

論文の内容の要旨

論文題目 An Enforced Loop-out Knowledge Flow Model and its Applications

(ループアウト型知識マネジメントサイクルに関する研究)

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Introduction

In the past 30 years, high concentration and a remarkable number of mergers can be observed in the genetically modified (GM) seed industry, leading to an oligopoly situation in which only a few companies control the market. Oligopoly leads several problems in GM seed industry, and decreases the competitiveness of GM seed industry. For the government, how to break oligopoly in GM seed industry would be an important issue. The development of GM seed industry is highly knowledge depending, and the players in GM seed industry usually use patent system to protect their intellectual property. Therefore, publishing the new technology through patent system to attract more generic GM seed players join the market would be a possible way to maintain the diversity and solve the oligopoly issue in GM seed industry. However, currently there is no generic GM seed even after patent expire, and the players in the GM seed industry do not increase. The market is still controlled by a few major players, and more and more people doubt whether the major players in GM seed industry build the entry barriers for the new players through the patent system.

On the other hand, to avoid higher price of medicine which resulted by oligopoly or monopoly, the U.S. pharmaceutical industry tried to facilitate generic drugs into the market by special policies. The case in U.S. pharmaceutical industry is successful, even the players in the industry are often using patent to protect their intellectual property as players in the GM seed industry. Therefore, this study use the U.S. pharmaceutical industry as a reference industry, to discuss how to facilitate the competition of GM seed industry.

Research Objective

Previous studies had discussed that how the policies generate the synergy effects, but the synergy mechanism in pharmaceutical industry was not analyzed. To reduce the research gap between previous study and the understanding of pharmaceutical industry, this study aims to find the linkage and synergy effect of these three policies in the U.S. pharmaceutical industry, and to

build an integrated model to examine its applicability to other industries. Therefore, this study sets the research question as “how the policies and regulations affect the activities of companies, and attract more players join the industry.” Thus, the research objective is to link these policies and create an integrated model to explain how to facilitate generic products through the knowledge perspective.

Methodology

This study uses the U.S. pharmaceutical industry as a reference industry, to propose a model to explain how the policies of the U.S. pharmaceutical industry facilitate the launching of generic products.

Based on the model, this study further checks how the factors in the model affect the GM seed industry, through the empirical study and reference review. This study collects the patent data of GM seed from United States Patent and Trademark Office (USPTO), and collects the examination data from the U.S. Department of Agriculture (USDA). Also, the lawsuit cases are gathering from the legal precedent and previous studies.

Results

The U.S. government has made special provisions for the U.S. pharmaceutical industry: namely, Orange Book, ANDA procedure, and Bolar Act, and these policies successfully maintain the diversity and competitiveness of the U.S. pharmaceutical industry through attracting the new players. This study further analyzes how these three policies affect knowledge flow and break oligopoly in the U.S. pharmaceutical industry in Chapter 2. Based on the analysis, a “policy-enforced loop-out knowledge flow model” is proposed to explain how these three policies broke the oligopoly from the knowledge perspective. See Figure 1, this study defines these three policies corresponding to three factors—product–patent linkage (PPL) disclosure, abbreviated regulatory path, and research and development freedom (R&D freedom), as a “Policy package”, to affect the corporate knowledge management, and facilitate the knowledge utilizing. Based on the policy-enforced loop-out knowledge flow model, this study illustrates the synergy effect of these policies as a combination of “knowledge confirmation,” “fast knowledge utilization,” and “reduced additional knowledge” from the knowledge perspective.

Compared to the U.S. pharmaceutical industry, there is no PPL disclosure to facilitate patented knowledge be used by third parties in GM seed industry, and that might be a reason why the patented knowledge cannot be used to launch the new products or generic products by third parties.

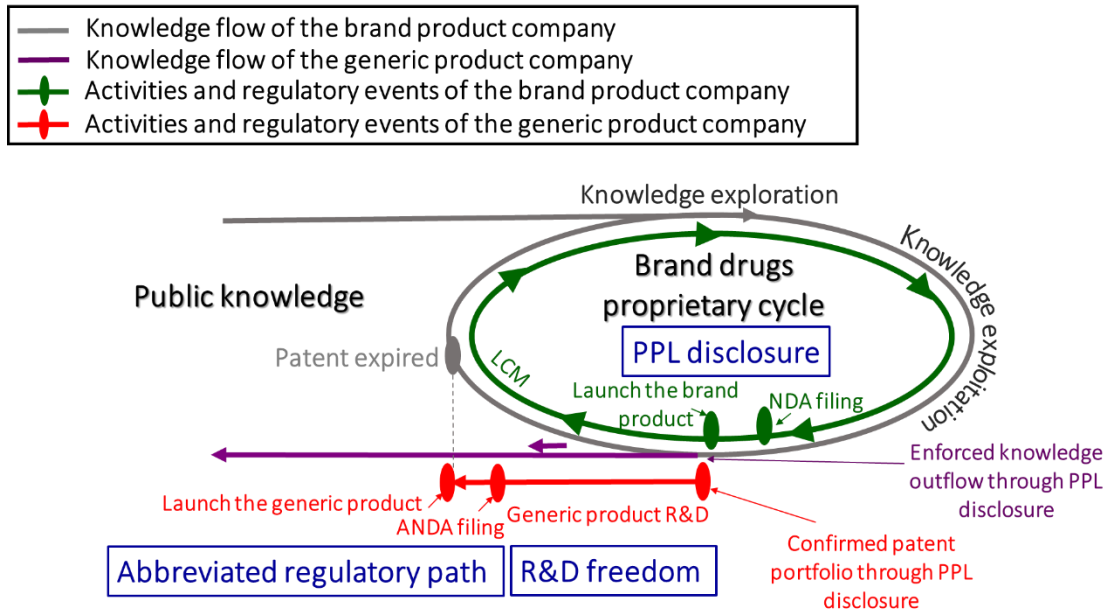


Figure 1. A policy-enforced loop-out knowledge flow model

This study further examines the three factors in GM seed industry under current situation. The patent portfolio of the glyphosate resistant soybean patents of the biggest GM seed company, Monsanto, are analyzed through the forward citations analysis in Chapter 3 which filed by Monsanto. This empirical study demonstrates that although the patented knowledge is cited by other companies, there is no GM soybean seed/variety launched by the third parties (excluding the major players). The results point out there is a gap between knowledge input and outcome of third parties in the GM seed industry. Also, the empirical results point out the different citation strategies between big 5 companies (major players) and third parties.

This study checks the importance of R&D freedom through reference review in Chapter 4, and calculates the average spending days of field trial and examination of approved GM seeds/varieties, to show the importance of the abbreviated regulatory path for GM seed industry. The reference review in Chapter 4 indicates the R&D freedom is restrict and the related knowledge is controlled by the major players through patent system or the licensing contracts. On the other hand, the empirical study of filed trial days and examination days in Chapter 5 show a possible way to short the period of field trial and examination, to facilitate the new varieties or generic varieties launching into the market.

Conclusion and Discussion

In conclusion, if the oligopoly in GM seed industry could be broken through attracting more

players into the industry with generic products launching, the policy makers could design a policy package which has the similar functions to the three factors in the U.S. pharmaceutical industry, to attract the new players into GM seed industry and raise their willing and ability for launching a generic GM seed. Especially designing the policy for PPL disclosure, would be the first step to maintain the competitiveness of each player in GM seed industry.

Although this model could be used to assess whether or not the competitive situation in an industry is healthy, it still has limitations regarding to the policy applicability. Since our model includes three functions of policy package—PPL disclosure, R&D freedom, and abbreviated regulatory path—the criteria for the model-based industry analysis and policy implications should also be linked to these three functions. The limitation of PPL disclosure is linked to the knowledge portfolio of the products. If an industry protects its new products by only one or a few patents, the PPL may not be very difficult to understand. For the abbreviated regulatory path, its applicability depends on how the target industry is regulated by related policies. The last limiting condition is whether an industry has R&D freedom. R&D freedom links to the patent system and regulation issues, and, at times, could occur as a result of the previous two conditions.

In addition, future work could focus on identifying other factors that affect oligopolies and reduce the competitiveness of industry, such as distribution control, price control, and business models, as well as establish new methods for analyzing existing data.