipment and software, and also provide important guarantee for improving ability of self-innovation, playing an important role in supporting the integration of informatization and industrialization. An information industry with ability of self-development and innovation is material and technical basis to promote the integration of our informatization and industrialization.

4 The Main Content of Information Industry Innovation

According to the characteristics of information industry and our re-definition on concept of industry innovation, this paper believes that information industry innovation includes four aspects: technology innovation, industry chain innovation, industry cluster innovation and policy innovation. The four aspects interacted between each other; help each other forward to promote accelerating the development of information industry, to form information industry innovation system. Among them, technology innovation, industry chain innovation, and industry cluster innovation are the most important aspects.

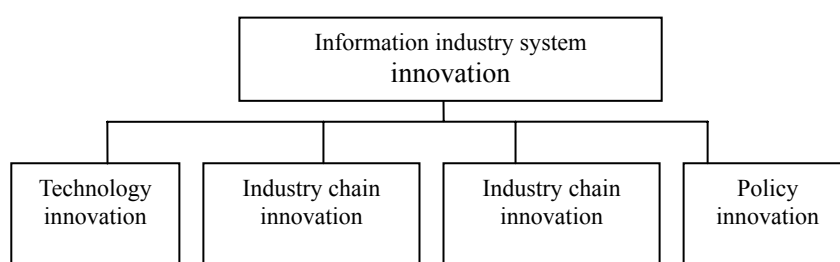


Figure 1 The Basic Framework of Information Industry Innovation System

4.1 Technology innovation

There are main four types of information technology innovation; one is the research and development innovation of information technology, which through carrying out a deep research and development on one information technology from vertical direction, makes innovation on some of the information technology. Second, is cross-fusion-type innovation of information technology, which refers to make innovation in some information technology through carrying out a deep research and development on them from horizontal direction of some associated items. Cross-fusion-type innovation of information technology includes the combination of traditional technology with high technology, and

the combination of information technology with other technology. Cross-fusion-type innovation of information technology is less investment, higher output, better effect, and quicker benefit. The cross-integration of technology and technology will greatly facilitate and promote the development of traditional industries and high-tech industries. Third, is coordination of information technology, which refers to the cooperation of technology innovation and coordinated development of enterprises in the industry, generally making the large enterprises as the core, with their rapid flow of technology and innovation, to form the organization which is similar to the spider web with small businesses, thus to open up a kind of information sharing, technology sharing and economic prosperity situation^[4]. Fourth, is the application innovation of information technology, which is to provide new products to our society or apply new production techniques to the process of production.

4.2 Industry chain innovation

Information industry chain is defined as within a certain geographic area, making a brand information company that is internationally competitive or has internationally competitive protection as the chain core, through relationship between intrinsic value activities, build strategic alliances with a number of information industry or business. Information industry chain puts the process of production of chain core as the main line, places the production activities of each node of on all aspects of their production activities, creating a kind of chain strands relations of resource sharing, mutual support of relative advantages, production match, and operation of scale and win-win cooperation. According to the general theory of division of the information industry, information industry chain is the one covering the information technology research, information product development, information product production and information services supplement and other sectors, including the main body of information application, information technology providers, information service providers, information content providers, telecom operators, information equipment manufacturers, and other components. Orderly combine the information technology industry, the information content industry and information service industries and logistics industry into an industry economical chain^[5]. The information industry chain innovation is the process of continuous differentiating new industries, and extending the industrial chain constantly.

4.3 Industry cluster innovation

Through the geographic concentration or nearness, which results in innovation aggregation, companies gain advantages of innovation to form a new innovative type of organization. With this particular organizational structure, companies will make long-term, stable and innovation collaborative relationship between each other. A notable feature of electronic information industry is that it has a long industrial chain, while the longer chain provides the basis for high-tech industrial division of labor among enterprises, and also creates a lot of space for the entry of new companies. Therefore, information industry cluster innovation based on the local decomposition and off-site decomposition of industry chain forms more easily than other industries.

5 The Main Model of Information Industry Innovation

The main model of information industry innovation can be summarized as five (Yang Xuequan, 2000): original innovation model, imitate innovation model, re-create innovation model, incubator innovation model and technology road mapping approach innovation model. Among them, the former three models constitute the main model of self-innovation

5.1 Original innovation mode

It is referred to the dramatic scientific discoveries, technological inventions, the leading technology of principle and other innovative achievements. Original innovation means that unique discoveries or inventions achieved in the areas of research and development, particularly in the areas of basic research and high technology research. Original innovation is the most fundamental innovation, is the innovation of best embodies the wisdom, and is an important manifestation that a nation makes a contribution to the progress of human civilization.

5.2 Integrated innovation model

It is referred to that, through the effective integration of existing technologies, product with marketability or new industries is formed.

5.3 Re-create innovation model

It is referred to that, based on the introduction of advanced technology, study, analyze, and borrow it to come up with a re-innovation, to form new technologies with independent intellectual property rights. Introduction, absorption and re-innovation are an important way to improve the ability of self-innovation. Through directly introducing advanced technologies from developed countries,

especially gain advanced foreign technology through using the way of foreign direct investment, developing countries can achieve self-innovation through digesting and absorbing, it not only shortens the time of innovation, but also reduces the risk of innovation.

5.4 Incubator innovation model

The so-called incubator innovation model is the mainstay of innovation that concerns institutions of higher learning, research institutions and their scientific knowledge, scientific achievements and scientific talents, self-found or co-found with society high-tech enterprises. As the parent's role of high-tech companies, institutions of higher learning, research institutions become the role of incubators, hatch companies and hatch profession, support companies and derive profession, take the path of a combination of production, teaching and research, combine research and development with industrialization organic, promote close combination of education, science and technology and the economy, transfer scientific and technological achievements when the conditions permit to actual productivity as soon as possible, to make scientific and technological achievements to be industrialized and commercialized^[6].

5.5 Technology roadmapping approach innovation model

That is an innovation model based on the technology roadmap, and through platform for information exchange and learning mechanism, technology roadmapping approach encourages cooperation and exchange of innovation network stakeholders, which can enable innovators make full use of vast amounts of knowledge and information, to increase the incentive to innovation, improve the speed of innovation, which greatly increase the efficiency of innovation activities.

6 Conclusions

The 17th National Party Congress proposed that, "Enhancing innovation capability and building an innovative country, which is the core of national development strategy, and the key to enhance overall national strength." Information industry as a typical high-tech industries need to innovate constantly, and only innovation, the information industry can always maintain the vitality of development; only innovation, can always maintain motive force for continuous development; only innovation, can always have a strong competitive power. Innovation development of information industry is an important driving force to promote adjustment of the country's industrial structure, while the integration of industrialization and informatization has brought new opportunities and challenges for innovation development the information industry. In order to achieve innovation development of information industry, we must actively promote the establishment of development system of innovative industries, and strengthen the ability of industry self-innovation, vigorously promote industrialization of innovative achievements, and enhance core competitiveness of industry.

(1) Strengthen the support of policy and regulation

A good policy and regulation environment is the base for the development of information industry innovation, we must attach great importance to create policy and regulation environment needed by the development of industry innovation. Through contestant promoting formulation and implementation of industrial policy, strengthen service functions of the government departments to information industry innovation. Make the typical enterprises, scientific research institutes as the point, investigate business-oriented innovation system and innovation environment, find out the main issues in the process of innovation and the policy and regulation which needs to solve. Carry on research on some key issues involved in innovation, focusing on policy to promote the application of information technology. At the same time, as to the new situations and new problems in development of the information industry innovation, it is necessary to further strengthen the establishment and improvement of regulations of related industries.

(2) Actively support self-innovation

Actively support development and application and extension of product with independent intellectual property rights, supported by standard of self-core -technology, to promote the core competitiveness improved steadily. Make the demand traction, application-oriented as principle, to promote the applications of technology of self-innovation and products in the major projects of informatization; enhance the depth and breadth of application and extension of information technology, focusing on the work of promoting using advanced technology to transform and upgrade traditional industries, to provide a broad market space for applications of innovative achievements, to provide endless demand drivers for development of innovative industries .

(3) Constantly co optimize the industrial structure

Improve the industry chain, consolidate electronic basic industries, to provide props and focus for industry innovation, and enhance the basic supporting ability of development of industry, self-innovation ability and self-control ability.

(4) Build a platform for production, teaching and research

Support and promote joint cooperation between enterprises, universities, research institutes and other units in the area of technology innovation and industrialization, thus form an effective model and mechanism of joint innovation, to strengthen the capacity of resource allocation, and promote industrialization of innovative achievements.

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