

Research on Firm Recruitment on Adverse Selection under the Game Theory Model

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Abstract: In the era of global economic integration, economy and science and technology have increasingly become the decisive factors of international competition, and among them, enterprises have increasingly become the main body of competition. Therefore, in recent years, major enterprises have increasingly improved the core competitiveness of their enterprises, and the research on human resources has become more and more in-depth. To maximize the benefits, in recent years, companies around the world have gradually realized the importance of high-level talent to their company's capabilities. However, due to various problems, such as information asymmetry caused by adverse selection, it is increasingly difficult for companies to select real talents to contribute more to themselves. Through the establishment of the game theory model, this paper discusses the benefits and losses for employers and applicants and finds the best employment recruitment scheme. The research results show that the information asymmetry in the recruitment process will greatly reduce the efficiency of enterprises to find talents, and cause losses to both recruiters, so this paper puts forward relevant suggestions for the problem of information asymmetry to make up for the information asymmetry of the double-reverse, to promote the absorption of outstanding talents by enterprises and drive the development of enterprises and economic recovery.

Keywords: Inspection and Certification, Human Resource, Management, Game Theory, Inverse selection

1. Introduction

Market competition, in the final analysis, is the competition of talents. All stages of enterprise operation must have qualified human resources as support, and recruitment of employees is the most important and basic way for enterprises to obtain talented persons [1]. The quality of recruitment work directly affects the operation of enterprises. Bill Gates once posted, "If you take away my best twenty employees, Microsoft will become an inconspicuous company"[2]. Among the six human resource management modules, recruitment employment is the premise of enterprise human resource management and is also the most critical. The core step is directly related to human resource management results quality [3]. It's enough to see the impact of high-level talent on enterprises. However, finding the right employees who are truly useful to the company is not always smooth sailing. Due to the different positions of the employer and the game, obtaining greater benefits will lead to information asymmetry between the two sides, which will eventually lead to irreversible results. The Certification and Accreditation Administration of the People's Republic of China reported on September

11, 2017, that 25 registrants had defrauded registrants of property at a certification body in Shanghai, including the company's major shareholders, to a frightening extent [4,5]. Due to the asymmetry of information and the inconsistency of the goals of the two, the company owner as the principal and the manager, that is, the agent in the process of the game can often only observe the surface phenomenon, or the document that can reflect the manager's ability or the result of the manager running the company, therefore, it is necessary to establish a corresponding screening and supervision system, to reduce the agency cost, but also maximize the manager's own utility and company benefits.

2. Literature Review

Information economics believes that information asymmetry has caused an imbalance in the interests of both sides of market transactions, affecting social fairness, the principle of social justice, and the efficiency of market allocation of resources. A famous model introduced by Akerllove, a famous American economist and winner of the 2001 Nobel Prize in economics, is the "lemons" market [5]. It is mainly used to describe the situation when the seller of the product knows more about the quality of the product than the buyer, and the low-quality product will drive out the high-quality product and occupy an advantage over the high-quality product so that the quality of the product in the market will continue to decline. And this phenomenon in the field of human resources is directly manifested as, the loss of outstanding talents in the recruitment unit or enterprise, resulting in stagnant or even declining business efficiency. There is reverse selection in human resources recruitment due to information asymmetry. Risk selection has an impact on the fairness of previous choices of employers and job seekers sound want to alleviate the problem of such adverse selection, in the actual talent recruitment process, market information is not completely effective, that is to say, the information of the enterprise and the talent is not symmetrical, the lack of information may lead to adverse selection or moral hazard in the process of enterprise recruitment or talent application [6]. The emergence of these problems will lead to the phenomenon of excellent talents and excellent enterprises being squeezed out of the market, which is one of the main problems in enterprise human resource management, and its analysis and research have certain practical significance. This leads to both job seekers and recruiters being responsible for the loss of time, finance, and funds [7]. The focus is on eliminating the problem of information asymmetry, that is, trying to make information transparent, and sharing information between the two sides [8,9]. Professor Michael Spencer, the winner of the 2001 Nobel Prize in Economics, proposed in his signaling theory that transactions can be improved if asymmetric information is transformed from private information to public information, that is, information is passed from the dominant party to the weaker party [10,11]. Based on this theory, this paper will be based on a static game model between recruiters and applicants. Recommendations are made in all aspects of information transparency. In this study, valuable insights for the prevention of information asymmetry in enterprise human resources recruitment will be provided specifically.

3. Game Model between the Recruiter and the Applicant

3.1. Assumptions

First, employment (A1) and non-employment (A2); Second, those who are able (B1) and those who are not capable (B2); Third, assuming that once hired, the company provides the salary to the candidate is $I(I>0)$, and if the company is not hired, the recruitment time cost $Q(Q>0)$ will be lost; Fourth, suppose A1 and B1 meet, and the applicant and the unit reach a consensus on cooperation to achieve a win-win situation. At this time, the company not only reaps the benefits $C(C>0)$ provided by successful employees to the company, but also the labor remuneration I that can cooperate with the recruiter; Fifth, suppose A1 meets B2, the applicant bears the penalty for falsifying information, but can still get the salary I provided by the company, but the benefits brought to the company by the

dishonest candidate are $D(D < C, D < I)$. Suppose A2 meets B1, and the company loses the potential benefits that real talent may bring to the company, and needs to bear the time cost $Q(Q > 0)$ caused by the interview, and the real talent needs to bear the cost of providing information in good faith $M(M > 0)$; Last, suppose A2 meets B2, the company spends the interview time cost $Q(Q > 0)$, and the fake talent needs to bear the cost of misrepresenting information $V(V > 0)$. The income matrix of candidates and applicants is shown in Table 1.

Table 1. Income matrix of candidates and applicants.

		Recruitment companies	
		A1	A2
Candidates	B1	Policy	A1B1
		Earnings	C-Q-I, I
	B2	Policy	A1B2
		Earnings	D-Q-I, I-N

3.2. Analysis of game results

For the candidate, by definition, I, M, N , are greater than zero, so the candidate chooses honesty, and the company recognizes that he is a real talent and decides to hire is the most profitable

For recruitment companies, because your Q, I, C, D are greater than zero and $D < C$, the benefits are greatest when choosing real talents and hiring. In summary, when choosing option A1B2, both parties will benefit the most, and other solutions will damage their interests.

4. Suggestions

It can be seen that the phenomenon of real information asymmetry in the recruitment process will cause losses for both the enterprise and the applicant, which will not only have a serious impact on the recruitment of outstanding talents by the enterprise but also greatly reduce operational efficiency and increase time costs, which in turn is not conducive to the sustainable development of the company and aggravates the problem of insufficient employment in society. Moreover, the pandemic has led to a downturn in the global economy. The outbreak of the epidemic, coupled with the energy and food crises caused by local wars, as well as Sino-US trade frictions, the policy regulation of various pillar industries has caused a huge impact on the industry.

To increase employment and the core competitiveness of enterprises, it is essential to standardize the recruitment process and strengthen information supervision. Enterprises need to standardize their recruitment process, establish a talent identification system, formulate the company's recruitment plan, job description, job qualifications, recruitment information release, applicant screening, and hiring decisions, through layers of selection and selection of talents that are truly beneficial to the company, and standardize the use of talents to bring benefits to the company.

Strengthen the information supervision system, improve the talent information database, transform the information of talents into common information, and through the government, schools, enterprises, and talent markets to jointly carry out a comprehensive information database of resumes, timely record the academic qualifications, credit and business level of talents, and continuously eliminate the asymmetry of information between applicants and enterprises. The school has to increase investment in the construction of archives infrastructure, introduce computers and other modern archives management equipment, improve the efficiency of archives work in middle schools, and then improve the level of archives work. In addition, when conditions permit, enterprises can also set up a special recruitment team, while ensuring the professional ability of recruiters, regularly organize and carry out training work, improve the professional level of enterprise recruiters, and improve the

efficiency of enterprise talent recruitment. The state should also improve the labor contract system, strengthen law enforcement, and safeguard the legitimate rights and interests of workers, while enterprises should also enhance legal awareness and actively assume social responsibilities. Strengthen the supervision of the market. By establishing a communication platform with good confidentiality, it is convenient to exchange private information between corporate recruiters and job seekers with confidence, so as to improve the transparency of the entire job market.

Flexible use of various recruitment channels. In the process of collecting information on management candidates, enterprises must be proactive. Strike and integrate various effective recruitment methods to get as many as possible to take non-public information, such as through intermediary channels, on-campus recruitment, advertising, and online recruitment. In short, in the current information asymmetric environment, to improve the effectiveness of enterprise recruitment, it is necessary to constantly emancipate the mind, pioneer and innovate, and constantly recognize the misunderstanding of current recruitment, to formulate corresponding countermeasures to improve the effectiveness of enterprise recruitment.

5. Conclusion

From a macro point of view, the domestic research on recruitment games has not been used as a prominent study of game theory and human resource management research, and the relevant literature is less than 100, while the game analysis specific to the field of campus recruitment is more thin and uneven, and the overall research started late and has shown a downward trend in recent years. It can be seen that the issue of human resources in game theory still needs to be paid more attention to. In the context of the epidemic, major enterprises are stagnant, want to seize market opportunities, promote national economic recovery and development, and absorb excellent talents is essential, but now the phenomenon of information asymmetry is continuing, resulting in a serious adverse selection problem, which not only sets difficulties for applicants to find jobs but also causes the loss of enterprise talents, greatly reducing the efficiency of recruitment. In response to this problem, this paper uses a simple static game to include both capable people and incompetent people in the hypothesis, to imitate the adverse selection caused by the applicant's information being more than the recruiter's and analyzes the recruitment results caused by the applicant concealing his information, especially the impact of the enterprise recruiting employees when the applicant has more information than the recruiter and makes suggestions from each link of expanding information transparency according to the analysis results. However, this paper only studies the behavior of applicants hiding information from recruiters, and does not consider the behavior of enterprises hiding information, and hopes that future research can add this point and use evolutionary games to further analyze to find more perfect solutions.

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