Research on the influence of Management incentive on Enterprise performance of listed companies in Chinese Pharmaceutical Manufacturing Industry

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Abstract

In recent years, with the outbreak of the novel coronavirus epidemic, listed companies in the pharmaceutical manufacturing industry have become one of the preferred sectors for investors. Based on human capital theory, stakeholder theory and non-value law, this paper selects the data of listed companies in Chinese pharmaceutical manufacturing industry, adopts the method of empirical research, and starts from two aspects of management compensation incentive and management equity incentive. The relationship between management incentive and corporate performance is studied. Research shows that there is a positive correlation between management compensation incentive and management equity incentive

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and corporate performance. According to the analysis results, this paper puts forward three suggestions: reasonable formulation of management incentive scheme, rational use of financial leverage, and reasonable establishment of sustainable development performance evaluation index system.

Keywords: Pharmaceutical manufacturing industry, management incentive, enterprise performance.

Introduction

With the continuous development of the pharmaceutical manufacturing industry, the national demand for health care is increasing daily. The sector plays a more critical role in the sustainable development of the national economy and industrial society. For a long time, the salary of senior executives in the pharmaceutical manufacturing industry has been a topic many people keep discussing. It is also a topic that some research institutions continue to pay close attention to. Management incentive is an incentive mechanism for enterprises to stimulate management's work passion and retain excellent managers. Salary incentive and equity incentive are the two most important management incentive methods in Chinese listed companies.With regard to the relationship between equity incentive and financial performance, most scholars believe that equity incentive and

financial performance is a positive correlation. Xu, Deng, and Jiang (2016) found that different incentive methods have different effects on corporate performance, in which salary incentive can play a positive incentive role, equity incentive and corporate performance have a reverse effect, while on-the-job consumption plays an incentive role in high-performing companies and a reverse effect in companies with poor operating conditions. Sai and Wang (2021) found that appropriate equity incentives can have a positive effect on financial performance, and there is no significant difference in financial performance between restricted stock and stock options. Ji (2021) the enhancement of management equity incentives can reduce double agency costs, thus improving the operating performance of listed companies. The research views on the relationship between equity incentive and financial performance are different, and because the factors that affect the financial performance of enterprises in different industries are also different. Therefore, this paper studies the listed companies in pharmaceutical manufacturing, hoping to find the relationship between management incentives and the performance of listed companies in pharmaceutical manufacturing.

Research objectives

Based on the analysis of listed companies in China's pharmaceutical manufacturing industry from 2019 to 2021, this paper studies the relationship

between management incentives and corporate performance. There are three specific objectives: whether management compensation incentives and equity incentives in pharmaceutical manufacturing industry have an impact on enterprise performance; what are the other main factors that affect the performance of pharmaceutical manufacturing enterprises? Combined with the conclusion of the article, the suggestions for the development of China's pharmaceutical manufacturing industry are put forward to improve the practical value of this study.

Research hypothesis

Management incentive is an incentive mechanism for enterprises to stimulate the work passion of management and to retain excellent managers. Generally speaking, the most commonly used incentive mechanisms for management are salary incentive and equity incentive. This paper will carry out research from these two aspects.

According to the human capital theory, stakeholder theory, and the theory of the law of unworthiness, there is a specific relationship between management motivation and enterprise performance. From the original swap to the emergence and continuous development of money, business people also pay more and more attention to the interests of employees while pursuing interests.Monetary

compensation does not exist independently in the discipline system and involves economics, management, psychology, and law. From the point of view of economics, the monetary salary paid by the enterprise and the cost involved is also related to the financial situation of the enterprise; from the point of view of management, the theory of human capital is the proper management of human beings that enterprises pay a certain amount of monetary compensation to train their senior management personnel for relevant job knowledge and skills, to lay a solid foundation for the long-term development of the enterprise; from a psychological point of view, stakeholder interest theory should pay attention to not only the interests of managers but also the interests of shareholders, creditors, employees and the government, which requires actively arousing the enthusiasm of management and doing their best for the development strategy of the enterprise. Only on the road to realizing the continuous development of the enterprise can the relevant stakeholders maximize their interests; from the perspective of law, we should pay attention to the level of compensation paid by enterprises and whether the mode of payment is legal and compliant while attracting and arousing the enthusiasm of management with monetary compensation. Scholars at home and abroad have found a significant correlation between management compensation and enterprise value. In recent years, domestic research has shown a positive correlation between executive compensation incentives and corporate performance. As a result, the hypothesis is

put forward:

H1: There is a positive correlation between management compensation and enterprise performance in the pharmaceutical manufacturing industry.

According to the stakeholder theory, if the development goal of the enterprise can be achieved, the management will be rewarded with a certain proportion of shareholding. Then the command will seriously and responsibly work for the welfare of the enterprise to get this part of the reward. By reading a large number of references, it is found that equity incentives in China have developed rapidly since the share reform. Most scholars believe corporate performance will improve after executives get equity incentives. For example, Liu, Y. -X. and Liu, Y. -C. (2022) found that management equity incentives can effectively solve the first agency problem and play a positive regulatory role compared with state-owned enterprises and low market-oriented areas. The regulatory effect of management incentives is more significant in private high-market-oriented enterprises and regions. According to the analysis results, implementing equity incentives for R & D technical personnel can significantly promote enterprises' long-term and short-term performance. Thus: put forward the hypothesis.

H2: there is a positive correlation between equity incentives and enterprise performance in the pharmaceutical manufacturing industry.

Research and design

This paper studies the relationship between management incentives and corporate performance, mainly from two aspects: the relationship between salary incentives and corporate performance and the relationship between equity incentives and corporate performance.

1) Data sources

Guotai'an database is currently the largest and most accurate financial and economic database in China. This paper takes 305 A-share listed companies in Chinese pharmaceutical manufacturing industry from 2017 to 2021 as the research object, and its data source is mainly from Guotai'an database. The principle of selecting data is to eliminate ST and * ST companies; to eliminate 84 listed companies with missing data; because the industry does not involve the finance and insurance industry, it does not need to consider the particularity of the finance and insurance industry, so there are 91 listed companies with a total sample size of 273.

In the process of research, the empirical research method sets the conditions used by a certain theory, puts forward the theoretical hypothesis, tests the

hypothesis under different conditions and different times, and uses facts to test whether it is correct or not. This paper constructs a multiple linear regression model between management incentive and enterprise performance in pharmaceutical manufacturing industry, and makes descriptive statistics, correlation research and multiple linear regression analysis on the sorted data through SPSS software to study the impact of management compensation incentive and equity incentive on enterprise performance.

2) Variable design

(1) Explanatory variable

The research index of enterprise performance takes the net income of total assets as a significant representative, which is one of the important indicators to reflect the profitability of enterprises. The calculation method of the net income of total assets is that the net income of total assets is equal to the net profit divided by the average balance of total assets. The net income of total assets is mainly a measure of the operating performance of listed companies. The higher the ratio, the better the performance of the company.

(2) Explained variable

Management incentive mainly selects the number of management shares

and management compensation as indicators for research. When selecting the data of the number of shares held by the management, it mainly deals with the natural logarithm of the number of shares held by the management. The compensation of management mainly selects the sum of the top three managers of each listed company, and then takes the data obtained by natural logarithm. In addition, through the reading and analysis of a large number of references, the final control variables selected in this paper are financial leverage, enterprise asset scale, equity concentration, operating income growth rate.

(3) Control variable

In addition, through the reading and analysis of a large number of references, the final control variables selected in this paper are financial leverage, enterprise asset scale, equity concentration, operating income growth rate. Financial leverage is obtained by dividing the total liabilities of the enterprise by the total assets of the enterprise. the greater the role of financial leverage, the greater the risk coefficient it bears, on the contrary, the smaller the financial leverage, the smaller the risk coefficient it bears. The scale of enterprise assets is studied by taking the natural logarithm of the total assets of the enterprise, and the size of the enterprise assets has a certain impact on the managers to manage the enterprise. The degree of equity concentration reflects the equity distribution of a company. Equity concentration

determines corporate governance, and corporate governance affects corporate performance, and then equity concentration also has an impact on corporate performance. The growth of an enterprise, that is, the growth rate of operating income, refers to the ratio of the difference between the current year's turnover and the previous year's turnover to the previous year's turnover. This index reflects the growth ability of the company. the higher the number of indicators, the better the growth ability of the company, and there is more room for development.

The details of each variable are listed in Table 1.

Table 1. Variable definition

Variable type	Variable name		Variable code	Definition
Explanatory variable	Corporate performance		ROA	Net income from total assets=Net profit / balance of total assets.
Explained variable	Management incentive	Salary incentive	WAGE	The natural logarithm of the top three management compensation.
		Equity incentive	MS	Natural logarithm of management shareholding.
Control variable	Financial leverage		LEVER	Asset-liability ratio=Total enterprise liabilities / total enterprise assets.

	Enterprise asset scale	SIZE	The natural logarithm of the total assets of the enterprise.
	Equity concentration degree	BLOCK	Proportion of shares held by the largest shareholder.
	Enterprise growth	GROWTH	Growth rate of operating income=(current turnover-previous period turnover) / previous period turnover × 100%.

(4) Model design

According to the research hypothesis, the model of related variables is designed as follows:

$$ROA_{i,t} = \alpha + \alpha_1 WAGE_{i,t} + \alpha_2 LEVER_{i,t} + \alpha_3 SIZE + \alpha_4 BLOCK_{i,t} + \alpha_5 GROWTH_{i,t} + \varepsilon$$ (Model 1)

$$ROA_{i,t} = \alpha + \alpha_1 MS_{i,t} + \alpha_2 LEVER_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 BLOCK_{i,t} + \alpha_5 GROWTH_{i,t} + \varepsilon$$ (Model 2)

Among them, ROA is the net interest rate of total assets; WAGE is the management compensation; MS is the number of shares held by the management; LEVER is the financial leverage; SIZE is the enterprise asset scale; BLOCK is the equity concentration; GROWTH is the enterprise growth; I is the I company; t is the t year; α is a constant term; ε is random error.

Empirical analysis

(1) Descriptive statistics

The overall situation of the data can be seen from Table 2: first, the maximum value of the total net asset interest rate is 0.604, which is quite different from the minimum value-0.847 and the average value of 0.058, indicating that the performance differences among pharmaceutical manufacturing enterprises are apparent, although they belong to the same industry, the income levels are different; second, the incentive level of management compensation fluctuates little, and there is little difference between more significant value, smaller value and average value; third, the maximum value of management equity incentive level is 20.654, and the minimum value is 6.685, indicating that the degree of equity incentive in pharmaceutical manufacturing enterprises is different; fourth, the maximum value of equity concentration is 68.76, and the minimum value is 4.71 which shows that there is a significant difference in the degree of equity concentration in pharmaceutical manufacturing enterprises. Some enterprises have a higher degree of centralized holding, and some have a lower proportion of the largest shareholder.

Table 2. Descriptive statistics

Name	Sample size	Minimum value	Maximum value	Average value	Standard deviation	Median
ROA	489	-0.847	0.604	0.058	0.101	0.055
WAGE	489	13.172	17.59	14.885	0.693	14.811
MS	489	6.685	20.654	15.836	2.686	16.098
LEVER	489	0.014	0.817	0.31	0.159	0.293
SIZE	489	19.706	25.259	22.13	0.964	22.098
BLOCK	489	4.71	68.76	31.036	11.414	29.49
GROWTH	489	-0.597	9.455	0.193	0.768	0.095

(2) Relativity analysis

Table 3. Correlation analysis

	Average value	Standard deviation	ROA	WAGE	MS	LEVER	SIZE	BLO-CK	GRO-WTH
ROA	0.058	0.101	1						
WAGE	14.885	0.693	0.212**	1					
MS	15.836	2.686	0.125**	-0.120**	1				
LEVER	0.31	0.159	-0.342**	-0.029	-0.140**	1			
SIZE	22.13	0.964	0.047	0.546**	-0.179**	0.264**	1		
BLOCK	31.036	11.414	0.107*	-0.094*	-0.078	-0.035	-0.013	1	
GROWTH	0.193	0.768	0.482**	0.130**	0.082	-0.041	0	-0.063	1

* $p<0.05$ ** $p<0.01$

From table 3, it can be seen that the correlation coefficient values between the total net asset interest rate (ROA) and management compensation incentive (WAGE), management equity incentive (MS), financial leverage (LEVER), equity

concentration (BLOCK) and enterprise growth (GROWTH) are significant. Specifically, the correlation value between ROA and WAGE is 0.212. Therefore, there is a significant positive correlation between ROA and WAGE. The correlation value between ROA and MS was 0.125. It showed significance at 0.01 level, which indicated a significant positive correlation between ROA and MS. The correlation value between ROA and LEVER was -0.342 and showed effectiveness at 0.01 level, which meant that there was a significant negative correlation between ROA and LEVER. The correlation between ROA and BLOCK was 0.107, indicating a significant positive correlation between ROA and BLOCK. The correlation value between ROA and GROWTH was 0.482 and showed considerable significance at the 0.01 level, marking a significant positive correlation between ROA and GROWTH. In addition, the correlation between ROA and SIZE is not substantial, which means that there is no correlation between ROA and SIZE.

(3) Multiple regression analysis

As can be seen from Table 4, taking WAGE, LEVER, SIZE, BLOCK, and GROWTH as independent variables and ROA as dependent variables for linear regression analysis, WAGE, BLOCK, GROWTH will have a significant positive impact on ROA; LEVER will have a significant adverse effect on ROA, SIZE will not affect ROA. This shows that the management compensation incentive, equity concentration, and corporate growth in the pharmaceutical manufacturing industry will have a positive impact on

corporate performance, assuming that one established financial leverage will hurt corporate performance; the higher the asset-liability ratio, the smaller the corporate performance; in the pharmaceutical manufacturing industry, company size has little impact on corporate performance.

Table 4. Regression Analysis of the influence of Management compensation incentive on Enterprise performance in the Pharmaceutical Manufacturing Industry

	Regression coefficient	95% CI	VIF
Constant	-0.347** (-3.722)	-0.530 ~ -0.164	-
WAGE	0.017* -2.547	0.004 ~ 0.029	1.543
LEVER	-0.213** (-8.802)	-0.261 ~ -0.166	1.13
SIZE	0.008 -1.666	-0.001 ~ 0.017	1.617
BLOCK	0.001** -3.753	0.001 ~ 0.002	1.017
GROWTH	0.061** -12.718	0.051 ~ 0.070	1.027
Sample size		489	
R^2		0.379	
Adjust R^2		0.373	
F value		F (5,483)=59.064,p=0.000	

Dependent variable: ROA.

	Regression coefficient	95% CI	VIF
D-W value: 1.603			
*p < 0.05 ** p < 0.01 the value of t in parentheses			

As seen in Table 4, the above table shows, that the R-value R-value model is 0.379, meaning that WAGE, LEVER, SIZE, BLOCK, and GROWTH can explain 37.9% of the changes in ROA. In the F-test of the model, it is found that the model passed the F-test (Fair59.064) (0.000 < 0.05), which shows that the construction of model 1 is meaningful.

As can be seen from Table 5, taking MS, LEVER, SIZE, BLOCK, GROWTH as independent variables and ROA as dependent variables for linear regression analysis, MS, SIZE, BLOCK, GROWTH will have a significant positive impact on ROA. Hypothesis 2 is true. Among them, the R-value of the model is 0.376, which means that MS, LEVER, SIZE, BLOCK and GROWTH can explain the 37.6% chance of ROA. When the model is tested by F test, it is found that the model has passed the F test.

Table 5. Regression analysis of the influence of management equity incentive on enterprise performance in pharmaceutical manufacturing industry

	Regression coefficient	95% CI	VIF
Constant	-0.325**	-0.508 ~ -0.143	-

	Regression coefficient	95% CI	VIF
MS	(-3.498) 0.003* -2.035	0.000 ~ 0.006	1.056
LEVER	-0.222** (-9.304)	-0.268 ~ -0.175	1.088
SIZE	0.016** -4.106	0.008 ~ 0.024	1.1
BLOCK	0.001** -3.649	0.001 ~ 0.002	1.012
GROWTH	0.062** -13.001	0.053 ~ 0.071	1.012
Sample size		489	
R^2		0.376	
Adjust R^2		0.37	
F value		F (5483)=58.319 p=0.000	

Dependent variable: ROA.

D-W value: 1.603

*p < 0.05 ** p < 0.01 the value of t in parentheses

Through the descriptive statistics, correlation coefficient analysis and multiple regression analysis of the samples, it is found that there is a significant positive correlation between the level of management compensation, the number of management shareholding and the net interest rate of total assets. This shows that the greater the intensity of management compensation incentive and equity

incentive, the better the enterprise performance, which verifies hypotheses 1 and hypothesis 2.This shows that management incentives can promote the improvement of enterprise performance.

Research conclusion and enlightenment

This paper takes the data of listed companies of Chinese pharmaceutical manufacturing enterprises from 2019 to 2021 as the research object, using a multiple linear regression model, and draws the following conclusions: first, there is a positive correlation between management incentives and corporate performance; second, there is a negative correlation between financial leverage and corporate performance; there is a positive correlation between equity concentration, corporate growth, and corporate performance. Therefore, the following suggestions are made:

First, formulate a reasonable incentive plan for the management. There is a significant positive correlation between management incentives and enterprise performance. It is further demonstrated that improving the remuneration of pharmaceutical manufacturing management and implementing equity incentives will help improve enterprises' performance. Under the continuous opening of the market economy and the continuous innovation of the talent strategy, if enterprises want to adapt to the developing market environment, they must pay attention to reforming the management compensation system and implement equity incentives for the

management. The personal interests of the administration are closely linked with the interests of the enterprise, and the benefits and risks are shared.

Second, make rational use of the financial leverage of enterprises. This paper's empirical part shows a negative correlation between economic power and corporate performance, and the increase in foreign borrowing will reduce corporate performance. The pharmaceutical manufacturing industry has the characteristics of a long R & D cycle, high risk, and uncontrollable cost. It occupies too many free funds and faces the threat of R & D failure in the drug R & D stage. When the enterprise's funds are insufficient, they need to borrow money from the outside to engage in debt management. Debt operation can increase the cash flow in the business process and enable the enterprise to obtain an additional part of the income. At the same time, the business rights of the enterprise will not be threatened, and debt operations can achieve the role of tax savings. Under the heavy temptation, some enterprises will continue to increase the debt ratio of some enterprises. Excessive corporate debt will make investors reduce their investment in enterprises for the safety of their funds, and at the same time, high debts will also have to pay high interest. If the payment is not timely, it will also affect the company's image. Therefore, it is necessary to make rational use of the financial leverage of the enterprise.

Third, establish a good performance evaluation index system. Attach importance to the long-term development of enterprises; the growth of enterprise

development determines the length of the enterprise life cycle. The pharmaceutical manufacturing industry has a solid anti-cycle ability. Once the new drug research and development is successful, it will bring long-term and stable benefits, so it is necessary to determine the goal of sustainable enterprise development. While paying attention to the positive effect of management incentives on enterprise performance, appropriate management incentives should be carried out according to the company's actual situation. When formulating the performance evaluation index system, we should fully consider the shareholding ratio of shareholders, the salary needs of managers and employees, and the long-term development of the enterprise, and establish a scientific and reasonable enterprise performance evaluation index system.

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