

## **A Review of Research on the Construction of Patent Commercialization Strategies for Chinese companies facing CAFTA**

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**Abstract:** Through the articles on patent commercialization of Chinese companies facing ASEAN countries, from three perspectives of status quo of intellectual property rights from ASEAN countries, research on enterprise patent commercialization for ASEAN countries and research on the choice of enterprise patent commercialization strategies are reviewed. By reviewing the related literature, the inadequacies of current studies are found out and the direction of future research is pointed out.

### **1. Introduction**

China and ASEAN are mutually beneficial partners, dialogue has been established on both sides for 28 years. With the deepening of globalization and the implementation of the “One Belt, One Road” strategy, there are also Chinese companies that have commercialized patents as an important part of the “going out” internationalization strategy. Some technology-based Western enterprises that are close to the CAFTA and have relative geographical advantages, relying on patented technologies and innovative products with certain comparative advantages are trying to carry out commercial activities aimed at fully realizing the value of patents for ASEAN. In general, recently, more and more Chinese companies are entering ASEAN with the industrial cooperation and interconnection between the two sides. Compared with the actions and progress of enterprises, domestic academic circles have summarized the theoretical research on the implementation of intellectual property strategy for ASEAN and the experience of innovative activities such as corporate patent commercialization which lacks of sufficient attention.

### **2. Current Status of Intellectual Property Research In ASEAN Countries**

ASEAN, including 10 member states, however, the ASEAN countries and their member states cannot reach the same level in terms of political, economic, cultural and technological development, which makes their respective national intellectual property legal systems cannot attain the same level. Fu-dong Liu points out that the differences between the intellectual property systems of China and ASEAN countries have hindered bilateral trade and believes that the two sides should establish a coordination and dialogue mechanism and formulate a unified intellectual property law[1]. Fan-le Wang discusses the construction of bilateral intellectual property cooperation mechanisms[2]. Through literature review, we find that the results of domestic research on intellectual property issues in ASEAN, mainly from the legal perspective to introduce the Status Quo of Legal Protection of Intellectual Property Rights in ASEAN Region, integration trend and coordination and cooperation between China and ASEAN intellectual property rights, the impact of the construction of the intellectual property system in ASEAN countries on trade.

### **3. Enterprise International Patent Commercialization Research**

#### **3.1 Research on the Connotation of Patent Commercialization**

Regarding the meaning of patent commercialization, there are different understandings in academic circles. Joshua S. Gans believe that patent commercialization is the process of turning invention innovation into a market[3]. Jensen&webster takes the commercialization process as an analytical perspective and believes that patent commercialization includes five stages: external license or creating companies, developing products, production and sales, mass production and export[4]. The study follows Jensen & webster's research on patent commercialization and defines patent commercialization as the realization process of patent commercial value composed of different stages, which are respectively referred to as "License or Spin-off", "Development", "Make and Sell" and "Mass Production".

#### **3.2 Research Status of Enterprise Patent Commercialization Decision Mechanism**

Zhang Rui constructs a scientific and technological achievement selection index system that can be transformed into an international standard from four aspects: the nature of achievement, technical level, economic benefit and social benefit, and establishes a decision-making model for scientific and technological achievements based on VIKOR method that can be transformed into an international standard. In addition, they conduct an empirical test on the results of six national science and technology programs in the field of materials. The result shows that the method can effectively reflect the potential of scientific and technological achievements to be translated into international standards, and can provide a basis for the country to choose the scientific and technological achievements of international standards[5]. Yang Qing considers the hesitation and ambiguity of multi-criteria group decision-making information due to factors such as complex environment and the level of knowledge and experience of decision makers. They Introduce the interval intuitionistic fuzzy set theory, constructing the optimization model of supply and demand matching of scientific and technological achievements with the goal of maximizing overall satisfaction[6]. Through the analysis of existing literature, authors mainly consider the choice of strategy from the perspective of different factors, conducting the model and calculating the optimal strategy.

#### **3.3 Research Status of Patent Commercialization for Companies Going to ASEAN**

In addition, in recent years, domestic scholars have begun to pay attention to issues such as intellectual property disputes, early warning and risk prevention and control in China-ASEAN bilateral trade. Bai-ming Liao discusses the intellectual property dispute settlement mechanism[7]. Xin-hua Tang use Chinese enterprises to invest in ASEAN as an example to discuss the intellectual property protection strategy under the background of "One Belt, One Road"[8]. The above-mentioned literature indicates that a small number of domestic research focus on the macro-mechanism and legal protection level of the coordinated protection of intellectual property rights in trade, which need strengthen the implementation of intellectual property strategies of Chinese enterprises in ASEAN.

### **4. The Research Status Of Enterprise Patent Commercialization Strategies Selection**

#### **4.1 Research on the Factors Affecting Patent Commercialization**

Hsu & Hsueh find that corporate size and R&D investment have a positive impact on technology conversion [9]. Wang Bin from the degree of foreign investment in enterprises, large-scale enterprises, industrial agglomeration and etc, constructing a transcendental logistic stochastic frontier model in which patents are converted into new product sales income as output variables and using the SFA method to analyse the patent conversion efficiency and its influencing factors[10]. The above literature analysis shows that the scholars from the perspective of the characteristics of the patent itself, the perspective of the internal and external environment of the enterprise, the

market conditions and the public market to research the factors of enterprise patent commercialization and conduct empirical research.

#### **4.2 Research on Patent Commercialization Mode**

Yi-qun Xia believes that the patent conversion model has three types: “patent capitalization“, “patent commercialization“and “patent productization“. zhao-hui Chen through the analysis of the evolution process of patent motives, pointing out the influence of patent motives on patent behaviors, and proposing a patent decision-making model driven by different patent motives. In addition, he from the aspects of object factor (patent), main factor (mainly enterprise), environmental factor (patent combination and network relationship) and value logic to design two patent commercialization models, which are Product-oriented mode and technology-oriented mode and analyses two commercialization models of patent commercialization[11]. In view of the patent’s indivisible technical value and economic value, adding to the combination of two commercialization modes in time and space, which helps companies to explore and realize the commercial value of patents.

#### **4.3 Research on the Combination of Enterprise Patent Commercialization Strategies**

The construction of patent commercialization strategies needs to consider the implementation target of commercialization, that is, the nature and characteristics of patents and related elements. As competition intensifies, enterprises begin to shift from a single patent to a patent portfolio competition phase. The uncertainty and complexity of patent commercialization environment also implies the requirements for the combination of patent commercialization strategies to a certain extent. Wagner & Parchomovsky reveal the relevance and diversity of patent portfolios, these features help to strengthen systematization and greater range of protection, improve technology application opportunities and reduce the risk of innovation uncertainty. Sheng-lei Pi analyzes the relationship between organizational coordination and competitive strategies, discussing the combination of corporate competition strategies from the two dimensions of organizational coordination and market segmentation[12].

### **5. Summary**

In summary, research on China-ASEAN intellectual property issues has received the attention of scholars. However, related literature focus on the macro-mechanism and legal protection level of the coordinated protection of intellectual property rights in trade, which need strengthen the implementation of intellectual property strategies (including patent commercialization strategies) of Chinese enterprises in ASEAN.

In addition, research on the relationship between patent commercialization strategy selection and uncertain external environment still needs to be strengthened. The choice of patent commercialization strategies also faces the impact of uncertainty in technology, market and system. However, the existing literature rarely examines the rationality of patent commercialization and its impact on performance from the perspective of uncertainty. From this perspective, using the theories of uncertainty and dynamic portfolio to reveal the formation and combination mechanism of patent commercialization strategies, which provides a new research space for the formation of more effective strategies and the new path of patent commercialization performance.

Lastly, existing literature indicates that attention to strategy combinations continues to increase, but it also shows that the formation of the strategy combination, the construction mechanism and its systematic impact on performance are still weak, which includes the internal and external influence factors of the strategy combination, the characteristics of the behavior subject, the nature of the behavior process, the choice of behavior strategy, the principle and basis of the combination are still to be studied.

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