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College Students' Participation in Comprehensive Rural Revitalization: An Exploration of Paths and the Implementation of Practical Research

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Abstract

The study explores the ways in which youth participate in the comprehensive revitalization of the countryside. In the process, the study thoroughly analyzes the participation of youth groups in rural revitalization, the paths they choose, and the challenges they face. The study also proposes corresponding strategies. As the 2024 No. 1 Document of the Central Government prioritizes enhancing rural industrial development, the demand for young professionals in modern agriculture is becoming increasingly urgent. However, there is a significant mismatch between the talent training in colleges and universities and the agricultural industry's demand.Young college students generally lack an understanding of and interest in agriculture, leading to an insufficient talent supply. The study uses a combination of network data research, questionnaire research, and interview methods to comprehensively reveal the talent demand characteristics of modern agricultural enterprises and the current situation of young college students' participation. This study crawls and analyzes 1,354 pieces of recruitment information from agricultural enterprises.The study also conducted a questionnaire survey covering 5,228 students from 218 colleges and universities across the country and in-depth interviews with senior executives of nine representative enterprises in agricultural sub-fields. The study found that the demand for agriculture-related enterprises continues to grow. These enterprises offer diverse job categories and salary levels, as well as higher requirements for young talent in terms of professional skills, cross-border integration abilities, and a sense of social responsibility. However, young students have limited knowledge of rural revitalization and are not very willing to participate in it. There are also challenges in university education's curriculum, resource integration, and training concepts. To address these issues, the study offers several recommendations, such as optimizing the talent cultivation systems of colleges and universities, strengthening agriculture-related courses and practical teaching, and increasing students' knowledge of and interest in rural revitalization. Other recommendations include strengthening university-enterprise cooperation, promoting the integration of industry and education, providing internships and practical training

opportunities, and collaborating with the government, society, and colleges and universities to build a support system for young people's participation in rural revitalization. These results can help build a bridge between colleges and universities and the agricultural industry, promote close integration of education and practice, and provide theoretical basis and practical guidance for youth participation in overall rural revitalization.

Keywords: Comprehensive Rural Revitalization; Agricultural; Youths; University Graduate

1. Introduction

1.1. Background and Significance of Research

The rural revitalization strategy is the foundation of modernizing agriculture and rural areas in the new era. The central government's No. 1 document for 2024 clearly puts forward the idea of "strengthening agricultural science and technology support," calling for accelerating the construction of a modern rural industrial system and promoting agricultural digital transformation. The Ministry of Education's Action Plan for Science and Technology Innovation for Rural Revitalization in Colleges and Universities further emphasizes the need to cultivate a team of talented individuals who understand agriculture, love the countryside, and love farmers. However, the agricultural sector currently faces a serious talent supply-demand contradiction: modern agriculture is accelerating its digital and intelligent transformation, and the demand for technical and management positions in agriculture-related enterprises is growing at an average annual rate of 24.7%. These positions urgently need young talent with cross-border integration capabilities. Conversely, less than 1% of college graduates are employed in agriculture, creating a significant structural imbalance.

This contradiction stems from multiple real-life dilemmas. First, the agricultural industry has undergone a fundamental transformation. The proportion of the traditional planting industry continues to decline while intelligent agriculture and rural e-commerce flourish (Zuo et al., 2023; Tian, 2022). This gives rise to agricultural digital engineers and agricultural project managers, among other emerging positions. However, 67.3% of agriculture-related enterprises report difficulty recruiting composite talent that meets their requirements. Second, the university personnel training system lags behind industry demands. Only 19% of colleges and universities offer "agriculture + information technology" cross-curricular courses. The alignment between the curriculum and industrial demand is less than 35%, and the development of practice platforms is inadequate, leaving 83.6% of students without practical field experience. Third, there is a significant cognitive bias among young people: Sixty-two percent of students still equate agriculture with traditional cultivation. Only 28.7% are familiar with smart agriculture and other emerging fields. Combined with the stereotypical image of agriculture in families and society, this leads to lower participation among highly educated individuals.

Even more concerning, this talent gap is hindering the endogenous dynamics of rural revitalization. Studies have shown that, on average, for every 1 percentage point increase in the density of young talent, the growth rate of rural per capita income increases by 0.7 percentage points. However, less than 6% of the approximately 420,000 agriculture-related graduates join the

rural front line each year due to the current disconnect between the education and industrial chains. This structural contradiction restricts the process of agricultural modernization and affects the realization of the goal of common prosperity.

This study breaks new ground by integrating web crawlers, questionnaires, and in-depth interviews. It constructs a four-dimensional analytical framework, "policy-driven industry transformation education fit youth participation," to reveal the operating mechanism of the rural revitalization talent ecology and provide empirical evidence to solve the youth participation dilemma.

1.2. Synthesis of Research

In recent years, the academic community has gradually begun to pay extensive attention to the exploration of the path and practical research on youth participation in the comprehensive revitalization of the countryside, as well as the in-depth implementation of the rural revitalization strategy. Domestically, scholars have emphasized that youth are a force for rural revitalization and should leverage their advantages in knowledge, skills, and innovative thinking (Niu, 2024; Weng et al., 2023;Yang, 2023). In "Research on the Responsibility of College Students in the Comprehensive Process of Rural Revitalization," Pang Hongmei and Jin Zhenzhen argue that college students can improve their practical abilities and provide intellectual support for rural development by participating in rural revitalization (Pang & Jin, 2023). This viewpoint emphasizes the necessity and importance of youth participation in rural revitalization. Cui Jun and other scholars focus on constructing educational practice bases to reform the education model and deliver "three agricultural" talents for rural revitalization. Niu Junqi proposed a "school-enterprise cooperation and integration of industry and education" model to cultivate talent adapted to smart agricultural development (Cui et al., 2024; Cheng et al., 2023). However,domestic research has largely remained at the level of describing paths, lacking empirical tracking of the "cognition-intention-behavior" chain.

Foreign scholars are also concerned about the role of youth in rural revitalization. For example, Shane Bowyer emphasized that urban youth need to overcome the mismatch between their personal interests and skill sets, as well as enhance their willingness to participate through diversified incentives when joining rural revitalization efforts (Shi, 2023; Chen et al., 2022). Darren Fizer's employment research on Tennessee State University graduates further verified the positive effect of participating in rural agricultural activities on students' career choices (Deng, 2024; Zhang, 2024). International research typically simplifies the policy environment by treating it as an exogenous control variable. This approach focuses solely on the impact of individual skills or interests on rural participation without systematically quantifying the dynamic effect of agricultural technology support policies on the decision-making of young talent and job structure. In contrast, this study focuses on the technology-oriented policy variable, "strengthening agricultural science and technology support," as outlined in China's Central Document No. 1. Through policy text mining and empirical testing, the study reveals that technological support policies directly drive the expansion of smart agriculture positions and clarifies this policy variable's core driving role in rural talent resource allocation.

These studies show that education reform, school-enterprise cooperation, and other measures can stimulate the enthusiasm and creativity of youth, injecting new vitality into rural revitalization. The studies also reveal the barriers and opportunities of youth participation in rural revitalization. They provide rich theoretical references and practical examples for further exploration of effective youth participation in rural revitalization.

1.3.Purpose of Research

This study aims to explore the current state of youth participation in comprehensive rural revitalization, including its path and problems. By crawling and analyzing the recruitment information of modern agricultural enterprises, conducting nationwide surveys of college students from various majors, and conducting in-depth interviews with representative enterprises from different agricultural subcategories, we will understand the specific needs of the modern agricultural industry for young talent and the current implementation status of college and university talent cultivation programs. By combining data on the supply and demand of talent, we analyze the main difficulties and obstacles college students face when trying to enter the agricultural field for employment and rural revitalization. We also provide targeted recommendations to encourage more young talent to enter the agricultural field and enhance the talent development of modern agricultural enterprises.

1.4. Hypothesis of Research

This study presents three research hypotheses based on an analysis of the development of modern agriculture and talent cultivation in colleges and universities. The hypotheses aim to explore the deep-seated reasons for the imbalance between the supply and demand of young talent in modern agriculture and the mechanisms through which this imbalance occurs.

(1) In the wave of digital transformation, modern agricultural enterprises have experienced a significant increase in demand for young talent capable of integrating information technology, data analysis, and agricultural knowledge. However, the current college and university talent training system has not yet adapted to this change, resulting in a notable discrepancy between talent supply and industrial demand.

(2) Higher education plays a role in stimulating young people's interest in rural construction and cultivating related knowledge and skills. However, there are significant shortcomings, especially in promoting a comprehensive understanding of the rural environment, enhancing practical and problem-solving abilities, and strengthening psychological resilience and emotional identity for engaging in rural construction. This makes it difficult to ensure students are prepared to participate in rural revitalization. Students are not fully prepared to participate in rural revitalization in terms of their abilities and psychological and emotional levels.

(3) As the rural revitalization strategy is implemented more deeply, diversified and multi-level job requirements have emerged in the agricultural field.

However, current college students' limited understanding of these new positions and vague knowledge of the required skills and career development paths, coupled with a lack of effective access to career planning information and guidance, have made them ill-prepared for employment

opportunities in agriculture. This has affected their willingness to participate in agriculture. This, in turn, affects their willingness to join the field.

2. Research Framework and Methods

2.1. Research Framework

This study uses the employment of young college graduates in agriculture-related fields as an indicator of their participation in rural revitalization. The overall research idea is to use a Python web crawler to analyze the recruitment information of agriculture-related enterprises and the characteristics of the positions. Then, we will diagnose the status quo and obstacles of young talent participation from the supply side and optimize the path to build a synergistic mechanism between the education and industrial chains. The goal is to optimize the path and construct a synergistic mechanism between the education and industrial chains. Finally, the recruitment data, questionnaire results, and enterprise interviews were triple cross-validated using the SPSS statistical analysis tool based on the demand for comprehensive rural revitalization and the participation of young talent in the bilateral study.

By systematically sorting the demand- and supply-side information, this study reveals the alignment and discrepancy between modern agricultural enterprises' talent demands and young college students' willingness to participate. Then, it proposes targeted suggestions and strategies to encourage young college students to actively participate in rural revitalization, meet modern agricultural enterprises' diverse talent demands, and promote the comprehensive revitalization of rural areas.

2.2. Research Methods

2.2.1. Network Data Research Method

With the help of Python technology, the study accurately captured a total of 1,355 job postings from four major recruitment platforms of agriculture-related enterprises. The key process of data crawling is as follows:

Table 1.Data Critical Processes

Steps	Technical implementation	Output results
Keyword screening	Setting keywords such as "agriculture", "rural revitalization", etc.	Preliminary data-set (2,000+ entries)
Data cleansing	Removal of invalid information, d-emphasis, format standardization	Valid data-set (1,354 entries)
Feature extraction	Parsing of job name, salary, skill requirements and other fields	Structured database

The crawler program automatically traverses and parses the HTML structure of the recruitment webpage according to preset keywords and screening logic. It accurately captures core information, such as job titles, requirements, salary ranges, and work locations. This provides a macro-level understanding of employment market dynamics in agriculture.

This study provides insights into the talent demand structure of modern agricultural enterprises, job requirement trends, and industry salary levels from multiple dimensions. These insights provide solid data support and a theoretical basis for subsequent research on how young talent can effectively contribute to rural revitalization and optimize college and university talent cultivation programs.

2.2.2. Survey Research Method

The study used a stratified sampling method to survey 2,180 colleges and universities nationwide, collecting 5,228 valid responses. The questionnaire covered four main aspects: the basic situation of the research object, the current situation of youth participation in the comprehensive revitalization of the countryside, and the problems and reasons behind it. Teachers and students from agriculture-related universities collaborated with the research team to determine and test the structure of the questionnaire and specific indicators.

The questionnaire data were analyzed using the professional software SPSS, which ensured the rigor and scientificity of the analysis by deeply mining and cross-comparing the massive questionnaire data. This method revealed young college students' multidimensional cognition, willingness to participate, and motivation for the comprehensive revitalization of the countryside. It also meticulously analyzed their specific performance in terms of employment choices, obstacles they face, and suggestions for improvement. This provides solid data support and a theoretical basis for subsequent studies. The structured questionnaire design and rigorous data analysis process aim to promote the effective participation of young people in rural revitalization and the integration of education and practice.

2.2.3. Interview Method

The research interviews were conducted based on nine representative, agriculture-related enterprises that were carefully recommended by the Specialized Committee on Industry-Education Integration of Intelligent Agriculture of the China Agricultural Machinery Circulation Association. The study selected these enterprises for in-depth interviews covering segments such as agricultural research (Shandong Agricultural Machinery Scientific Research Institute, Deputy Director Sun Zhimin), intelligent equipment (Qingdao Zhongrui Automobile Service Co., Ltd., ; general manager Zhang Qing; digital agriculture (Beijing Earthworm Digital Technology Co., Ltd.; general manager Gao Dehui); and agricultural finance (National Agricultural Credit Guarantee Alliance Co., Ltd.; director Yue Lei). These enterprises included institutions, high-tech enterprises, specialized small- and medium-sized enterprises, and foreign enterprises. Key decision-makers such as technical leaders and executives were interviewed, including those from institutions, high-tech enterprises, specialized SMEs, and foreign-funded enterprises. The interviews covered nine major segments of agriculture, ensuring the breadth and representative of

the study. These enterprises have significant status and influence in their respective fields and provide rich, comprehensive practical experience and insights due to their diversity.

The interview outline focuses on three aspects: the professional and competence demands for talent and the reasons for the gap between supply and demand. The interview questions are structured and semi-structured to comprehensively and deeply explore the current situation, challenges, and future prospects of enterprises in recruiting young talent, cultivating talent, and participating in rural revitalization.

Through these questions, the research team obtained a detailed analysis of enterprises' measurement indexes for recruiting young talent and their expectations for new employees' competencies. The team also revealed the obstacles encountered in the recruitment process and preferential policies related to recruitment in various fields. Additionally, the interviews addressed key topics, such as the current state of school-enterprise collaboration, enterprises' actual role in the comprehensive revitalization of villages, and specific recommendations for cultivating talent in colleges and universities. This information is valuable for developing an effective docking mechanism between enterprises and university education.

3. Findings of the Study

3.1. Demand for Young Talent for Rural Revitalization

The implementation of the rural revitalization strategy has activated the rural economy and given rise to an urgent demand for young talent in agriculture. This study uses crawler technology to capture recruitment data in agriculture, combines in-depth interviews, and comprehensively analyzes the specific needs and characteristics of agribusinesses for young talent in the context of rural revitalization. This analysis can be summarized in three points:

(1) The implementation of the Rural Revitalization Strategy has led to sustained growth in the demand for young talent in agriculture-related industries

Since the implementation of the rural revitalization strategy, agriculture-related industries have significantly increased their employment absorption capacity. According to the 2023 China Undergraduate Employment Report, the employment ratio of undergraduate agriculture, forestry, animal husbandry, and fishery graduates increased from 0.5% in 2018 to 0.8% in 2022, with an average annual growth rate of 12.5%. Growth is more significant in large agricultural provinces. The demand for agriculture-related jobs in Henan Province accounts for 18.6% of the national total, while Shandong Province accounts for 14.2%. Together, these two provinces contribute nearly one-third of the national job growth. Notably, first-tier cities such as Shanghai and Beijing have developed high-value-added industries, such as smart agriculture and bio-breeding. These cities have seen the salary level of agriculture-related jobs reach RMB 8,200 per month, which exceeds the national average by 37%.

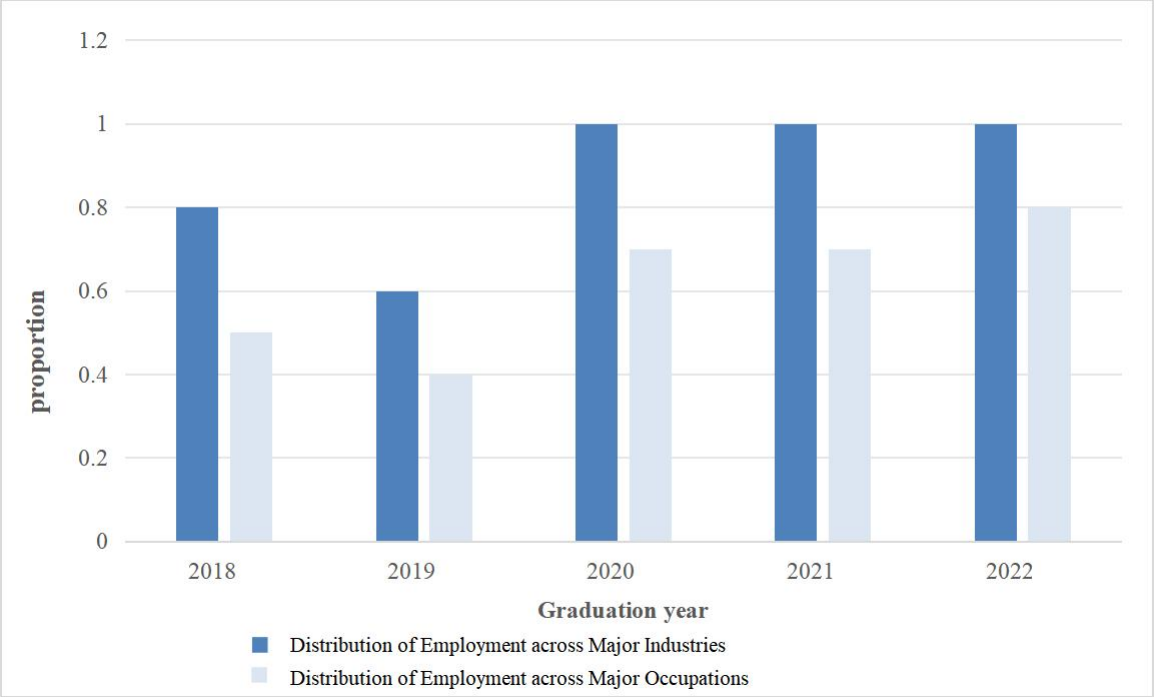

Figure 1. Percentage of college graduates employed in industry

(2) Diversification of agriculture-related businesses in terms of size, number, salary, and job categories.

As the rural revitalization strategy has deepened, the number and scale of agriculture-related enterprises have grown rapidly (Table 6). Their job categories and salary levels have also become more diverse. According to recruitment data and interview records, modern agricultural enterprises mainly demand workers in four fields: technology, service, sales, and production. Technical jobs account for 21.5% of the demand, reflecting the new requirements of digital transformation for agricultural talent.

Table 2.Evolution of the structure of agriculture-related posts

Job Category	2019 Percentage	2023 Percentage	Increase	Typical Company Cases
Production	45%	32%	-28.9%	Shandong Luhua Group
Technical	12%	21.5%	+80%	Beijing Big Earthworm Digital Technology
Management	15%	18.3%	+22%	Raiken Agricultural Machinery (Qingdao) Co.

Meanwhile, the salary level at agriculture-related enterprises has generally increased to attract more talented individuals. For instance, Qingdao Zhongrui Automobile Service Co., Ltd. offers recent graduates a variety of job opportunities during the hiring process, including positions in

product development, operations, research and development, and project management. The company has also developed an excellent training program to cultivate well-rounded talent that meets the needs of businesses. Additionally, National Agricultural Credit Guarantee Union Co., Ltd.'s practice shows that it supports new agricultural business entities by providing policy financial tools and allocating a large amount of bank funds to agriculture and rural areas, thereby promoting the development and growth of agriculture-related enterprises.

(3) High demand for young talents' quality of service in agribusinesses

Modern agribusinesses have higher requirements for young talent, demanding not only solid professional skills, but also cross-border integration ability, innovative thinking, practical experience, and social responsibility.

Table 3. Demand Weight and Compliance Rate of Modern Agricultural Enterprises for the Competence Dimensions of Young Talents

Competency Dimension	Weighting Coefficient	Example of Specific Requirements	Achievement Rate
Professional and Technical Competency	0.32	Agricultural Machinery Maintenance, Pest Control	41.7%
Digital Literacy	0.28	Python Data Processing, GIS Geographic Information System	23.5%
Practical and Innovative Competency	0.24	Agricultural Project Planning, Intelligent Equipment Improvement	17.8%
Professional Literacy	0.16	Teamwork, Resilience to Adversity	17.0%

During the interviews, senior management from several agriculture-related enterprises said that, despite the strong demand for jobs, young talent with these qualities is scarce, which makes recruitment difficult. For example, Yue Lei of the National Agricultural Credit Guarantee Union Co., Ltd., said that farmers should have a sense of "one understanding and two loves" — understanding of agriculture, love of the countryside, and love of farmers — as well as a down-to-earth, rigorous, and practical work attitude. Zhang Qing of Qingdao Zhongrui Automobile Service Co., Ltd., mentioned that although recent graduates have theoretical knowledge, they often need training and job rotation to adapt to the needs of enterprises. Therefore, colleges and universities should pay more attention to cultivating students' practical abilities and enhancing their cross-border integration skills to meet the actual needs of agriculture-related enterprises.

3.2. Participation of Young Talent

Through systematic questionnaire research and data analysis, the study thoroughly examines the current situation and characteristics of young talent's participation in rural revitalization from three dimensions: the student cognitive layer, the college education layer, and the path obstacle layer. These three dimensions can be summarized as follows:

(1) There needs to be an improvement in youth awareness of and willingness to participate in the comprehensive rural revitalization strategy.

The data show that students from agriculture-related colleges and universities have a significantly higher understanding of the rural revitalization strategy than students from non-agriculture-related colleges and universities. Beyond cognition and willingness, young people's regional emotional bonds further affect their choice of participation paths.This reflects the effectiveness of agriculture-related education in enhancing strategic awareness among students. In terms of willingness to participate, education becomes a key factor influencing the choices of highly educated students, especially in regard to career development. The higher the education, the lower the willingness to pursue agricultural employment.

Additionally, the degree of feeling is an intrinsic factor affecting youth's willingness to participate and is closely related to the choice of participation mode. Students with strong local ties are more likely to engage directly in agricultural production and construction, while those with weaker ties may opt for indirect participation through technical support or management services.

Table 4.Regression analysis of factors influencing willingness to participate

Variable	β coefficient	Standard error	t-value	P-value	Explanatory power
Educational level	-0.31	0.04	-7.25	<0.001	18.3%
Household location	0.24	0.03	6.12	<0.001	14.2%
Agricultural cognitive level	0.41	0.05	8.20	<0.001	22.7%

(2) Challenges in curriculum system, resource integration and training concepts in the training of rural revitalization talents in colleges and universities

The research found that, although most colleges and universities offer agriculture-related courses, the curricula are not well aligned with students' actual needs. Colleges and universities still need to strengthen their efforts to integrate internal and external resources and build practical teaching platforms. This limits students' opportunities to gain practical experience and improve their skills while in school.

Table 5.Matrix of fit between college programs and industry needs

Course Type	Industry Demand Matching Degree	Typical Institution Cases
Crop Cultivation	★★★★☆	China Agricultural University
Agricultural Economics	★★★☆☆	Huazhong Agricultural University
Agricultural Robotics	★★☆☆☆	Northeast Agricultural University (to be added in 2023)
Agricultural Branding and Marketing	★☆☆☆☆	No Institution System Offering

In addition, there is a discrepancy between universities' training concepts and their suitability for agricultural development. Some universities have failed to adequately integrate the rural revitalization strategy into the talent training process, resulting in students lacking a clear sense of direction in their career choices. Together, these challenges constitute a bottleneck in the training of talent for rural revitalization in colleges and universities.

(2) Cognitive bias and practical dilemmas in the path of youth participation in rural revitalization

On one hand,Young students often have limited knowledge of rural revitalization strategies and lack a comprehensive understanding of career prospects and development opportunities in agriculture. This leads them to view agriculture as a secondary or alternative career option.

On the other hand, young students face multiple dilemmas during the practical application process. Research data shows that a lack of practical experience, discomfort with the agricultural environment, and ambiguity in career development planning are the main factors hindering young people's participation in rural revitalization.

Besides, traditional family and societal concepts have a significant impact on youth choices. Many young people must consider family expectations and social pressures when making career choices. Together, these factors create many challenges and obstacles for youth participating in rural revitalization.

4. Analysis of Problems and Recommendations

4.1. Problem Analysis

According to the research results, we can see that, in the context of the in-depth implementation of the rural revitalization strategy, young talent presents a complex and diversified status quo in

terms of demand and supply, as well as cognition and action. The research team believes that the current problems faced in youth participation in the comprehensive revitalization of the countryside mainly fall into four categories:

(1) Structural imbalance between supply and demand for talent

Rural revitalization has increased the demand for digital and composite jobs. However, the talent training system of colleges and universities is lagging behind. The degree to which professional settings match industrial demand is less than 35%. However, the actual willingness and actions of young people to participate in rural revitalization have not grown simultaneously, resulting in a significant imbalance between supply and demand.

This imbalance is reflected not only in quantity but also in misalignment of quality and structure. There is a significant cognitive bias among young people: 62.3 percent of students equate agriculture with traditional farming, while only 28.7 percent are aware of emerging fields, such as smart agriculture.

(2) Outstanding contradiction between enterprise demand and talent reserve

Demand from agriculture-related enterprises for cross-border competence in "agriculture + information technology" accounts for 67.3%. However, only 19% of colleges and universities offer relevant courses. The lack of practical platforms in educational institutions is evident in the fact that only 47.8% of agribusinesses provide systematic training and 83.6% of students lack practical experience in the field.

Enterprises require young people to have solid professional knowledge and emphasize cross-border integration ability, innovative thinking, practical experience, a sense of social responsibility, and other qualities. However, due to asymmetric information and limited educational resources, many young people are overwhelmed by the job-seeking process and struggle to demonstrate their strengths and potential.

(3) Insufficient motivation for youth participation

Further analysis by the research team revealed that insufficient knowledge of the agricultural industry, lack of practical experience, and absence of necessary vocational skills are significant barriers to youth participation in rural revitalization. External factors, such as family and societal influences, also profoundly impact the career choices of youth, causing some to hesitate when faced with employment opportunities in the agricultural sector. This imbalance between supply and demand affects not only the speed of the rural revitalization strategy but also restricts the development opportunities for young talent.

Currently, there is a significant imbalance between the demand for young talent in rural revitalization and the actual participation of young people. The quality of service required of young people in agriculture-related enterprises is increasing, as are the positions and treatment being optimized. There is a disconnect between the talent cultivation system of colleges and universities and the industrial needs of rural revitalization. Young college students' cognition, expectations, willingness, and emotions toward rural revitalization affect the degree to which they participate.

4.2. Suggestions for Improvement

To effectively promote the active participation of young people in rural revitalization and optimize the path for young talent, the research team developed the following four feasible suggestions for improvement. These suggestions are based on an in-depth analysis of the imbalance between the supply and demand of rural revitalization talent, the challenges enterprises face, the disconnect between university education and the cognitive bias of young people.

(1) Constructing a mechanism for collaborative training between enterprises and universities to promote the accurate matching of supply and demand of young talents

In light of the growing demand for young talent in rural revitalization efforts and the lagging training systems of colleges and universities, agriculture-related enterprises should actively participate in the entire talent cultivation process. This includes providing internships, training positions, and employment opportunities, as well as collaborating with colleges and universities to develop talent cultivation programs that align with industry needs. Enterprises can establish scholarships and participate in joint research and development projects to attract and cultivate young talent with cross-border integration capabilities and innovative thinking. At the same time, enterprises can provide colleges and universities with regular feedback on changes in talent demand and guide them in adjusting their curriculum. This will optimize the allocation of educational and industrial resources. This two-way interaction enhances the employment competitiveness of young talent and promotes the sustainable and healthy development of the agricultural industry.

(2) Increase the education of rural sentiment and practice in the agricultural field in colleges and universities, and stimulate the rural sentiment and sense of responsibility of young people

When cultivating talent for rural revitalization, colleges and universities should foster students' connection to the countryside and their sense of social responsibility. In addition to teaching professional knowledge, colleges and universities should allow students to gain an in-depth understanding of rural culture and experience rural life. They can do so by adding courses on rural culture, organizing countryside expeditions, and developing volunteer activities. These activities will stimulate students' love of the countryside and their sense of belonging. At the same time, colleges and universities should strengthen their cooperation with agricultural practice bases to provide students with more opportunities to gain practical experience. Students should be able to go into the fields, identify problems, and solve them, thus improving their practical skills and innovative spirit.

(3) Optimize the design of rural revitalization policies and pay attention to the development needs of young talents

The government should introduce policies that support young talent, such as providing start-up capital, tax incentives, and housing subsidies. These policies would reduce the economic pressure on youth employment and entrepreneurship in rural areas. At the same time, the policy should address the career development paths and income expectations of young talent and enhance their career development opportunities and income levels in agriculture by establishing special training

programs and career advancement channels. Additionally, the policy should strengthen psychological guidance and humanistic care to help young talent overcome difficulties and challenges in their work and life in the countryside, maintaining a positive mindset and motivation.

(4) Increase social publicity and guidance to create a good social atmosphere for rural revitalization

Rural revitalization requires policy support, investment of resources, and broad participation and acceptance by society as a whole. Therefore, increasing publicity and guidance at the societal level is indispensable. Through media publicity, network dissemination, cultural activities, and other means, society can demonstrate the vivid practices and remarkable results of rural revitalization, thereby enhancing public awareness and sense of identity towards rural revitalization. By establishing advanced models and recognizing outstanding youth, we can foster an atmosphere that respects labor and entrepreneurship. This will allow young people to find a sense of belonging and honor in rural revitalization and encourage them to participate more actively in this important cause.

Optimizing university curricula and strengthening practical teaching links can enhance students' comprehensive knowledge of and interest in the agricultural industry. At the same time, school-enterprise cooperation should be strengthened to jointly formulate talent cultivation programs that ensure a high degree of compatibility between educational content and industrial demand. Additionally, we should establish diversified information acquisition channels and a career planning guidance system to help students clarify their career development direction and enhance their employment competitiveness. These improvement suggestions aim to build a closer education-industry docking mechanism and promote the effective flow of young talent to the agricultural sector. Implementing these measures is expected to alleviate the talent shortage in modern agricultural enterprises, encourage young talent to play a greater role in rural revitalization, and promote the in-depth implementation of the comprehensive rural revitalization strategy.

5. Conclusions

With the theme of "Exploring and Practical Research on the Path of Youth Participation in Comprehensive Rural Revitalization," this study used a network data research method, questionnaire research method, and interview method to conduct a comprehensive and in-depth analysis of the talent demand of modern agricultural enterprises, the willingness of young college students to participate in rural revitalization, and the current situation of rural revitalization in the implementation of the comprehensive rural revitalization strategy. The study found that the promotion of the rural revitalization strategy urgently demands young talent. The in-depth promotion of the rural revitalization strategy creates an urgent demand for young talent to the extent that Hypothesis 2 has been confirmed.. Through the analysis of 1,354 job postings from agriculture-related companies, 5,228 student surveys, and in-depth interviews with nine

agricultural enterprises, this study reveals that the core contradictions faced by young people participating in rural revitalization can be classified into three major categories.

From a structural imbalance perspective, the digital transformation of modern agricultural enterprises has accelerated with an average annual growth rate of 24.7 percent in the demand for technical and managerial positions. However, the talent training system of colleges and universities is lagging behind, with less than 35 percent of professional settings matching industrial demand. Only 19% of colleges and universities have opened "Agriculture + Information Technology" cross-curricula, and 83.6% of students lack practical experience in the field. This results in a serious shortage of "know agriculture, know technology, good management" composite talent,Which verifies Hypothesis 1. Finally, insufficient motivation for youth participation is another issue. The higher the education level, the lower the willingness to participate. Only 12.7% of doctoral students and 34.2% of specialists are willing to participate. Traditional concepts of family and society form a hidden resistance, restricting the construction of a reservoir of rural revitalization talent,which Hypothesis 3 was validated.

In light of the aforementioned issues, the study proposes the following systematic improvements: first, establish a mechanism to integrate industry and education, promote the construction of training bases between universities and agriculture-related enterprises, incorporate real enterprise projects into the curriculum, and require enterprise instructors to participate in designing talent cultivation programs. Second, we should strengthen the cultivation of local sentiment and practical ability. We should develop a teaching module on rural revitalization case studies, organize students to participate in "one village, one product" projects, and establish a progressive training chain of cognition, practice, and identification. Additionally, we can improve the policy support system by setting up special scholarships, such as the "Rural Revitalization Elite Program," and providing housing subsidies, title evaluation inclination, and other policy support for grassroots youth. Finally, we can create a "new farmer growth community" through an innovative social mobilization model and promote successful initiatives, such as "smart farmland" and "e-commerce to help farmers," through short video platforms to reshape the image of the agricultural profession.

Research has confirmed that youth groups are not only beneficiaries of rural revitalization but also key promoters. To solve the current dilemma, it is necessary to break the silo effect of "education-industry-policy" and establish a three-dimensional support system that includes precise traction on the demand side, deepening reform on the supply side, and synergistic empowerment on the policy side. In the future, this study could expand to include cases from central and western counties, establish a long-term tracking database of youth career development, and provide dynamic decision-making references for rural revitalization talent strategies.

Author Contributions:

Sitian Liu:conceptualization,gather material,writing ─ original draft; Jiayi Wang: writing ─ original draft,formulate a questionnaire, data analysis; Weiyun Gong:writing ,translating, review

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