

Research on the Characteristics of Reverse Innovation of Non-core Enterprises in Industrial Innovation Network

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Abstract— For many SMEs in the low-end of the global value chain and the absence of the domestic value chain, how to achieve transformation and upgrading through innovation, and gradually become the leading enterprise in the industry, this is a practical problem that is extremely important and affects the future economic structure. The appearance of reverse innovation, a new mode of transfer of innovation, offers the possibility of effective remedy of this problem. Since it is difficult for a single company to have all the skills needed to maintain technological leadership and market innovation, different forms of partnerships between organizations have become an important source of corporate strategy. It broke through the previous chain model, and the companies are often closely linked. The innovation of the company should also be regarded as completed in the industrial innovation network. This paper studies the reverse innovation of non-core enterprises from the perspective of industrial innovation network, and cites the case of Huawei's mobile phone reverse.

Keywords—*industrial innovation network; non-core enterprise; reverse innovation.*

I. INTRODUCTION

The emergence of industrial networks is a manifestation of the maturity of industrial development. An industry may initially have only a few companies that produce, sell, and reproduce products, and these companies are therefore dominant in the industry. Since the reform and opening up, along with the sustained economic and social development in our country, all walks of life have ushered in great development. The highly developed market economy will inevitably lead to the emergence of social division of labor. Therefore, the industry has slowly emerged a complete and rich industrial chain, and thus formed an industrial network.

In today's highly developed market economy, competition among all walks of life has become increasingly fierce. The importance of innovation to a company is self-evident. Cluster enterprises based on industrial networks have obvious learning

effects. A company's success (usually a company that occupies the core position of an industrial network) can often lead to the development and progress of a large number of companies that have a division of labor and cooperation relationship. Cluster industry is closely linked, so the innovation of core enterprises in the industrial network (such as technological innovation and new ideas for product development) is easily captured and learned by non-core enterprises. Non-core companies continue to learn and accumulate their own strength, and ultimately occupy the core position of industrial networks through reverse innovation. At present, many small and medium-sized enterprises in our country are facing the crisis of transformation and upgrading. Through the study of this issue, many small and medium-sized enterprises have provided a transformation idea. It is an interesting phenomenon that non-core enterprises evolve into core enterprises through reverse innovation. What characteristics do non-core enterprises with such counterattacks generally have?

II. LITERATURE REVIEW

Reverse innovation is not a new concept. It was created earlier and applied to the strategy choices of enterprises to develop new products. The reverse innovation at this stage focuses on the product and future market demand. It is required to follow the enterprise's goal and follow the opposite angle to finally achieve the creativity and ideal of product development. In addition to being used in the development of new enterprise products, the idea of reverse innovation has also been applied to sports and other fields. The use of reverse innovation in the field of sports and the improvement of methods and strategies can often yield unexpected results. For example, the "forehand ball serve" technique in the table tennis game is playing with a small arc circle: the "time difference" spiking in the volleyball sport, and the reverse flight spiking.

Summarizing this phase of reverse innovation research is more focused on the concept of reverse innovation itself, although it proposes several ideas and ways to achieve reverse

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innovation, but the lack of case analysis and research, and thus lack of feasibility and application.

Since the beginning of the 21st century, the development trend of economic globalization has been obvious. Many high-end products from developed countries are not sold smoothly in foreign markets in the country. For this reason, product manufacturers in developed countries are changing their strategies to develop new products and sell them worldwide. The product time will be adjusted according to local conditions. This adjustment is called global indigenization [1]. It points out that when globalized products or services are integrated with local culture, they are more likely to succeed. In follow-up studies, Govindarajan et al. pointed out that targeting emerging markets and attempting to achieve rapid development and progress through global localization proved to be far from enough [2]. To this end, the concept of reverse innovation was proposed and used to explain this phenomenon – products that were developed for emerging markets were often introduced into the markets of developed countries. In addition, Govindarajan et al. "GE developed a portable ultrasound machine that meets the special needs of the Chinese market in the early 21st century and was finally introduced into the advanced economies market and succeeded" as a case to study and succeed from the perspective of reverse innovation [3].

The work of Govindarajan et al. is not limited to this. This kind of reverse innovation can be from enterprises in advanced economies or local enterprises in emerging economies, even though their innovative soil is the emerging economies market. Zedtwitz M, Corsi S, et al.'s research on reverse innovation is not confined to the previous concept, that is, originally originated in emerging economies, and later introduced to developed country markets and achieved successful innovation [4]. They adopted the linear innovation model of product concept, product development, introduction of primary target market, and subsequent secondary market introduction in four successive stages, extending the definition of reverse innovation to the market introduction [5]—the reverse innovation of innovation process and product development stage [6]. From the perspective of globalization, based on the location of innovation, the innovation flows between developed countries and developing economies are discussed [7]. The type of reverse innovation is divided into weak innovation and strong innovation.

What reverse innovation describes is a new economic phenomenon. It has a broad research perspective [8]. Re-examining the course of "reverse innovation" development, you will find that when reverse innovation returns to people's horizons again, it is given new connotations and meanings [9]. It is this kind of new connotation and new meaning that has been given rise that domestic and foreign scholars and experts have extensive interest and common concern for research on reverse innovation [10].

Chen Jin and Huang Heng and others earlier noticed the phenomenon of reverse innovation and called it "backward innovation" [11]. The background of this concept is still that "multinational companies rely solely on the markets provided by the developed countries of Europe and the United States to meet their growth needs [12], and thus product R&D shifts to

the emerging economies market and ultimately achieves expected results in both markets". In order to specifically explain and achieve the purpose of explaining this phenomenon or concept, Chen Jin and Huang Heng et al. adopted a case analysis approach and focused on analyzing two cases, namely, the expansion of GE Medical's business [6] and the case of China High Speed Rail [11]. China High Speed Rail is a very typical and well-known case for the public. First, it introduces relatively mature high-speed rail technology from abroad, digests and absorbs it, and then re-innovates on the basis of it, eventually forming a high-speed railway with independent intellectual property rights [12]. Complete technology and external output technology.

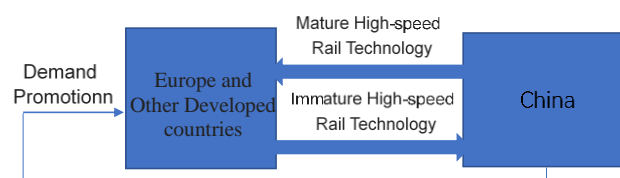


Fig. 1. The reverse innovation model for high-speed rail in China

The successful experience of China's high-speed rail innovation model provides new ideas for reverse innovation, namely, introduction-digestion, absorption-reinvention. As an emerging economy, China's many domestic companies will inevitably be affected and impacted by the "reverse innovation" strategy from multinational companies, and these ideas will help China's industrial transformation, upgrading and reverse innovation [13]. Another example of domestic research on "reverse innovation" is BYD Auto [7]. By digging in target markets, a large number of mature technologies, imitations of classic products, and anatomical techniques have been used to achieve an overall improvement in the level of technology and ensure a high level of product production. High-quality; through the vertical integration of the industry chain, the production cost was depressed. Some scholars have summarized the concept of "reverse innovation" as "starting from poor consumers and refining them"[14]. BYD Auto's successful case is particularly consistent with this situation.

With the deepening of research on reverse innovation, the influencing factors and realization paths of successful reverse innovation have gradually become a new research direction. In this regard, Xu Nina and others used the case study method to do a lot of related work [15]. Taking Haier's "Little Baby Prodigy" series product innovation as an example, the influencing factors for the success of reverse innovation in latecomers are studied [16]. The study pointed out that the key to the reverse success of latecomers is to choose an industrial sector with a relatively small technological gap with leading companies, give full play to the innovative resource elements with local comparative advantages [17], and rely on open innovation strategies, technologies and markets, and management innovations [18]. Closely coordinated strategic support. Of course, the results of this case study also have certain limitations. That is, the above conclusions are drawn from the study of individual cases. There are no further detailed case studies and multiple cases, cross-case studies, and lack of systematicness.

III. REVERSE INNOVATION FROM THE PERSPECTIVE OF INDUSTRIAL INNOVATION

China's various cluster industries have sprung up and have spawned a large number of small and medium-sized enterprises. The research on reverse innovation in foreign countries is not applicable to the problems that domestic research is facing and needs to be solved due to the differences in market environment and economic development methods. The research point of reverse innovation should not be limited to the multinational companies in developed countries - industrial cooperation companies or the emerging economies - developed countries - oriented innovation chain. Based on solving the problems in the development of small and medium-sized enterprises in China, such as the lack of innovation and the transformation and upgrading of the industry, domestic experts and scholars have extended the concepts and scope of application of reverse innovation. Companies are often closely linked, and corporate innovation should also be considered as completed in the industry innovation network. Therefore, the problem of reverse innovation in enterprises should also be examined in the industry innovation network.

Since it is difficult for a single company to have all the skills needed to maintain technological leadership and market innovation, different forms of partnerships between organizations have become an important source of corporate strategy. It broke through the previous chain model [19] and not only became an effective way for companies to improve their internal innovation activities [20], but also provided resources for organizations to share resources and cooperate in research and development. A brand new communication platform. This new and innovative approach has attracted widespread attention from scholars and has gradually become an important research topic in the field of corporate management [21].

The rise of Huawei's mobile phone has caused Samsung, who once ruled China's smartphone market, to pull down the altar. How did Huawei break out of the crowd of smartphones? We all know that Huawei is a global leader in information and communications solutions and has strong capabilities in communications networks, terminal servers, and cloud computing services. It was no coincidence that Huawei first entered the smart phone manufacturing industry. Huawei set up a mobile phone company as early as 2003. However, it was only at that time that it produced functional devices for 2G and 3G communication networks, mainly for major telecom operators. Service version.

After entering the era of smart phones, Huawei's mobile phone business has a large body and many models, but it still focuses on cooperation with carriers and has not fundamentally transformed itself into a truly market-oriented smartphone manufacturing company. Huawei's mobile phone seized the needs of consumers on the market at that time – the performance parameters of the mobile phone were high, the design was fashionable and the price was really close to the people. After Liu Jiangfeng dominated the glory brand debut, it suddenly detonated the entire smart phone shipping market. Huawei Glory focuses on technology and has advantages in terms of productivity, yield, and new product iterations [22].

Compared with the Apple iPhone, the Samsung S series and the note series, Huawei uses the SVA wolf siege attack tactics. The launch of the P series and mate series is highly praised in the domestic and overseas markets, and the design and production process, hardware and software performance parameters are not inferior; like the glory X1 7-inch screen mobile phone is in the dimensions of who is larger than who World War I became famous. The positioning of Glory is quite clear. Glory this brand is a mobile phone manufacturing mode that operates with Internet thinking: the development concept is equal, open, inclusive and decentralized; product positioning is cost-effective over similar mobile phone products on the market, brand values: be courageous to be yourself .

Table1:Top Six Global Smartphone Brands by Worldwide Market Share 2016–2017

Company	2017		2016	
	Ranking	Market Share	Ranking	Market Share
Samsung	1	26.10%	1	18.50%
Apple	2	16.90%	2	20.30%
Huawei	3	11.40%	3	11.30%
OPPO	4	8.10%	4	8.80%
BBK/vivo	5	6.20%	5	7.10%
LG	6	4.60%	6	5.80%
Others		26.70%		28.30%
Total Production Volume (Unit:k)		307 049		399 566

Source:TrendForce, Apr,2017

Table2:Top Smartphone Brands Market Share of All Chinese Brands,2016–2017

Company	2017		2016	
	Ranking	Market Share	Ranking	Market Share
Huawei	1	24.70%	1	23.60%
OPPO	2	17.60%	2	18.40%
BBK/vivo	3	13.40%	3	15.00%
Xiaomi	4	8.10%	4	6.00%
ZTE	5	7.80%	5	6.30%
Others		28.40%		30.70%
Total Production Volume (Unit:k)		141 725		190 361

Source:TrendForce, Apr,2017

Fig. 2. sales-level tactics

As for the sales-level tactics against Huawei, it is even better than Huawei's online mall. It is available online at Tmall, Jingdong, Suning, Gome, No. 1 stores, Amazon, QQ Shopping and other online platforms; The sales contribution of traditional retail channel agents. The version cooperating with telecom operators, the version mobile phone that cooperates with iQIYI video; Glory, as the brand sponsor, cooperates with some star concerts, sponsors some high-profile events of the society, etc., in order to spread the image of the brand. Near and consumers' psychological perception distance.

IV. CONCLUSION AND OUTLOOK

After The successful counterattack of Huawei's mobile phone did not know how it felt for Nokia, Motorola, and HTC. The rise of China-made smart phones has become inevitable. China's traditional mobile phone manufacturers have succeeded in reversing the status of OEMs in the previous functional machine era. There are few, but it is the cross-border making of mobile phones by Internet technology companies that has led the rise of smart phone branding in China.

Through literature review and case study on the rise of Huawei mobile phones in the field of smartphones and mobile phones, the reverse innovation of non-core enterprises should pay attention to the following points:

First, focus on strategic areas, build brand value. Second, good at capturing market demand and future market needs. Third, Build capacity based on strategic and business changes to truly help customers cope with challenges and difficulties. Become a business partner who can explore the future together with customers and face future challenges and growth together. Fourth, actively play the role of design innovation. The choice of design as an innovative element needs attention. For non-core enterprises, it is better to re-integrate and conceive existing products rather than focusing on multi-functional and highly complex products, first meet the lower-end market requirements, and then promote continuous technology innovation through continuous innovation and learning. And then gradually to the high-end market.

The research on reverse innovation in the industrial innovation network is a new topic, so most of the existing researches remain in the discussion of the innovation network itself and related issues of the core enterprises in the network. The biggest deficiency of the existing research lies in the core enterprises in the industrial innovation network. The neglect of the phenomenon of non-core enterprise changes ignores the conditions for the occurrence of reverse innovation within the network and the evolutionary mechanism. This article extends the concept of reverse innovation to the level of industrial innovation network and lays a good foundation for subsequent qualitative research on the evolution mechanism of reverse innovation in the enterprise.

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