

Analysis of the Operation Mechanism of Personnel Management in Universities Using Human Resource Theory

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Abstract: To create a team of high-quality and high-level college teachers is an inevitable requirement for comprehensively fulfilling the strategic task of talents. At present, it is necessary to focus on the implementation of the talent strategy. It should commit to changing the concept of talents, and firmly establish the idea that talent resources are the first resource by following the principle of “openness, mobility, competition, and order” to further improve and perfect the management system and operation of college teachers mechanism. It also should adhere to the rule of law and actively promote the system construction of the teaching team and continue to do a good job of attracting and training high-level creative talents. According to this background, this study focuses on the analysis of the current situation of human resource management in universities and proposes the human resource management system with the innovation of operating mechanism. Based on the behavioral characteristics of relevant economic stakeholders, this study has established a model of human resource management in universities by analyzing the behavior choices of various stakeholders and conducting theoretical explorations for establishing an effective human resource management system in universities.

1. Introduction

The implementation of the talent strategy, which is centered on the cultivation and attraction of good talents, is the fundamental guarantee to meet the challenges of accession to the WTO and enhance the comprehensive national strength [1-2]. It is also a major decision made by our government. The implementation of the talent strategy puts forward new and higher requirements for the construction of university teachers [3-4]. We must stand on the commanding heights of the development of the new times by accurately understanding the connotation of talent strategy. Finally, we can deeply understand the significance of implementing talent strategy, and fully grasp the teaching staff of colleges and universities [5].

From the human resource management concept, the traditional personnel management regards manpower as the cost. While the modern human resource management regards manpower as the resource. From the management mode, the traditional personnel management is mostly reactive operation management [6]. The modern human resources management is mostly the active response strategy management. Through the development of human ability, human intelligence can be stimulated and the performance of the organization can be improved. From the point of view of management, the traditional personnel management is centered on the event itself [7-8]. Instead, the modern human resources management is centered on people. Regarding to the management methods, the traditional personnel management isolated the static management. The modern human resources management is the dynamic management of the whole process [9-10]. Therefore, whether from the connotation concept of human resources management, or the center and method of human resources management, it is suitable for the management of human resources in universities. As the training base of talent resources, the development and management of talent resources in universities should be at the forefront of the times. Only in this way can we meet the needs of the market economy and internationalization of education. Based on the analysis of the current situation of human resources in colleges and universities, this study has established models using game

theory to analyze the related human resources management system.

2. Research Basics and Analytical Methods

2.1 Analysis of the Current Situation of Personnel in Universities

In 2018, there were 34 million students which are enrolled in general colleges and universities, with an increase of 200% over 2010 [11]. That means the students are growing at a much faster rate than college teachers. According to the national regulations, the ratio of students to teachers increased from 2.8:1 in 2010 to 8.5:1 in 2018. As seen in Figure 1, it is clear that higher demands are put forward for the quality of education in universities.

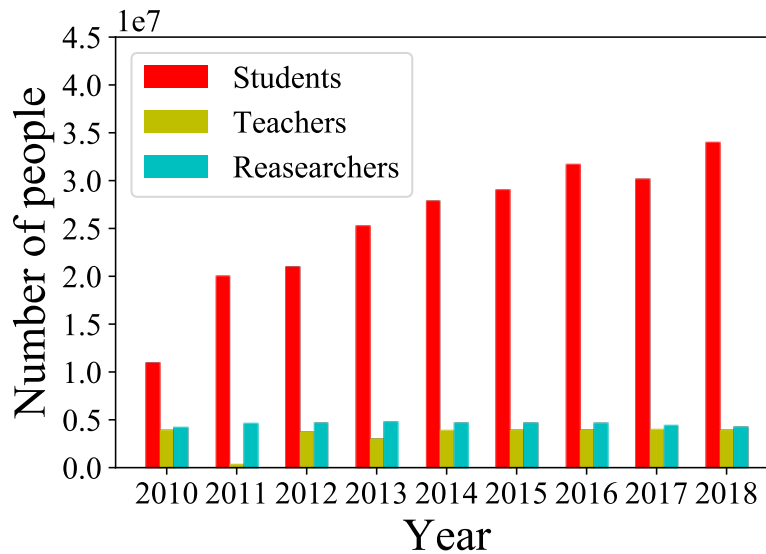


Fig.1 Comparison of Human Resources in Universities Regarding to the Number of Students, Teachers and Researchers

2.2 Characteristics of Human Resources in Universities

The characteristics of human resources are vivid, dynamic, time-called and dual role. Human resources are living resources. It is because of people with social consciousness that the subjective initiative is in the main position with economic activities [12]. The human resources are dynamic, which manifests itself in self-development with choosing occupation and exerting enthusiasm. The formation and development of human resources configuration are also dynamic. The human resources are both a creator and a consumer. At the same time, there are intellectual, regenerative and social characteristics.

(1) University teachers are engaged in the transfer of innovative knowledge, and their contribution is obviously positive and external. They should enjoy high social honor and status.

(2) The output benefits of human resources in colleges and universities (confirmation of talents, value of scientific and technological achievements) are difficult to evaluate from a market point of view.

(3) The work of university teachers is used for the knowledge transfer and innovation, and the degree of effort is difficult to supervise directly.

2.3 Establishment of Analytical Method

The management of human resources refers to the use of modern scientific methods. The combination of a certain material resources of human resources is for the reasonable training, organization and deployment. As a result, the human and material resources can be maintained as the best proportion of dynamic. At the same time, people's thoughts, psychology and behavior carry out the appropriate induction, control and coordination. As a result, the full play to people's subjective initiative can be given and make people to do their best in order to achieve organizational

goals. The management on the behavior of incentive (psychological) needs to use the scientific research perspective and methodology. First of all, it should be focused on the human nature, the needs, the motivation, the goals and the results. The other elements of individual behavior and its associated mechanisms seem that these are the basic elements to determine the efficiency of incentives. It is the basis and mechanism of organizational incentive process and key links. Based on this kind of incentive factor analysis, the human resource management can be regarded as such an incentive process.

3. Analysis of the Operational Mechanism of Personnel Management

3.1 Establishment of Incentive Model

It is supposed that the university is the identified economic entity that provides the employee with the contractual requirements (I^*, a^*) , which I^* is a certain of income and a^* is the effort requirements. Z_m is the rate of output at which the university's interests are maximized. Paying a certain amount of supervision costs (M) can be used to observe the teachers' efforts. Accordingly, the outcome of the supervision incentive payment $S(S \geq I^*)$ or the penalty (F) can be determined.

Thus, the effectiveness of the university to the employee comes from a combination of the contract payer (the basic income is I^*), the cost of effort $C(a^*)$, the incentive utility $U(S)$, and the potential penalty utility $U(F)$. University supervision and incentives are cost-effective, and universities should weigh whether their oversight is low-cost or efficient. Z_l is the output rate of the employee's passive idleness (Z_l is strictly less than the output rate Z_m under the effort requirement a^*).

This study used a simple hybrid strategy game model of incomplete information to describe the behavioral choices of the university and its human resources. The relevant factors of human resource management are analyzed.

3.2 Model Selected by Universities

It is assumed that the university is supervised with a probability selection of P , and that the college employees are selecting efforts based on a probability X_1 . Furthermore, it can be seen from Figure 2 that the probability of employees when working hard and getting rewards are X_2 , and the probability of not working hard to be punished is X_3 .

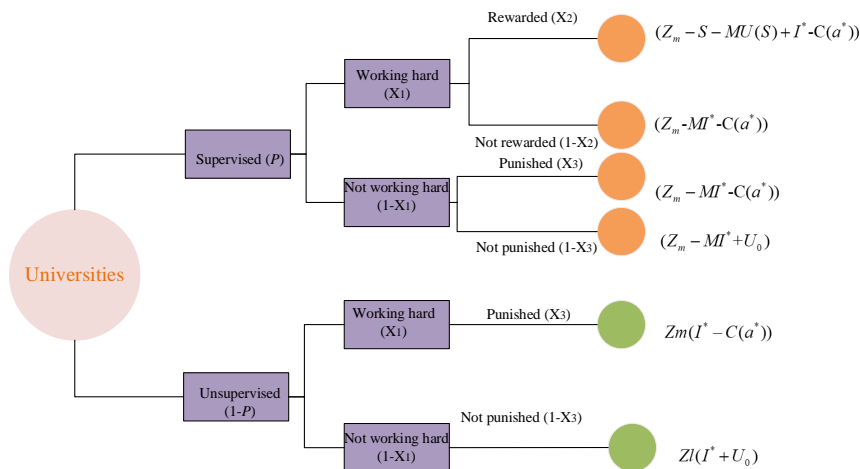


Fig.2 Model Selected by Universities

Inside the above model, F is the degree of punishment (assuming it can be converted into a university interest), $U(F)$ is the loss of the employee's effectiveness as a result of the punishment.

U_0 is the utility of the employee's passive idleness (e.g. more leisure or the use of prescribed work time for their own benefit). The expected utility of the university's choice of supervision and non-supervision is respectively shown below.

$$E_1 = X_1(Z_m - SX_2 - FX_3 - Z_1) + FX_3 - M \quad (1)$$

$$E_2 = X_1Z_m + (1 - X_1)Z_1 \quad (2)$$

When the university behavior is balanced, it is $E_2 = E_1$. The result is below:

$$X_1 = (X_3F - M) / (X_2S + X_3F) \quad (3)$$

When the probability of hard-working is as follow:

$$X_1 > (X_3F - M) / (X_2S + X_3F) \quad (4)$$

The optimal choice for the university is not supervised. when the probability of hard-working is below:

$$X_1 < (X_3F - M) / (X_2S + X_3F) \quad (5)$$

When $X_1 = (X_3F - M) / (X_2S + X_3F)$, the best choice for the university is the supervision.

3.3 Analysis of Employee Choices

It is assumed that the university chooses to supervise or not to supervise, and that people are given by appropriate rewards and punishments based on the results of the supervision (see Figure 3). In the above game model P_1 is the probability of efforts, q is the probability of university supervision, o is the probability of being awarded, λ is the probability of being punished, the remaining symbols are the same as in the last section. The expected utility of an employee's efforts is as follow:

$$E_1 = qoU(S) + I - C(a) \quad (6)$$

When the employee doesn't work hard, the expected utility is:

$$E_2 = q(-\lambda U(F)) + I - C(a) \quad (7)$$

When the probability of university supervision is:

$$q < (U_0 + C(a)) / [oU(S) + \lambda U(F)] \quad (8)$$

The best choice for employees is to make the best of effort.

When the probability of university supervision is:

$$q > (U_0 + C(a)) / [oU(S) + \lambda U(F)] \quad (9)$$

The employee's optimal choice is not to work hard.

When the probability of the university supervisor is:

$$q = (U_0 + C(a)) / [oU(S) + \lambda U(F)] \quad (10)$$

The employee randomly chooses to work hard or not to work hard.

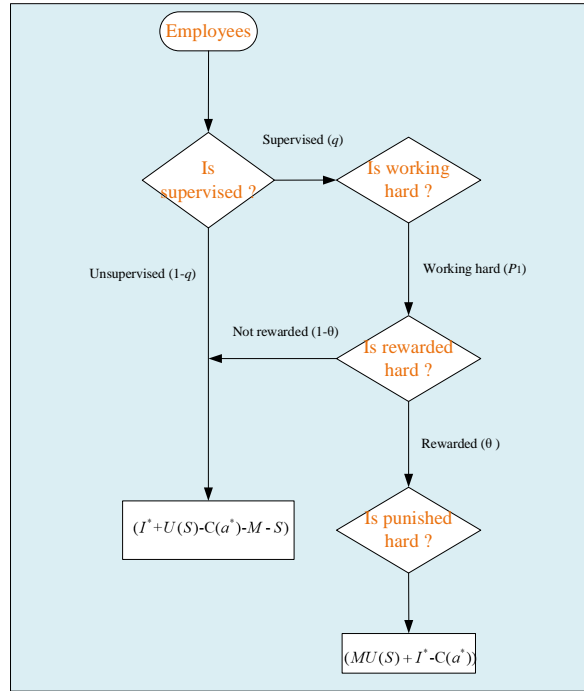


Fig.3 Model Selected by Employees

3.4 Innovation of the Management and Operation Mechanism

At present, most colleges and universities in China implement the system of principal responsibility. A scientific leadership system should establish a modern management concept is “people-oriented” management, and always put the development of talent resources in colleges and universities in the first place. Thus, as seen in Figure 4, we should establish teacher-oriented management ideas, establish the concept of teaching according to the rule of law, fair competition, structural diversity. The principal personally grasps the management of talent resources, and the members of the leadership group coordinate and cooperate with each other on the issue of talent management. We should set up the scientific and reasonable management institutions, the implementation of university and hospital management system at the two levels. At the same time, the functional institutions should be reformed and the personnel service should be transformed into the Human Resources Department, which was included in the teacher’s section. The university-level professor committee makes decisions, evaluates and makes suggestions to all high-level talent program (fund) candidates and key position candidates in the teaching and scientific research series, and makes suggestions to the decision-making bodies at the university level. The college-level professor committee evaluates the proposed talents of the college, and evaluates the key and key positions to be hired by the teaching and scientific research series of the institute, and makes suggestions for the plan. We should evaluate all high-level talent programs (funds) within and outside the college, and make recommendations to the university professor committee. On the basis of the collective decision-making of the Committee of Professors, the Dean (director of the department) is responsible for the management of the Committee of Professors, which is composed mainly of the subject leaders of the second mathematics branch, and the term of office may be set at 2 to 3 years, and the General Secretary of the Party of the Academy should be a member of the Professors Committee. The members of the Professors' Committee are appointed by the President and are in fact major matters of the collective decision-making department.

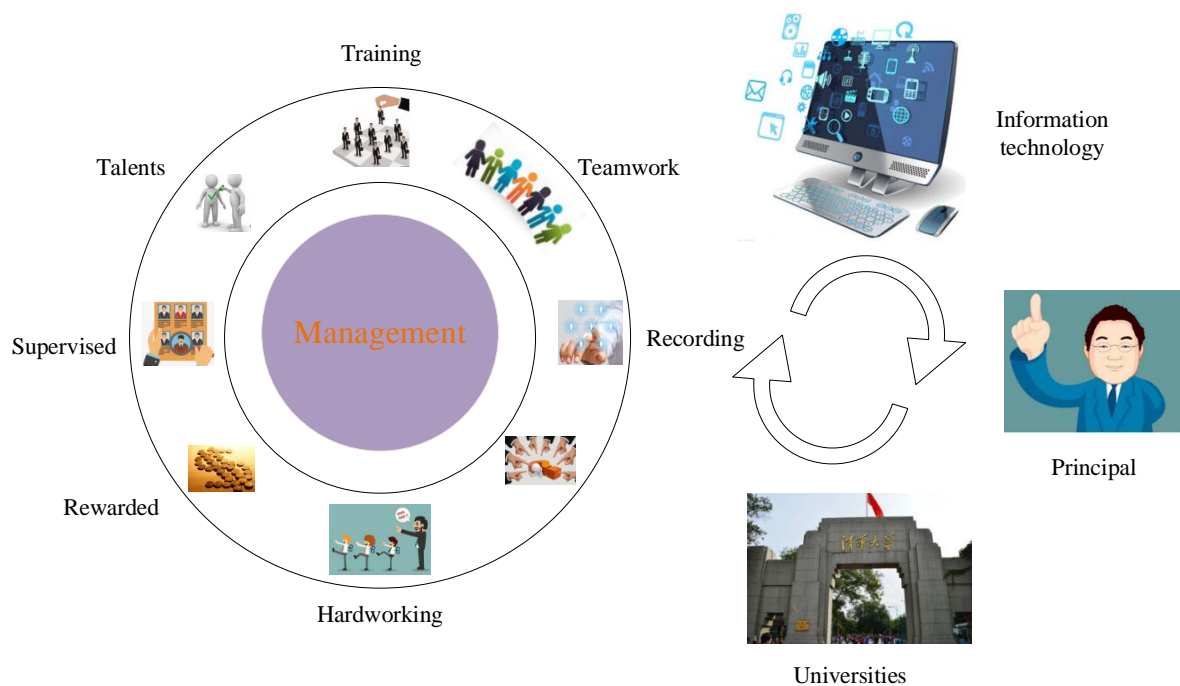


Figure 4. A diagram of the digital structure of human resources management

4. Conclusion

(1) Because it is difficult to directly supervise the work of human resources in colleges and universities, there is a certain opportunity cost for people to work hard in universities, which is one of the reasons why college teachers work part-time or in second jobs more often. Therefore, the part-time or second occupation of college teachers to supervise or oppose the results are generally not high, should be properly guided, so that the university's teaching and scientific research is beneficial.

(2) The most colleges and universities lack the corresponding human resources with the incentive and restraint mechanism. The expectations of passive idleness loss are small. The lack of not working hard can be easy to become one of the people's rational choice.

(3) The human resources of colleges and universities face many external choices, but the chances of automatic separation or dismissal are asymmetric. The university wants to retain talent and all aspects of the conditions are difficult to achieve. It is almost impossible to dismiss an incompetent person. Through the above analysis, we think that the innovation of the human resource management system of colleges and universities should establish the incentive and restraint mechanism under the condition of the market economy, which is very important to improve the performance of college teachers effectively.

Under the impact of the knowledge economy and market economy tide, the management of talent resources in colleges and universities must obtain a win-win situation of personal value and organizational goal from the point of view of human resource management and according to the characteristics of knowledge-based employees. Facing the industrial attribute of higher education, the management of talent resources in colleges and universities must introduce the market mechanism, make the market allocation of talent resources, evaluate the labor value of college teachers from the perspective of human resource management, and form the labor price and teacher market in line with the international market. The talent resources of colleges and universities must be implemented at the university and hospital levels. The universities should strengthen the establishment and management, implement the real teacher appointment system, and really improve the enthusiasm of talent resources from the integration of system incentive and management incentive. The key to the management of talent resources in colleges and universities in the

establishment of the talent evaluation system, and it is also the difficulty of talent resource management, which needs to be further discussed by experts in education, economy and management.

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