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Analysis on the influence factors of college students about the willingness to work in rural e-commerce

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Abstract

In recent years, rural e-commerce has been actively improving, but the contradiction between talent demand and supply has become increasingly prominent. This article combines the four dimensions of personal characteristics, professional attitude, family background and external environment to conduct empirical research on willingness to engage in rural e-commerce among e-commerce major students. The results show that the willingness to engage in rural e-commerce is generally low, which influences internship experience, academic planning, salary expectations, career perception, family attitudes, school guidance and public opinion.

Keywords: rural e-commerce, willingness to work, influence factor

1 Introduction

The 19th National Congress report of the Communist Party of China indicated that agriculture is fundamentally related to the people's livelihood and national economy. We must always regard the 'three rural' issues as the top priority of work and implement the rural revitalisation strategy. As an essential part of e-commerce, rural e-commerce plays an increasingly prominent role in stimulating rural consumption, promoting agricultural upgrading, assisting targeted poverty alleviation and promoting rural development. It has injected strong impetus into promoting talent revitalisation, rural industry revitalisation, ecological revitalisation and cultural

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revitalisation. In the background of ‘big country and small peasants’, the Chinese rural e-commerce model has been continuously optimised and iterated through the ways of ‘collecting zeros into the whole’, ‘gathering small into big’ and ‘all to whole’, etc. In these ways, they provide opportunities for Chinese agricultural products to enter the second stage of rapid development.

Although the continuing optimisation of rural e-commerce is a positive development, the contradiction between talent demand and supply in the e-commerce industry has become increasingly prominent. The shortage of talents has severely restricted the development prospects of the Chinese rural e-commerce industry. The Smart E-commerce Research Institute of China Agricultural University released the ‘2020 China Rural E-commerce Talent Status and Development Report’. The data made available under this report estimate that the talent gap of rural e-commerce will increase to 3.5 million in the next 5 years. To investigate the willingness of e-commerce talents in rural e-commerce, this paper establishes four dimensions of personal characteristics, professional attitudes, family background and external environment, which are based on the three theories of individual behaviour, social capital and professional values, to conduct an empirical study on the influence factors of college students about the willingness to work in rural e-commerce under the background of rural revitalisation in Chongqing, China.

2 Current research

As a new type of e-commerce field, rural e-commerce has very promising employment prospects, and national policies also strongly support the development of rural e-commerce. The current research on rural e-commerce employment of college students mainly focuses on the following three aspects:

(1) Research on the employment status of rural e-commerce for college students. Chen Yue believes that the employment direction of college students tends to be diversified, and their attitudes towards rural employment are relatively vague, and most of them hope to enter stable enterprises [1]. Dong Zhuannian believes that the shortage of talents has restricted the development of small and medium-sized cities, and the relevant mechanisms for entrepreneurship support should be improved, so that college students can learn to balance the relationship between self-development, family harmony and material needs to realise the value of life [2]. Zhang Chaofeng believes that the project support measures such as increasing entrepreneurial subsidies implemented by local governments and universities have greatly promoted the targeted poverty alleviation work of rural e-commerce [3].

(2) Research on the factors affecting the willingness to work in rural e-commerce of college students. Lu Yonghua found that the original experience, development prospects, rural environment and policy environment are important factors affecting the willingness to work in rural e-commerce of college students [4]. Zhou Haibo used regression model analysis to find factors such as individual, family, economy and social culture that significantly affect the choice of employment location for college students [5]; Fang Annuo believes that the employment situation perception, practical experience, peer influence and school guidance significantly affect their willingness to engage in rural e-commerce work [6].

(3) Research on rural e-commerce employment strategy of college students. Zhao Wenwen believes that the policies are well-implemented and performed as the Western Volunteer Program, college student village officials, etc., but they still have questions such as insufficient implementation and insufficient social support [7]; Yang Chunqi believes that the government should take advantage of the situation, improve the rural environment, optimise personnel training, improve the service system and create a good environment and atmosphere for the development of e-commerce [8]; Heyue believes that strategies such as adjusting the college curriculum system settings, improving support policies, increasing government propaganda, building a good platform and increasing grassroots employment arrangements can better attract college students to engage in the rural e-commerce industry [9].

Different regions have different influence factors on the employment of college students in rural e-commerce. The above-mentioned documents provide an in-depth analysis of the employment status, influencing factors and

attracting strategies of college students in rural e-commerce. Based on the background of rural revitalisation, this paper conducts an empirical research on the factors that determine employment willingness in Chongqing e-commerce majors. It provides more targeted suggestions for Chongqing to increase the proportion of rural e-commerce employment.

3 Experimental procedure

This article combines individual behaviour theory, social capital theory and professional value theory to conduct research on Chongqing e-commerce majors from internal factors and external factors. Individual characteristics and professional attitudes are summarised as internal factors, and the family background and external environment are summarised as external factors. This is shown in Figure 1.

Fig. 1 Influence Factors dimension division diagram.

(1) Variable selection and hypothesis testing

This article introduces a total of 17 variables to conduct a detailed analysis of each major dimension. The selection of specific variables is based on the following aspects:

Individual characteristic dimension: Seven variables of 'gender', 'personality', 'household registration', 'practical experience', 'academic planning', 'job selection location' and 'salary expectations' can be included in the individual characteristic dimension. The first six items are dichotomous categorical variables, and the last item is set to five levels for measurement, so that the respondents can choose the score that meets their judgement. According to individual behaviour theory and other literature analysis experience, it can be known whether an individual has participated in the practice or project of rural e-commerce, and the actual situation such as academic planning after graduation may have a certain degree of influence on his willingness to work. Therefore, the following hypotheses are put forward for Chongqing e-commerce majors:

H1: Internship experience significantly affects their willingness to work in the rural e-commerce industry.

H2: Academic planning significantly affects willingness to work in the rural e-commerce industry.

Occupational attitude dimension: the degree of occupational understanding, actual experience and subjective evaluation significantly affect the intensity of the willingness to work. Therefore, three variables of 'situation perception', 'occupation perception' and 'professional expectations' are set in the occupational attitude dimension. The occupational perception reflects the degree of understanding of the occupation. So, the following hypothesis is put forward:

H3: Occupation perception significantly affects willingness to work in the rural e-commerce industry.

Family background dimension: We can find that among the many indicators of family background dimension, the three indicators, namely 'income level', 'education level' and 'parent occupation' are more recognised in many studies. Considering the diversity and ambiguity of occupations, this study only retains the first two variables and divides them into five levels for measurement and adds 'family members', 'family attitudes' and

‘family relations’ as three binary variables. Different individuals have different family backgrounds, which create different employment conditions and different types of students. It means that family attitudes, education level and income level have an important influence on willingness to work. Therefore, the following hypotheses are put forward:

H4: Family attitudes significantly affect willingness to work in the rural e-commerce industry.

H5: Education level significantly affects willingness to work in the rural e-commerce industry.

H6: Income level significantly affects willingness to work in the rural e-commerce industry.

External environment dimension: School education and interpersonal communication have a significant impact on willingness to work. Combining relevant literature, we set up two variables, namely ‘school guidance’ and ‘social opinion’ and six measurement questions, and used a five-level scale for measurement. The school provides college students basic knowledge, practical opportunities, new information and public opinion, and it also changes the subjective understanding of society. Therefore, the following hypotheses are put forward:

H7: School guidance significantly affects willingness to work in the rural e-commerce industry.

H8: Public opinion significantly affects willingness to work in the rural e-commerce industry.

In summary, the descriptions of all measurement questions and the explanatory variables of the model are shown in Tables 1 and 2:

(2) Data acquisition

The final sample is comprised of junior and senior students who study e-commerce in Chongqing, including Chongqing University(CQU), Southwest University(SWC), Chongqing University of Posts and Telecommunications(CQUPT), Chongqing University of Technology(CQUT), Chongqing JiaoTong University(CQJTU), Chongqing Technology and Business University(CTBU), Chongqing Institute of Engineering(CQIE) and Chongqing University of Education(CQUE). These universities not only cover comprehensive, normal, finance and engineering universities but include ‘double first-class’ key universities and ordinary undergraduate universities.

The questionnaire star was used to conduct online surveys. 30–40 questionnaires were distributed to each of the 8 universities, and a total of 300 questionnaires were collected. A total of 11 questionnaires did not meet the conditions and only 289 valid questionnaires were obtained. The valid questionnaire rate was about 96.3%. Also, the number of valid questionnaires in various universities is well distributed, reaching the expected goals. The specific sample size of each university is shown in Table 3.

(2) Result analysis

By calculating the Alpha coefficient, the reliability coefficient value is ascertained at 0.888, which is higher than 0.8, indicating that the data in this study has a high reliability quality. The KMO value of the validity coefficient is 0.906, and the sig value is 0.000. The Bartlett sphericity test indicates that the research data has a high level of structural validity. The reliability and validity test results are shown in Tables 4 and 5.

Based on the descriptive statistical analysis of the survey sample data, 141 e-commerce college students in Chongqing are willing to engage in the rural e-commerce industry, which accounted for 48.79% of the total. Further, there are 148 unwilling students, which accounted for 51.21% of the total number. The specific statistical results are as follows:

1. Descriptive statistics of individual characteristic dimensions

Among the samples participating in the survey, a larger number of people are more extroverted, which is further in line with the personality characteristics of Chongqing locals from the perspective of personality analysis. From the analysis of internship experience, nearly two-thirds of Chongqing e-commerce majors have not participated in the practice of rural e-commerce. From the analysis of academic planning, nearly 70% of college students choose direct employment. From the analysis of job location, students willing to stay in Chongqing for employment are very optimistic. The salary of e-commerce majors in Chongqing is expected to be concentrated in and around 4001–5000 yuan, which is a reasonable level for the income of fresh graduates in Chongqing. The specific data is shown in Table 6.

2. Descriptive statistics of professional attitude dimensions

Overall, the average value of the measurement questions of the professional attitude dimension is above 3

Table 1 Description of measurement questions.

Dimension	Variable	Description
Individual characteristic	Gender	What is your gender?
	Personality	What is your personality?
	Household registration	Where is your household registration?
	Practical experience	Have you participated in a project in the rural e-commerce industry?
	Academic planning	What will you do after graduation?
	Job location	Do you want to stay in Chongqing after graduation?
	Salary expectations	What is the expected salary after graduation?
Occupational attitude	Situation perception	Demand: Do you think the recruitment market has great demand for e-commerce students in CQ?
		Prospects: Do you think the employment prospects of e-commerce majors in CQ are very optimistic?
		Market: Do you think e-commerce majors have an advantage in the job market?
	Occupation perception	Information: Do you think you know more information about rural e-commerce?
		Practice: Do you have done many rural e-commerce practices and projects?
		Policy: Have you learned about preferential policies that encourage college students to engage in rural e-commerce work?
Family background	Professional expectations	Industry: Do you think rural e-commerce industry can attract high-quality talents?
		Status: Do you think the social status of rural e-commerce practitioners is improving?
		Salary: Do you think the current salary level of rural e-commerce is more competitive?
		Prospects: Do you think the development prospects of rural e-commerce are very good?
		Family members
		Family attitudes
External environment	School guidance	Family relations
		Education level
		Income level
	Public opinion	Internship: Does school can provide internship opportunities in rural e-commerce?
		Course: Does the school set up some courses on rural e-commerce?
		Information: Does the school pass on rural e-commerce related information to you?
		Same group: Do your friends have participated in rural e-commerce practices or projects?
		View: Are your friends more optimistic about the rural e-commerce industry?
		Propaganda: Have you learned many advanced deeds of rural e-commerce through media propaganda?

Table 2 Explanation of model explanatory variables.

Variable	Explanation of model explanatory variables
Individual characteristics	
Gender	0=female, 1=male
Personality	0= extroverted, 1= introverted
Household registration	0= urban, 1= rural
Practical experience	0=No, 1=Yes
Academic planning	0= further studies, 1= employment
Job location	0= out of CQ, 1= CQ
Salary expectations	1=below 3000 yuan, 2=3001–4000 yuan, 3=4001–5000 yuan, 4=5001–6000 yuan, 5=6000 yuan and more
Occupational attitude	
Situation perception	1=strongly disagree, 2=somewhat disagree, 3=neutral, 4=somewhat agree; 5=strongly agree
Occupation perception	1=strongly disagree, 2=somewhat disagree, 3=neutral, 4=somewhat agree; 5=strongly agree
Professional expectation	1=strongly disagree, 2=somewhat disagree, 3=neutral, 4=somewhat agree; 5=strongly agree
Family background	
Family attitudes	0=No, 1=Yes
Family members	0=No, 1=Yes
Family relations	1=very bad, 2=bad, 3=fair, 4=good, 5=very good
Education level	1=junior high school and below, 2=senior high school/secondary school, 3=junior college
	4=undergraduate; 5=postgraduate or above
Income level	1=below 50,000 yuan, 2=50,000–100,000 yuan, 3=100,000–150,000 yuan, 4=150,000–200,000
	yuan; 5=200,000 yuan or more
External environment	
School guidance	1=very non-conforming, 2=relatively not conforming, 3=fair, 4=relatively conforming, 5=very conforming
Public opinion	1=very non-conforming, 2=relatively not conforming, 3=fair, 4=relatively conforming, 5=very conforming

points, which shows that the professional attitude of Chongqing e-commerce majors is relatively optimistic. The average value of the two variables of employment situation perception and occupation expectation is higher, reflecting that the e-commerce industry is more optimistic about its employment situation and the current development of rural e-commerce. However, the understanding of quotient is not high and needs to be strengthened. Specific data are shown in Table 7.

3. Descriptive statistics of family background dimensions

From the perspective of family members, the number of only-child families is 125, which accounted for 43.25%. Further, the number of non-one-child families is 164, which accounted for 56.75%. From the perspective of family attitudes, 100 people support the rural e-commerce industry, which accounted for 34.60%.

Table 3 Valid questionnaires in each university.

University	Number of valid questionnaires	Percentage
CQU	37	12.80%
SWC	33	11.42%
CQUT	32	11.07%
CQUPT	34	11.76%
CQJTU	39	13.49%
CTBU	39	13.49%
CQIE	35	12.11%
CQUE	40	13.84%

Table 4 Reliability coefficient test.

Cronbach Alpha	Number of items
0.888	29

Table 5 KMO and Bartlett test.

KMO	Bartlett sphericity test	Approximate chi-square value	Degree of freedom	Significance
0.906	3785.465		406	0.000

Table 6 Descriptive statistics of individual characteristic dimensions.

Variable	Classification	Quantity	Percentage
Gender	Male	135	46.71%
	Female	154	53.39%
Personality	Extroverted	170	58.82%
	Introverted	119	41.18%
Household registration	Rural	163	56.40%
	Urban	126	43.60%
Internship experience	Yes	101	34.95%
	No	188	65.05%
Academic planning	Employment	199	68.86%
	Further studies	90	31.14%
Job location	CQ	203	70.24%
	Out of CQ	86	29.76%
	Below 3000 yuan	7	2.42%
Salary expectation	3001–4000 yuan	70	24.22%
	4001–5000 yuan	99	34.26%
	5001–6000 yuan	62	21.45%
	6000 yuan or more	51	17.65%

Further, there are 189 people who do not support it, and this number accounted for 65.4%. From the perspective of the family's network, the average level is 3.03, which indicates that the ability to help children in their career is slight. Most of the parents' education level is below high school or technical secondary school. The annual

Table 7 Descriptive statistics of professional attitude dimensions.

Variable	Average value	Standard deviation
Situation perception	3.33	0.695
Occupation perception	3.04	0.808
Professional expectation	3.31	0.691

family income level is mainly concentrated between 50,000 and 150,000 yuan. The specific data of parents' education level and family annual income level are shown in Figures 2 and 3.

Fig. 2 Educational level of parents. **Fig. 3** Annual income level.

4. Descriptive statistics of external environment dimensions

The mean values of school guidance and public opinion are all above 3 points, which is more optimistic.

The higher scores of social public opinion indicate that the students and friends around the respondent have a positive view and practice of the rural e-commerce industry. The specific data is shown in Table 8 given below.

Table 8 Descriptive statistics of external environment dimensions.

Variable	Average value	Standard deviation
School guidance	3.17	0.776
Public opinion	3.24	0.757

5. Cross-analysis of factors affecting employment willingness

Through the cross-analysis of the factors affecting employment willingness, only the P-value of the three indicators of 'internship experience', 'salary expectations' and 'family attitudes' is less than 0.05, which indicates the practical experience, salary expectations and family members of Chongqing e-commerce college students. Attitudes are significantly related to their willingness to work in the rural e-commerce industry. The specific data is shown in Table 9 given below.

Table 9 Cross-analysis table of multivariate and employment willingness.

Variable	P-value
Gender	0.055
Personality	0.226
Household registration	0.557
Practical experience	0.000
Academic planning	0.133
Job location	0.308
Salary expectations	0.007
Family members	0.637
Family attitudes	0.000
Education level	0.290
Income level	0.646

6. Correlation analysis of factors affecting employment willingness

Correlation analysis of factors affecting employment willingness shows that the significance of the variables is 0.000. There are two asterisks (**) in the upper right corner, which indicate these variables are significantly correlated at the 0.01 level. Further, the correlation coefficient is positive, which indicates a positive correlation verifying the speculation. The specific data is shown in Table 10 given below.

7. Regression analysis of factors affecting employment willingness

'Employment willingness' is a binary variable and a binary logistic regression model that is used to carry out further exploration. There are 17 independent variables in the above four dimensions, and the dependent variable belongs to the employment willingness, which is determined within the range of [0,1]. The specific probability model is shown in the following Eq. (1):

$$\ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \sum_i \beta_i X_i + \varepsilon \quad (1)$$

In Eq. (1), the probability of Chongqing e-commerce majors who are willing to work in rural e-commerce can be represented by p , the explanatory variable that affects the willingness to work can be represented by X_i , β represents the coefficient, and the random error term can be represented by ε . When $p=1$, it means willing,

Table 10 Multivariate correlation analysis (N289).

Variable		Situation perception	per-Occupation perception	Professional expectations
Occupation perception	Pearson correlation	0.630**	-	-
	Significance (bilateral)	0.000	-	-
Professional expectations	Pearson correlation	0.738**	0.630**	-
	Significance (bilateral)	0.000	0.000	-
Family relations	Pearson correlation	0.368**	0.463**	0.433**
	Significance (bilateral)	0.000	0.000	0.000
School guidance	Pearson correlation	0.562**	0.631**	0.555**
	Significance (bilateral)	0.000	0.000	0.000
Social opinion	Pearson correlation	0.594**	0.642**	0.663**
	Significance (bilateral)	0.000	0.000	0.000

and when $1-p=0$, it means unwilling.

According to the regression model, the predicted value is 76.8%, which is greater than 50%. Also, the comprehensive test chi-square value of the model coefficient is 123.97, which is significant at the 1% level, indicating that the model effect is good. The specific logistic regression analysis results are shown in Table 11 given below.

Table 11 Logistic regression analysis.

Variable	B	S.E.	Wals	Sig.	Exp (B)
Gender (reference: male)	0.281	0.360	0.607	0.436	1.324
Personality (reference: introverted)	-0.209	0.319	0.429	0.513	0.812
Household registration (reference: rural)	0.209	0.354	0.348	0.555	1.232
Practical experience (reference: yes)	-0.899	0.388	0.066	0.008	1.104
Academic planning (reference: employment)	-0.797	0.368	4.698	0.030	0.451
Job location (reference: CQ)	-0.437	0.347	1.586	0.208	0.646
Salary expectations (reference: below 3000 yuan)	-0.598	0.162	13.565	0.000	1.818
Situation perception	-0.080	0.117	0.465	0.495	0.923
Occupation perception	0.216	0.108	4.030	0.045	1.241
Professional expectation	0.144	0.099	2.113	0.146	1.154
Family members (reference: yes)	0.277	0.331	0.698	0.404	1.319
Family attitudes (reference: yes)	-2.404	0.393	37.349	0.000	0.090
Family relations(reference: very bad)	0.068	0.218	0.096	0.756	1.070
Education level (reference: Junior high school and below)	0.002	0.167	0.000	0.990	1.002
Income level (reference: below 50,000 yuan)	-0.191	0.178	1.149	0.284	0.826
School guidance	0.319	0.107	1.238	0.005	0.888
Public opinion	0.256	0.119	1.725	0.038	1.169
Constant	-0.534	1.435	0.138	0.710	0.586

In the dimension of individual characteristics, the variables of gender, personality, household registration and job location are not significant at the 5% level, which indicates that these variables have no significant impact on the willingness to engage in rural e-commerce work. The academic planning (reference: employment) is significant at the 5% level, and $B=-0.797<0$, which indicates that people who choose direct employment will

prefer to engage in rural e-commerce work. The internship experience (reference: yes) is significant at the 1% level, and $B = -0.899 < 0$, which indicates that the people who have participated in the practice are inclined to engage in rural e-commerce work. Salary expectations (reference: 3000 yuan or less) are significant at the 1% level, and $B = -0.598 < 0$, which indicates that people with lower salary expectations will prefer to engage in rural e-commerce jobs. Hypotheses 1 and 2 are true.

In the dimension of occupational attitude, situation perception and occupational expectations are not significant in the model ($p > 0.05$), which means that these variables did not significantly affect their rural e-commerce work willingness. Occupation perception is significant in the model ($p < 0.05$, $B = 0.216$), and it has a positive effect, indicating that college students with better occupation perception tend to engage in rural e-commerce work. Hypothesis 3 is true.

In the family background dimension, family members, family relationship, education level and income level are not significant in the model ($p > 0.05$), which indicates that these variables have no effect on the willingness to engage in rural e-commerce. Family attitudes (reference: yes) are significant in the model ($p < 0.01$, $B = -2.404$), which indicates that family attitudes have a significant and negative impact on e-commerce college students' willingness to engage in rural e-commerce. These prove that hypothesis 4 is true and that hypotheses 5 and hypothesis 6 are not true.

In the external environment dimension, school guidance and public opinion are significant in the model ($p > 0.05$), which indicates that school guidance and social public opinion have an impact on e-commerce college students' willingness to engage in rural e-commerce. The B value is greater than 0, which means that the better the school guidance and public opinion are, the higher the willingness of college students will be to engage in rural e-commerce. Hypotheses 7 and 8 are established.

After the regression model test, the three categorical variables of internship experience, salary expectations, and family attitudes all have an extraordinary impact on the willingness of e-commerce majors to engage in rural e-commerce, which is consistent with the results of the chi-square test. The academic planning variables are inconsistent with the chi-square test results. The variables of career perception, school guidance, and public opinion have an important impact on the willingness to work, but other variables are not significant, and the correlation analysis has not been verified. This situation is probably because the chi-square test only considers the relationship between a single variable and the explained variable. However, the regression analysis has carried out a multi-factor analysis, and the various factors in the regression model have mutual influence, which results in different test results. The results of the regression analysis shall prevail. Therefore, the seven variables of internship experience, academic planning, salary expectation, career perception, family attitude, school guidance and public opinion all have a significant impact on the willingness to work, which means that the remaining assumptions are all valid, except for Hypotheses 5 and 6.

4 Conclusion

The willingness of e-commerce majors to work in the rural e-commerce industry is closely related to the four dimensions, namely individual characteristics, professional attitudes, family background and external environment. Simultaneously, internship experience, academic planning, salary expectations, career perception, family attitudes, school guidance and public opinion significantly affect their willingness to work. In Chongqing, the e-commerce majors have a low willingness to engage in rural e-commerce. Most of the students have not participated in the relevant practices of rural e-commerce. More students choose direct employment. Although the professional attitude towards rural e-commerce is generally good, their understanding needs to be strengthened. Simultaneously, the attitude of family members and the guidance of schools in rural e-commerce are not very optimistic. Therefore, all relevant institutions should start with the above positive influencing factors and increase their willingness to work in a targeted manner.

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