Correlation Analysis of Investment in Higher Education and Graduate Employment Matching

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Abstract: With the rapid development of higher education, society has been paying increasing attention to investment in education. However, whether investment in higher education is effective in improving the job matching of graduates is still a question that deserves in-depth research. The spatial effect of the impact of higher education investment on innovative human capital is empirically examined. It is found that higher education investment promotes regional innovative human capital accumulation, and there is a certain spatial effect, in which the central university investment shows negative spatial spillover with "siphon effect", and the local university investment shows positive spatial spillover with "diffusion effect ". Based on the relevant theory and empirical analysis, this paper constructs the influence model of employment matching degree, and verifies the positive effect of higher education investment on the job market through data. The research results show that reasonable education investment can not only enhance the employment competitiveness of graduates, but also optimize the matching of supply and demand in the labor market.

1. Introduction

With the rapid development of the global economy and science and technology, higher education is seen as an important area of investment at both the national and individual levels[1]. Through tertiary education, individuals are able to enhance their knowledge and skills to take advantage of the increasingly competitive labor market[2]. Most regions are supported by top-notch higher education, which provides a fundamental impetus and support for the concentration of innovative talent in the region[3]. Human capital theory also suggests that, in addition to the general function of discovering and cultivating talents, higher education's function of scientific research and technology transformation is the key to the growth of innovative talents[4].

In recent years, the scale of global higher education has been expanding and the number of graduates has continued to grow, but the problem of matching between graduates and the needs of the job market has become more and more prominent[5]. Many graduates face the dilemma of mismatch between jobs and their own qualifications and specialties in the employment process, leading to a decline in the rate of return to higher education and employment inefficiency. In response to this problem, in-depth exploration of the relationship between investment in higher education and the match between graduates' employment, the innovative human capital formed by investment in higher education does not only play a role in the region, but the spatial external effect cannot be ignored.

The purpose of this paper is to study the correlation between investment in higher education and graduates' employment matching degree, specifically exploring the impact of different academic levels, specialty settings and regional economic development on employment matching degree[6]. By constructing an empirical model, this paper will reveal the role of higher education investment in enhancing the employment matching degree of graduates, and put forward policy suggestions for optimizing the allocation of education resources and enhancing the efficiency of the labor market.

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2. Theoretical foundations of investment in higher education

The theory of human capital regards education as an investment, believing that individuals can accumulate human capital, such as knowledge and skills, through education, thereby increasing productivity and future income levels[7]. As an important source of human capital, investment in higher education not only brings higher economic returns to individuals, but also creates more economic benefits for society as a whole. By enhancing the comprehensive quality and professional competence of educated individuals, higher education promotes innovation, improves labor efficiency, and contributes to sustainable socio-economic development[8]. The theory provides a theoretical basis for analyzing the impact of investment in higher education on employment. Return on Investment (ROI):

$$\text{ROI} = \frac{\text{Net Profit}}{\text{Investment Cost}} \times 100 \tag{1}$$

Employment Rate Formula:

$$\text{Employment Rate} = \frac{\text{Number of Employed Graduates}}{\text{Total Number of Graduates}} \times 10 \tag{2}$$

From an individual perspective, investment in tertiary education includes private costs such as tuition fees, living expenses and time costs, while the benefits are mainly reflected in increased future income and improved career development[9]. Studies have shown that the returns to higher education usually increase with the level of education, especially in knowledge-intensive industries, where highly educated individuals are more competitive in the job market[10]. However, with the massification of higher education, there is an oversupply of highly educated individuals in some fields, leading to a decline in the economic returns to certain professions and qualifications, which in turn affects the actual benefits of investment in higher education.

Investment in higher education also brings significant socio-economic benefits. The emergence of high-quality human resources can promote industrial upgrading and technological innovation and boost national competitiveness. Higher education can improve social stability and public well-being by raising the intellectual and moral standards of members of society. Higher education also plays an important role in reducing social inequality and promoting social mobility. Governments increase public investment in higher education not only to improve the quality of the workforce but also to achieve long-term socio-economic development goals.

Investments in tertiary education have far-reaching effects on labor market supply and demand. The level of knowledge and skills upgraded through education can significantly improve the adaptability and competitiveness of graduates in the job market. At the same time, investment in education also has a direct impact on the structural matching problem in the job market, where the content and mode of higher education need to be aligned with market demand. Especially with the rapid changes in science and technology and the economy, the traditional education model has been unable to meet the dynamic demands of the current labor market in some aspects, leading to a decline in the job matching of graduates. Therefore, how to effectively allocate educational resources and synchronize the development of higher education with market demand has become an important issue for policymakers in various countries.

3. Analysis of Factors Influencing Graduates' Employment Matching

The degree of graduates' employment matching is affected by multiple factors, including education level, professional setting, personal ability, and geographic economy, etc., which together determine the competitiveness of graduates in the labor market and the suitability of jobs. The level of education directly affects the positioning and salary expectation of graduates in different career fields; whether the professional setting matches the market demand determines the degree of fit between what graduates have learned and the skills they need; and the differences in personal ability and the regional economic environment also play an important role in the employment opportunities and the degree of match of graduates. In the following, we will analyze in detail the

three aspects of education level, professional setting and personal ability.

3.1. Relationship between education level and job matching

Educational attainment is usually closely related to occupational level, with tertiary qualifications seen as an important barrier to entry into higher-paid, higher-skilled jobs. With higher qualifications, graduates have the opportunity to enter more complex and specialized positions, thus improving job matching. However, with the popularization of higher education, the educational requirements for some positions have gradually increased, and even the phenomenon of "educational inflation" has emerged, resulting in certain jobs that should have been filled by people with secondary education being gradually taken over by people with higher education, resulting in a waste of talent and mismatching,showed in Figure 1 :

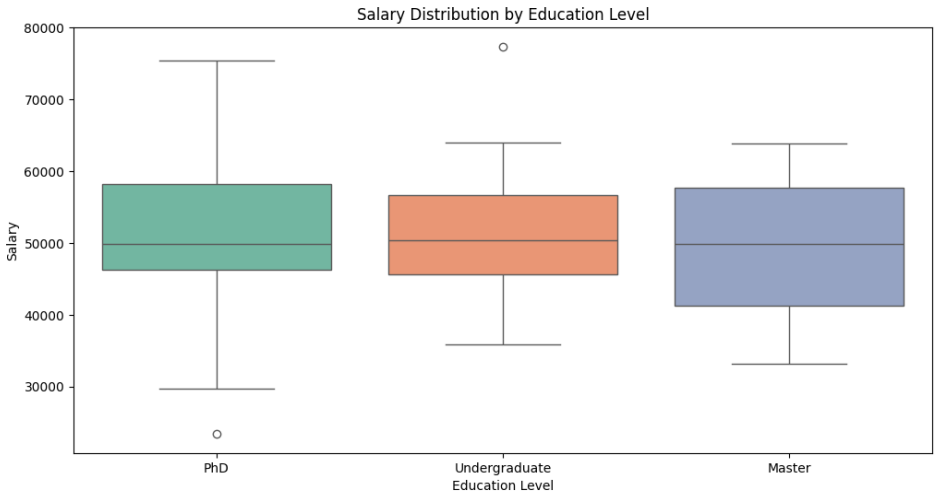

Figure 1 Salary Distribution by Education Level

The education premium refers to the increase in income and career opportunities associated with higher levels of education. Studies have shown that people with higher qualifications usually earn higher starting salaries and have better career development opportunities, especially in high-tech and knowledge-intensive industries. Nonetheless, with the massive expansion of higher education, the education premium in some industries has gradually weakened, and the mismatch between higher education and job requirements has become more prominent. This mismatch not only affects the career development of individuals, but also has a negative impact on the allocation of resources in the labor market.

Higher education qualifications not only enhance job matching, but also have a significant impact on employment stability. Generally speaking, graduates with higher education can obtain more stable long-term job opportunities in the job market and are less affected by economic fluctuations. The higher the level of education, the greater the flexibility and adaptability of graduates in facing career choices, the faster they can adapt to changes in job requirements, and thus improve their stability and match in different employment environments,showed in Figure 2.

Graduates with different levels of education show significant differences in their industry and regional choices. Those with high education levels are more inclined to choose industries with high technological content and strong innovation ability, and concentrate in economically developed big cities or innovation centers. On the other hand, graduates with middle-level education are more inclined to choose labor-intensive industries or to be employed in regions with relatively backward economies. This difference in choice not only reflects the direct impact of education level on employment matching, but also further exacerbates the problem of structural mismatch in employment between regions and industries.

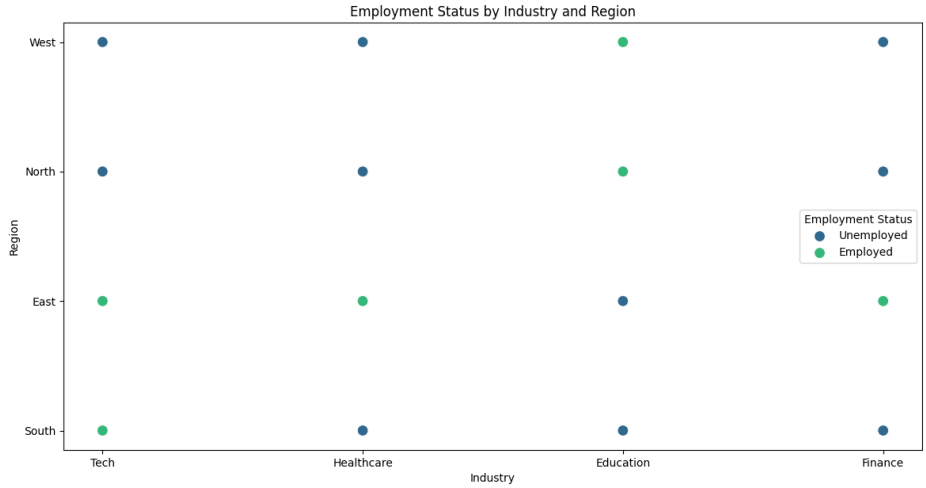

Figure 2 Employment Status by Industry and Region

3.2. Correlation between specialization and job matching

Whether or not the specialty settings of colleges and universities match the market demand is a key factor affecting the degree of employment matching of graduates. With the adjustment of industrial structure and the rapid development of science and technology, there is an increasing demand for certain emerging professional skills in the market, and the traditional professional settings often lag behind these changes, resulting in a disconnect between what graduates learn and the requirements of jobs. With the development of artificial intelligence, data science and other fields, graduates of related majors are more competitive in the job market, and some relatively traditional majors may face employment difficulties. Specialization settings need to be adjusted in a timely manner to follow market changes in order to improve job matching.

The design of the content of college courses determines the theoretical knowledge reserve of students and also directly affects their practical ability and employment adaptability. A reasonable professional curriculum should include both theoretical and practical courses to ensure that graduates have the practical operation ability and problem-solving ability required by the job. The curriculum of some colleges and universities is too theoretical, resulting in a lack of practical experience, which makes it difficult for students to be competent for their jobs immediately after entering the workplace. This disconnect reduces the employment match of graduates and increases the training costs of employers. Focusing on the combination of practical teaching and market skill demand is an important means to improve the employment matching degree of graduates.

The employment match of graduates is not only limited by their chosen specialization, but is also closely related to the coverage of the job market and the employment flexibility of that specialization. Certain specialties have strong generalization and cross-industry applicability, and graduates in fields such as economics and management can find suitable positions in a wide range of industries; other specialties may be more industry-specific, such as medicine and law, and graduates of such specialties are limited in their choices in the job market. If their specialties are in "surplus" or "saturated" in terms of market demand, the degree of job matching for graduates will be significantly reduced.

In order to improve the match between professional settings and the job market, many colleges and universities have gradually strengthened their cooperation with enterprises and ensured the synchronous development of the contents of professional courses and the actual needs of enterprises through the mode of industry-academia integration. This kind of cooperation can provide students with richer internship and practice opportunities, and also enable colleges and universities to more accurately understand the market changes and adjust the professional direction and curriculum, so as to better meet the employment needs of enterprises. Through this two-way interaction, the matching degree of graduates when they enter the job market is significantly improved, and the

recruitment and training costs of enterprises are also reduced.

3.3. Relationship between graduates' personal abilities and job matching

The personal ability of graduates is one of the most important factors affecting job matching, especially whether their level of vocational skills matches the job requirements. The demand for skills in the job market is becoming more and more specialized and comprehensive, and graduates need to have not only solid professional knowledge, but also a variety of interdisciplinary skills, data analysis, communication skills and teamwork. The fit between personal ability and job demand directly determines the competitiveness of graduates in the job market. If graduates fail to master enough practical skills during their school years or fail to keep up with the industry trend, they may face the problem of low matching degree in the process of job hunting, which affects the success rate of employment.

Professional skills, as well as graduates' soft skills, such as communication skills, emotional intelligence, leadership and resilience, also have a significant impact on job matching. In today's work environment, where teamwork and cross-departmental communication have become particularly important, employers are increasingly looking for graduates with good communication and problem-solving skills. Lack of these soft skills may lead to difficulties in succeeding in real work even when technical skills meet the requirements of the job, thus affecting the overall job match. Therefore, schools should focus on comprehensive quality enhancement when training students to improve their adaptability in a variety of occupational environments.

Internships and practical experience are one of the key factors in enhancing the job matching of graduates. Through internships, students are able to better understand the workplace environment, gain practical work experience and develop their professional skills on the job. Graduates with rich internship experience are usually more likely to integrate into the workplace quickly and reduce the training costs of enterprises, and are therefore more preferred by employers. Graduates who lack practical experience may face greater adaptation pressure after entering the workplace, resulting in a lower job match. Therefore, internship is not only a demonstration of personal ability, but also an important way to enhance the fit between graduates and their jobs.

Individual career planning has an important impact on graduates' job matching. A clear career development goal can help graduates make more targeted choices in the job search process, thus enhancing the accuracy and match of employment. On the contrary, graduates without clear career planning may fall into blind choices during job search, resulting in a mismatch between career paths and majors and personal abilities, which affects long-term career development. Therefore, cultivating students' career planning skills during college and helping them clarify their career goals will not only help increase the success rate of job search, but also enhance job matching and career satisfaction after graduation.

4. An empirical analysis of the match between investment in higher education and employment

Through empirical analyses of investment in higher education and graduate employment in various countries, studies have generally found that increased investment in education can effectively improve employment opportunities for graduates, especially in knowledge-intensive industries, where the return on investment in higher education is particularly significant. Some empirical studies have shown that national or regional public investment in higher education can directly affect employment rates by improving the quality of education and optimizing the allocation of educational resources, which makes graduates more in line with market demand and thus improves job matching. In addition, individual private investment in education can also improve competitiveness, shorten job search time and increase employment opportunities.

The empirical study also shows that there are differences in the impact of investment in higher education on the degree of job matching of graduates at different levels of education. Generally speaking, graduates with postgraduate education and above have a higher degree of matching in the job market, and such high-end talents have obvious advantages in terms of professional skills and

job adaptability. On the other hand, the matching degree of graduates with bachelor's degree fluctuates due to the changes in professional settings and market demand. While the employment situation of certain majors is more desirable, undergraduates in some fields may face the dilemma of over-employment. Therefore, the effectiveness of investment in higher education depends not only on the total amount of input, but also on the optimal allocation of educational resources at different levels of qualification in order to improve the overall matching degree.

Structural differences in investment in tertiary education also have important implications for job matching. Specifically, the uneven distribution of educational resources among different disciplines, regions and institutions may lead to an imbalance between the supply of and demand for graduates in certain fields. For example, chronic underinvestment in some disciplines has led to a shortage of professionals and a low degree of job matching for graduates, while other overinvested disciplines face an oversupply of graduates, affecting the degree of matching. By optimizing the investment structure and ensuring a reasonable allocation of educational resources among different disciplines and regions, these problems can be effectively alleviated and the overall employment match of graduates improved.

The rate of return on investment in higher education is one of the most important indicators of the effectiveness of educational investment, and that rate of return is often positively correlated with the degree of employment match of graduates. An empirical analysis of the rate of return on investment in education reveals that institutions and majors with higher quality of education and a better fit with market demand usually have a higher degree of job matching and rate of return for their graduates. Conversely, if educational investment fails to effectively enhance the competitiveness and job adaptability of graduates, the rate of return will be lower. Therefore, to measure the effectiveness of investment in higher education, it is necessary to focus not only on the employment rate, but also to analyze the income level and job-matching situation of graduates, so as to comprehensively reflect the actual return on investment in education.

5. Conclusion

This paper reveals several key findings through an in-depth analysis of the relationship between investment in higher education and graduate job matching. First, investment in higher education significantly improves graduates' employment opportunities and career potential, but this effect is affected by factors such as education level, specialization and regional economic environment. Increased investment in education improves the job matching of graduates, and the return on investment is particularly evident in high technology and knowledge-intensive industries.

An increase in educational level is usually closely related to an increase in occupational level and employment stability. However, with the popularization of higher education, the phenomenon of "academic inflation" has emerged in some fields, which has led to a gradual weakening of the competitive advantage of highly educated people in certain industries. In this regard, policymakers need to pay attention to how to balance academic requirements with actual market demand, so as to avoid wasting resources due to over-reliance on academic upgrading. The reasonableness of professional settings has an important impact on the employment matching degree of graduates. Colleges and universities should adjust their professional settings and optimize course contents by matching with industry demands to ensure that graduates can master skills that match market demands. According to the calculation results and the principle of maximum affiliation, it is possible to determine the affiliation level of the evaluation object. At the same time, the fuzzy comprehensive evaluation results can also be quantified according to a certain score standard, and more specific evaluation results can be obtained by sorting and analyzing the evaluation scores, which can further enhance the actual working ability and market adaptability of graduates.

Personal ability plays a key role in job matching. In addition to professional skills, factors such as soft skills, practical experience and career planning ability also significantly affect the employment results of graduates. Higher education institutions should help students improve their overall quality through comprehensive training, so as to fully prepare them to enter the job market. In order to improve the effectiveness of investment in higher education, policy makers and

educational institutions need to take into account various factors such as education level, professional settings, and individual abilities to optimize the allocation of resources and promote the interface between education and market demand. The employment of future college graduates is a common concern of the whole society, and the evaluation of the employment quality of college graduates can provide a certain reference basis for improving the employment of college graduates. Through the hierarchical analysis method to construct the evaluation index system, on this basis, the use of fuzzy comprehensive evaluation can be a comprehensive judgment of the employment quality of the target object, but also can be further analyzed on the evaluation results of the sub-indicators, to find out where the shortcomings of the employment work, in order to provide a more targeted policy recommendations and improvement measures.

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