

19. LIU Ning. A research on the Effect of rural human capital drain on regional agriculture growth: Based on the Panel Data of

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# Enterprise Technological Innovation and Market Innovation of Innovative Management

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### Abstract

The enterprise should break the situation that the technological innovation and market innovation are separated from each other, which should set up the technological innovation and market innovation management from the angle of total innovation management; it is a very urgent issue under the challenge of the current environmental changes. In this paper, it takes the concept and definition of technological innovation management as the starting point, with the aid of the interpretation of the related content of technological innovation and enterprise technological innovation management, combined with the theoretical model of technological innovation, discussing and exploring the enterprise technological innovation as well as the choice of market innovation strategies.

Keywords: TECHNOLOGICAL INNOVATION, MARKET INNOVATION, INNOVATION MANAGEMENT

### 1. Introduction

Science and technology can play more and more important role in the social and economic development, in today's market economy environment, the competition between enterprises finally is in the competition of core technology; enterprise can guarantee itself not to be eliminated by the market only by having constant technological innovation, the only way that enterprises can maintain long-term competitive advantage is the continuous and effective management of technological innovation, which can strength-

en their own core technology capabilities. Technological innovation management has become the most important catalyst for the success of the enterprise to obtain the market competition. Under the challenge of technological changes, technological innovation management began to enter into the eyes of Chinese entrepreneurs in 1998 [1]. In 2000, the management of technological innovation has become the new exploration direction for Chinese enterprises, which can also be called as "The Year of Technological Innovation Management". Technological innovation man-

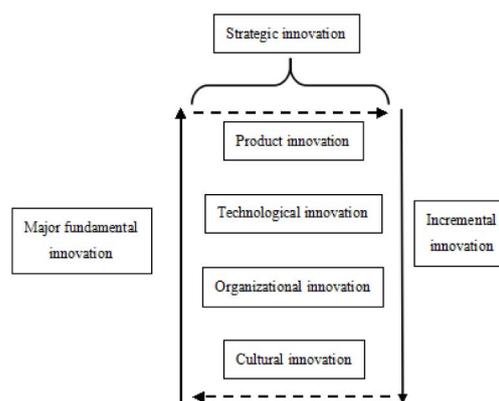
agement as a new management mode is sweeping the country along with the wave of technological change, as well as the construction of information [2].

## 2. The Concept of Technological Innovation Management

Technological innovation management is the evolution of technological management theory. With the continuous development of technological management theory, technological management has a new position [3]. Researchers are having more and more awareness about the technological management, which should be incorporated into the enterprise strategic management activities, the focus of management should be placed in the technological innovation management, only the organic combination of the two aspects can play a strategic role in technological management, therefore, it can strengthen the core competitiveness of enterprises. [4] Thus, we can see that technological innovation management actually should include two aspects, namely, technological innovation and enterprise technology management. It is a kind of enterprise technological management method based on technological innovation. The management of technological innovation should be always for the rational allocation of resources, the operation of the system should be more efficient, so as to improve production capacity, according to the enterprise strategic planning, which can be regarded as the management activities to guide the management of enterprise.

### 2.1. Technological Innovation

The core of technological innovation management is technological innovation. Technological innovation means the innovation of producing technology, including the development of new technology, as well as the application of the existing technology and re-innovation [5]. (see Figure 1) Technological innovation is a complicated process. It begins with the innovation awareness and innovation concept, through the constantly discovery, so as to solve problems with the ultimate goal of making a new projects put into practice, so as to have economic value and social value. Specifically speaking, it mainly includes new product development, new production methods, new organization and management form, new supply channel and new market development and so on. The innovation of producing technology, which begins with the basic research, the practical application of the production, the success of the business, serving the business, whose process is quite complex [6]. At present, most scholars believe that the process of technological innovation can be divided into several different stages, such as research and development,

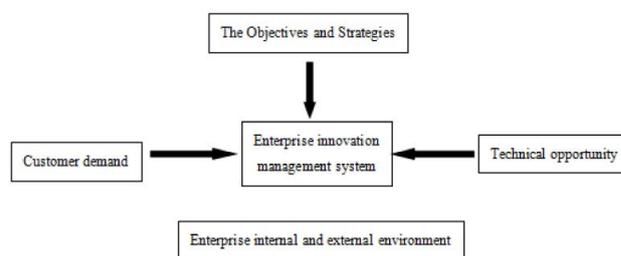


**Figure 1.** The Operating Mechanism of Enterprise Collaborative Innovation

pilot, mass production, technology promotion and popularization.

### 2.2. Enterprise Technology Management

The essence of technological innovation management is the management of technology. Technology management is a subsystem of the entire enterprise management system, which mainly refers to the development of enterprise technology, product development, technical cooperation, technology transformation and technology transfer, planning, organization, command, coordination and control as well as a series of management activities in general [7-8]. The purpose of enterprise technology management is according to the nature of the work of science and technology to adopt the scientific work flow, with plans, step by step, so as to use reasonable and legitimate enterprise technical force and resources, which will be the latest scientific and technological achievements that can be quickly transformed into realistic productivity and realize the technical progress of enterprises and economic benefits with double harvest (see Fig. 2).

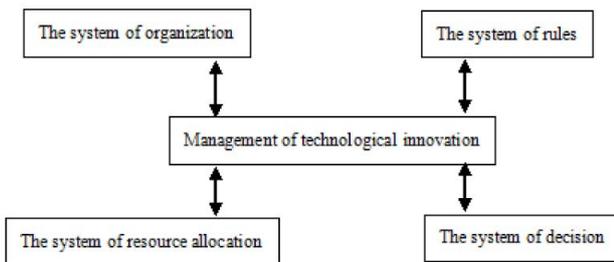


**Figure 2.** Concepts Model of TI Management System

### 2.3. Theoretical Model of Technological Innovation

Management activities and producing activities can promote each other, having mutual influence on each other, which can promote the progress of technological innovation management [9]. It is not hard to see that technological innovation management is

a series of research and innovation activities that are guided by the organization's decision, through the relevant resources, so as to optimize the allocation and integration and put them into practice [10]. Moreover, the technological innovation management can be including four basic elements: organization system, rule system, resource allocation system and decision-making system, the relationship among them can be described in Fig.3.

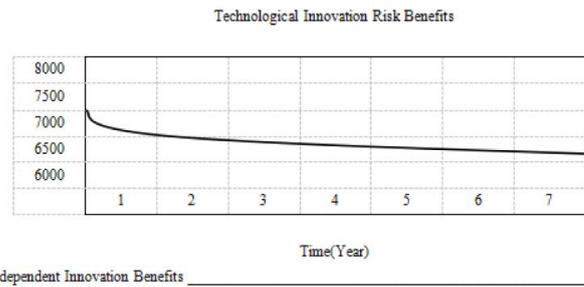


**Figure 3.** RORD Four Elements for the System of Enterprise Innovation

The basic process of technological innovation management can be summed up as follows: enterprise timely making corresponding adjustment according to the changes of the external environment; making rapid assessment on information changes, making the strategic planning; making new innovative projects according to the strategic plan, making the relevant schedule table; during the process of making the advanced technological innovation management, making correcting errors timely, so as to ensure the activities can be carried on smoothly. [11]

### 2.4. The Connotation of Enterprise Technological Innovation Risk

Technological innovation is a kind of risk behavior, the enterprise's technological innovation behavior has the feature of symmetry with the survival risk, on one hand, the enterprise may get huge profits brought the technological innovation, on the other hand, it may bear the corresponding risks. Researchers defined technology innovation risk as follows: due to the uncertainty of the external environment, the difficulty and complexity of the technological innovation of the projects, as well as the limited innovator's own ability and capability, which leads to the failure of technological innovation, suspended, revoked or not up to the target probability and consequences (see Fig. 4). And the enterprise technology innovation is driven by the enterprise under the market mechanism, in order to obtain high returns or core competitiveness, the enterprises will take the initiative to carry out technological innovation behavior [12]. Moreover, the enterprise technology innovation risk is not limited to the technological



**Figure 4.** The Chart of Technological Innovation Risk Benefits

innovation project, which is caused by the enterprise technical innovation projects and then it can spread to the entire enterprise. Therefore, the risk of technological innovation can be defined as the risk because of the failure of enterprise technological innovation projects, as well as the sum of the other chain risks that may be caused [13].

### 1.5. Risk Factors Analysis of Enterprise Technological Innovation

There are many factors that can affect the success or failure of technological innovation, Generally, it can be divided into two categories: the internal risk and the external risk. The internal risk of enterprise mainly refers to the management risk and technical risk, producing risk and financial risk and so on, while the external risk of enterprises are mainly including policy risks and market risks, etc..

#### 3. The Internal Risk of Enterprise

##### 3.1. Management Risk

Technological innovation management risk refers to the possibility that the failure of innovation may be occurred during the process of technological innovation. For example, the poor organization and coordination is existed, some departments are not good at cooperating, leaders do not pay enough attention to the risk, there is no sufficient research, the distortion of market information is existed, the leader of the main body of innovation made wrong decision-making, market positioning is not right, the researching and development process is uncoordinated. [14]

##### 3.2. Enterprise Technological Innovation Strategy

The industrial positioning of technology choice is the choice of technology, namely, choosing what kind of industry or what kind of technology can be chosen in the industry. There are three basic choices for enterprise's technology choice: (1) keeping reservation in the original industry; (2) withdrawing the original industry; (3) entering into the new industry. The industrial positioning of technology choice is very important in the whole process of the development of

technology, especially during the period of exchanging technology. When it has the industrial positioning of technology choice, it should put focus on analyzing the industry's phase, as well as the industry's long-term strategic analysis, which also should analyze the advantages of the enterprise as well as the situation of competitors.

### 3.3. Technological Choice Strategy Based on Market Orientation

It must be confirmed: firstly, whether there is a strong competitor in the market? Secondly, whether there are many alternative products or potential alternative products in the market? Thirdly, how the strength and structure of the market is, including buyers, general users, corporate buyers, institutional buyers, the government purchaser, as well as the distribution and proportion of international buyers; their culture, economy, life style and preferences; the main raw materials and the situation and trend of the suppliers. [15] Only enterprises can clarify the above matters can it determine the focus of the target market, the development of related products, so as to adapt itself to the market, as well as the segmentation market. Moreover, the segmentation market can be started from the user demands to determine the lateral subdivision target market, so as to determine vertical market segments from the transfer of products and the production chain. In this way, when the enterprise make technological innovation choice, it can have target, developing new markets, consolidating the existed markets, or expanding the existed market (which can make the unsalable products find the best way to sell products).

### 3.4. Technological Choice Strategy Based on Technology Orientation

Technology positioning mainly refers that the enterprise can be in accordance with the internal and external environment to determine their own main products of technology, the level of technology, technical content, so as to save cost as much as possible and develop market. The basic choice of technology type mainly refers to the choice of two types, namely, products technology and process technology. From the view of technology structure in our country, the government and enterprises should adjust the introduction way because it is very difficult to get the real advanced technology by means of introducing the equipment and the key equipment, therefore, the government and enterprise should adjust the ways of introduction. For example, Japan and Germany put focus on the introduction of technology in the past half a century, which put more focus on the introduction of patents, technology licensing and other soft

technology, paying special attention to the development of technology. This point should cause the attention of our country's enterprises in the technical position [16-17].

### 3.5. Strategy for Market Innovation

The innovation planning stage is based on the external environment, especially the technological environment and the information of market environment, so as to determine the phase of enterprise innovation project portfolio and innovation project progress. In this stage, under the enterprise strategy guidance, the organization structure can provide information support, the organization of internal system can provide the resources support, which are all the important influence factors. In the stage of developing the main content of the technical innovation, the existed the ability and experience that technical department had can be regarded as the base of the development, at the same time, it can have demands on the market, which can be formed by the decomposition of the corresponding standard and inseparable from the information of marketing department with its resource support.

### 4. Conclusions

From the perspective of the above factors of the collaborative innovation, the successful development of collaborative innovation needs the integrated support from the enterprise collaborative innovation management framework. At the same time, whether the collaborative innovation process can be a success or failure lies in whether it can adapt itself to the changes of environment and resource or not. Therefore, the architecture of collaborative innovation management can provide support for the collaborative innovation process mainly by introducing external variable characteristics, so as to establish external adaptability of architecture and support the collaborative innovation process.

### References

1. Gerwin D. 1988. Strategic and Organizational Implications of Computerized Manufacturing Technology. 5th Edition, Higher-Education press
2. Glaser B G, Strauss A L. 1965. Temporal aspects of dying as a non-scheduled status passage. American Journal of Sociology. vol.71, pp13-15
3. Devaus, d. a. 2001. Research design in social research. CA: Sage Publications.
4. Edwin, Mansfield. 1988. Industrial innovation in Japan and the United States, Science. vol.24, pp49-61

5. Eisenhardt K M. 1989. Building theories from case study research. *Academy of Management Review*. vol.14, pp535-550
6. Taylor Hazel, Artman Edward, Woelfer Jill Palzkill 2012. Information technology project risk management; bridging the gap between research and practice. *Journal of Information Technology*. vol.27, pp17-34
7. Graham Andrea M., Rogers Jamie. 2011. Technology innovation risk mitigation and organizational strategy: A balanced framework for technology managers. PICMET: Portland International Center for Management of Engineering and Technology, Proceedings, IEEE Computer Society. pp1-6.
8. Love Peter E. D., Davis Peter R., Chevis Robert, Edwards David J. 2011. Risk/Reward compensation model for civil engineering infrastructure alliance projects, *Journal of Construction Engineering and Management-ASCE*. vol.137, pp127-136
9. Beinhofer Bernhard. 2010. Producing softwood of different quality: does this provide risk compensation?. *European Journal of Voroosi Research*. vol.129, pp921-934
10. James I Icdiund. 2000. Risky business: safely regulations, risk compensation, and individual behavior. *Injury Prevention*. vol.6, pp82-90
11. Kong X X (2009) Classification of innovative human capital. *Sci Technol Manag Res* 7:18-23
12. Rutherford M (2009) System of economics: the old institutional economics and new institutional economics. China Soc Sci Press 11:77-83
13. Yen A (2011) Comparative in stitution alanalysis, Lian Zhou translation. Shanghai Far East Press, Shanghai
14. Kos R, Allchin A, North Detal (2014) Property rights and institutional change new system of school and school property. Shanghai Joint Publishing 82: 223-229
15. Luo H (2012) Enterprise system of human capital for innovation. *Theory Front* 9: 231-236
16. Gupta A K (1997) Managing the R&D and marketing interface. *Res Manage* 3-4: 38-43
17. Kong X X (2009) Study of enterprise in centive institution of skilled human capital. *J Zhengzhou Inst Aeronaut Ind Manage* 27 (2): 29-35

