

# Research on the relationship between enterprise patent output and brand strategy based on dynamic econometric analysis

Hao Zhang

School of Economics, Singapore Management University, Singapore

**Keywords:** Dynamic measurement, Enterprise patent, Brand strategy

**Abstract:** With the highly internationalization of economic activities, patent technology can provide innovation inspiration and determine the direction of R&D, which plays a crucial role in brand strategy. Brand marketing strategy is actually the process of spreading all the information contained in the brand. With the arrival of economic globalization, the market has entered the era of consumers' "brand recognition and purchase". Therefore, enterprises should pay more attention to the benefits brought by the brand, and developing brand strategic marketing is the only way out for enterprise development. With the continuous improvement of internationalization, enterprises will undoubtedly improve their competitiveness. The patent analysis results of the industry can make the enterprises themselves clear about their strengths and weaknesses, and help them formulate targeted technology strategies. The success of enterprises needs innovation and patents, and the development of enterprises needs sustainability. In the dynamic and chaotic global competitive environment, if enterprises want to compete successfully and achieve sustainable development, they not only need to create new products and services and adopt advanced technologies, but also must conform to the global economic and social development trend. The so-called know yourself and know yourself can win every battle, and the results of patent analysis have more commercial reference value for competitive enterprises.

## 1. Introduction

With the high internationalization of economic activities and the acceleration of scientific and technological progress, the factors that affect social and economic development have become numerous and complicated, and economic development has become increasingly unstable. The main phenomenon in real production activities is that many observed time series of economic statistical indicators show non-stationarity [1]. However, the vast majority of enterprises have failed to play the powerful role of patents, and the lack of independent intellectual property rights and patents has become the bottleneck for enterprises to become bigger and stronger.

Patent is the general name of documents and publications containing patent contents, and is the largest source of technical information in the world. The patent documents fully record the technical solutions related to invention and creation. The technical content is relatively reliable, highly standardized, and easy to retrieve. Enterprises can learn about relevant existing technologies, know the development trend of the industry's core technologies, and clarify the industry's competitive situation [2]. Patented technology can provide innovation inspiration, determine the direction of R&D, avoid patent infringement, save research funds, and also can clarify the technical level and R&D hotspots of competitors in the industry, timely adjust their own technological innovation direction, and save research funds, which plays a vital role in brand strategy.

## 2. Creation and management of enterprise patents and brands

### 2.1. Basis of brand strategy

Brand marketing strategy is actually the process of spreading all the information contained in the brand. With China's accession to the World Trade Organization, Chinese enterprises must create strong brands with Chinese characteristics if they want to remain invincible in the world economic

cycle. The competitiveness of products and enterprises is finally reflected in the competitiveness of brands. With the intensification of market competition, brand has increasingly become the core resource of enterprises. Scientific brand strategy is related to the long-term development of enterprises and is an important part of their long-term business strategic planning. To put it simply, a brand is a business name that the seller specifies for his product. A brand is the representative of an enterprise, just as a name is a personal symbol. The building of brand image is to establish a strong customer relationship, confidence, and even create emotional affinity between the brand and target customers or consumers. Reputation is the foundation of a brand, and local enterprises must establish credibility at the starting point of competition with multinational brands, not relying on hype, but on improving the management level, the ability of quality control, the mechanism of improving customer satisfaction and the quality of the team to establish credibility [3].

The modern brand has surpassed the distinguishing function and become the product image and cultural characteristics of the seller. In this image and culture, consumers can feel the psychological and cultural value of consuming a certain brand. With the advent of economic globalization, the market has entered the era of consumers' "brand recognition and purchase", and a large number of enterprise managers have realized that brand strategic marketing is the only way out for enterprise development. Strengthening the brand strategic innovation ability of national enterprises is an important measure to strengthen the internal innovation ability of Chinese enterprises, build a strong independent innovation system of national economy and change the mode of economic growth. Commodities are products for exchange, and products have use value and value. In marketing activities, the use value of commodities determines that in commodity exchange activities, material elements and cultural elements are inseparable. Material elements are the basis of cultural elements, and cultural elements are guides to meet the final needs and destination of consumers. We should develop new products and create product quality features according to the actual needs of consumers. With China's accession to the World Trade Organization, Chinese enterprises must create strong brands with Chinese characteristics if they want to remain invincible in the world economic cycle.

## **2.2. Brand strategic innovation development mode under the influence of enterprise patents**

With the impact of the "Belt and Road" and economic globalization, the degree of internationalization is constantly improving. China's economy and enterprises are facing severe challenges. Enterprises must undoubtedly improve their competitiveness to survive and develop in this environment. The patent analysis results of enterprises can help enterprises identify their own strengths and weaknesses, and help enterprises formulate targeted technology strategies. The layout of patent application is directly related to the development of core technology and the change of market trend, which can also give inspiration from the side. When the technology strategy is transferred, it is easy to re invest in scientific research, which is not conducive to the sustainable development of core technology. Enterprise patent analysis provides a broader application prospect for enterprise strategy. Mining more valuable competitive intelligence from patent data is a crucial and effective strategic management approach for enterprises themselves and their competitors. Although patents need to pay patent fees, which may not be beneficial to small businesses in the initial stage of their business, we can use Figure 1 to analyze the above views (as shown in Figure 1). This figure makes a comparative study of the patent implementation behaviors under the two annual fee systems. If the cost is too high, but the expected income is low, and there is a big risk to be taken, the inventor will have no enthusiasm to engage in patent behavior.

However, small and medium-sized enterprises should make a clear analysis of their own operating basis, and make clear their advantages and disadvantages in terms of products, technology, capital, talents and market. Through enterprise patents, after a certain period of specific operation of brand strategy innovation, small and medium-sized enterprises (SME) can obtain the results of brand strategy innovation, which can reflect the performance of brand strategy innovation of SME [4]. Development mode of outsourcing brand strategy. Some enterprises use funds to purchase the right to use and ownership of other domestic or foreign brand patents, and turn them into their own

brands with market competitiveness. The main advantages of this mode are low cost, short time and high speed, but the disadvantage is that the acquired company and the original company may have great differences in management ideas, management systems and methods, which increases the management friction cost. New enterprises can actively develop and promote brand-new brands with independent intellectual property rights and independent brand premium in the early stage of starting a business through their existing strength.

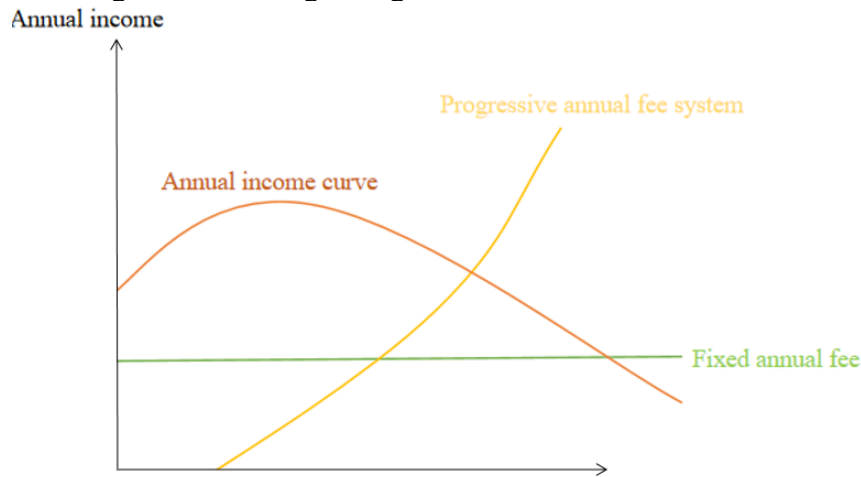


Figure 1 Patent enforcement under two annual fee systems

Enterprises can select appropriate brand strategy development mode through their own patents, organically combine specific brand strategy innovation elements, and creatively apply the brand strategy development mode implemented. Technological innovation requires the change of enterprise strategy to adapt to it. To a certain extent, the change of enterprise strategy will also promote enterprises to innovate technology, making enterprises become the main body of technological innovation. For most people in most enterprises, building a cross technology and cross management multi-functional team is a practical way to solve this problem and realize the integration of technology and enterprise strategy [5]. This method has been more and more widely used in enterprises.

### 3. Patent and brand strategy under dynamic economic analysis

#### 3.1. Dynamic economic system analysis

The dynamic macroeconomic process analysis takes the entire national economic activity as the object of study, and studies the development and change of the national economy from the perspective of the total socio-economic volume. It takes the systematic process of economic development as the main content of the analysis. According to the different characteristics of the economic process analysis, the macro dynamic analysis can be divided into dynamic equilibrium analysis and dynamic disequilibrium analysis. Dynamic planning analysis, also known as unbalanced dynamic analysis, is based on decision theory and economic planning theory.

It focuses on the prediction of various relevant economic information, data and future conditions in the process of economic activities, and mainly affects the expansion and contraction of economic life with the intervention of planning [6]. Although the theory of time sequence analysis method is relatively complex, the high development of modern computer technology ensures that it can be effectively applied to the empirical analysis of real economic problems. Research shows that the theory of one-way causal measure of cointegration time series is an effective means to analyze complex economic systems. The basic idea of defining unidirectional causal measure originates from the prediction theory of stationary random process. In order to expand the causal measure theory of non deterministic trend stationary process to non-stationary process time series time series  $\{Y(t)\}$ ,  $\{X(t)\}$  unidirectional full measure and spectrum domain measure are respectively defined as:

$$M_{Y \rightarrow X} \equiv M_{V \rightarrow U} \quad \text{and} \quad M_{Y \rightarrow X(\lambda)} \equiv M_{V \rightarrow U[\lambda]} \quad (1)$$

Dynamic time point and sequence analysis combines the change factors of time series into the research fields of economic variables such as output, price, wage, profit and interest rate in microeconomic analysis. Quantitative analysis of economic factors is carried out from the perspective of different time points. The role of market regulation and price mechanism is used to a certain extent. It combines with macro dynamic analysis to adjust China's industrial structure, plan theory. The analysis of national economic control and development trend has certain reference significance [7]. The combination of dynamic economic model and economic control theory leads to the combination of dynamic economic control model, dynamic equilibrium method, productivity layout theory and planning theory, which is suitable for macro national economic control, and promotes the discussion of dynamic balance theory of production layout and decision optimization theory of pan system mathematical model. It can be expected that the principles and methods of dynamic economic analysis will have broad prospects for development in the future socialist modernization.

### 3.2. Patent output and brand strategy

Today, the success of an enterprise requires innovation, patents, and sustainable development. In a dynamic and chaotic global competitive environment, if an enterprise wants to compete successfully and achieve sustainable development, it not only needs to create new products and services and adopt advanced technologies, but also must conform to the development trend of the global economy and society [8]. For the convenience of analysis, we abstract the factors of interest conflict and coordination between the enterprise and the experts engaged in invention activities in the enterprise, and regard the enterprise and the experts engaged in invention activities as a community of interests, collectively called "inventors".

When the inventor doesn't apply for a patent right, he avoids the principle of information disclosure required by the patent system, thus keeping the invention confidential to a certain extent. There used to be some enterprises in China that made inventions that were easy to copy but didn't apply for patents. As a result, the invention was imitated by others and applied for a patent first, and I had to bear heavy economic losses [9]. The patent right is an asset that can bring benefits. It should be allowed to operate freely in the form of capital, and various artificial restrictions on its operation should be reduced to encourage various "financial innovations" based on the patent right.

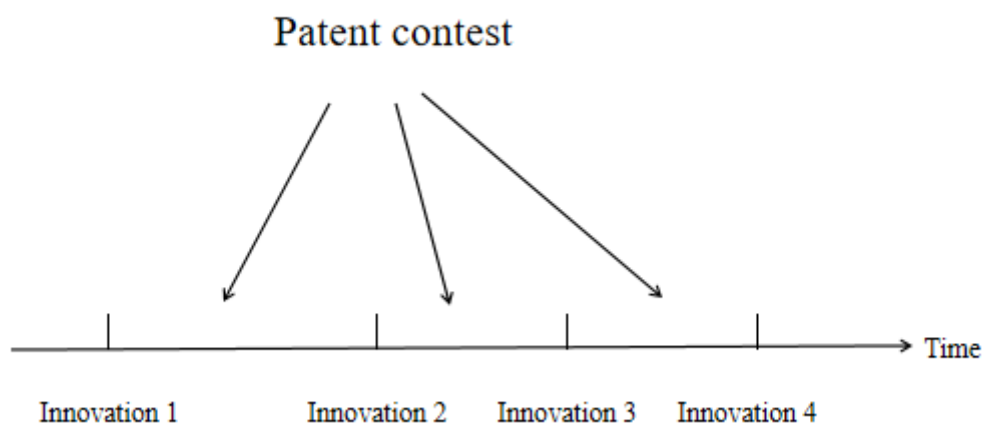


Figure 2 Enterprise patent competition mode

The increase of net income brought by patents constitutes an effective incentive for enterprises to apply for patents. As far as competitive enterprises are concerned, the above-mentioned patent analysis results also well illustrate the core of R&D of their own brands. When conducting R&D in their own fields, they can adjust their R&D strategies in a timely manner, focus on other

improvement points, and adopt different technical means from other groups. Of course, they can also draw inspiration from other brands' innovative technologies, obtain higher-quality innovative technology R&D results, enhance market competitiveness(as shown in Figure 2), and avoid wasting research funds or possibly causing infringement disputes.

For competitive enterprises, they can understand the patent applications of their competitors. While obtaining high-quality innovative technology research and development achievements, they can also recognize their competitors' strengths, weaknesses, capabilities, opportunities and threats, and technology strategies, learn about their potential markets and even their market cooperation strategies, and can adjust their own research and development strategies according to the analysis results to avoid infringement risks. The so-called "know yourself and know your opponent" can never be defeated. The patent analysis results are also of more commercial reference value for competitive enterprises.

#### **4. Conclusions**

As far as China enterprises are concerned, it is imperative to adopt appropriate ways and means and countermeasures in line with the international enterprises, conform to the increasingly clear trend of the world's requirements for sustainable development of enterprises. Expand to the general technical field.

As scientific and technological research and development all need to learn from other people's achievements, and innovate or digest and absorb and innovate on this basis, the patent analysis results of enterprises can make the advantages and weaknesses of enterprises clear, and help enterprises to formulate targeted technical strategies. China's patent output performance fluctuates to a certain extent, but it keeps an upward trend on the whole. This trend comes from the joint action of technical efficiency, scale efficiency and technological progress. The level of regional economic development, industrial structure and regional urbanization have important influences on the performance of regional patent output. The government should cooperate with enterprises to optimize the R&D environment of local enterprises, formulate reasonable scientific and technological plans, political and strategic plans, and increase investment in scientific research. Through enterprise patents and specific operation of brand strategy innovation for a certain period of time, SME can obtain the results of brand strategy innovation to reflect the performance of brand strategy innovation of SME. Development mode of outsourcing brand strategy. Some enterprises use funds to purchase the right to use and ownership of other domestic or foreign brand patents, and turn them into their own brands with market competitiveness.

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