Research on Optimization Strategy of Human Resources Management in State Owned Enterprises Based on Game Theory

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Abstract. Based on game theory, this paper analyzes the problems of human resource management in state-owned enterprises and puts forward corresponding countermeasures. The research indicates that under the background of poor governance structure, there is a negative motivation for the operation of state-owned enterprise managers, human resources departments, employees and so on, which comes out the poor performance management and imperfect performance appraisal. Therefore, state-owned enterprises should optimize their human resources management strategies from the three levels of executives, human resources departments and employees, including improving the internal governance structure, strengthen the matrix performance management system, enrich the human resources incentives, and ultimately improve the operational efficiency of state-owned enterprises.

1. Introduction

The state-owned economy is the main body of the socialist market economy, and the state-owned enterprise is crucial support of the development of the market economy of our country. It aims to optimizing the human resource management of the state-owned enterprise, promoting the utilization efficiency of the human resource of the state-owned enterprise. It is an important guarantee to accelerate the transformation of China undefineds economic structure, improve the economic growth rate, and drive the overall transformation of the economy. For a long time, under the influence of planned economy and other historical factors, the degree of marketization of state-owned enterprises is relatively low, and the utilization efficiency of human resources of state-owned enterprises is generally not high, which gives rise to the undesirable phenomenon of redundant personnel. Since the reform and opening policy, governments and departments at all levels, led by the State Council, have reformed and standardized the operation mode of state-owned enterprises, which to a certain extent has enhanced the operational vitality of state-owned enterprises. The efficiency of human resources management has also been greatly improved. In the new age, our country is faced with the internal comprehensive pressure of economic development and external trade friction. Therefore, it is necessary to promote the rapid development of national economy by enhancing the competitive vitality of state-owned enterprises by improving the efficiency of human resources utilization.

On the basis of game theory, this paper analyzes the problems of human resource management in state-owned enterprises, and puts forward corresponding countermeasures according to the actual situation, which has great theoretical value and strong practical significance.

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2. The problems of Human Resource Management in State-owned Enterprises from the Perspective of Game Theory

2.1. Insufficient management of the human resources management department's performance under Principal-Agent relationship

Under the principal-agent relationship, the executive undefineds salary treatment has a strong administrative nature under the performance management of the human resources management department, which is lack of the principal-agent relationship. Therefore, the enterprise managers undefined pursuit of business performance lacks sufficient endogenous motivation, although in the current trend of strengthening executive performance appraisal, many state-owned enterprise executives begin to pay attention to the business situation of enterprises. However, the performance management of human resources management department is still insufficient.

Table 1. Game Model Design of Management and Human Resources departments in State-owned Enterprises

| Human Resources Department Strategy | Management strategy |
|------------------------------------|---------------------|
| Active Management                  | S-C+J,Y-W           |
| Negative Management                | F-J+C,Y-W           |

In the model game of this level, the state-owned enterprise management and the human resources department are the two sides of the game. In order to simplify the research, the following assumptions are put forward:

Set the positive management of the human resources department gains the income as S, in contrast, the gain is F. (if the penalty for mismanagement is J and, and active management gets this part of the compensation, because of the low degree of marketization of state-owned enterprises, The difference between S and F is not obvious in the case of positive numbers (so S=U), but active management not only consumes human and material resources of the department, but also easily offends others. The set cost is C (J ≤ C)

Set the performance appraisal income of the management of the state-owned enterprise is Y strictly, in contrast, the gain is X, the difference between Y and X is ignored, and the difference between Y and X is ignored. And it often not penalized for human management inaction, or influenced by HR strategies, and then lost in a democratic election. Thus the game model I is formed (see Table 1).

The final Nash equilibrium is that negative supervision is the optimal strategy of management and negative management is the optimal strategy of human resources department. Therefore, under the principal-agent relationship, the management has little effect on the performance management of human resources management department.

2.2. Dynamic Human Resources Management Departments have Weak Performance Assessment for Employees under Dynamic Game Conditions

Under the dynamic game, in the first stage of the game, the final Nash equilibrium between the state-owned enterprise management and the human resources department for the game is that negative supervision is the optimal strategy of the management, and negative management is the optimal strategy of the human resources department. Explain that employees are the players in the second stage. He understands the tactical options of the human resources department.

Table 2. Design of Human Resources departments and employees in State-owned Enterprises within Game Model

| Employee Strategy | Human Resources Department Strategy |
|-------------------|-------------------------------------|
| Active Work       | E-D+Q,H-A-Q                         |
| Negative Work     | B-S+D,G-A+S                         |
Then, the following assumptions are made: the positive work income is E, the positive management reward is Q, the negative work income is B, the negative management penalty is S, the leisure cost D (leisure is always scarce, and S=Q≤D), the change of working attitude under the low market level can’t produce the income gap, that is E=B;

the human resources department actively manages the income H, the negative management income is G, the same H=G, but the cost is A (the same as the above, A>S), and in the first stage of the game, the management will take the passive management strategy, therefore, the human resources sector interests will not be directly affected by the staff strategy, the second stage game model II can eventually form (see Table 2).

The final Nash equilibrium is: passive work is the best strategy for employees, and passive management is the best strategy of the human resources department.

2.3. Insufficient Internal Motivity of Human Resource Efficiency Promotion in State-owned Enterprises under the Premise of Property Right Division

Under the background that the property right belongs to the country, and the staff know that the optimal strategy of the human resources department is passive management, there will also be a game in the task acceptance and arrangement of the employee undefineds daily work. In view of the first two stages of the analysis, we can make the following assumptions:

Employees strive hard to get a profit K, negative work gains a profit of L, leisure cost is D, the penalty of negative work is S, and the reward is Q. Because employees already understand the optimal strategy of human resources department, it is difficult to appear the punishment S and reward Q, which is in line with the current situation of human resources management in state-owned enterprises.

On this basis, whether employees A and B choose whether to work hard or not depends on the size of K-D and the size of L, but unfortunately, as mentioned above, as the compensation incentives of state-owned enterprises are still not completely market-oriented, The gap between doing more and doing less is not obvious (except for the market-oriented financial enterprises, so the gap between K and L is not big, resulting in the generalized result of K-D≤ L, and the employees must choose negativity as their own optimal strategy.

3. Strategies of Optimizing Human Resource Management in State-owned Enterprises from the Perspective of Game Theory

3.1. Improving the Internal Governance structure of State-owned Enterprises and enhancing the performance Management of State-owned Enterprises under the Principal-Agent relationship

This is the basic strategy of optimizing the human resource management of state-owned enterprises and the long-effective mechanism to realize the efficient operation of state-owned enterprises. Generally speaking, the internal governance structure of an enterprise includes three levels: first, the balance and restriction between the highest decision-making power of the shareholders undefined general meeting, the daily decision-making power of the board of directors, and the daily supervision power of the board of supervisors; second, The relationship between the board of directors and the supervisory board and the management; third, a series of management system relations, such as financial standard, internal control and so on. From the level of human resource management, the most important thing to improve the utilization efficiency of human resources in state-owned enterprises is to optimize the internal governance structure of the first and second levels. In the first level, the balance and restriction between the highest decision-making power of the shareholders undefined general meeting, the daily decision-making power of the board of directors, the daily supervision power of the board of supervisors, the absolute decision-making power of the board of directors should be reasonably restricted, and the supervisory mechanism of the board of supervisors must be firmly guaranteed. To reduce the unreasonable interference of the board of directors in the management, such as the placement of the relationship account entry level; in the second level, in the Principal-Agent relationship between the board of directors and the board of supervisors and the
management, it is necessary to further strengthen the supervision of the performance appraisal of the management, from the point of view of human resource management, it can not only set up final performance appraisal to indirectly assess the management but also utilization of human resources, but also directly set up human resources management and utilization indicators, such as employee education, job saturation, etc. Through the improvement of these two levels of internal governance, the performance management under the principal-agent relationship of state-owned enterprises will be promoted.

3.2. Transformation of Linear Management to Matrix Management, strengthening performance appraisal system of Human Resources in State-Owned Enterprises

This is an effective means to optimize the human resource management of state-owned enterprises and a necessary tool to realize the efficient operation of state-owned enterprises. From the point of view of traditional line management, the advantages of line management are high execution efficiency, high professional degree and strong transmission ability. However, with the continuous development of market economy, every industrial division of labor becomes more and more complicated and diversified, and intelligent operation. Full business integration is the overall development trend of all walks of life. Hence, the advantages of matrix management began to highlight. Compared with linear management, matrix management increases the lateral management and assistance due to a specific task. It has high flexibility and practicability, and accords with the basic characteristics of the current market economy development.

Matrix management has the following advantages for the management and utilization of human resources in state-owned enterprises: first, it can not only achieve departmental performance appraisal, but also set up a single project or a specific task of performance evaluation. The performance appraisal of employees is more scientific and meticulous. Second, the performance appraisal of employees can be analyzed from both a partial perspective and a financial perspective. Finally, the summary strategy can be realized by human resource management department, which is based on the dual evaluation and evaluation of KPI and GS. Of course, matrix management has its advantages, but it should be clear that matrix management is essentially a multi-command management system, so state-owned enterprises should set up work committee according to the nature of business department in order to further reduce coordination costs. Taking financial enterprises in developed coastal areas as an example, the work collaboration of various departments is realized through various committees, such as the retail business committee, the institutional business committee, the performance appraisal committee, and so on. This will be conducive to the vertical and horizontal assessment and evaluation of human resources.

3.3. Focus on Enriching Human Resources Incentives and Accelerating the Promotion of Mixed Ownership Reform of State-owned Enterprises

This is an important guarantee to optimize the human resource management of state-owned enterprises and an inevitable measure to realize the efficient operation of state-owned enterprises. Maslow undeinfineds hierarchy of needs theory tells us that people undeinfineds needs are divided into multiple levels. In general, existing studies encourage enterprises to motivate employees from both the material and spiritual levels, thus enhancing the enthusiasm of employees. This paper very much recognizes this approach, but the emphasis of this paper is to enrich the specific means of material incentives and the specific content of spiritual incentives, including: first, in terms of material incentives, do not limit to direct incentives for money, we should adopt the mode of ESOP, put forward the ESOP, activate the enthusiasm of employees from the angle of property right, which is also the important connotation of the mixed ownership reform of state-owned enterprises. Second, in the aspect of spiritual incentive, Should be linked to the business of the enterprise, not only limited to the award of the Yu Wenyu competition, to clarify the core pursuit of the enterprise as the main business, and to maximize the possibility of recreational activities and business exchanges, To enhance the flexibility of human resources management and to realize the relaxation of human resources management; third, we should
also form a positive corporate culture, such as respecting old employees and encouraging them to "bring new to the old". Speed up the cultivation and development of enterprise personnel. Finally, we should actively introduce private enterprises into the ownership system of state-owned enterprises, actively learn from the experience of private enterprises in the application of talents, and promote the flexibility of human resources management in state-owned enterprises.

4. Conclusion
In conclusion, based on the basic national conditions of our country, the state-owned enterprises must be the core participants of the socialist market economy with Chinese characteristics. Therefore, we must continue to optimize the management of the human resources of the state-owned enterprises to realize the transformation and development of the state-owned enterprises themselves, and then promote the transformation of the national economic structure and the transformation of the driving force, and ultimately promote the national economy. Preface, steady and sustainable development cannot be ignored. At present, the state owned enterprises in our country have a poor performance management of the human resources management department under the principal-agent relationship under the principal-agent relationship. Under the dynamic game, the performance evaluation of the human resources management department is weak, and the state owned enterprise manpower is divided under the premise of property right division. The internal motive force of the promotion of resource efficiency is less than three core obstacles. This is not the unscientific and unreasonable design and design of the state-owned enterprises, but the reform of the state-owned enterprises still needs to be further deepened, and the strategy of human resources management still needs to be optimized. Therefore, combining the game theory, the article proposes to improve the internal governance structure of the state-owned enterprises. In order to improve the performance management under the principal-agent relationship of the state-owned enterprises, the transformation of the linear management to the matrix management, the strengthening of the performance appraisal system of the human resources of the state-owned enterprises and the enrichment of the incentive means of human resources. And acceleration of the three major countermeasures to promote the reform of the mixed ownership of the state-owned enterprises, it should activate the human resources of the state-owned enterprises and enhance the enterprises operation more efficiency.

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