Python-based employment big data analysis in higher vocational colleges

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Abstract. In recent years, with the increase of graduates and the economic slowdown caused by the impact of the novel coronavirus pneumonia epidemic, the problem of difficult employment has attracted wide attention from all walks of life. Taking the employment data of graduates of a vocational college as an example, this paper displays the employment rate of graduates, employment industry, matching degree between employment unit and profession, salary level, geographical distribution and other information through data collection, data cleaning, data analysis and data visualization, so as to provide reference for students' career planning and employment choice. Finally, countermeasures and suggestions are put forward to help students better plan their career development, and job market data support for universities and government departments are also provided.

Keywords: College students; Get a job; Salary; Industry; territory.

1. Introduction

The difficult employment of college students is not only a practical problem, but also a social problem. At present, the total number of graduates in China is increasing year by year. It is estimated that there will be 11.58 million graduates in 2023 (see Figure 1). Although college graduates have a high level of professional knowledge, they are the dominant group in the labor market. However, with the development of globalization and the impact of knowledge economy, college students must have the core employability to meet the requirements of the new economy in order to develop successfully. The research shows that in the current job market, vocational college graduates are facing a relatively large employment pressure. In the process of employment, there are many obstacles to employment, such as lack of professional identity, lack of professional skills, information asymmetry and so on. In addition, the employment situation of vocational college graduates is affected by some factors, such as personal quality, the degree of matching between majors and market demand, and the novel coronavirus epidemic [1].

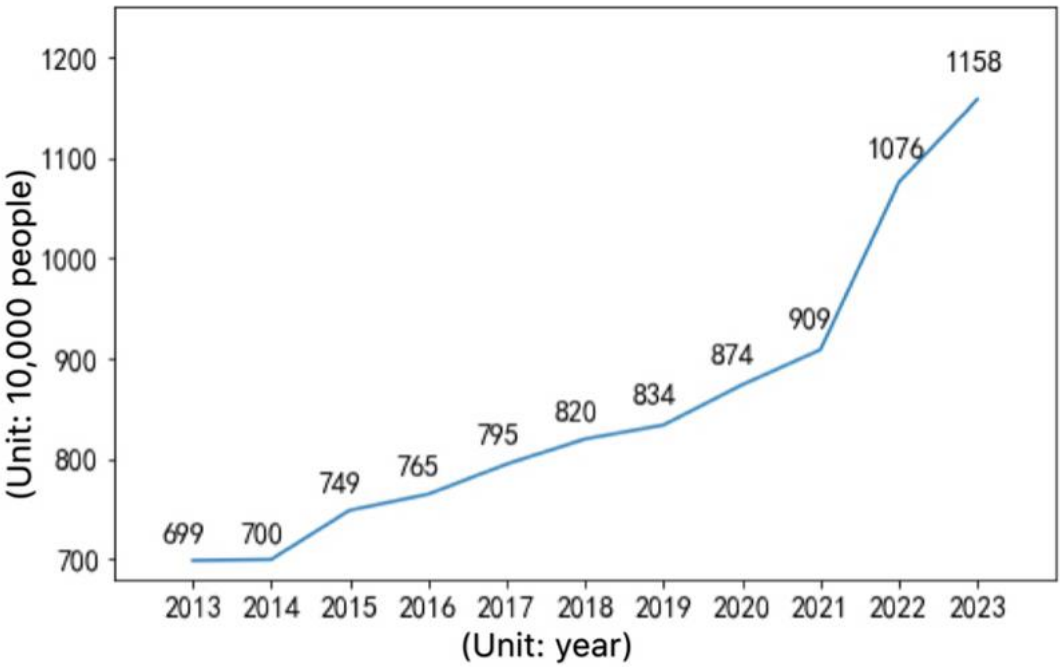

Figure 1 The number and growth trend of national graduates in recent ten years

A comprehensive big data analysis of the employment situation of vocational college graduates is of great significance for understanding the demand and trend of the job market and improving the employment competitiveness of graduates. Vocational colleges can better understand the social demand for vocational skills, guide vocational colleges to carry out teaching reform, and train talents who are more in line with market demand. The government and education departments understand the current situation and development trend of vocational education, and can specify education policies with specific targets to further promote the development of vocational education. It is necessary for the government to understand the situation of the job market and the supply and demand of professional talents to formulate employment policies. Employment research can provide important references for the government to formulate employment policies. The geographical distribution, industry distribution, salary level and other information displayed by employment analysis can provide employment guidance and help for graduates, which is conducive to their preparation in advance and improve their employment competitiveness.

2. Analysis of employment data

This paper selected a vocational college computer and related majors graduates for analysis, the total number of students 1226. The employment success rate, industry distribution, regional distribution and salary level are visualized.

2.1 Employment success rate

From the perspective of graduation destination, the situation of employment, non-employment, self-employment and further study is shown in the following figure. The number of students employed by enterprises was 984, accounting for 80.3% of the total number of students, and the total number of students employed by the three ways of joining the army, starting their own businesses, and studying further was 130, accounting for 10.6% of the total number of students. The proportion of unemployed people is 9 per cent of the total population

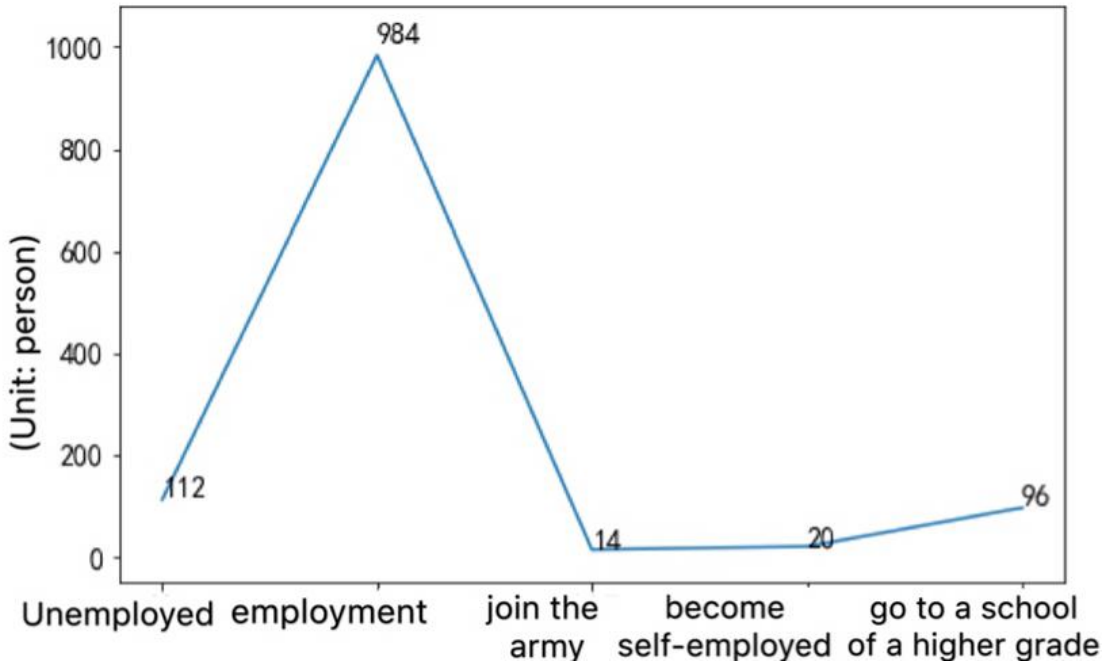

Figure 2 Overall employment distribution data

2.2 Industry distribution

According to statistics, the graduates of this school are mainly employed in software research and development and operation and maintenance, information technology, computer related industries, reaching about 45%, and the professional matching degree is good. This was followed by retail and wholesale, construction and education, accounting for about 13%, 10% and 7%, respectively. Employment in the rest of the industry barely exceeds 5%. This shows that software development and operation and maintenance, information technology, computer-related industries are the main fields of employment for graduates of the school of Computer Science.

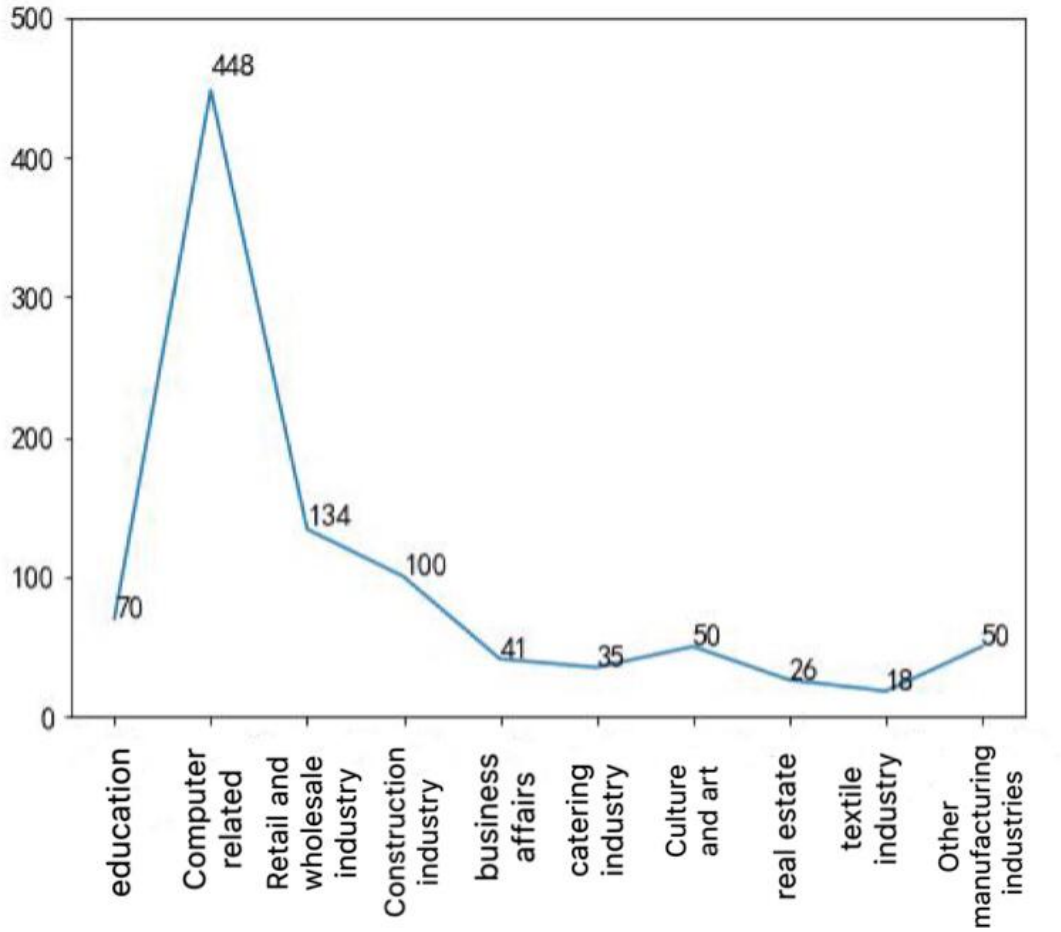

Figure 3 Industry distribution

2.3 Geographical distribution

From the perspective of employment region, most students are concentrated in Guangzhou. On the one hand, first-tier cities have a high degree of economic development, relatively more job opportunities, relatively high salaries and generous welfare benefits, attracting many graduates to develop. On the other hand, many enterprises in second - and third-tier cities also need a large number of graduates, but because of the lack of regional development, relatively low wages, small development space and other reasons, the attractiveness of graduates is limited.

The cluster of junior college students in first-tier cities also has some problems, such as the pressure of job competition, high cost of living, concentration of skilled talents, and soaring housing prices, which have put them to the test. Therefore, junior college students should give proper consideration to developing in small and medium-sized cities, realizing their own value and contributing to local development.

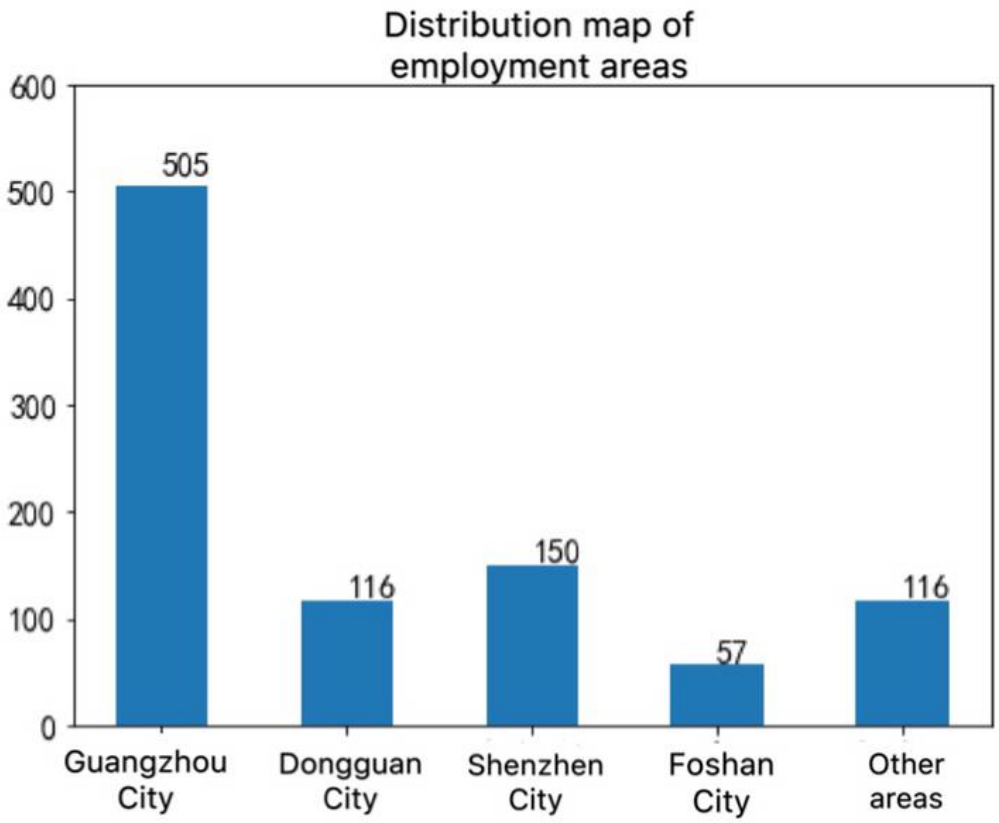

Figure 4

2.4 Salary level

According to the statistics, the average salary of the sample graduates is 4,344 yuan. Among them, the number of graduates with a salary level between 3,000 and 5,000 yuan accounts for the largest proportion, the number of graduates distributed between 3,000 and 4,000 yuan is 301, and the number of graduates distributed between 4,000 and 5,000 yuan is 314, accounting for 62% of the total number. About 24 per cent of graduates earn between RMB5,000 and RMB8,000, and no more than 5 per cent earn more than Rmb8,000. Its graduates have average salaries across the board, but the proportion of graduates with high salaries is low.

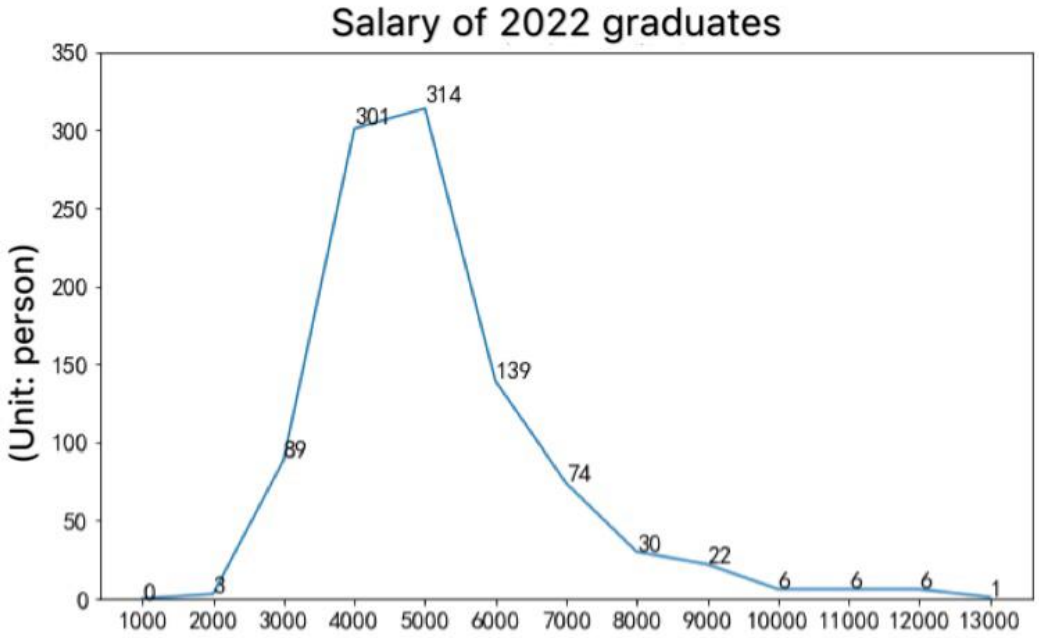

Figure 5

3. Countermeasures and suggestions to solve the problem of college students' employment.

3.1 Guidance on employment areas

According to the needs of the profession and industry to choose the employment region, different professions and industries have different requirements for the region, some professions and industries in the big city employment may have more advantages, while some industries are more suitable for small cities or rural employment. Considering the cost of living and development opportunities, big cities have a high cost of living, but also provide more development opportunities and resources [2]. Small cities or villages have low living costs but relatively few development opportunities and resources. When choosing a job location, you need to take into account the cost of living and development opportunities. In order to promote local economic development, the government has introduced some employment support policies, such as subsidies, tax incentives, etc. These policies can help graduates of higher vocational colleges get more opportunities in employment. Coordinate the urban-rural dual structure differences and regional disparities. Appropriately tilt resources to small and medium-sized towns, narrow the difference in political resources between cities and regions, and better guide college students to move to underdeveloped areas and small towns, which can not only bring human resources to small towns, but also alleviate the pressure on large and medium-sized cities and promote a virtuous circle of social development.

The choice of employment areas needs to be based on their own conditions and development needs, but also need to consult more, more understanding of the employment situation and policies in different places, to make a smarter choice.

3.2 The government has introduced measures to encourage college graduates to find jobs and start businesses

The government provides more employment opportunities for college graduates through recruitment, internship, training and other forms, and strengthens the publicity of employment information channels. Establish entrepreneurship support funds to provide financial, technical and management support for college graduates to help them start their own businesses [3]. We will strengthen employment services and support, establish employment guidance centers and

employment information platforms, and provide college graduates with services and support in job-hunting information, career planning and job-hunting skills. We will strengthen vocational education and training to improve the professional quality and competitiveness of college graduates and help them better adapt to the job market. Formulate relevant policies, such as employment priority, tax incentives and other policies, to provide more employment and entrepreneurship opportunities for college graduates.

3.3 Schools should be market-oriented and promote the integration of education and employment.

Adjust the professional Settings, according to the market demand and employment prospects, reasonable professional Settings, pay attention to the training of market competitiveness of talents. Establish an industry-university-research cooperation mechanism, strengthen cooperation with enterprises, incorporate the needs of enterprises into the teaching content and practice links, and improve students' practical ability and employment competitiveness. Campus recruitment and internship employment services are carried out to provide students with job search training, resume preparation, career planning and other services to help students better adapt to the job market [4]. Establish an employment information platform to provide students with the latest employment information and job information, so that students can keep abreast of market changes and employment opportunities. Strengthen the school career guidance, help graduates scientific analysis of the market, objective understanding of themselves, to help graduates to master certain career skills. Through the Career guidance Center, we provide career counseling, employment counseling and other services to guide students in career planning and employment preparation. Through the above measures, the school is oriented towards the market, promotes the combination of education and employment, and provides better education and employment services for students.

3.4 Reform of teaching methods

Teaching methods were reformed to integrate subject content with practical projects, allowing students to acquire knowledge and skills through participation in projects. Use project as a theme to teach. Combining subject content with practical projects, projects are used as teaching topics to guide students to learn knowledge and skills through practice. Promote the "classroom revolution", build a modern classroom, take learners as the center, carry out the integrated teaching design of "teaching, learning, training, doing and evaluation", and explore new teaching methods such as "action-oriented" teaching, project-oriented teaching, scenario-oriented teaching and process-oriented teaching. The projects provided by enterprises are incorporated into the teaching plan, so that students can master practical skills and work experience through practical exercise and project practice [5]. Let students participate in the planning, implementation, evaluation and other aspects of the project, and cultivate students' project management ability. Develop students' teamwork ability. Let the students carry out the project practice in a team, cultivate the students' teamwork ability and communication ability.

3.5 Deepen school-enterprise cooperation

School-enterprise cooperation aims to promote the common development and win-win cooperation between the two sides. School-enterprise cooperation can provide more practical opportunities for students, so that students can better integrate into the enterprise and understand the operation mode and actual work of the enterprise, so as to better train talents. School-enterprise cooperation to jointly carry out research and development and innovation projects, jointly solve practical problems of enterprises, promote education and teaching reform and enterprise technological innovation, schools to improve the quality of talents, enterprises to improve core competitiveness. School-enterprise cooperation needs a long-term and stable cooperation mechanism, and a reasonable benefit distribution, risk sharing, intellectual property protection and other systems should be established to ensure the sustainability and long-term nature of cooperation.

School-enterprise cooperation is a mutually beneficial and win-win cooperation mode, which can promote the benign interaction between schools and enterprises and promote economic and social development [6].

4. Conclusion

Based on the big data analysis of the employment situation of computer-related graduates in a higher vocational college, this paper presents the data from several aspects, such as regional distribution, salary level, industry distribution and matching degree. In the direction of employment, it provides important reference and guidance for the students of vocational colleges. The research method and analysis results of this paper can also provide reference for the analysis of employment situation in other higher vocational colleges.

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