

Professional Talent Competition in Colleges and Universities under the Perspective of "Game Theory"

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Received 1 November 2014, www.cmnt.lv

Abstract

Talent competition of colleges and universities is becoming fiercer under the background of continuous development in economy, science and technology. Notably, the competition between the similar professional talents is indeed common occurrence. For the above hot topic, this article quoted the concept of the game theory to discuss its main concepts and types, analyzed the view of employment between similar professional talents of colleges and universities and the cultivation ways of the core competitiveness through the exploration perspective of game theory, in order to create an employment environment conducive to the college talents competition.

Keywords: game theory; job selection; competitiveness

1 Introduction

The report of the 17th national congress of the party pointed out that the first key point of scientific outlook on development was development; the core was people-oriented. Scientific development in the final analysis is the development of free, comprehensive and sustainable people. Only contemporary college students all-round develop themselves, can they undertake the important task of the rise of Chinese nation and become the backbone of nation and the future hope of state [1]. In the 21st century, the competition between countries has become the competition between talents. Specifically speaking, it is the competition of core competitiveness for comprehensive development of talents. This kind of competition not only involves in the national rise and fall, but also directly relates to the employment of college students in today's increasingly grim employment situation. To face the increasingly intense competition for talent, a growing number of experts and scholars have realized the importance of training talents and begin to keen on discussing how to strengthen the competitiveness of talents in colleges and universities. In the article of On the Concept and Constitution of University's Cultivating Pattern [2], Dong Fangze analyzed the connotation of "mode" and "talent cultivation" and "the characteristics of talent training mode", thereby affecting the rational knowledge and reform and innovation of the talent cultivation model. In the article of Exploration of Talents Training Mode of Colleges and Universities under the View of Higher Education Ecology [3], Hu Chunlei, Huang Wenlong cited the higher education ecology theory that provided the brand-new theoretical perspective for the exploration and reform practice of

talents cultivation mode for colleges and universities. The reexamination of the ecological environment of colleges and universities, the redefinition of talent training target ecological niche of colleges and universities, and reselection of personnel training strategy of colleges and universities make the different levels and types of colleges and universities in complex environment find its ecological niche in higher education ecological system accurately, choose and formulate strategic planning that is suitable for their own development. In the article of Exploration and Analysis on the Innovation of Talents Training Mode of Colleges and Universities Based on the Strategy of Reinvigorating China through Human Resource Development [4], Yuan Xingguo explained the significance meaning and goal of strategy of reinvigorating China through human resource development for reform and innovation of university talent training mode through analyzing existed essential issues in university talent training aspect, and put forward the specific measures of reform and innovation for university talents training mode in order to better serve the goal of the strategy of reinvigorating China through human resource development.

Compared with previous research achievements of experts and scholars, the research scope of this paper was smaller, but the theory was updating. This paper took the competition of similar professional talents in colleges and universities as research subject. The advanced ideas of game theory were quoted. Multidimensional perspectives of job-choosing view and cultivation of core competitiveness were analyzed. The topic of the talent competition research was explored together.

2 Concept of Game Theory

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A. CONCEPTION OF GAME THEORY

Game theory is a new branch of modern mathematics and also an important subject of operational research. Game theory mainly studies the interaction of formulized incentive structures [5], which is mathematical theory and method of studying the phenomenon with fight or competitive nature. Game theory considers the predict behavior and actual behavior of individual in games and studies their optimization strategy. Biologists understand and predict some results of evolution theory by using game theory. Game theory has become one of the standard analysis tools of economics, which is widely used in biology, economics, international relations, computer science, politics, military strategy and many other disciplines. Its basic concepts include players, actions, information, strategy, profit, balance and results, etc, in which players, strategy, profit are the most basic elements. Players, actions and results are collectively referred to as game rules.

B. THE CLASSIFICATION OF GAME THEORY

The classification of game also has different categories according to the different benchmarks. It is generally believed that game mainly can be divided into cooperative game and non-cooperative game [6, 7]. The difference between cooperative game and non-cooperative game is the binding agreement of interacted parties, if there is one, then it is a cooperative game, otherwise it is a non-cooperative game. From the time sequentiality of behavior, the game theory is further divided into two categories: static game and dynamic game. Static game refers that participants choose at the same time or though choose not at the same time in the game, the second actors do not know what actions the first actors take; dynamic game refers that the player's actions have order in the game, and the second actors can observe what actions the first actors take. It is divided into complete information game and incomplete information game according to the understanding of the player to the other player. Complete information game refers that in the process of game, every player has accurate information of the other player's characteristics, strategy space and revenue functions. Incomplete information game means if the player does not have accurate information on the characteristics, strategy space and revenue functions of the other player, or has accurate information not for the entire participant's characteristics, strategy space and revenue functions. In this case, the game is the incomplete information game.

3 The Game Behavior of Job Selection of Similar Professional Talents in Colleges and Universities

In view of the difference in the quality (comprehensive abilities) of similar professional talents in colleges and universities, it can be simply divided into two categories: excellent and common. Professional talent is divided into two categories of excellent and common in order to facilitate the analysis, there is no absolute standard mainly based on the differences of reality. Different talents in different cities will receive different educations, feel different cultures. Even the same class in the same school will also exist a distinct education results. Some are top notch, some are more general, the specific basis of division is the professional talent in key colleges and universities is better than in general colleges and universities; the good comprehensive ability composed by professional quality, practical ability, innovation ability, etc is excellent.

A. A POSITION, TWO GAME MODELS: GENERAL GAME IN SIMILAR PROFESSIONAL UNDERGRADUATES

Employer only offers a job to graduates that are likely to appear many applications of graduates under the existing market-based human resource policy. For the convenience of analysis and explanation of the game between the graduates, the following assumptions are showed at this point: employment market of similar professional undergraduate in an area has obvious duality, which is segmented as the main Labor market and the secondary Labor market. At this point, the main Labor market only has one employer to provide a job for graduates, and one and only two graduates A and B can hand in resume to apply for a job; if there is only one graduate enters the main Labor market, then he can get higher returns; if two graduates also stick to the main Labor market, then the rate of obtaining an employment is reduced greatly, both of them are get lower returns.

However, graduate A has two alternative strategies in facing the recruitment of main Labor market: apply for and do not apply for, so does the graduate B. Next is to embody further the hypothesis: when the graduate A and graduate B both choose the employment strategy, their income is $1/2W$ respectively; when the graduate A chooses to apply for the job, but graduate B does not, the income of graduate A is $2W$, graduate B's is $1/3W$; when the graduate A does not choose to apply for the job, but graduate B does, the income of graduate A is $1/3W$, graduate B's is $2W$; when the graduate A and graduate B both do not choose to apply for the job, then both of them have no income. Here, we set W to 3000 RMB according to the wage level of Ningbo graduate taking work. In conclusion, income matrix chart of general game between graduate A and graduate B can be made as shown in the following table:

Table 1 Income of general game in similar professional graduates

	The application of graduate B	The free application of graduate B
The application of graduate	1500,1500	6000,1000

The free application of graduate A	1000,6000	3000,3000
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Thus, the employment competition in similar professional undergraduates is generally coming from making decisions for their own interests.

B. TWO JOBS, TWO TALENTS GAME MODELS: GAME BETWEEN SIMILAR PROFESSIONAL POSTGRADUATE AND UNDERGRADUATE

With the expansion of enrollment scale together with other factors, the competition between postgraduate and undergraduate is growing in the employment market of college and university graduates. Here we construct game model of postgraduate and undergraduate: two jobs, two students' model. Specific hypothesis is as follows: the two jobs are respectively provided by one employer of the main labor market (for convenience of analysis, this

paper assumes an institution with good conditions) and provided by one employer of the secondary labor market (this paper assumes a private enterprise with worse conditions), Wages have great difference for reference. The situation of institution is: postgraduate (3000RMB/month), undergraduate (2500 RMB/month). Private enterprise implement merit pay, undergraduate and postgraduate have the same standard of 2000 RMB/month. And the two positions have the same recruitment requirements of bachelor or above. At the same time, in graduates' talent market, there is the one and only one postgraduate A and an undergraduate B to compete for jobs. Matrix chart of specific success probability in competition as shown below:

Table 2 Matrix of success probability of competition

	Institution application of undergraduate B	Private enterprise application of undergraduate B
Institution application of postgraduate A	60%,40%	100%,100%
Private enterprise application of postgraduate A	100%,100%	50%, 50%

Thus, the competitive advantage of postgraduates is significantly higher than undergraduates among similar professional graduates.

4 The Cultivation Way of Core Competitiveness

(1) The formulation of scientific training plan

Colleges and universities is the cradle to cultivate and bring up high qualified person with core competitiveness. Training plan is the specific plan for talents training in colleges and universities or the project for talents cultivation. Talents cultivation of colleges and universities includes the training goal, major setting and course setting, training plan, evaluation standard, etc [8, 9]. Talents cultivation of colleges and universities must be scientific. The so-called science is that this project needs to be formulated according to the demand of social development, combining with the features of colleges and universities and integrated development direction of students', which fully reflects the organic unity of professional characteristics, school characteristics and the characteristics of students themselves.

(2) The strengthening of career education for graduates

Career education is the comprehensive education activities that purposely, designedly and organically culture the consciousness and skills of individual career planning, develop individual comprehensive vocational ability, promote the activities of the individual career development and guide the individual to conduct and carry out the career planning. Many students did not have conscious and rational analysis faced with job selection after the high school graduation. Their professional was

chose due to parents' advice or on the basis of propaganda of social hot professional; therefore the choice of professional was immaturity and blindness, which needed professional education in college.

(3) The strengthening of lab construction in colleges and universities for the creation of more hands-on opportunities for students

Laboratory teaching (class) is the indispensable part of the undergraduate course teaching, which is also the most effective and the most important forms. It is the most effective means to cultivate student's analyzing and solving practical problems ability by taking students into the social role in simulation of real form; putting the theoretical knowledge learned from classroom into practice; helping students to consolidate and deepen the professional theory knowledge learned from classroom and grasp the basic skills.

(4) The strengthening of psychological quality education of graduates

In the face of the fierce competition pressure, institutions of higher learning should mobilize all forces and do a good job in students' psychological quality education. Positive and optimistic attitude and faith area vital part in the process of job search, and an important part of graduates' core competitiveness. Colleges and universities should pay much attention to this work. College students' graduation season is also the most significant period in their mood swings, colleges and universities should do a good job particularly during this period.

5 Conclusion

Since the 1980s, people have found that the importance of human resource in competitiveness is more and more obvious with the development of national competitiveness theory and continuous deepening of research. How the future competitiveness of a country (region) is will depend on advantages in its human resources aspects [10]. Talent competitiveness in essence is organic synthesis and high cohesion of all kinds of talents factors of human resources quantity, quality, efficiency and environment in a nation, region, and institution, and is quantization of all kinds of talents factors.

For the study on similar professional talents competitiveness of colleges and universities, this article applied game theory into the job selection behavior from

the aspect of employment, studied job selection behavior of college students from that perspective, and carried out the empirical study through investigation and survey, thus to provide a new perspective and new thinking for the competitiveness study of the related subjects in exploring graduates job selection. This is the innovation and highlight of this article.

More than that, this paper put forward relevant suggestions for cultivating the core competitiveness of college students on the basis of talent competitiveness research in colleges and universities, in order to achieve rapid development of higher education and promotion of the win-win development of college students, which have a profound theoretical and practical significance.

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