Research on Wuhan's Attractiveness to College Students' Employment and Entrepreneurship in Wuhan-Based on Different School Levels

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Abstract: At present, human resources are regarded as important strategic resources in China. Wuhan has a million university students and abundant human resources, but brain drain has always been a major problem in Wuhan. Based on different school levels, through factor analysis, six factor dimensions are extracted from the factors affecting college students' willingness to employ and entrepreneur in Wuhan. By binomial logisitc regression analysis, explore and analyze the impacts on college students' willingness to employ and entrepreneur in Wuhan, in order to provide ideas for Wuhan to improve its policy content and increase urban attraction. Thus, promote the sustainable development of Wuhan.

1. Introduction

In the context of China's innovation-driven development strategy, human resources are regarded as the core and source of innovation development, and become the primary link of strategy imp implementation. *Report of the 19th National Congress of the Communist Party of China* clearly pointed out the importance of talents for the construction of socialist modernization in China. It can be seen that human resources have been regarded as an important strategic resource in China. Wuhan is a city of one million university students and the number of graduates each year is large, but it has been facing a serious problem of brain drain. In 2017, the Government of Wuhan launched the plan of "Million University Students Studying and Employing in Wuhan", hereinafter referred to as *the Project* and introduced special preferential policies for college students, which include nine major preferential measures in order to attract college students to find jobs in Wuhan and increase the attractiveness of Wuhan.

2. Literature Review

Different scholars have investigated and analyzed many factors that affect the employment of college students. Xiaoyu Liu, Jungang Hu [1] found that the gender, age, political outlook, hometown, and professional type of college graduates had a significant impact on their employment by establishing a binary classification logistic regression model. However, Graduation colleges have not significantly affected the employment situation. Xueyang Yan [2] pointed out that comprehensive ability and personal growth expectation have the most serious impact on the employment of college students in Northeast China. School conditions have the least impact on employment of college students in Northeast China. Tingting Gao [3] explored the impact of urban environmental factors, urban living standards, urban development potential and individual factors on graduates' choice of employment cities.Gao Peng [4] pointed out that college students with a native place of Hubei are significantly more willing to stay in Wuhan and among four influencing factors, the policy factor has the greatest impact. Ishitani [5] used data from the United States to study the impact of college students on the choice of employment area. Valentina Vasile [6] pointed out in the research: the level of development, labor compensation and attractive employment opportunities, the demand for specialization and the labor market, and the supply of education system have a significant impact on the brain drain and employment.

According to the existing research results, it can be found that the factors affecting the employment of college students are various. Moreover, the birthplace factor is an objective factor, and its degree of influence is widely recognized, and the impact of school level and influence factors is inconsistent. Therefore, this article uses a questionnaire survey to further explore the impact of school level and other influencing factors on the undergraduates' employment and entrepreneurship in Wuhan under the influence of hometown to put forward targeted suggestions to attract outstanding talents of Wuhan universities to stay in Wuhan and provide ideas for Wuhan to improve *the Project*.

3. Questionnaire Setup and Data Collection

This article is to obtain data through questionnaire survey and analyze the data. The questionnaire includes three parts: basic information, employment willingness, and factors that affect employment willingness. According to the review of a large amount of literature and the talent policy in *the Project* proposed by Wuhan in 2017,the employment influencing factors set in the questionnaire include 19 factors such as talent policies, industry prospects and housing price level. The influencing factors are scored according to the five points of the Likert scale from "very unimportant, unimportant, average, important, and very important", and assigned from "5" to "1". The survey divided Wuhan universities into "Double-First Class" colleges, ordinary undergraduate colleges, and junior colleges. These surveys were conducted in 10 colleges in Wuhan, and data were obtained through field distribution and recycling questionnaires. A total of 650 questionnaires were distributed, and 650 were collected. The questionnaires that were not filled in and answered incompletely were excluded, and 600 valid questionnaires were finally obtained.

4. Sample Descriptive Statistics

The basic information of the respondents' gender, grade, hometown, and willingness to stay in Wuhan is statistically summarized. The results are shown in Table 1.

Table 1 Sample Descriptive Statistical Analysis

		School Levels					
		"Double-First Class" Colleges		Ordinary Undergraduate Colleges		Junior Colleges	
		Quantity	Proportion	Quantity	Proportion	Quantity	Proportion
Gender	Male	95	47.5%	94	47.0%	95	47.5%
	Female	105	52.5%	106	53.0%	105	52.5%
Hometown	Hubei Province	65	32.5%	99	49.5%	137	68.5%
	Non-Hubei Province	135	67.5%	101	50.5%	63	31.5%
Would you like to stay in Wuhan	Willing	123	61.5%	114	57.0%	70	35.0%
	Unwilling	77	38.5%	86	43.0%	130	65.0%

Descriptive statistics found that among the 200 surveyors at each level of colleges and universities, the ratio of sex is balanced, and the sample selection is reasonable. In terms of willingness to stay in Wuhan, more people in "double first-class" and ordinary undergraduate colleges are unwilling to stay in Wuhan, and the number of junior colleges who are willing to stay in Wuhan is higher.

As can be seen from Table 2, in the index system of factors affecting employment willingness, in terms of career development, the average values of employment opportunities, relearning opportunities, promotion space, and industry prospects all exceed 4, and the average values of the convenience of transportation and the suitability of urban life are also more than 4, while the average values of talent policy are less than 4, and its standard deviation is greater than 1. The mean value of college students' theme communities is the smallest, which is close to 3, and its standard deviation is relatively large.

Table 2 Indicator System of Factors Affecting Employment Willingness

Influencing Factors	Average Value	Standard Deviation
1. Loose Settlement Policy for College Students	3.512	1.2068
2. Housing Security for College Students	3.535	1.0912
3. Theme Community for College Students	3.085	1.1676
4. Internship Positions and Subsidies for College Students	3.400	1.0764
5. Directly Recruiting Grassroots Social Service for College Students	3.362	1.0906
6. Innovation and Entrepreneurship Education and Training	3.332	1.0787
7. Undergraduate Entrepreneurship Project Funding	3.563	1.1305
8. Wuhan Development Level	3.977	.9871
9. Wuhan Development Potential	4.110	.9413
10. Employment Opportunities	4.197	.9070
11. Relearning Opportunities	4.112	.9077
12. Promotion Space	4.187	.8774
13. Industry Prospects	4.283	.8969
14. Item Price Level	3.998	.9798
15. House Price Level	3.932	1.0076
16. Degree of Supporting Infrastructure	3.993	.9477
17. The Convenience of Transportation	4.018	.9727
18. The Suitability of Urban life	4.163	.9044
19. Availability of Public Leisure Equipment	3.877	.9881

5. Empirical Analysis

5.1 Reliability Analysis

Questionnaire reliability analysis uses the most commonly used reliability coefficient-the Cronbach coefficient to determine whether there is a high inherent consistency between the items of the questionnaire or scale. Its value is between 0 and 1, and the closer it is to 1, the higher the credibility. The reliability coefficient is preferably above 0.8. The reliability of the data collected from the questionnaire was analyzed by SPSS 22.0, and the obtained Cronbach coefficient was 0.870, which is greater than 0.8 and indicates that the questionnaire has a higher credibility and the questionnaire results are reliable. The results are shown in Table 3.

Table 3 Reliability Analysis

Clonbach Coefficient	Number of Items
.870	24

5.2 Validity Analysis and Factor Analysis

Using SPSS22 software for factor analysis, KMO was 0.856 in KMO and Bartlett test shown in Table 4, greater than 0.7, indicating that there is a certain relationship between the independent variables designed in the questionnaire, and the questionnaire is valid; and the significance is less than 0.001, indicating that the questionnaire is qualified for factor analysis. Then the next step can be factor analysis.

Table 4 KMO and Bartlett Test

KMO Sampling Suitability		.856
Bartlett's Sphericity Test	Chi-square Last Read	3850.482
	df	171
	Sig.	.000

Considering that there may still be a correlation between the factors, the maximum variance orthogonal rotation method is used to extract the factors with the characteristic root greater than 1 as a standard. There are 4 factors in total. The cumulative contribution is 55.386%, which is less than 60%, indicating that the current four dimensions cannot represent the 19 influencing factors well.

According to the gravel chart, the sixth point tends to be gentle, so six factors are extracted, and each item belongs to a factor. The cumulative variance interpretation is 65.389%, which is greater than 60%, indicating that the current six dimensions can better represent these data, and the factors' ownership is determined by the item's load factor of 0.50 or more. The results are shown in Table 5.

Table 5 Factor Lotd Matrix

Influencing Factors	Factor Dimensions					
	1	2	3	4	5	6
1. Loose Settlement Policy for College Students					.850	
2. Housing Security for College Students					.652	
3. Theme Community for College Students		.662				
4. Internship Positions and Subsidies for College Students		.607				
5. Directly Recruiting Grassroots Social Service for College Students		.782				
6. Innovation and Entrepreneurship Education and Training		.733				
7. Undergraduate Entrepreneurship Project Funding		.632				
8. Wuhan Development Level						.805
9. Wuhan Development Potential						.727
10. Employment Opportunities	.650					
11. Relearning Opportunities	.729					
12. Promotion Space	.780					
13. Industry Prospects	.725					
14. Item Price Level				.671		
15. House Price Level				.841		
16. Degree of Supporting Infrastructure			.673			
17. The Convenience of Transportation			.655			
18. The Suitability of Urban life			.781			
19. Availability of Public Leisure Equipment			.822			

Therefore, the influencing factors on the attractiveness of college students to stay in Wuhan to employ are divided into six dimensions, and each dimension is composed of several specific items. Name these six dimensions based on the meaning of these specific items:Factor1(10, 11, 12, 13) is mainly related to the career development of college students, such as employment opportunities, so it is named "*Career Development*"; Factor2(3, 4, 5, 6, 7) mainly involves employment and entrepreneurship policies in *the Project*, such as internships and subsidies for college students, so it's named "*Employment Security*"; Factor3(16, 17, 18, 19)mainly relates to the quality of urban life, such as the convenience of transportation, so it is named "*Urban Living Conditions*"; Factor4(14, 15) is mainly related to the cost of living, such as house price level, so it is named "Living Cost";Factor5(1, 2) is mainly related to the residence settlement policy in *the Project*, such as the loose settlement policy for college students, so it is named "*Housing Security*"; Factor6(8, 9) is mainly related to urban development, such as Wuhan's development level and Wuhan's development potential, so it is named "*Urban Development*".

6. Regression Analysis

6.1 Logistic Regression Model

Logistic regression model [7] is one of the statistical analysis models often used when analyzing categorical dependent variables. Logistic regression belongs to probabilistic nonlinear regression. Suppose that under the action of the independent variables x1, x2 ... xk, the probability of occurrence

of an event is pi, and the ratio of the ssssprobability of occurrence to the probability of non-occurrence is $\frac{\text{pi}}{1-pi}$, so the Logistic regression model is:

$$Ln\left(\frac{pi}{1-pi}\right)=\alpha+\sum_{i=1}^{n}\beta iXi+\varepsilon i \tag{1}$$

In Equation (1), α is a constant term, βi is called a regression coefficient, and the error term εi is a random variable, E (εi) = 0, var (εi) ≥0, and K is 1, 2, 3, 4, 5and so on.

The dependent variable in this article is a discrete variable: whether you want to stay in Wuhan-Y, there are two values (willing to stay Y = 1, unwilling to stay Y = 0), so binary logistic regression is used. According to a large amount of literature and previous research results, we know that hometown is a very important factor affecting the choice of employment place for college students. Therefore, the eight factors of *hometown, school level, career development, employment security, urban living conditions, living cost, housing security,* and *urban development* are the independent variables of the model. Therefore, the model pre-established in this paper is

$$Ln\left(\frac{pi}{1-pi}\right)=\alpha+\sum_{i=1}^{8}\beta iXi+\varepsilon i \tag{2}$$

Among them, x1 is *School Level*, x2 is *Hometown*, x3 is *Career Development*, x4 is *Employment Security*, x5 is *Urban Living Conditions*, x6 is *Living Cost*, x7 is *Housing Security*, x8 is *Urban Development*.

Since the school level is a type variable, dummy variables should be introduced and the coding is shown in Table 6.

Table 6 Classification Variable Encoding Table

Label	School Levels	Encode		
School Level(1)	"Double-First Class" Colleges	1.000	0.000	0.000
School Level(2)	Ordinary Undergraduate Colleges	0.000	1.000	0.000
School Level(3)	Junior Colleges	0.000	0.000	1.000

6.2 Model Inspection

6.2.1 Significance Test of the Model

This article uses the SPSS22 software by using a backward: conditional method to select independent variables. One line of the model outputs the likelihood ratio test results of whether all parameters are 0. If P <0.05, the model makes sense overall. With a confidence level of 0.01, five iterations were performed, and the significance test of each iteration is shown in Table 7, that is, each iteration passed the significance test of the model.

Table 7 Omnibus Test of Model Coefficients

		Chi-square	df	Sig.
Step 1	Model	108.241	9	.000
Step 2	Model	108.209	8	.000
Step 3	Model	107.832	7	.000
Step 4	Model	107.041	6	.000
Step 5	Model	105.305	5	.000

In addition, from the perspective of the model's positive judgment rate, when the model is empty, the model positive judgment rate is 50.3%.After five steps, the rate increased to 68.3%.

6.2.2 Goodness of Fit Test

There are both discrete and continuous variables in the model. The commonly used indicators D and Pearson chi-square are no longer suitable for testing the goodness of fit of the model. Therefore,

the method developed by Hosmer and Lemeshow was used to test the goodness of fit of the logistic regression model. When the P value is not less than the test level (P= 0.05), it is considered that the information in the current data has been fully extracted, and the model fits well. The test results of model fit are shown in Table 8. It can be seen that the model passed the goodness-of-fit test.

Table 8 Hosmer and Lemeshow Tests

Step	Chi-square	df	Sig.
1	11.816	8	.160
2	14.675	8	.066
3	16.579	8	.135
4	12.088	8	.147
5	7.467	8	.487

6.2.3 Significance Test of Regression Coefficient

In this paper, SPSS22 software is used to adopt the backward: conditional method to select independent variables. All independent variables are first included in the model. Both hometown and school level are used as classification covariates, and the hometown is Hubei Province and the school level is a junior college for reference.

Table 9 Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 5	Career Development	.227	.092	6.034	1	.014	1.254
	Urban Development	.147	.090	2.694	1	.099	1.159
	School Level(1)	-.883	.232	14.504	1	.000	.413
	School Level(2)	-.856	.223	14.714	1	.000	.425
	Hometown(1)	-1.309	.186	49.373	1	.000	.270
	Constant	1.221	.172	50.541	1	.000	3.390

The independent variables included in the model are determined according to the probability of 0.05 in and 0.1 out. After five iterations, the independent variables entering the model are shown in Table 9.

6.2.4 Establishment of the Model

According to Table 9, after five iterations, the confidence level is 0.01, and the independent variables that finally enter the model are X1, X2, X3 X8.The final model is

$$Ln\left(\frac{pi}{1-pi}\right) = -0.883X11 - 0.856X12 - 1.309X21 + 0.227X3 + 0.147X8 + 1.221 \quad (3)$$

Due to the introduction of dummy variables, the variables in the model are specifically explained: X11 = "Double First-Class" Colleges, X12 = General Undergraduate Colleges, X21 = native place is not Hubei Province, X3 = Career Development, X8 = Urban Development.

6.2.5 Explanation of Model Results

According to the model finally established in this article, Career Development, Urban Development, Hometown, and School Level have a significant impact on university students' stay in Wuhan to start a business and employment, while the policies for staying in Wuhan, including Housing Security and Employment Security, Urban Living Conditions, and Living Cost have no significant impact on university students' staying in Wuhan to start their own businesses. This article makes some appropriate explanations for the model that was eventually established.

(1) School level factors

The model results show that the school level has a significant impact on university students to start a business and find employment in Wuhan. Under the same conditions, the ratio of the number

of students from "Double First-Class" colleges and junior colleges staying in Wuhan to employ is 0.413. The ratio of the number of undergraduates from ordinary undergraduate colleges and junior colleges staying in Wuhan for entrepreneurship and employment is 0.425. That is to say, compared with junior colleges, "Double First-Class" colleges and ordinary undergraduate colleges have more college students choosing to leave Wuhan. At different school levels, the platforms and opportunities for college students to contact are different, and competitiveness and comprehensive ability are also different. At the same time, and outstanding students' requirements for work may be higher. Under such circumstances, it can be seen that Wuhan has lost many outstanding students.

(2) Policy factors

The model results show that the two factor dimensions about policies extracted by factor analysis did not enter the final model. There may be many reasons. For example, the first reason is that *the Project* was only developed for three years, and immature and imperfect measures may be unavoidable; the second reason may be that the policy promotion is not enough. Most college students do not have a basic understanding of the preferential policies in *the Project*, so that the impact of the policies factors is not very significant.

7. Suggestions and Conclusions

For the results of the model, this paper makes the following recommendations in order to improve the attractiveness for students staying in Wuhan for entrepreneurship and employment, and promote better implementation of *the Project*:

1) Refine policy measures at the school level. Many outstanding college students choose to leave Wuhan to work, which has caused Wuhan to lose a lot of high-level talents. Therefore, relevant departments can refine the policy, and add or modify some measures based on existing levels for different school levels. Attract more outstanding talents to stay in Wuhan, while ensuring the relative fairness of the policy.

2) Increase the propaganda of the Project. During the questionnaire survey, we learned that many students didn't know *the Project* in Wuhan very well. Publicity measures such as related advertising columns can be set up in universities or other public place to make students understand *the Project* spontaneously, so that more college students can truly understand *the Project* in order to attract more people and make full use of the educational achievements of universities in Wuhan.

3) Emphasize the career development of college students and provide them with more opportunities to promote career development. College students attach great importance to career development. Therefore, for enterprises, they should pay attention to the increase of employees' learning knowledge and work skills at work, provide employees with a good platform to promote their own capabilities and provide corresponding security mechanisms. Through the attraction of Wuhan's enterprises, attract more outstanding university students.

4) Continuously improve the development level of Wuhan. Urban development plays a significant role in attracting more outstanding talents to stay in Wuhan. Wuhan is a vibrant and energetic city. It continuously develop to attract more and more graduates to stay in Wuhan for employment, improve Wuhan's economic vitality, and promote Wuhan's development.

Wuhan's outstanding university talents condense valuable local education costs, and more outstanding university students choosing another place of employment will be a huge loss for Wuhan. At the same time, it will cause Wuhan's human resources employment costs to increase. Therefore, relevant departments should pay more attention to the problem of college students' career selection, and constantly improve policies to increase the attractiveness of Wuhan to outstanding talents, make full use of Wuhan's educational resources and achievements, and then continuously improve the economic vitality and promote the sustainable development of Wuhan.

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