


Article

What Attracts College Students to Start a Business in Rural Areas?—A Qualitative Comparative Analysis from China

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Abstract: Employment is an important public issue related to national economy and people's livelihood. In 2022, the global youth unemployment rate will reach 14.9%, affecting a total of 73 million people. In order to deal with the social risks brought about by large scale youth unemployment, countries around the world are taking measures to solve the employment problem of college students, the main youth employment group. In the 14th Five-Year Plan, China proposes to promote the modernization and development of agriculture and rural areas by supporting university graduates and scientific and technical personnel to enter the rural economy and start their own businesses; moreover, China also aims to achieve economic recovery in the post epidemic era through mutual promotion between the entrepreneurial choices of college students and the direction of national economic development. Through qualitative comparative analysis of 131 Chinese college students, it is found that none of the antecedents meets the requirements of sufficient and necessary conditions for consistency greater than or equal to 0.8 and coverage greater than or equal to 0.9. Further analysis shows that there are three paths for college students' rural entrepreneurship: "resource-based, with policy guarantee and villager participation", "policy support, villager participation" and "villagers actively participate". The government, enterprises, villages and college students should invest more in improving policy support, building infrastructure, diversifying industrial structure, clarifying strategic positioning of villages and innovating entrepreneurial models, so as to promote the modernization of China's agriculture and rural development and the realization of the goal of rural revitalization while solving the employment difficulties of college students.

Keywords: college students' entrepreneurship; rural entrepreneurship; entrepreneurial willingness; qualitative comparative analysis



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1. Introduction

Since the outbreak of COVID-19 in 2020, the world has been faced with the development dilemma of increasing unemployment. According to the latest report Global Youth Employment Trends in 2022 issued by the International Labor Organization, it is estimated that the global youth unemployment rate will reach 14.9% in 2022, and the total number of unemployed young people will reach 73 million [1]. Among them, fresh college graduates seeking jobs for the first time are especially facing the risk of long-term deterioration of labor market opportunities and results. Meanwhile, the number of college graduates in China is expected to reach 10.76 million in 2022 [2]. The huge employment group is in sharp contrast with the stagnant job market that has been reshuffled as a result of the epidemic. Seeking a solution to the employment dilemma of college students, a major employment group, has become an important priority for social stability and economic recovery. In China, college students generally choose to work in government departments, public institutions and enterprises, and it is rare for college students to start their own businesses. In order to alleviate the challenges of the job market under the impact of the epidemic, the central and local governments have introduced a large number of policies to support entrepreneurship. Since the Ministry of Education issued the Notice on Doing a Good Job in Employment and Entrepreneurship of College Graduates in 2022 in November,

the leading employment groups across provinces and cities in China have formulated a number of local documents on employment and entrepreneurship of college graduates, to further help them to start their own businesses. On 19 April 2022, the Ministry of Education held the “Third Dispatching Video Conference of Employment of College Graduates in 2022”, pointing out that on the basis of applying policy posts, more market posts should be developed at the structural level to solve the employment problems of college graduates. As the main driver for college students’ market employment, choosing rural areas as the main location of entrepreneurship can not only effectively alleviate the employment pressure of fresh graduates, but also provide a steady stream of talent support for the rural revitalization strategy.

The entrepreneurial spirit of college students is very necessary for the generation of entrepreneurial willingness and behavior, and this spirit is related both to the environment surrounding entrepreneurs and to their very characteristics. Studies have shown that college students’ willingness to start a business in rural areas is generally closely related to factors such as entrepreneurial education, entrepreneurial environment, personal ability and spirit of adventure [3]. In particular, the entrepreneurial education structure received by college students has a significant impact on entrepreneurial attitude, and the positive impact of attitude and self-efficacy on entrepreneurial intention has been confirmed [4]. Influenced by social influence, trust and risk perception, young entrepreneurs have a mixed willingness to use crowdfunding platforms, thus affecting the possibility of external financing for their entrepreneurship project [5]. The outbreak of COVID-19 has a significant impact on entrepreneurs’ sense of entrepreneurial self-efficacy, and some small enterprises’ utilization of unbalanced environmental changes also validates the compatibility of accepting an entrepreneurial orientation, on the one hand, with coping with economic risks and uncertainties, on the other [6]. Although there have been many studies on college students’ employment and entrepreneurship, notably rural, most of them are based on the correlation between a single influencing factor and entrepreneurial willingness. There are few studies on the combination of multiple motivations for college students to choose rural entrepreneurship and the driving path of college students’ rural entrepreneurship. Under the background of the severe employment situation of college graduates in the post epidemic era, the research on the reasons why college students choose or do not choose to return to rural areas for entrepreneurship, and paths taken, has a strong practical guiding significance for alleviating the employment pressure of social youth groups, with a view to achieving full employment and promoting economic recovery in the post epidemic era.

Based on this, this paper puts forward the following research questions. First, what are the key factors that affect college students’ rural entrepreneurial willingness? Second, what are the realistic paths for college students to choose to go back to rural areas for entrepreneurship? Third, how can the rural entrepreneurial environment be improved to enhance college students’ willingness to start a business in rural areas?

2. Literature Review

2.1. College Students Entrepreneurship

The research on college students’ entrepreneurship mainly focuses on the influencing factors of college students’ willingness to start a business, college students’ entrepreneurship education and college students’ entrepreneurial environment. The construction of entrepreneurship education and its system is the main driving force of college students’ entrepreneurship, and many scholars engaged in pedagogy, ideological and political work and student employment management related work in universities have discussed this issue. The nine environmental factors based on the GEM model [7], competitive intelligence factors before starting a business [8] and the individual quality and psychological factors in the individual and social environment perspective [9] are the main ideas proposed by scholars. According to the analysis of the factors influencing college students’ entrepreneurial intention, college students’ entrepreneurship is influenced by universities, government, enterprises and society in their effective construction of an entrepreneurial environment

and support system. However, the education system of universities is not perfect at present in terms of guiding college students' entrepreneurship, and this is reflected in the content and system design of entrepreneurship courses [10], entrepreneurship faculty and school-enterprise alliance [11] and practicality of entrepreneurship education [12]. By reviewing the existing policies of entrepreneurship support [13] and entrepreneurship education for college students in China [14], some scholars suggest that the government should provide a good entrepreneurial environment and create an atmosphere to encourage college students' entrepreneurship [15], improve the business service system environment for college students' entrepreneurship [16], and support college students' entrepreneurship in collaboration with government, industry and academia [17]; and that universities should vigorously carry out entrepreneurship education [18].

2.2. Rural Entrepreneurship

Rural entrepreneurship has significantly boosted the agricultural economy, and this trend is more obvious under the policy support of rural revitalization [19]. The development of a rural tourism economy provides opportunities for rural entrepreneurship, which can promote the high-quality development of new rural industries: this can take place through the industrial development modes of characteristic industry-pulling, leading enterprise drive, industry integration, backbone elite drive and entrepreneurial park clustering [20].

The inherent system constraints, instability of change, strong supply chain constraints, farmers' own capacity constraints and the ability to access internal and external resources for rural entrepreneurship all affect the scale and extent of rural entrepreneurship development in China [21]. As the main driving force behind rural entrepreneurship, the family background, age, working experience, mastery of core technology, number of years of entrepreneurship experience and regional differences will affect the choice of model for farmers' entrepreneurship. At present, the majority of China's farmers' entrepreneurship is imitation entrepreneurship rather than innovation entrepreneurship [22]. Social capital can significantly affect the dependence of farmers' entrepreneurial performance on social capital through the moderating variable of an entrepreneurial environment [23], while the richness of entrepreneurial, financial, association and interpersonal networks can directly affect entrepreneurial motivation [24]. In addition to social capital, risk attitude is also an important factor influencing entrepreneurship in the hometown. Notably, the attitude of migrant workers towards entrepreneurship determines the amount of investment they expect: those who prefer to take risks expect to invest more and tend not to return to their hometown to start their own business [25].

At present, the poor incentive policies for youth entrepreneurship in China's rural areas have led to the low motivation of entrepreneurial college students to return to their hometowns; the high implementation standards of existing entrepreneurship policies have made it difficult to implement subsidies; and the financing problems of youth entrepreneurship have restricted the development of rural youth entrepreneurship [26]. Therefore, some scholars have studied the potential role of an inclusive digital financial policy in supporting rural entrepreneurship under the trend of financial digitization. They have put forward suggestions such as strengthening top-level design and zoning policies, integrating culture, tourism and agriculture to optimize the rural industrial structure, strengthening the construction of digital villages, improving rural infrastructure, improving the quality of rural education and raising the level of rural human capital [27].

2.3. College Students' Rural Entrepreneurship

Rural college students' entrepreneurship is a broad field, which not only responds to the call of national policies, but also provides a feasible path to alleviate the employment pressure of college students. In view of the increasingly severe employment situation of college students in China, college students' willingness to start a business in rural areas is generally insufficient. Moreover, most of them choose to start a business independently rather than passively, which accounts for more than 80% [28]. In the group of

college students who choose to start their own business, their entrepreneurial motivation is generally to realize their self-worth and is not closely combined with the needs of the community. Moreover, it is limited by the fact that college students receive non-systematic and non-practical entrepreneurship education during their school years. In the context of an imperfect rural entrepreneurship support system and backward auxiliary conditions for entrepreneurship, the success rate of college students' entrepreneurship is generally not high [29]. For the dynamic and uncertain rural entrepreneurial environment, the concretization of national support policies and the enhancement of college students' perception of rural entrepreneurship can effectively improve the current situation of college students not actively returning home to start their own businesses [30]. In addition, in terms of environmental support for rural entrepreneurship policies, besides direct support policies such as "double innovation" and rural revitalization, the enrollment expansion policy of colleges and universities also has a significant impact on college students' rural entrepreneurship. Based on the data of China Labor Dynamic Survey (CLDS) in 2016, it is found that the average entrepreneurial rate of rural college students has increased by about 5% after the implementation of the enrollment expansion policy of colleges and universities, an influence that has dynamic heterogeneity of region, gender, family background and time [31].

2.4. Review of Existing Research

The existing research on entrepreneurship among college students and rural entrepreneurship in general, and rural entrepreneurship among college students in particular, has yielded quite rich insight on the influencing factors affecting entrepreneurial intention and entrepreneurial performance. Moreover, it has proposed and verified the direct influence of factors such as the institutional environment at the national level, self-quality at the college student level, and social capital at the village level. However, the generation of college students' choice of entrepreneurship in rural areas is not only the result of many single factors mentioned above, but also the result of multiple simultaneous factors. To date, there is no systematic summary on how college students' entrepreneurship in rural areas is affected by multiple factors. Therefore, studying the generation of college students' entrepreneurial willingness and behavior from this perspective has strong practical application value and theoretical innovation value.

3. Research Design

3.1. Research Method and Data Sources

3.1.1. Research Method: Qualitative Comparative Analysis

Qualitative research methods focus on theoretical and normative research, and are suitable for discussing the research problems of "ought to be". Quantitative research methods are good at finding the correlation between variables by analyzing the data in practice, and can contribute to research problems by putting forward hypotheses, verifying hypotheses and improving theories. In addition, while some real research problems and their inducing factors cannot be measured quantitatively, we can nevertheless conceptualize and simplify complex social phenomena and their causes by using set relations to explore the combination of antecedents of different social phenomena. In 1987, Charles C. Ragin put forward the qualitative comparative analysis method (QCA), which is different from the traditional linear correlation analysis. He analyzed the relationship between conditions and results based on set theory and Boolean algebra instead of traditional relevant analysis ideas; examined the nonlinear relationship between independent variables and dependent variables from the perspective of set rather than correlation; and formalized the logical process of analysis of human problems with Boolean algebra algorithms. As a data analysis method taking cases as samples, through studying the relationship between the combination of different conditional variables and outcome variables, the combination of conditions that lead to the occurrence or non-occurrence of outcome variables is obtained.

College students' choice of starting a business in rural areas is influenced by many factors rather than any single factor. Moreover, single specific factors are usually not decisive in causing college students to choose rural entrepreneurship; and each variable is difficult to be fully quantified and operable. Studying the impact of a single antecedent on the outcome variable of entrepreneurial willingness cannot well explain the reasons for the phenomenon. QCA can not only analyze effect of the coverage and consistency of a single factor on the result, but also analyze the correlation between the logical combination of different independent variables and the dependent variables. Therefore, when exploring why college students choose to start businesses in rural areas, adopting the research method of QCA to analyze the case samples has a strong practical explanatory power.

3.1.2. Data Sources

According to the needs of the research, this paper designed a questionnaire titled "Survey of College Students' Willingness to Start a Business in Rural Areas" to be distributed among college students. The distribution method was the "Questioning Star" online link, and the distribution range included target groups aged between 16 and 40 years old. The questionnaire analyzes the rural entrepreneurial willingness and attitudes of the target groups towards different environmental factors, and a total of 131 valid questionnaires were collected, forming the original database of this paper.

3.2. Model Construction of College Students' Rural Entrepreneurship

Rural college students' entrepreneurship belongs to a type of entrepreneurial behavior and innovative behavior. By consulting relevant literature, it is found that most of the existing studies start with the impact of the entrepreneurial environment on entrepreneurial willingness, and analyze the impact of different entrepreneurial environments on that entrepreneurial willingness. Among them, the GEM model for analyzing enterprise competitiveness and TOE analysis framework for analyzing innovative application and adoption are the most widely used. On the basis of the existing model, this paper makes use of the survey of rural entrepreneurship in China (referred to as "Thousand Villages Survey") organized by Shanghai University of Finance and Economics in 2016 to measure the business environment of villages, thereby constructing the permanent research framework of the paper.

3.2.1. GEM Model

GEM (groundings, enterprises and markets) model was first proposed by Tim Padmore and Henrev Gibson to improve the diamond model and to analyze the competitiveness of enterprise clusters. Among them, the groundings elements are the supply elements of the whole innovation system, which are the input elements of the production process, and include "resources" and "facilities". Enterprise elements are the structural elements of the whole system, which determine the production efficiency of industrial clusters and include "suppliers and related enterprises" and "firm structure and strategy". Markets factors are the demand factors of the whole industrial cluster, which are composed of "local market" and "external market". Most of the existing studies at home and abroad have revised the nine elements of the entrepreneurial environment proposed by GEM model (see Table 1).

3.2.2. TOE Framework

The TOE (technology, organization and environment) framework put forward by Tornatzky and Fleischer in 1990 was originally used to analyze the influencing factors of enterprises' adoption of innovative technology, that is, the influence of the technology application situation on the technology application effect [44]. Researchers in the TOE framework generally believe that the decisive factors affecting the adoption of innovation can be classified into three dimensions: technology, organization and environment [45]. Among them, the technical level emphasizes the characteristics of technology itself and other related technical factors; and it focuses on whether technology matches the structural

characteristics of the organization, coordinates with the application ability of the organization, and can bring potential benefits to the organization [46]. At the organizational level, it pays attention to the characteristics of organizational structure matching with technology, such as system, mechanism, capital investment and other factors, which include: organizational scale, business scope, formal or informal institutional arrangements, communication mechanism and idle resources of reserve savings [47]. The environmental aspect focuses on the situational factors that will affect the technological capability, including the market structure of the organization and the control policies of the external government [48,49].

Table 1. Elements of entrepreneurial environment based on GEM model.

Author	Year	Entrepreneurial Environmental Factors
Gnyawali and Fogel [32]	1994	Entrepreneurship management skills, socio-economic conditions, policies and working procedures, financial support and non-financial support for entrepreneurship.
Chi Renyong [33]	2002	Network system, venture risk management system, venture incubation system, entrepreneur training system, enterprise training system and successful reward system.
Gao Jian; Jiang Fuyan; Li Xibao [34]	2003	Financial support, government policies, government projects, education and training, research and development transfer, business environment and professional infrastructure, domestic market openness, physical infrastructure, culture and social norms.
Zhang Yuli [35]	2004	Social and economic conditions, government policies and working procedures, financial and non-financial support, entrepreneurship and management skills.
Guo Yuanyuan [36]	2006	Environmental support, economic foundation, cultural support, scientific and educational support and service support.
Cai Li [37]	2007	Policy environment, science and technology environment, market environment, financing environment, cultural environment and talent environment.
Su Yinan [38]	2009	Economic environment, policy environment, education and training environment, social and cultural environment and financing environment.
Zhang Xiue; He Shan [39]	2010	Resource environment and embedded element environment.
Liu Xinzhi; Liu Yusong [40]	2013	Government services, policy support, financial support, entrepreneurial atmosphere, infrastructure, public services, technical barriers and legal protection.
Zhang Xiaoyun; Zhu Honggen; Xie Chunyan [41]	2014	Supporting policy environment, social and economic environment, scientific and cultural environment, financial service environment and infrastructure environment.
Cai Juan; Wang Yong [42]	2019	Policy, government services, education and training, financial support, infrastructure, entrepreneurial atmosphere, legal environment and market environment.
Hao Zheng; He Gang; Wang Xinyuan; Zhang Yong [43]	2022	Human resources, market size, government size, hardware facilities, financial capital and software facilities.

Source: self-made by the author.

In China, many scholars have studied the influencing factors and paths in the fields of digital governance and e-government from the perspective of the TOE framework. For example, the development level of big data in provincial government is affected by three factors: technology, organization and environment [50]. Performance difference of local government website construction [51], influencing factors and implementation path of provincial government digital governance [52], and government service data collaborative governance level [53] are also included. Other scholars have constructed the TOE theoretical framework based on different research issues. For example, in the research on the blocking factors and policy directions of poverty control in ethnic areas, it is proposed that technical factors include two levels of technical platform—foundation and technical support. Moreover, organizational factors include four levels—fund allocation, management system, human resource training and service guarantee; and environmental factors include four levels—senior leadership support, policy plan, laws and regulations and social subject participation [54]. In the analysis of the integration framework of the original innovation performance difference of enterprises, it is pointed out that the technical conditions include technical ability and technical management ability; the organizational conditions include the original innovation atmosphere and executive support; and the environmental conditions include market orientation and policy orientation [55]. In the TOE analysis of improving the green transformation performance of the manufacturing industry, it is pointed out that the technical conditions include green innovation ability and informatization level; the organizational level includes government support; and the environmental level includes market competition and environmental regulation [56]. In the research of which R&D institutions have higher innovation performance, it is pointed out that the technical level includes infrastructure and high-level talents; the organizational

level includes R&D funds and personnel; and the environmental level includes government support and regional economic development level [57].

3.2.3. Investigation into the Current Situation of Rural Entrepreneurship in China

The “Survey of Rural Entrepreneurship in China” organized by Shanghai University of Finance and Economics in 2016 (also known as “Thousand Villages Survey”) included township heads, village directors or party secretaries, members of village committees, entrepreneurs and non-entrepreneurs who are familiar with rural entrepreneurship in China as survey objects. The survey area spanned more than 30 provinces, municipalities directly under the Central Government, autonomous regions and special administrative regions, and more than 1500 villages were visited, resulting in nearly 20,000 interviewees.

In the “Thousand Villages Survey”, the measurement of village business environment is mainly carried out from the following aspects. “Education and training” is measured by education level and skills training. The floating population is measured by the number of migrant workers in the particular township, county, province and other provinces. “Culture and system” is measured by religious beliefs and religious buildings. “Financial institutions” is measured by traditional financial institutions and Internet financial institutions. “Transportation communication” is measured by the distance between the village and the main transportation communication hub and the existing communication tools in the village. “The ability to attract external capital” is measured by investment in fixed assets, foreign investment, investment from other provinces and cities and other investments. “Village entrepreneurship policy” is measured by the examination and approval of entrepreneurial projects, the financial support of the government and the expenditure in the process of entrepreneurship.

3.2.4. Model of Entrepreneurship Management

The theory of entrepreneurship management, which is based on the interaction between different elements, has evolved from focusing on the characteristics of entrepreneurs to focusing on entrepreneurial opportunities, entrepreneurial resources, entrepreneurial organizations, and entrepreneurial situations. Similarly, showing a development trend has evolved from invoking a single element to multiple elements, and from static analysis to dynamic analysis.

Gartner (1985) first studied the characteristics of entrepreneurs and entrepreneurial enterprises, and further proposed a dynamic entrepreneurial theory model to explain how entrepreneurial phenomena occur [58]. The model includes four elements, that is entrepreneurs, organizations, environments and entrepreneurial processes, while the four elements interact and influence each other in different ways (see Figure 1). Wickham (1998) put forward three entrepreneurial elements—opportunity, resource and organization—based on the core element of entrepreneurs [59]. He concluded that entrepreneurs would organize and integrate resources, organizations and teams to implement entrepreneurial activities after identifying opportunities. At the same time, he pointed out that entrepreneurship is a process of continuous learning. Through learning, entrepreneurs build an organizational structure and culture that match opportunities and then achieve entrepreneurial success (see Figure 2). Sahlman (1999) constructed an environment-centered four-factor entrepreneurship model, in which the entrepreneurial process is represented by the dynamic interaction between any resource, opportunity, transaction behavior and the external environment [60]. Among them, researchers include entrepreneurs, individuals or groups that provide resources and services for enterprises; opportunities refer to any market activities that may benefit in the future; trading behavior refers to contractual transactions between entrepreneurs and resource or service providers; and external environment is all external factors that are not directly controlled by entrepreneurs (see Figure 3). On the basis of predecessors, Timmons put forward the three-elements model of entrepreneurship, which regards entrepreneurial opportunities, resources and teams as the core driving factors in

the entrepreneurial process; and entrepreneurship is regarded as a process of achieving dynamic balance among the three elements (see Figure 4) [61].

The above model only takes the identification of entrepreneurial opportunities as a starting point for assessing the factors that influence entrepreneurial behavior. Shane and Venkataraman (2000) put entrepreneurial opportunities throughout the entire entrepreneurial process and proposed a new entrepreneurial management model (see Figure 5) [62].

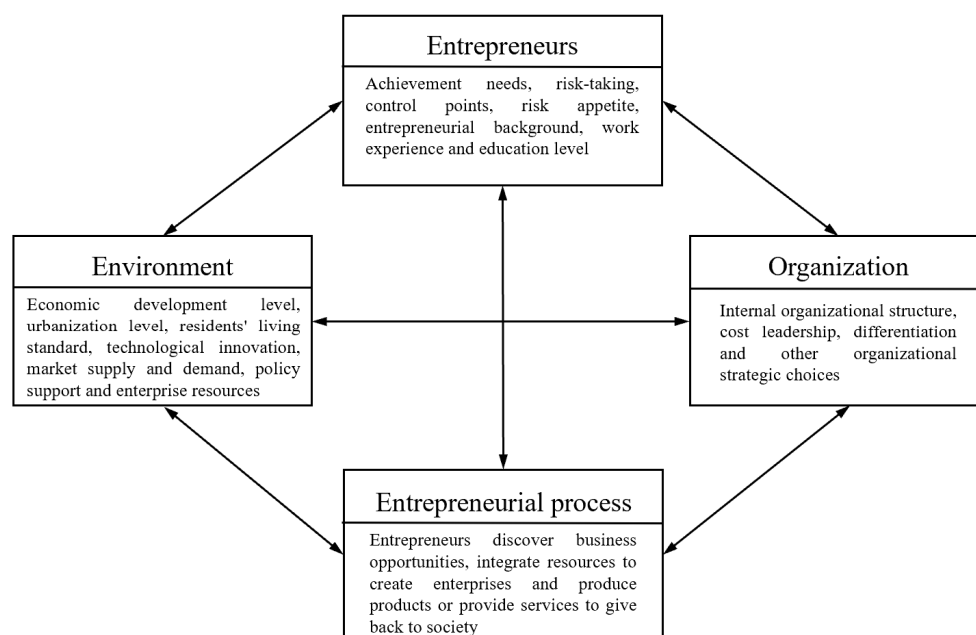


Figure 1. Gartner's entrepreneurial model. Source: self-made by the author.

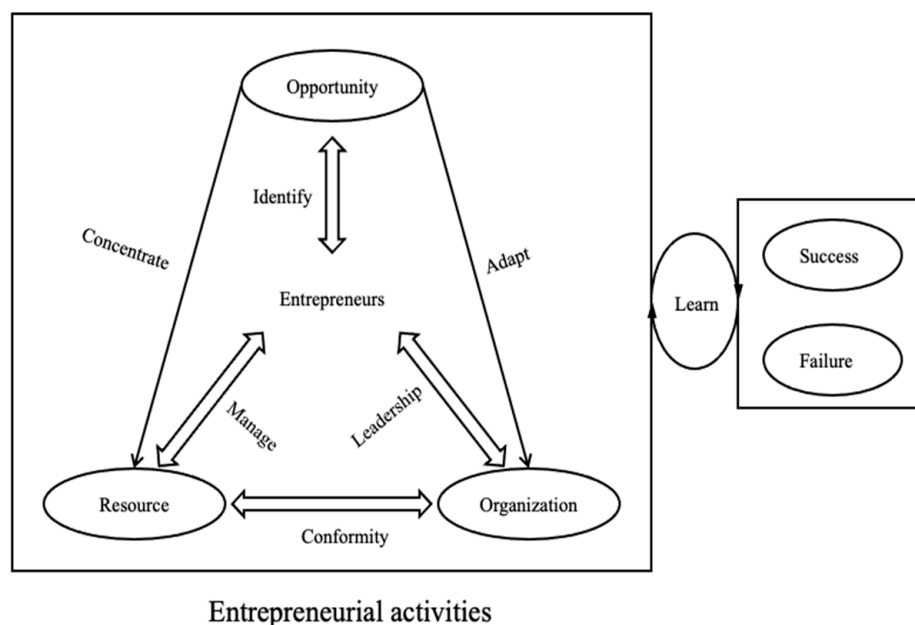


Figure 2. Wickham's entrepreneurial model. Source: self-made by the author.

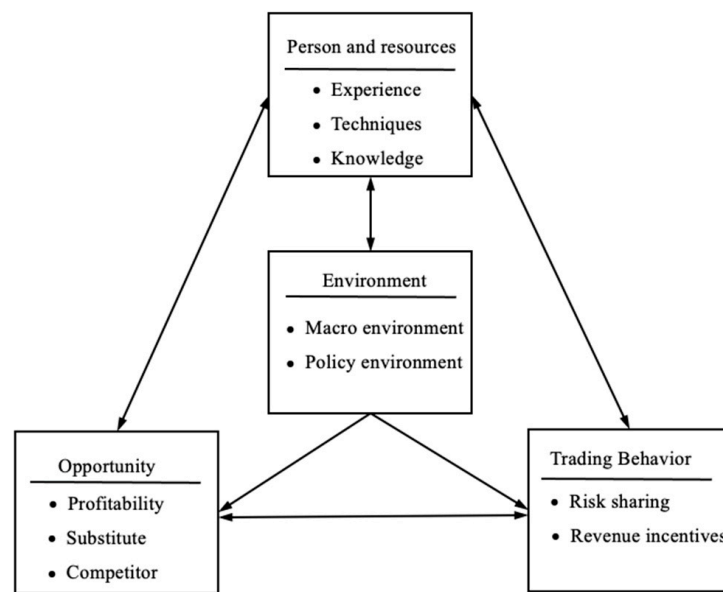


Figure 3. Sahlman's entrepreneurial model. Source: self-made by the author.

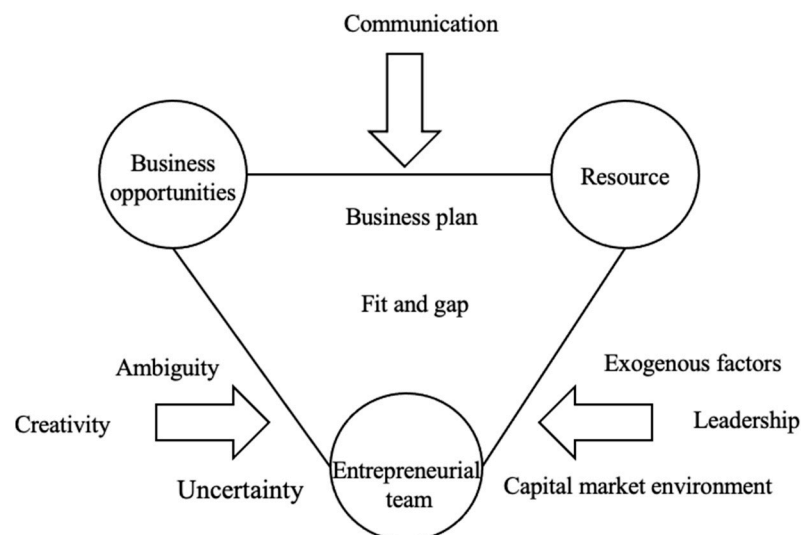


Figure 4. Timmons's entrepreneurial model. Source: self-made by the author.

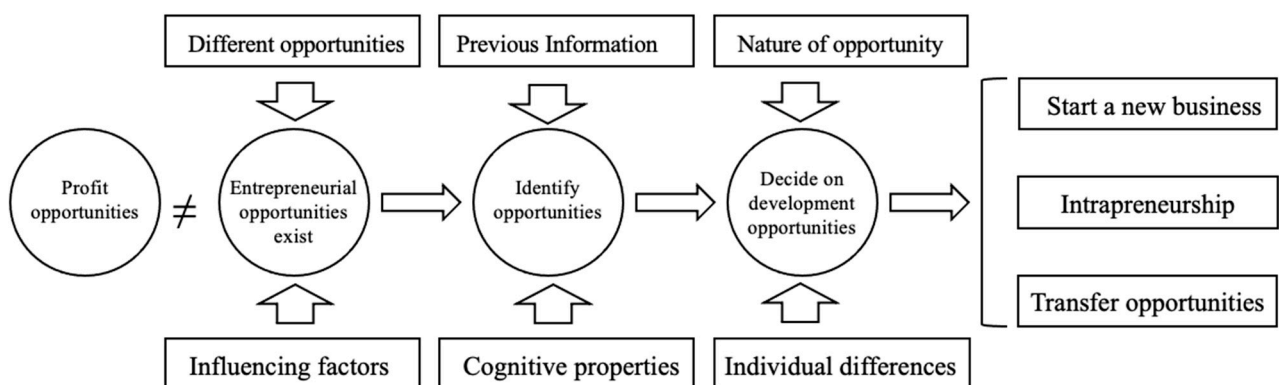


Figure 5. Shane and Venkataraman's entrepreneurial model. Source: self-made by the author.

3.2.5. A New Research Model: The TPO Framework

Based on the GEM model, TOE framework, relevant research on the influencing factors of innovation and entrepreneurship in the “Thousand Villages Survey” and the existing entrepreneurial management model, we consider that the characteristics and opportunity identification of entrepreneurs are highly diverse influencing factors, which are affected by complex factors such as personal growth experience, personality, ability and attitude. If the analysis of entrepreneurial behavior is included, the impact path of external environmental factors on entrepreneurial behavior cannot be explained. Therefore, this paper analyzes the driving factors of college students’ rural entrepreneurship from the three dimensions of the external environment—technological, policy and organizational—which explain the indicators of the proposed “TPO” model herein (see Figure 6 and Table 2).

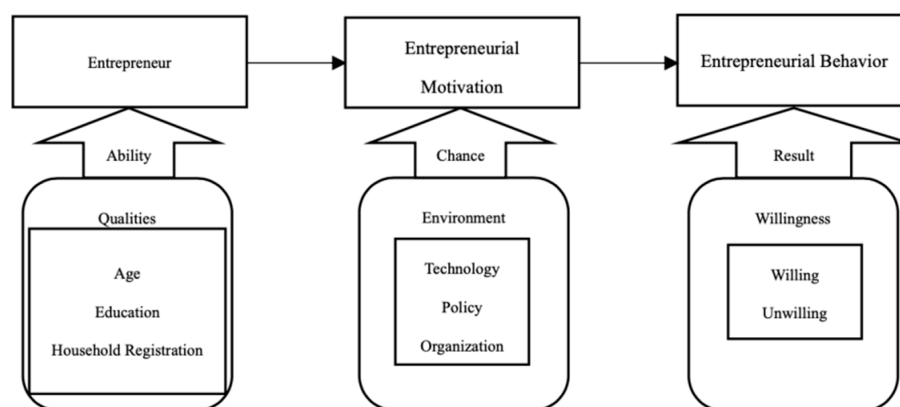


Figure 6. TPO entrepreneurial environment model. Source: self-made by the author.

Table 2. Indicator description of TPO entrepreneurial environment model.

Primary Indicator	Secondary Indicator	Indicator Description
Technology environment	Platform support (X1)	Is there any professional technology platform to support college students’ entrepreneurship, such as a business incubation base?
	Technician support (X2)	Is there any entrepreneurial technician support, such as regular guidance for high-tech talents?
Policy environment	Financial service policy [63,64]	Is there any local financial policy to support college students’ entrepreneurship, such as loan policy with or without low threshold, or rent reduction policy?
	Talent cultivation policy [65–67]	Is there any local policy on entrepreneurship training?
	Entrepreneurial tradition (X4)	Do local people support entrepreneurship in rural areas or have a tradition of entrepreneurship?
	Leaders’ support (X5)	Do local administrative leaders support college students’ entrepreneurship?
Organizational environment	External financing (X6) [68]	Does the local area have the ability to attract external capital, that is, is there a continuous inflow of external capital?
	Industrial structure (X7)	Is the local industrial structure complete, that is, does it have agriculture, industry and service industries?
	Infrastructure (X8) [69,70]	Are the local road, communication, electricity, internet and tap water facilities perfect?
	Richness of resources (X9)	Are there sufficient and rich resources with economic value in the local area?
Other	Education (X10)	Do they have a bachelor’s degree or above?
	Age (X11)	This is a continuous variable.
	Household registration (X12)	Is it an agricultural household registration?

Source: self-made by the author.

The TPO model classifies the rural entrepreneurial environment based on the premise that it affects entrepreneurial willingness. Entrepreneurial technology environment is the first type, and the technical platform support and technical personnel support needed for entrepreneurship are included here, along with the discussion about the TOE model. The second type is the entrepreneurial policy environment, which mainly combines the discussion on policy support in the GEM model to bring financial service policies, on the

one hand, and policies to cultivate talent into this type of environment, on the other. The third type is entrepreneurial organization environment, in which entrepreneurial tradition, high-level support, external financing, industrial structure, infrastructure and resource abundance are included, according to the measurement of the village business environment in the “Thousand Village Survey”. In addition, some scholars have also done research on the impact of other factors on college students’ willingness to return to rural areas to start businesses; these have included the educational level of entrepreneurs, their age and whether they are registered as rural residents. Since the focus of this study is the mechanism by which the entrepreneurial environment impacts on the entrepreneurial willingness of entrepreneurs, these factors belonging to entrepreneurial characteristics are only included in the initial stage of analysis.

4. Empirical Results and Analysis

4.1. Data Calibration and Truth Table Construction

Since our selected variables include both category variables and continuous variables, we cannot use clear sets for analysis only, and so also use fuzzy sets and multi-value set assignment methods to calibrate the raw data. Clear sets divide the variable values into yes (1) and no (0), and variable X12 adopts this classification standard. According to the fuzzy set of qualitative comparative analysis, it is necessary to calibrate the variables for which the values are not between zero and one. There are several values between complete membership (1) and complete non-membership (0), and there is also a maximum fuzzy point (0.5) that does not belong to either. The variable X11 is calibrated by the standard of the fuzzy set. Variables with equal distance or proportional progression are assigned by multi-value sets, such as 0, 0.33, 0.66, and 1 adopted in this paper. Variables X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, and Y belong to this, so the multi-value sets are used to measured them. In this paper, the collected raw data is calculated by fsQCA 3.0, and the truth table of 131 survey samples is obtained.

The assignment of a multi-value set or clear set is relatively simple, whereas the assignment of a fuzzy set is complex: for the latter, it is necessary to set an anchor point and maximum fuzzy point. In view of the age of the entrepreneurial group (a continuous variable that needs fuzzy set calibration), the anchor point that belongs completely is set at 22 years old, 35 years old is the biggest fuzzy point, and 60 years old is the anchor point that does not belong completely. This is in consideration of the fact that the general age of bachelor graduates in Chinese mainland is around 22 years old, the age of doctoral graduates is generally under 35 years old, and 60 is the statutory retirement age and so anyone beyond this cannot be classified as being within a post-graduation entrepreneurial group.

4.2. Verification of the Necessity and Sufficiency of Single Antecedents

QCA mainly analyzes how the combination of each variable affects the dependent variable, but the same antecedent condition may exist in many cases. In this event, it is necessary to separately analyze these variables to determine whether they are necessary or sufficient conditions leading to the result. Generally speaking, the necessary condition needs to meet the coverage $(X_i \leq Y_i) \geq 0.9$, that is, it can be judged as necessary when the probability of cases containing the condition is greater than or equal to 0.9 when the results appear. The determination of the sufficiency condition needs to satisfy the consistency $(X_i \leq Y_i) \geq 0.8$, that is, the condition can be determined as a sufficiency condition when the probability of the result occurring when the condition occurs is greater than or equal to 0.8.

As shown in Table 3, with a single factor as the result variable, there are X3, X4, X8, X11, ~X7 and ~X10 with consistency greater than or equal to 0.8, and ~X11 with coverage greater than or equal to 0.9, so no single variable can be regarded as the necessary and sufficient condition for the result of “willingness to start a business in rural areas”. However, as shown in Table 4, there are X1, X4, X11, ~X7, ~X9 and ~X10 with consistency greater than or equal to 0.8, and there is no single conditional variable with coverage greater than or

equal to 0.9, so no single variable can be regarded as the necessary and sufficient condition for the result of “unwilling to start a business in rural areas”.

Table 3. Single-factor necessity and sufficiency analysis on “willing to start a business in rural areas”.

Antecedent Condition	Consistency	Coverage	Antecedent Condition	Consistency	Coverage
X1	0.798602	0.630034	~X1	0.457762	0.772481
X2	0.770769	0.659053	~X2	0.499860	0.723775
X3	0.917902	0.723116	~X3	0.364522	0.617030
X4	0.916644	0.636558	~X4	0.322657	0.767976
X5	0.708532	0.734522	~X5	0.573427	0.640325
X6	0.755664	0.683837	~X6	0.483217	0.639934
X7	0.497063	0.773955	~X7	0.821678	0.674668
X8	0.854301	0.716363	~X8	0.466189	0.698319
X9	0.588811	0.79150	~X9	0.780559	0.699287
X10	0.626154	0.811345	~X10	0.824615	0.757647
X11	0.971049	0.572949	~X11	0.160699	0.972081
X12	0.493007	0.568548	~X12	0.506993	0.510563

Source: calculated by fsQCA3.0.

Table 4. Single-factor necessity and sufficiency analysis on “unwilling to start a business in rural areas”.

Antecedent Condition	Consistency	Coverage	Antecedent Condition	Consistency	Coverage
X1	0.843252	0.572217	~X1	0.454797	0.660137
X2	0.778212	0.572351	~X2	0.536423	0.668084
X3	0.736965	0.499376	~X3	0.591382	0.861032
X4	0.886667	0.529623	~X4	0.391545	0.801598
X5	0.625528	0.557778	~X5	0.702276	0.674528
X6	0.683902	0.532337	~X6	0.593821	0.676422
X7	0.539350	0.722343	~X7	0.831220	0.587047
X8	0.765854	0.552379	~X8	0.606748	0.781752
X9	0.609756	0.705019	~X9	0.819675	0.631626
X10	0.693334	0.772744	~X10	0.830732	0.656516
X11	0.994634	0.504786	~X11	0.158537	0.824873
X12	0.434959	0.431452	~X12	0.565041	0.489437

Source: calculated by fsQCA3.0.

4.3. Path Analysis of a Combination of Antecedent Conditions

The nine conditional variables X1 to X9 and the result variable “rural entrepreneurial willingness” are included in fsQCA3.0 for analysis. In the analysis, the occurrence frequency of cases is greater than or equal to 3, the consistency is greater than or equal to 0.8, and the variables X3 (policy support), X6 (external financing ability) and X8 (infrastructure conditions) are set as present according to the practice of rural entrepreneurship. The remaining variables are present or absent, and the combination analysis of antecedents and conditions of “willing to start a business in rural areas” and “unwilling to start a business in rural areas” are then obtained (see Tables 5 and 6).

4.3.1. The Path Analysis of Antecedent Conditions for “Willing to Start a Business in Rural Areas”

In the combination of antecedent conditions in which the willingness to start a business in rural areas is shown, we can see that the paths are $X1*X2*X3*X4*X5*X6*X8$, $X1*X2*X3*X4*X6*\sim X7*X8*\sim X9$ and $\sim X1*\sim X2*X4*\sim X5*\sim X6*\sim X7*\sim X8*\sim X9$.

The first path of willingness to start a business generally occurs in villages with specific resource reserves, such as agriculture, minerals, forests or tourism resources, where local village leaders and villagers are generally willing to start a business. Villages have relatively complete infrastructure such as roads, electricity and communications, and strong

entrepreneurial ideas are supported from villagers to village leaders. There is widespread organizational and policy support for entrepreneurial platforms in villages, so it is usually easy to attract the inflow of external funds. In this situation, entrepreneurs are prone to entrepreneurial willingness, which can also be regarded as a type of entrepreneurship defined as “resource-based, with policy guarantee and villager participation”.

Table 5. The combination of antecedent conditions for “willing to start a business in rural areas”.

Configuration	Intermediate Solution		
	1	2	3
X1	•	•	⊗
X2	•	•	⊗
X3	•	•	
X4	•	•	•
X5	•		⊗
X6	•	•	⊗
X7		⊗	⊗
X8	•	•	⊗
X9		⊗	⊗
Number of cases	20	20	11
Consistency	0.816762	0.906709	0.896082
Raw coverage	0.603567	0.496154	0.273462
Unique coverage	0.133566	0.0225174	0.0467831
Overall solution consistency		0.827914	
Overall solution coverage		0.724965	

Source: obtained after the operation of fsQCA3.0. Note: frequency cutoff = 3, consistency cutoff = 0.914546. Assumptions: X3 (present), X6 (present), X8 (present). • represents the existence or high membership score of the condition, and ⊗ represents the absence or low membership score of the condition.

Table 6. The combination of antecedent conditions for “unwilling to start a business in rural areas”.

Configuration	Intermediate Solution		
	1	2	3
X1	⊗		•
X2	⊗	⊗	•
X3	⊗	⊗	
X4		•	⊗
X5	⊗	⊗	⊗
X6			
X7	⊗	⊗	⊗
X8			
X9	⊗	⊗	⊗
Number of cases	6	7	5
Consistency	0.848151	0.880206	0.858177
Raw coverage	0.270949	0.324174	0.289268
Unique coverage	0.0120324	0.0214498	0.0288888
Overall solution consistency	0.822743	0.0225174	0.0467831
Overall solution coverage		0.822743	
Overall solution coverage		0.580379	

Source: obtained after the operation of fsQCA3.0. Note: frequency cutoff = 3, consistency cutoff = 0.81404. Assumptions: X3 (present), X6 (present), X8 (present). • represents the existence or high membership score of the condition, and ⊗ represents the absence or low membership score of the condition.

The second path of willingness to start a business generally occurs in villages with weak industrial foundation and no hardware infrastructure support, yet where a village has introduced the entrepreneurship support policy and its villagers’ enthusiasm for participation is high. In this kind of village, the industrial structure is incomplete and there are no rich economic resources. However, the infrastructure of the village is relatively

complete and the village provides technical and policy support for entrepreneurs. Therefore, the villagers' foreign exchange is convenient, a strong entrepreneurial tradition is formed, and external funds tend to flow in. In this situation, entrepreneurs' willingness to start a business is also strong, which can be regarded as the entrepreneurial path of "policy support, and villager participation".

The third path of willingness to start a business generally occurs in villages with poor resources, weak infrastructure, imperfect industrial foundation, no provision of entrepreneurial technology or relevant policy support, and village leaders who do not support innovative entrepreneurial behavior. This kind of village's external financing ability is very weak, yet there is a pioneering spirit among the villagers. College students are willing to start a business here because of the abundance and support of villagers' human resources, so it can be called the pioneering path by which "villagers actively participate".

4.3.2. The Path Analysis of Antecedent Conditions for "Unwilling to Start a Business in Rural Areas"

In the combination of antecedent conditions in which the unwillingness to start a business in rural areas is shown, we can see that the paths are $\sim X1^* \sim X2^* \sim X3^* \sim X5^* \sim X9$, $\sim X2^* \sim X3^* X4^* \sim X5^* \sim X7^* \sim X9$ and $X1^* X2^* \sim X4^* \sim X5^* \sim X7$.

In the first path of unwillingness to start a business, the main reason why college students are reluctant to start a business in rural areas is that their villages do not have rich economic resources and a perfect industrial system, the villages do not have policy support and technical platform support for starting a business, and the village leaders do not have the determination to start a business bravely. In the second path of unwillingness to start a business, although the villagers have a tradition of starting a business and some successful cases, their villages do not have rich economic resources, have an incomplete industrial structure, and do not provide technical and policy support, while the village leaders have no willingness to support them, so their willingness to start a business is also very low. In the third path of unwillingness to start a business, although the village provides technical support for entrepreneurs, there is no entrepreneurial tradition among the villagers, and village leaders do not support entrepreneurship. In addition, the industrial system of the village is incomplete and the resources are not rich, so college students do not have a high willingness to start a business considering these conditions.

5. Research Findings and Policy Suggestions

5.1. The Findings of this Study

In this paper, the technological environment, institutional environment and organizational environment are taken as conditional variables, and the rural entrepreneurial willingness is taken as the result variable. On this basis, we construct a TPO entrepreneurial environment model that affects the rural entrepreneurial behavior and explores the paths that lead to college students' "willingness to start businesses in rural areas" and "unwillingness to start businesses in rural areas", respectively. Through exploring the influencing factors and paths of rural entrepreneurial behavior, the following research findings are obtained.

First of all, whether college students choose to go back to rural areas to start a business is influenced by simultaneous factors covering the technical, institutional and organizational environment. No single factor, whether in platform support, technical support, policy support, entrepreneurial tradition, high-level support, external financing, industrial structure, infrastructure, resource affluence, educational background, age and household registration can directly lead to the willingness or not to start a business. This finding is not completely consistent with the findings of existing studies on the support of national policies, difficulties in implementing subsidies and financing difficulties that directly affect college students' willingness to start businesses in rural areas [26,31]. However, it highlights the fact that college students' willingness to return to rural areas to start businesses is affected by a combination of multiple factors, rather than being the result of any single factor.

Secondly, the paths indicating that college students are willing to go back to the rural areas to start their own businesses include those that are “resource-based, with policy guarantee and villager participation”, “policy support, with villager participation” and “villagers actively participate”. The three paths all include a village entrepreneurial tradition, and the differences lie in whether the policy environment supports it or not, and whether there are abundant economic resources to rely on. This also proves that regardless of the support of policies and economic resources, as long as there is a tradition of entrepreneurship in the village, college students will tend to have entrepreneurial behavior in the village, which further verifies the important influence of entrepreneurial tradition and entrepreneurial atmosphere as a “software resource” [15].

Finally, among the three paths that result in college students not wanting to start a business in rural areas, the lack of economic resources and the imperfect industrial structure are common phenomenon. In addition, the lack of policy support and technical support and the lack of support from village leaders will also reduce college students’ willingness to choose to start a business in rural areas. It can be seen that the existence of resources and industrial structure as “hardware resources” will also significantly affect college students’ enthusiasm for returning to the countryside to start a business [27]. Although the previous research finding highlighted an entrepreneurship tradition as an important factor influencing college students’ willingness to start a business in rural areas, the lack of resources, industrial structure, and policy and technical support will also lead to their increased unwillingness to go back to rural areas to start a business until these conditions are met.

5.2. Policy Suggestions

The starting of businesses in rural areas by college students is an important way to solve the problem of youth employment and unemployment in the post epidemic era, and also an effective way to achieve an upgrading of the rural industrial structure and sustainable economic development. To encourage college students to return home and start their own businesses, the government, villages and enterprises need to collaborate to provide policy, resources, technology, facilities and other support in their nascent rural entrepreneurship.

First of all, macro-policy support, infrastructure construction and systematic entrepreneurship training are government responsibilities in which it can and should be brave. In terms of policies, the government should introduce entrepreneurship support policies to: provide a higher amount of interest-free secured loans to individuals and organizations that meet the basic conditions (fixed business premises, good reputation and legal compliance) for starting a business; reduce administrative fees (the registration fees and taxes for college students to start businesses in rural areas); allocate special funds to train and guide local college students as first-time entrepreneurs through labor and employment departments; encourage the establishment of college students’ entrepreneurial incubation bases; and provide site support jointly across rural areas. The improvement of hardware facilities will provide the most basic material guarantee for rural entrepreneurship. In terms of infrastructure, the government should also improve infrastructure such as electricity, water conservancy, roads and communications, and provide facilities and basic resources for the production, transportation and sales of products and services. With the blessing of entrepreneurship support policies, technology platforms and infrastructure, rural products and services can be updated in line with the times and frequently communicated with the external market, thus opening up a smooth market for the transaction of rural products and significantly increasing the willingness of college students to return to rural areas to start businesses.

Secondly, from the perspective of villages, the corresponding industrial development strategy should be formulated according to the specific conditions of villages, and superior resources should be concentrated to develop service industries such as tourism, agriculture such as grain production and sales, or high-end manufacturing industries. On the basis of

traditional agricultural processing, villages should realize the output of deep processing and high value-added products and cultivate a number of characteristic rural industries for breeding characteristic livestock and planting green organic agricultural products, such as Yangcheng Lake hairy crabs, Wuchang rice, Hainan fruits and oasis agriculture in Gansu. In addition, at the village collective level, it is necessary to: promote the integration and development of primary, secondary and tertiary industries; break the barrier awareness of a single industrial structure; encourage all villagers and rural enterprises to participate in rural revitalization and new rural construction with the support of village leaders; cultivate the entrepreneurial awareness and tradition of the entire village; and attract more preferential policies and entrepreneurial groups of college students—while promoting the development of rural characteristic agriculture, animal husbandry and processing manufacturing.

Thirdly, from the perspective of enterprises, it is necessary to overcome the “siphon effect” of the city and take the initiative to assume the responsibility of enterprises in rural revitalization, such as actively developing the rural industrial market, providing more jobs for the countryside, especially enriching the service industry structure beyond that of processing, manufacturing and agriculture. At present, JD, Alibaba and other e-commerce platforms actively participate in the transformation and upgrading of rural industries by establishing industrial chains such as warehousing, logistics, sales and procurement in rural areas. In the future, the traditional rural industrial economy should form a rural economic development pattern of “one village, one product and one scene” in the market-oriented operation of enterprises. In addition to the improvement of the industrial chain and sales channels, the active participation of enterprises can provide more talent reserves and entrepreneurship technology support for college students’ rural entrepreneurship, and attract more college students to bring more advanced management concepts, knowledge and technology.

Finally, as the main body of entrepreneurship, college students should broaden their thinking when choosing entrepreneurship under the strategic background of national rural revitalization, and regard the rural environment as a serious choice for entrepreneurship. By combining the entrepreneurial experience and knowledge gained through systematic study and practice with the characteristic resources of villages, college students can create the rural characteristic culture card, and open up a new era of a high-quality rural economic development model in rural areas. Especially in the innovation of emerging knowledge-based industries, the production and management concepts of advanced technologies such as the Internet, cloud computing, big data and intelligent algorithms can support many rural entrepreneurship projects. Based on the mastery of these technologies and concepts, college students can better expand the brand effect of rural entrepreneurship and increase the added value of their products and services. Combined with the practice of rural entrepreneurship in recent years, direct homestay tourism, live selling of agricultural products and direct selling of characteristic agricultural products provide college students with a range of choices from which to start their rural entrepreneurship in the future.

5.3. Deficiencies and Discussions

Due to limited knowledge, this paper has not analyzed the rural entrepreneurial willingness of college students from the correlation with other influencing factors, nor has it classified different types of villages to study their relationship with the entrepreneurial willingness of college students. Without analyzing college students’ educational background, market investment preferences and other factors, the theoretical model constructed in this paper can only explain the impact of the rural entrepreneurial environment on college students’ entrepreneurial willingness, and the significance of this explanation is therefore limited. In future research, Stata can be used to verify the correlation of the antecedent influencing factors of college students’ rural entrepreneurial willingness; and to classify rural areas in China according to their characteristics so as to study the influence of village types on college students’ rural entrepreneurial willingness.

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