

The Impact of Innovative Activities in the Innovative Pharmaceutical Industry on Corporate Market Value

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Abstract. Innovative drugs refer to drugs with independent intellectual property patents. With the gradual improvement of China's intellectual property status, research on innovative drugs will bring high profits to enterprises. The innovative drug industry has always been in the eyes of investors in today's social conditions. At the same time, as an emerging investment option, what indicators will affect the changes in the market value of innovative drug companies is available for everyone to discuss. In this article, through the collection of Chinese innovation Companies in the pharmaceutical industry conducted linear regression analysis and found that the impact of corporate market value is closely related to innovation activities. At the same time, it was found that patent activities related to innovation activities will have a marginal effect and have a certain negative correlation. This article aims to help companies in the innovative drug industry find ways to increase their market value and help investors see the good news brought about by innovative activities in the stock market.

Keywords: Innovative drugs, Innovative drug market research, Enterprise market value, Corporate financial management.

1. Introduction

In recent years, due to the epidemic of infectious diseases, targeted drugs in the innovative pharmaceutical industry have been continuously put on the market, which has produced good results in the prevention and treatment of epidemics. The development of this industry has undergone great changes on a global scale, and in China, the state's support policies for innovative drugs are also increasing. For example, the newly released "14th Five-Year Plan for the Development of the Pharmaceutical Industry" aims to promote the transformation of the pharmaceutical industry into an innovation-driven industry and achieve high-quality development.

From a global market perspective, China's innovative drugs face competition from multinational pharmaceutical companies such as Novartis, Pfizer, and Roche. These companies have been leaders in the global market for innovative medicines. Their R&D capabilities and influence have great advantages over domestic companies in all aspects. Looking back at the domestic market, the number of innovative drug companies has surged, and competition is fierce. However, with the support of relevant policies, the company has a very good growth environment.

In this article, it explores whether innovation activity in the innovative pharmaceutical industry has an impact on a company's market capitalization. To evaluate a company's development in recent years, examining its market value is a very important indicator. Market value is also an important indicator for investors in the financial market to consider whether to invest in a company. Therefore, a company's financial performance is an important factor in whether it can attract investment. At the same time, the company's market value will affect whether the company can obtain financing at a lower cost and have more stability. Source of income, and more convenient use of one's brand awareness [1]. This article will analyze the financial data of companies in China's innovative drug industry and interpret annual reports. Obtain the company's market value, total assets, operating income, R&D investment, number of patents, etc. to build a model and find the answer to whether the company's innovation-related data can affect the company's market value.

Judging from the reading of existing literature, more literature on the innovative pharmaceutical industry will focus more on research and development efficiency and be more biased toward biological analysis. However, papers that combine corporate finance and financial aspects rarely

appear. Therefore, this article aims to conduct an empirical analysis of corporate financial management in the pharmaceutical industry and prove relevant results. By looking up the two keywords of the innovative drug industry and corporate market value, I read whether patents will affect corporate market value, and the article did not conduct an empirical analysis on patent subdivisions and found that only RPP patent citations have a slight impact [2]. At the same time, innovation will also affect the company's performance. A company's performance capabilities are also an important factor in its success in standing out from its competitors and gaining sustainable competitiveness [3]. In order to maintain the health of the industry and exclude some less developed companies, most companies in China will carry out activities such as corporate mergers and acquisitions and listings [4]. However, this does not solve a company's financial problems very well, nor does it solve the current situation of the industry. In the long term, from this perspective, it would be a better choice to help companies that support this industry conduct more heart-piercing activities. The chemical-pharmaceutical industry is facing an unprecedented and rapidly changing environment. New markets, new technologies, and new demands are all affecting the company's operating strategies. Companies in this industry should conduct research on the most prominent current trends, including patient-centered research. Centered on new technology development [5]. In the rapid changes in the industry, companies should consider the advantages brought by innovative activities and speed up the efficiency and output of innovative activities.

The goal of this article is to study the impact of innovation activities in the innovative pharmaceutical industry on the market value of companies, and the correlation between different innovation angles and the rise and fall of the market value of companies, to provide companies with solutions to break the situation and bring certain benefits investment ideas to investors.

2. Methods

2.1. Hypothesis

According to the resource-based perspective, an enterprise's resources and capabilities are the key to obtaining sustainable competitive advantage. At the same time, innovation capabilities are regarded as the core capabilities of an enterprise and are also intangible assets that other enterprises cannot imitate in the short term. A company's innovation can promote the acquisition of resources and improve resource utilization efficiency, so the company's pursuit of innovative activities has a positive contribution to the company's financial activities [6]. Based on the previous conclusions, it has been found that there is a certain positive correlation between enterprise innovation performance and market performance so it can make the following assumptions [3]:

H1a: positive correlation between corporate market value and innovation activities

Whether more innovation can bring better financial performance is also a question worth thinking about. When companies carry out innovation activities, should they also take into account the marginal effect and the innovation output of small and medium-sized enterprises in the process of innovation? A U-shape is [7]:

H1b: negative correlation between corporate market value and innovation activities

2.2. Dependent Variable

The innovation activities of enterprises are mainly reflected in two activities: R&D investment expenditure and patent acquisition. Innovation investment can be understood as product innovation, company structure innovation, and value chain innovation. The number of patents is the number of certified patents obtained when a company applies for patents after conducting innovative activities and then undergoes review and approval. In basic regression, this article adds the four frequency words to get the relative market value of the company (MV).

2.3. Independent Variable

The main factors that affect the market value of a company are the evaluation of the company in the market and the effective transformation of the company's innovative activities. Therefore, the variable *Innov* in my study includes the company's product R&D investment, value chain R&D investment, and company structure innovation investment. The coefficients in the regression model are used to show whether the variable *innov* will affect the market value of the company.

2.4. Control Variable

In order to ensure the accuracy of the regression results of the model, it chose a company's total assets and income to control, because among the 216 samples selected, each company has a different size in the market and a different profit status. Differences, so any changes in these two variables will not be examined in the subsequent empirical analysis (Table 1).

Table 1. Variable Definitions

Variables	Symbol	Definitions
All innovations of a company	Innovation	The sum of the four-part of innovation activities (product, company structure, supply chain, marketing)
company net income	Income	2018-2023 Company annual net income
Number of company patent authorizations	Patent	authorized patents can be transformed into applications
Total company assets	Total asset	Appears as a control variable to prevent the total assets of the company from affecting the research
Market Value	MV	Market value of the company over the years 2018-2023

2.5. Model Specification

The value of the variable, $\beta_1 \beta_2 \beta_3 \beta_4$ is the slope coefficient, these four coefficients will not affect the empirical results. The main purpose is to show the impact of the four factors total asset, income, innovation, and patent on market value. If the value $s \beta_1, \beta_2, \beta_3, \text{ and } \beta_4$ appear in the result, the larger the value, it represents a certain Each factor has a positive correlation with market capitalization. If a smaller value or negative number appears, the factor does not affect it to a certain extent or reaches a diminishing marginal level, showing a negative correlation.

$$MV = \beta_0 + \beta_1 \text{Totalasset} + \beta_2 \text{Income} + \beta_3 \text{Innovation} + \beta_4 \text{Patent} \quad (1)$$

2.6. Summary of Descriptive Data and Correlations

In terms of investment in innovation activities, the average value reached 8.427e+07, and the standard deviation reached 1.365e+09 (Table 2). These two values are quite high, indicating that the innovation investment of each enterprise in the selected 216 samples is very, very high. At the same time, there are also very large differences in the investment of different companies, but the level of dispersion is large, indicating that some companies have relatively low innovation levels. In the income sheet, the mean and standard deviation are both very high. What is more interesting is that the company's income status ranges from 0 to 2.3203+11. The distribution range is very wide, so this item should be used as a control variable according to the different statuses of the company. The same situation occurs in patents. The range is calculated from 0. Some companies do not pay attention to the research and development of product patents. They may focus most of their R&D funds on the optimization of the company's value chain or product updates and iterations, without making breakthroughs. Sexual advances need to be protected by patents.

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Innovation	216	8.427e+08	1.365e+09	23689538	1.115e+10
Income	216	1.198e+10	3.021e+10	0	2.320e+11
Patent	216	36.699	47.754	0	219
Total asset	216	1.766e+10	2.688e+10	7.612e+08	1.981e+11
MV	216	4.790e+10	7.018e+10	3.618e+09	5.943e+11

Table 3 shows the correlations between variables. At the 1% significance level, there is a significant positive correlation between corporate market value and innovation activities, indicating that corporate innovation activities will have a greater impact on corporate market value. The remaining variables are all positively correlated, but the correlation is not very strong.

Table 3. Correlations between variables

	MV	Patent	Innovation	Income	Totalasset
MV	1.000				
Patent	0.162**	1.000			
Innovation	0.519***	0.318***	1.000		
Income	0.148**	0.587***	0.276***	1.000	
Totalasset	0.289***	0.659***	0.508***	0.913***	1.000

3. Results

In my regression results (Table 4), the positive correlation between innovation activities and market capitalization is significant. You can see that the correlation coefficients are 23.474 and 23.334. This value means that when I control total assets and income, what is mentioned in the article Each increase in the selected innovation indicator's market value by one unit will increase the market value by 2.34 billion units per month. The positive correlation of the coefficient emphasizes the importance of innovation in increasing the company's market value. This is compared with the business attributes of the innovative pharmaceutical industry, which usually requires continuous research and development of new products to maintain competitiveness.

There is also a positive correlation between total assets and market capitalization, but the impact is still small, only 0.572 and 0.664. There is no obvious result in the regression results (Table 4), so total assets are not the only driving force for growth, at the same time, total assets will not be an indicator used by investors to evaluate a company's investment opportunities. Instead, they may pay more attention to the quality of total assets and the operational efficiency of output.

In terms of income, the overall results show a negative correlation (Table 4) with values of -0.414 and -0.430. The negative correlation results are not very significant, but it is possible that expenditure and income will not have a great impact on market value, although the company has strong profitability but is unable to attract investors, which may reflect diminishing returns on revenue growth.

At the same time, I also found the negative impact of the number of patents in the results (table 4), and the result is shown as $-6.136e+07$, which means that the increase in the number of patents has a negative correlation with the market value. Investors may not care about the number of patents, but rather More attention is paid to the quality of patents, such as the influence of patents and market acceptance, rather than simply focusing on quantity. Therefore, in the innovative drug industry, how to transform patents into valuable assets is very important.

Table 4. Regression result

	(1) MV	(2) MV
<i>Totalasset</i>	0.572 (0.494)	0.664 (0.524)
<i>Income</i>	-0.414 (0.394)	-0.430 (0.396)
<i>Innovation</i>	23.474*** (4.131)	23.334*** (4.146)
<i>Patent</i>		-6.136e+07 (1.150e+08)
<i>_cons</i>	2.297e+10*** (5.324e+09)	2.391e+10*** (5.615e+09)
N	216	216
Adj. R-sq	0.264	0.261

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

4. Discussion

Based on the results of the regression analysis, it can be seen that innovation activities have a very large correlation with the market value of enterprises. At the same time, innovation activities have a positive impact on the market value of enterprises. The positive impact means that the degree of innovation activities increases. What can affect the growth of a company's market value? The impact of innovation activities mainly depends on the company's ability to apply and transform innovation results after innovation. At the same time, it can also see the special activities covered by innovation activities, and patent activities. From the perspective of popular thinking, the patent impact of activities will have an impact on the market value of enterprises, but according to empirical results, patent activities have a negative correlation. Through, patent activities are divided into multiple types, and the impact of different types of patents is also different [2]. The rest of the activities mentioned in the article have no significant correlation with the market value of enterprises, such as changes in total assets and changes in income. As shown in Table 4, the regression results of Innovation activities will have a very significant impact on enterprises. With a strong positive correlation effect, the release of news about innovative activities is mostly good news for investors. Investors will conduct more stock transactions in the market for companies that have released information related to innovative activities. At the same time, investors will think that the attitude of the company's stock market will also have a certain impact on the company's market value. When the company has requirements for increasing the company's market value in terms of strategic development, it should focus on the sentiment of investors in the stock market. It needs to find an investor who is interested in the company's stock. Reasons for investment, and innovative activities that can serve as good news, also change market sentiment and make the company's stock market more active. As mentioned in the previous article, there is a U-shaped correlation between corporate innovation and corporate finance [7]. At the same time, we also know that the selected companies in the innovative pharmaceutical industry have continued to increase their innovation activities due to Chinese policy support, thus breaking the marginal effect and leading to innovation. Activities can significantly affect a company's market capitalization. Based on the current results, it can be seen that if a company wants to have good profitability in the current market, it should first consider the impact of innovative activities. In the future, if innovative drug companies want to break through difficulties, they might as well try to Innovate in all aspects, constantly optimize the company's value chain, try to change the current situation from their perspective, and improve the company's viability and sustainable development capabilities. In other words, the innovation activities of enterprises will have a positive impact on the market value of enterprises. It is known that if a company wants to have strong competitiveness in the industry, it must first innovate its own value chain so that its company has a strong competitiveness in the industry. A place to gain more industry resources and increase sustainable competitive advantage. At the same time, targeted drugs for various diseases cannot draw new results from old conclusions but require pharmaceutical companies to carry out huge innovations [8]. Driven by the current development of AI, innovative drugs will also influence digital innovation. There is a

growing need to improve the efficiency of various company operations because it will face higher public health expenditures in the future [9]. Switzerland predicts this indicator, and public health growth will reach 30% in the future, the significance of this article is to hope that the innovative pharmaceutical industry will continue to improve its innovation capabilities, greatly improve its corporate viability, and at the same time increase its market value and obtain a wider range of resources in the market [10].

5. Conclusion

The most intuitive result of this article is that innovation activities have a very large positive impact on the market value of enterprises. Therefore, it can be seen from the results that the market value of innovative drugs will change greatly during the process of innovation activities, and the stock price will also fluctuate greatly, which is not clearly shown in this article, but judging from the database in the past five years, the average weekly opening price has been high, so some companies in this industry will improve their own companies in all aspects. Having more risk control capabilities, market competitiveness, and excellent financial performance and financing capabilities will control the market value of your company. At the same time, innovative activities are beneficial to a company without any harm, so you can change the market value through innovative activities. It is a relatively high-quality choice in this industry.

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