A Study on the Role of Compensation Incentives and Equity Incentives in Technology-based Enterprises

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Abstract. Technology-based enterprises, driven by innovation, have flourished in the economic market in recent years. For technology-based enterprises, how to effectively motivate employees to unleash their innovation drive and thus improve corporate performance is a key focus of management in technology-based enterprises. Pay incentives and equity incentives have been widely used in enterprise personnel management in recent years, and previous scholars generally believe that these two approaches can be more effective in motivating employees to innovate and establish a sense of ownership. In order to better study the shortcomings of salary and equity incentives in innovative companies and the strategies to solve them, this paper summarizes the relevant studies and uses Huawei and Hikvision, which have excellent incentive policies, as examples, to find and point out that the level of managerial shareholding and salary level are the criteria for incentives and should be limited to a reasonable range. Secondly, different incentive methods should be used at different stages to optimize the incentive effect.

Keywords: Compensation Incentives, Equity Incentives, Innovative Enterprises.

1. Introduction

1.1 Background

The difficulty of managing people in technology-based companies compared to traditional companies is that performance is difficult to measure in terms of hours worked or piecework. In a technology-based enterprise, which is composed of nearly 30% of scientific and technological talents, it is a key management task for the managers to manage the personnel well and to respect and stimulate their intellectual contribution and teamwork while preventing talent loss. Compensation incentives are a more common means of motivation, with both long-term and short-term incentives, and the principle of targeting as the root. Equity incentives are a form of remuneration incentive, allowing employees' vested interests to become one with the company, which is more likely to retain talent and contribute to the sustainable development of the company.

1.2 Related research

Wu developed an incentive pay model based on game theory and analyzed it for the different stages of the firm's life cycle. They found that by combining these two conditions, firms can choose the optimal range of change in incentive rates and calculate the range of incentive pay. In this way, firms can obtain the optimal incentive pay strategy [1]. Mehran's study presents empirical evidence on the relationship between executive pay structure and firm performance. He used pay data from 153 randomly selected manufacturing firms from 1979-1980. and found a negative correlation between the percentage of executive stock-based compensation and the percentage of shares held, suggesting that boards of directors take into account the overall incentives of executives when designing compensation packages [2]. Baker et al. discuss aspects of compensation that seem highly irrelevant to current economic theory and practice and summarize empirical evidence that is inconsistent with our traditional economic theory [3].

John et al. calculated the optimal level of equity incentives for CEOs and used the residuals of the model to measure deviations from the optimal level of equity incentives held by CEOs. They found that the way firms determine optimal levels of equity incentives and grant new equity incentives is consistent with economic theory.[4] Jensen and Murphy analyzed the performance pay and incentives

of top management for more than 2000 CEOs in three samples spanning five decades. The lack of evidence of strong pay-for-performance incentives for CEOs was considered puzzling. They hypothesized that political forces operating in the public sector and organizations restrict large payouts for outstanding performance[5]. David et al. found that the likelihood of a firm being the target of fraud allegations is positively related to a summary measure of incentive preference. They also noted that the strength of the association between the probability of fraud and the intensity of options depends on the characteristics of the firm's shareholder structure[6].

The Ortiz-Molina theory links the capital structure to the CEO's overall incentives to maximize the share price. It is found that the sensitivity to pay performance decreases in the case of direct debt leverage, but is higher in firms with convertible debt. As leverage increases, the sensitivity of managerial wealth to the firm's option return declines faster than the sensitivity of equity wealth [7]. Shane, et al. used an option pricing model based on risk-neutral valuation principles. They examined the value and incentive effects of six non-traditional stock options for executives. They adjusted various parameters of some non-traditional options to induce large changes in incentive strength, while others were less sensitive to such changes [8].Zattoni and Minichilli investigated the proliferation and characteristics of stock incentive plans used by Italian listed companies. They reveal the reasons for the proliferation of these equity incentive plans in Italy. It is found that the determinant for the adoption of these schemes is the size of the company and not the absence of controlling shareholders. This study supports the symbolic view of corporate governance, according to which the introduction of new governance practices may not entail substantial governance reforms [9]. Burns et al. studied the impact of executive pay and investor protection on dividend distribution policies in Europe. They found a negative (positive) relationship between both option compensation and restricted stock and dividends (repurchases). However, when incentive compensation is protected by dividends, dividend payments increase. In countries with weak investor protection, firms pay higher dividends, consistent with maintaining a reputation for distributing excess free cash flow [10].

1.3 Objective

This article analyses the management objectives of technology-based enterprises from the perspective of their membership composition, enterprise valuation and asset structure, and in the light of the bottlenecks in the development of technology-based enterprises in corporate management in recent years. In the third part of the article, the application of salary incentives and equity incentives in technology-based enterprises is analyzed, as well as the problems encountered, and it is found that there are generally problems of unreasonable distribution and the design of incentive policies that tend to be too fast and too violent. In the fourth part of the article, suggestions are made for the management and incentive policies of technology-based enterprises, and successful cases such as Huawei and Hikvision are combined to analyse how to pay attention to the proportion of salary and equity, and what kind of appropriate incentive policies should be emphasized at what stage. The final part makes a conclusion and gives its own reflections.

2. Characteristics of technology-based firms and development bottlenecks

2.1 Firm characteristics

2.1.1 Personnel composition of technology-based firms

In terms of technology content, technology-based enterprises are reflected in two indicators: the proportion of technology personnel at the decision-making level and the input and output of research and development of new technologies. For example, the Beijing Municipal Science and Technology Commission's approach to the identification of private science and technology enterprises stipulates that science and technology personnel with a university degree or higher, or intermediate or higher support level, account for more than 30% of the total number of employees of an enterprise before identifying it as a science and technology enterprise. The fourth item of Article 11 of the Management

Measures for the Identification of High-Tech Enterprises clearly states that the proportion of scientific and technological personnel engaged in research and development and related technological innovation activities in the enterprise shall not be less than 10% of the total number of employees of the enterprise in that year. This shows that human resources, as one of the most active factors in technology-based enterprises, and entrepreneurs' intellectual property as intangible capital, account for about 35% or more of technology-based enterprises. It is easy to see that talent management in technology-based companies is a key and difficult point of business management.

2.1.2 Valuation of technology-based companies

Company valuation is a prerequisite for investment activities. Since technology-based enterprises will have high-risk and high-return characteristics, according to the preferences of investors, financing has become an important source of funds for technology-based enterprises. However, unlike general companies, technology-based companies often rely on innovation capability, technology property rights and other intangible assets, coupled with the lack of stable cash flow, so there are difficulties in company valuation.

In the early 20th century, Fisher developed the Fisher Separation Model for technology-based, high-growth companies, where consumption and investor decisions could be separated in a perfect market. After its further development and evolution, it became a more general discounted cash flow method and unified the flow parameters and calculation methods for the different stages of development of technology-based companies. This method allows entrepreneurs to have an optimistic estimate of the future, but also takes into account the dilution of the capital invested in the project in advance, which can effectively avoid blind optimism.

Compared with foreign countries, China's domestic valuation of technology-based enterprises is divided into three categories, one is the revision and improvement of traditional valuation methods, and the second is to regard high-tech and enterprises as a combination of real options, the enterprise value which is equal to the present value of the long body of cash flows plus the value of real options. For example, Chinese scholars such as Zhang Shape and Chen Xiaoyan believe that the payment of dividends by companies will affect the value of the company, and therefore suggest the use of real options for value assessment by deducting the impact of dividends; third is the combination of traditional valuation and the combined real options approach.

2.1.3 Capital structure of technology-based companies

For new technology-based firms in a knowledge-based economy, what drives firm value comes not only from physical capital, but also from intellectual capital, such as human capital, intellectual property rights, and intangible assets. As a core asset, intellectual capital has a significant impact on capital structure decisions. Therefore, a technology-based company is not only a combination of assets, but also a combination of assets and people or assets and growth opportunities, and the dependence and synergy of assets and growth opportunities with investment in human capital determine the value of the company. Take Huawei as an example, in 2015, the cumulative investment in patent R&D exceeded RMB 38 billion, more than twice the annual budget of NASA, with 50,377 cumulative patents granted and the number of PCT (patent cooperation leapfrog) applications topping the list for two consecutive years.

2.2 Focus on human resource management and development bottlenecks in technology-based companies

2.2.1 Focus on target management

High-tech employees are mainly unit labor or mental collaboration, which cannot be calculated by working hours or piecework and are not applicable to traditional models such as supervision, and are suitable for motivation and evaluation by objectives. Target management originated in the U.S. in the 1950s and began to be promoted in China in the early 1980s. This management is achieved by setting and evaluating planned objectives.

Management and target setting in high-tech companies is a two-way street and can usually take the form of an internal bidding and tendering system. The enterprise management sets the basic direction for the development of science and technology projects through the design and planning of enterprise management objectives, and then the science and technology developers voluntarily select the projects that meet the strategic development objectives of the enterprise after evaluation and bidding, setting the time, standard and quality for the realization of the objectives, and also granting the corresponding authority and conditions. Bids are submitted by the company's in-house staff, and after evaluation, the successful bidder is selected to form a project team, which disbands on its own at the end of the project.

2.2.2 Development bottlenecks

Technology-based companies change rapidly, with rapid changes in organizational structure and management style. At the same time, the high rate of talent turnover creates difficulties for companies' human resource management. Due to the high demand and requirement for talents in technology-based enterprises, and the lack of sufficient investment funds in the early stage of development or small and medium-sized enterprises, there is a big problem of not being able to retain talents. A survey of high-tech companies founded more than three years ago shows that 51.55% of employees have been working in the same company for less than three years, 31.88% for 1-3 years and 16.65% for less than one year, with 44.45% of all employees working in the same company for less than three years. Such a high turnover rate means that employees to whom the company has to devote a lot of time and financial and material resources to train are no longer able to contribute to the company, resulting in huge losses for the company. In addition, management models are constantly evolving due to the different composition of the workforce, which makes it difficult to establish an effective long-term management approach.

3. Application and problems of wage incentives and equity incentives in the development of technology-based companies

3.1 Application

Remuneration is a psychological contract between individuals and enterprises, and is an important motivating factor for the productive development of employees. At present, excellent high-tech enterprises such as Huawei, Tencent, Ali, Headline, Google, etc., offer their employees super-competitive salary rewards in the external talent market, such as Huawei's $2 million per year recruitment plan for talented teenagers.

Proper application of salary incentives allows salary to be used as an indicator for employees to value the importance of the individual, bring out their full potential and achieve greater benefits for the company.

Equity incentives are a combination of personal and business interests. In order to achieve the union of personal interests and corporate interests, to ensure the joint creation of value, to obtain the recognition of the capital market, and ultimately to achieve the goal of the market to buy, the company's revenue, excellent high-tech companies often implement attractive equity incentive plans. Statistics show that more than 90% of the world's top 500 companies have increased efficiency by one-third and profits by 50% after implementing equity incentive plans. Overseas, Facebook has 30% employee ownership, and the successful IPO has created more than 1,000 millionaires; in China, the whole building rejoiced after the recent announcement of Ant Financial Services' plan to go public, just because according to Ant Financial Services' valuation, it is estimated that 5,000 millionaires and 500 billionaires can be born among Ant Financial Services' employees.

3.2 Problems

Due to the increasing share of intellectual property rights, the business distribution model has evolved from the original remuneration system to a system of remuneration plus distribution of

intellectual property interests. In the case of high-tech companies, the remuneration incentive system may present the following problems: first, the internal allocation of personnel is unreasonable. The inability to compare individual R&D capability or to reflect the difference between employees at the present time and at a certain period in history may lead to reduced employee motivation. Second, the company's compensation system is not competitive with that of other companies of the same type at the same time, which may also frustrate the sense of community among employees and may lead to brain drain.

The application of equity incentives in technology-based companies can also have the problem of being too fast and furious. For example, the 2002 MBO (Management Buy-Out) boom, which involved too many companies, led to public concern about the loss of public equity. Surveys show that almost half of the publicly traded companies that have applied equity incentives have used an equity incentive ratio above 8%, and some have even exceeded the 10% limit in some way.

4. Suggested measures and strategies

4.1 Coordinate the relationship between stock incentive and wage incentive

The innovation capability performance of technology-based firms is closely related to the design of management's reasonable incentive system. Li Yao and Wang Wei selected Chinese GEM-listed companies as a sample between 2009 and 2014, and through empirical analysis, they concluded that when the level of management shareholding was in the range of 0 to 30.73%, with the increase of management shareholding, the equity incentive played a positive role in technological innovation and was positively related to innovation input; when it exceeded 30.73%, the effect of trench defense began to stand out and the participation ratio and innovation The participation ratio is negatively correlated with investment in innovation. Wage incentives have a positive relationship with investment in technological innovation.

Table 1. Huawei Employee Compensation Position

Salary Composition	Below the 25th percentile	25-50th percentile	Median 50-75th percentile	50-75th percentile	Above the 75th percentile
Basic Salary	0.4%	5.1%	55.7%	34.9%	3.9%
Short-term Incentive	4.4%	9.8%	56.6%	27.3%	2.0%
Long-term Incentive	6.9%	6.9%	56.4%	26.6%	3.2%
Benefits and special treatment	3.6%	8.5%	60.3%	25.4%	2.2%

In Huawei's case, the reason it is among the world's third-largest handset generators is inextricably linked to the company's internal incentive policy.

As Table 1 shows, 2% of employees have short-term incentive compensation above the 75th percentile and 56.6% are at the 50th percentile. Short-term incentives are used to recognize departmental performance and reward individual performance by rewarding the achievement of annual goals; meanwhile, 3.2% of employees enjoy long-term incentive pay above the 75th percentile and 56.4% of employees fall at the median. Long-term incentives are used to motivate the achievement of long-term goals, to achieve traction for sustained performance improvement, to encourage focus on the company's long-term goals and sustained growth, and to retain high-performing employees and key talent.

In addition, since 2001, Huawei has introduced and implemented a virtual stock incentive plan, whereby the entity's shareholders purchase real shares based on net assets per share for the year, and then sell an equal proportion of virtual shares to employees. Between them, dividends on the virtual

restricted shares will be controlled at 30-35%, and the dividend percentage will be gradually reduced as the share price increases. In this way, the original shares held by the company's employees are gradually absorbed and converted into virtual shares, which only involve dividends and share price appreciation gains, not ownership rights, while the real power is held by Huawei's controlling shareholder association.

4.2 The Choice of Stage Incentives

Technology-based enterprises, especially small and medium-sized enterprises, are not suitable for wage incentives at the initial start-up stage, when funds are biased toward R&D investment. At this stage, stock incentive as a kind of salary compensation can retain top talents for the company, so that employees have a sense of ownership and integrate faster and better. The incentive policy at this stage firstly considers the incentive cost, which mainly includes capital, financial costs, tax costs, etc., which are included in the company's management expenses, thus diluting the share of profit for the year. When applying equity incentives, especially in the case of companies that are close to the IPO node, if the timing is not right, there is likely to be a significant increase in overhead costs, which will cause the company to no longer meet the performance conditions to be listed on the stock exchange.

Secondly, the time fixation of the stock incentive plan should, on the one hand, achieve the long-term incentive purpose, and the waiting period for incentive recipients to exercise their rights should generally not be less than one year; on the other hand, the time fixation of the stock incentive plan should not be so long that the incentive effect of the stock incentive is lost; generally speaking, the validity period of the stock incentive plan should not exceed seven years. In the process of implementing the stock incentive plan, in order to avoid special circumstances such as resignation, dismissal or transfer of the incentive beneficiary from the position, the incentive plan should be stipulated in advance to avoid conflicts arising from the special circumstances.

In addition, the appropriateness of the incentive must be taken into account. The contribution of future core staff, and potential core staff, to performance growth should be combined with positions and activity and performance over the years to form a dynamic year-to-year release mechanism. When a company has no plans to go public in the short term, it may opt for a dynamic release or a one-time release.

For example, Hikvision Digital Technology Company Limited, established in 2001, is a state-owned high-tech holding company that provides security, big data services and visualization management worldwide. As of the end of 2018, there have been four consecutive calls on the grant of the corresponding share incentive plan to the incentive recipients, with a term of 10 years, with a lock-up period of two years after release and the unlocking of 40%, 30% and 30% of the proportion of shares granted to the incentive recipients in three installments. Starting in 2018, a time two full unlocking and the first unlocking in 2018. The performance criteria for the first round of the stock incentive plan for NPV were 15%, 16% and 17%, gradually increasing, while the performance criteria for the second and third rounds of the stock incentive remained unchanged at 20%, indicating that the performance criteria for NPV should be set in accordance with the actual situation considered by the company when setting the performance criteria for NPV. This gradual unlocking of shares enriches the non-equity compensation system and motivates shareholders with an eye on the company's long-term development.

5. Conclusion

This paper summarizes the design of incentive policies in technology-based firms and points out the problems that exist in the use of incentive methods, including wage and equity incentives, in most firms. Through examples, it also illustrates how successful technology-based firms use incentive policies appropriately. The study revealed that technology-based companies tend to have poor compensation distribution among internal employees and overly fast and aggressive stock incentives. After analyzing the incentive design of Huawei and Hikvision, for example, it was found that the

proportion of shares held by managers and remuneration should be reasonably distributed according to the actual situation of the company. Secondly, in the early stage of development, when the capital is weak, the equity incentive is more reasonable, and in the middle stage of development, the wage incentive is introduced, so the combination may be the most effective incentive policy.

Through the study of the incentive policy of technology-based enterprises, it is found that the bulk of the staff is important for such enterprises. Whatever the incentive policy, it underlines that "people" are the main driver of the company's development. In addition to motivating people, protecting intellectual property rights is also a way of motivating and respecting them. Intellectual property is the backbone of the technology market for technology-based companies. Technology-based companies should establish a strong protection system, raise staff awareness of intellectual property protection; take the initiative to apply for patents, trademarks, etc., and apply for patent protection for trade secrets; hire professionals to protect the company's intellectual property rights; or ask service agencies to regularly train employees on intellectual property rights, to better control the risk to the company's property rights.

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