Study on the Innovation Capability of House Electric Appliances Industry in China

XU Honggui¹, ZHAO Kun²
¹ School of Economic & Management Beijing Jiaotong University, P.R.China, 100044
² Logistics School, Beijing Wuzi University, P.R.China, 101149
Piaopiao_zk@163.com

Abstract: On the basement of further researching achievement about enterprise innovation capability, this paper presents a new innovation capability evaluation model for measuring the comprehensive innovation capability through analyze the situation and requirements about innovation of house electric appliances industry in China. The new evaluation model is presented by: innovation hard capability, innovation soft capability and executive capability. By using this new evaluation model, house electric appliance enterprises can measure their innovation capability more objective, find their shortcoming about innovation capability, and then establish suitable innovation development strategy.

Keywords: Innovation capability, evaluation, soft capability, hard capability, executive capability

Along with the rapid national economic development in 2007, house electric appliances industry acquired excellent performance in China. According to the report of Chinese house electric appliance industry institute, the industry gross product is 605.33 billion yuan, increase 26.05% than 2006. The whole industry export achieve 31.4 billion us dollar, increase 27.6% than 2006. However, due to lack core technology, the “black electric”---- color TV decrease 20.30% than 2006. Therefore, more and more house electric appliance enterprise transfer their attention into their innovation capability, and plan to draw up their innovation strategy.

1. Research Summary

Based on the important situation in enterprise development, innovation capability became the hotspot topic in academician all over the world. In spit of their difference on embody manner about enterprise innovation capability, their material content is similar. They almostly consent that the enterprise innovation capability is a comprehensive system consisted with several element. On account of different perspective of their respective analyse, the bound manner is different among the element of innovation capability.

C. K. Prahalad, Gary Hamel(1990), publish their articl “The Core Competence of the corporation” on <Harvard Business Review>. The first time bring forward the conception about core competence, then the upsurge of core competence study became all over the world. In their theory, they put technology innovation as the main core competence.

Wei jiang, Xu qingrui(1999), analysing the process of technology innovation, believe that there are five directions build up the configuration element of technology innovation, innovation decision-making capability, R&D capability, produce capability, marketing capability and organize capability. The strength of enterprise technology capability is represent in the technology level containing in the product, the degree about product satisfying the market demand, the capability of putting the innovation product into manufacture and the capability of product marketization.

Wu fengping, Ge ming(2005), focus on the technology innovation character of huge enterprise, provide comprehensive evaluation measure. There are three basic steps: first, found index system based on the character of huge enterprise; second, using principal component analysis to reduce dimension, acquire comprehensive index contain main information and weights; third, using ideal solution method to evaluate innovation capability.

2. Actual situation about house electric appliances industry in China
2.1 Character of house electric appliances industry in China
1. Completely competition industry
After entering WTO, house electric appliances industry is the largest open degree industry in China. Contrary to other industries, our government protect lest. The competition in electric appliances industry is under the completely competition environment, the competition strength is hard, and competition requirement is high.
2. Develop into mature
House electric appliances industry strides into mature phase, and comes into saturation period. They have enough real strength to carry out innovation activities with plan, process and in an orderly way and gain some innovation outcomes. Under this situation, innovation capability study require what innovation capability required by house electric appliance enterprise, the strength degree of innovation capability, and what is the weakness part about innovation capability.
3. Competitive advantage is unconspicuous, innovation capability is deficiency
Our house electric appliance enterprises either choose joint venture to acquire technology for development, or choose low cost strategy. The innovation investment is seriously deficiency relative to foreign company and their product did not realize difference-oriented competition, therefore the core competition is weakness.
4. The industry concentration ratio is very low
There are more than thirty brands in Chinese house electric appliance industry. One survey about house electric appliance brand in 2007 shows: Haier receive 14.71% concern became NO.1 brand. But in generally, the top ten brand receive 69.1% concern, at the same time the front three brand receive 38.13% concern. These survey data indicate the industry concentration ratio is low, each brand have their own dominance product.

2.2 Character of house electric appliances industry in China

![Pie-1 three development period](image)

There are three main periods during the development of house electric appliance industry, showing as the Figure-1. Chinese house electric appliance industry strided into second period several years ago, when they satified domestic market more than 50%. However, there maybe more than ten years before they come into third period, since their impotent innovation capability seriously delay their development.
3. Innovation requirements and level in house electric appliances industry

3.1 Innovation requirements in house electric appliance industry

There are four main innovation required by house electric appliance industry which based on the same headspring---ideological innovation. Ideological innovation is the essence of all kinds of innovation, the originality, fundamentality and determining direction of innovation, the standard of right or wrong, and the attitude of things treatment. Technology innovation and Marketing innovation are elements; Culture innovation and Management innovation are guarantee.

3.2 Technological levels in house electric appliance industry

1. Basic research
Follow the newest science and technology improvement, and prepare for technical reserve more than five years. This is the highest technology level.
2. Application research
Through application research, improve the productivity, adjust producing technics and ameliorate product line, preparing for technical reserve within three years. This is the middle technology level.

3. Product development
Develop new product based on market requirements. Including: manufacture design innovation, profile design innovation, and function design innovation. Do not prepare technical reserve more than one year. It is the lowest technology level.

4. Innovation capability evaluation model
Innovation capability of house electric appliance enterprise is complicated, comprehensive and hyper dimensional, therefore its mainly presents by three aspects:
1. Factor input aspect: define as hard capability. This is the tangible part, including: machine, equipment, staff, capital investment and information system.
2. Enterprise aspect: define as soft capability. When factor input into enterprise, the outcome is quiet different since different enterprise provide different management and culture. Management, culture and development environment is the intangible part.
3. Output aspect: define as executive capability. This is the outcome by the innovation capability of a enterprise. Innovation outcome, performance, economic benefits, and social benefit will plenitude embody innovation capability of an enterprise.
Pic 4 shows us the specific model.

Pic. 4 The model of evaluation system in house electric appliance industry

5 Conclusion
Based on analyzing the character and requirement of innovation capability with Chinese house electric appliance industry, this paper presents a new evaluation model. This model integrates non-linear relationships among various factors internally influencing an enterprise's innovation capability quite well. The assessment becomes comprehensive and objective. This model is concise, comprehensive and feasible. By using this model, house electric appliance enterprises can overall acquaint their innovation capability situation and find shortcoming.

Author Brief:
Xu Honggui is a Ph.D at School of Economic & Management Beijing Jiaotong University, Beijing, China, 100044. Tel: 010-62182656. Email: xuhg@cisri.com.cn.
Zhao Kun is a Lecturer at Logistics School, Beijing Wuzi University, Beijing, China, 101149. Tel: 010-89534018. Email: piaopiao_zk@163.com.

References
[2]. Wei jiang, Guo bing, Xu qingru, Enterprise technology competence and evaluation indexes of enterprise's technology innovation capability, Evaluation on high technology enterprise in China, 1999 (5) : 29-34.
[3]. Wu fengping, Ge ming, Geng xiaona, Huge enterprise technology innovation capacity evaluation measure and application, Science & Technology and Economy, 2005.5