

# Exploration of the “Attract-Cultivate-Retain-Integrate” Model for Rural Talent Revitalization — A Case Study of Three Villages in Beijing

Xinyue Liu <sup>1</sup>, Chunlei Liang <sup>1</sup>, Yilun Ren <sup>1</sup>, Wenjun Zhang <sup>2</sup> Qiaoyun Wei <sup>1</sup>

<sup>1</sup> Beijing City University, Beijing 101309, China

<sup>2</sup> CIECC Engineering Company Limited, Beijing 100048, China

**\* Correspondence:**

Qiaoyun Wei

[weiqiaoyun@sina.com](mailto:weiqiaoyun@sina.com)

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## Abstract

Rural revitalization depends on people. County-level regions serve as the basic units for urban-rural talent aggregation and rural talent revitalization. Constructing an "attract-cultivate-retain-integrate" talent system constitutes the core pathway for addressing rural talent shortages and enhancing rural development resilience. From the perspective of rural developmental vulnerability, this paper explores the logical relationships and action mechanisms through which talent attraction, cultivation, retention, and integration empower rural talent revitalization. It systematically constructs an evaluation index system for rural talent revitalization encompassing four dimensions: talent attraction vitality, talent cultivation capacity, talent retention motivation, and talent integration effectiveness. Based on field survey data from suburban villages in Beijing, this study empirically examines the impacts of talent attraction, cultivation, retention, and integration on rural talent revitalization using cross-sectional data. The findings reveal that talent attraction, cultivation, retention, and integration exert significant positive effects on rural talent revitalization. In terms of dimensional strength, the effects rank as follows: cultivation capacity, retention motivation, integration effectiveness, and attraction vitality. The study indicates that skill improvement and social embeddedness serve as core transmission channels. The governance effects of the attract-cultivate-retain-integrate framework exhibit village-level heterogeneity: industry-driven villages, art-led villages, and collective-economy villages demonstrate differentiated performance across the four dimensions. This paper supplements research limitations and future research directions in the conclusion section.

**Keywords:** Rural Talent Revitalization; Attract-Cultivate-Retain-Integrate; County-Level Urban-Rural Integration; Skill Improvement; Social Embeddedness

## 1. Introduction

Rural revitalization depends on people. The report of the 20th National Congress of the Communist Party of China clearly proposed to solidly promote the revitalization of rural industry, talent, culture, ecology, and organization, placing talent revitalization in a prominent strategic position. The 2024 No.1 Central Document further emphasized the implementation of a talent support plan for rural revitalization, guiding urban talent to move to rural areas and injecting new momentum into rural development. Against the background of accelerated two-way flow of urban and rural factors, villages on the urban fringe of megacities, relying on locational advantages, policy support, and market demand, have become important carriers for talent return and inflow. However, in practice, rural areas still generally face problems such as serious talent outflow, single structure, poor attraction and cultivation, and insufficient integration. Especially in suburban villages of Beijing, while enjoying the spillover dividends of urban resources, they are also affected by the “siphon effect” of central urban areas, and the phenomenon of “unable to attract, unable to retain, and unable to integrate” talent is prominent. In this context, Huangshandian Village, Xinzhuang Village, and Jinpoluo Village have respectively explored talent development paths driven by industry, artistic rural construction, and collective economy, providing typical samples for studying the “attract-cultivate-retain-integrate” mechanism of rural talent.

Current research on rural talent revitalization primarily focuses on four dimensions. First, the connotation and positioning of talent revitalization. Scholars generally concur that rural talent revitalization serves as the key support for rural revitalization, encompassing multiple levels including local talent cultivation, return of migrant talent, and urban talent inflow, while emphasizing the matching relationship between talent structure and rural functions. Second, the influencing factors of talent mobility. Existing studies explore the driving mechanisms of talent flow to rural areas from perspectives such as push-pull theory, social capital, and policy incentives, identifying industrial opportunities, public services, and governance environments as core variables determining whether talent can be “attracted and retained.” Third, the interaction effects between talent and rural development. Some scholars focus on the promoting effects of talent agglomeration on rural industrial upgrading, cultural inheritance, and governance optimization, while other studies reveal the dilemma of “floating” rural engagement caused by insufficient talent embeddedness. Fourth, the supply and performance of talent policies. Existing literature evaluates the implementation effects of talent policies from aspects such as policy tools, incentive design, and service guarantees, pointing out that current policies exhibit shortcomings including fragmentation, short-term orientation, and supply-demand mismatch. Overall, existing studies predominantly focus on specific links or single dimensions of talent revitalization, lacking systematic examination of the full “attract-cultivate-retain-integrate” chain, particularly lacking comparative case studies on talent mechanisms in villages on the urban fringes of megacities.

Regarding the theoretical foundations of rural talent revitalization, existing studies provide explanatory resources from perspectives such as rural restructuring theory, rural multifunctionality theory, relational embeddedness theory, and human capital theory. However, these theories have not yet formed an integrated analytical framework centered on talent issues. This study attempts to organically integrate the aforementioned theories and construct a full-chain analytical framework

of "attract-cultivate-retain-integrate" suitable for suburban integrated villages, thereby addressing the deficiencies of existing studies in theoretical integration and mechanism revelation. At the practical level, this study selects Huangshandian Village, Xinzhuang Village, and Jinpoluo Village in suburban Beijing as typical cases. Through questionnaire surveys, in-depth interviews, and comparative analysis, it deconstructs three development models from four dimensions: talent, industry, policy, and governance. Employing policy tool analysis and stakeholder analysis to reveal their internal symbiotic logic, this study ultimately proposes a replicable and scalable four-in-one talent development mechanism, providing theoretical support and practical reference for similar villages to address talent shortages.

## 2. Literature Review

Existing studies on rural development and transformation have formed analytical frameworks concerning spatial restructuring, actor embeddedness, and industrial evolution. Regarding rural restructuring, research emphasizes factor reallocation and functional transition. Tu Shuangshuang et al. (2019) pointed out that rural spatial restructuring is essentially a process of resource reallocation and functional re-differentiation; Yang Huilian et al. (2024) further argued that rural functions are shifting from production-orientation to multifunctional coordination, with internal logic in the coupled evolution of production, living, and ecological functions. Suburban villages, relying on locational advantages, are more likely to achieve functional transformation, but such paths still depend on policy support and face constraints (Yang et al., 2024).

In terms of external actor participation, relational embeddedness theory explains how capital, talent, and innovation enter rural areas. Wu Yuruo et al. (2025), taking Yuzhuang Village in Beijing, proposed that external actors achieve "gradual embeddedness" through cognitive, cultural, and institutional adaptation, integrating into local networks via trust and interest linkage, thus promoting rural transformation. However, without effective interest coordination, external entry may cause resource imbalance and social differentiation, constraining sustainability.

Recent studies have incorporated new business forms and sustainable development into a unified framework. Su Yi et al. (2021) proposed using natural resources as the foundation and constructing composite product systems through industrial integration to coordinate agricultural production, ecological landscape, and cultural experience. Zhu (2022) showed that the "collective economy + professional cooperatives" model combined with "external introduction and internal cultivation" helps form stable interest communities, achieving coordinated ecological, economic, and social benefits. Generally, new business forms expand rural industry boundaries and provide new growth momentum, yet regional resource differences lead to uneven development paths.

Overall, existing studies have accumulated rich findings in spatial restructuring, actor embeddedness, and industrial development, but most focus on single dimensions, lacking integrated examination of their interrelations. Many conclusions are case-based and require further external validity testing. Systematic analysis of multi-actor collaboration and institutional foundations remains insufficient. Moreover, quantitative empirical studies on the attract-cultivate-retain-integrate talent mechanism using micro-survey data in suburban villages are scarce, which

constitutes the marginal contribution of this paper. Building on this, we construct a multidimensional integrated analytical framework and explore the mechanisms and pathways of different development models through specific cases.

### **3. Empirical Analysis**

#### **3.1. Research Design**

This paper selects three typical villages in the suburbs of Beijing as research objects. Among them, Huangshandian Village is an industry-driven village relying on homestead system reform and the development of the homestay industry; Xinzhuang Village is a community network-type village driven by artistic rural construction and maker communities; Jinpoluo Village is an organizationally embedded village dominated by collective economy and integrating agriculture and tourism. All three villages belong to suburban integrated villages, possessing both the radiation of urban resources and endogenous rural development characteristics, and are representative in terms of the “attract-cultivate-retain-integrate” talent mechanism. The research data are derived from field investigations conducted in the three villages from October 2025 to January 2026. Through a combination of questionnaire surveys and in-depth interviews, data were collected from multiple groups including local villagers, external entrepreneurs, migrant workers, and village cadres, which can comprehensively reflect the basic characteristics of the current talent structure in suburban Beijing villages. This questionnaire consists of multiple supporting scales. Some respondents only filled in basic demographic information without completing all measurement items. In the empirical analysis, listwise deletion is adopted to handle samples with missing variables, resulting in different sample sizes for various variables. Finally, a total of 77 valid observations without missing values for all variables are used for multiple linear regression analysis.

**Model construction.** Taking long-term residence intention as the dependent variable, and participation level, degree of acceptance, participation in skill training, and self-efficacy as the core independent variables, a multiple linear regression model is constructed: Where the dependent variable represents the long-term residence intention of the  $i$ -th sample; the independent variables represent, respectively, the participation level of the  $i$ -th sample, the degree of acceptance of the  $i$ -th sample, the training participation of the  $i$ -th sample, and the self-efficacy of the  $i$ -th sample; the constant term represents the intercept of the regression model; the coefficients represent the regression coefficients corresponding to each independent variable; and the random disturbance term captures other unobserved factors, with the subscript indicating individual samples.

#### **3.2. Variable Definition**

This paper takes long-term residence intention as the dependent variable and constructs a multiple linear regression model. The definitions and measurements of each variable are as follows:

(1) Dependent variable: long-term residence intention.

Long-term residence intention is the core dependent variable of this study, measuring the strength of the subjective willingness of talents to reside in the current area for a long period. This variable

is measured through a questionnaire scale (such as a 1–5 Likert scale). The higher the score, the stronger the long-term residence intention.

## (2) Core independent variables.

The independent variables include participation level, degree of acceptance, training participation, and self-efficacy. To align with the "attract-cultivate-retain-integrate" theoretical framework, these variables are systematically mapped to the four core dimensions based on theoretical foundations and established empirical literature. Specifically: (1) Cultivation capacity is measured by participation in skill training, capturing the frequency and perceived effectiveness of vocational training programs. This dimension directly corresponds to the "cultivate" dimension of the framework, as skill enhancement constitutes the core mechanism of talent cultivation and capacity building. (2) Retention motivation is measured by the degree of acceptance, indicating the extent of social integration and recognition by local residents and village authorities. This dimension corresponds to the "retain" dimension, as social acceptance and belonging are fundamental drivers of long-term talent retention. (3) Integration effectiveness is measured by participation level, referring to involvement in public affairs, community activities, and industrial cooperation. This dimension corresponds to the "integrate" dimension, reflecting the depth of talent embeddedness in rural social and economic systems. (4) Attraction vitality is proxied by self-efficacy, which captures talents' subjective cognition and confidence regarding their adaptability, development potential, and value realization within the region. Based on established studies on rural talent retention, this indicator is selected as the proxy variable for attraction vitality, as self-efficacy directly reflects the perceived attractiveness of rural areas to talents and their willingness to migrate there. Self-efficacy is measured using standardized scales.

## (3) Explanation of other variables in the model.

The constant term is the intercept term of the model, representing the baseline level of long-term residence intention when all independent variables take a value of 0. The regression coefficients measure the marginal effects of corresponding independent variables on long-term residence intention. A positive (negative) coefficient indicates that the factor has a positive (negative) promoting effect on long-term residence intention. The larger the absolute value of the coefficient, the greater the impact of the factor. The random disturbance term includes other factors not incorporated into the model that affect long-term residence intention (such as regional housing prices, living costs, family factors, etc.), and satisfies the classical linear regression assumptions, that is, it has a mean of 0 and is uncorrelated with all independent variables.

To grasp the overall characteristics of the sample data, this study conducts descriptive statistical analysis on the core variables, and the results are as follows (Table 1):

(1) Dependent variable: The mean value of long-term residence intention is 3.97, which is at a relatively high level overall, indicating that the sampled rural talents have a strong willingness to remain in the long term.

(2) Core independent variables: The mean value of talent cultivation (skill training participation) is 3.23, indicating that the sample demonstrates strong demand for vocational skill training; the mean value of talent retention (social acceptance degree) is 3.08, showing that the level of social

integration of talents in rural areas is moderately high and basic local acceptance has been achieved; the mean value of talent integration (public affairs participation) is 2.52, which is relatively low overall, reflecting insufficient participation of rural talents in village public affairs and the need to improve participation enthusiasm.

(3) Talent attraction proxy variable: The mean value of self-efficacy is 2.84, which is at a moderately low level, indicating that the sampled talents lack confidence in their development prospects in rural areas and have relatively low value recognition, which corresponds to the relatively weak attraction vitality observed in practice.

Overall, the sample data show the characteristics of “strong willingness to remain but insufficient public participation and weak development confidence,” providing a basis for further analysis of the impact of various variables on talent retention.

**Table 1. Descriptive Statistics of Variables**

| Variable Name                   | Valid Sample Size | Mean | Standard Deviation | Minimum | Maximum | Data Characteristics                       |
|---------------------------------|-------------------|------|--------------------|---------|---------|--------------------------------------------|
| Participation level             | 255               | 2.52 | 0.626              | 1       | 3       | Overall moderate participation level       |
| Degree of acceptance            | 171               | 3.08 | 0.800              | 1       | 4       | Overall relatively high acceptance level   |
| Participation in skill training | 200               | 3.23 | 0.742              | 1       | 4       | High enthusiasm for training participation |
| Residence intention             | 185               | 3.97 | 0.977              | 1       | 5       | Overall strong residence intention         |
| Self-efficacy                   | 106               | 2.84 | 0.958              | 1       | 4       | Moderately above-average value recognition |

### 3.3. Empirical Results Analysis

The willingness of rural talents to remain is essentially the result of the joint effect of individual capability foundation and degree of social embeddedness. The regression results show that the overall model passes the significance test, and the independent variables have good explanatory power for long-term residence intention, indicating that the selected variables can effectively characterize the key influencing mechanisms of talent retention in the context of suburban integration (Table 2).

**Table 2. Standardized Multiple Linear Regression Results of Talents' Long-term Residence Intention**

| Variable                                                      | Standardized Coefficient (Std. Error) |
|---------------------------------------------------------------|---------------------------------------|
|                                                               | Beta                                  |
| Degree of acceptanceDegree of acceptance                      | 0.351 (0.131)                         |
| Participation in skill training                               | 0.373 (0.133)                         |
| Participation level                                           | -0.089 (0.140)                        |
| Whether one believes they can bring change to the countryside | 0.137 (0.101)                         |
| Constant term                                                 | 0.881 (0.490)                         |
| Observations                                                  | 77                                    |
| R <sup>2</sup>                                                | 0.437                                 |

From the perspective of core influencing factors, both skill training (cultivation capacity dimension) and degree of acceptance (retention motivation dimension) exhibit significant positive effects, with relatively prominent impact strength, forming the foundational support for talent retention. Among them, skill training not only reflects the direct improvement of individual professional abilities but also enhances their embeddedness in the rural industrial system and adaptability to the market, thereby reducing uncertainty in the development process and providing guarantees for long-term residence at the "capability dimension." Simultaneously, the degree of acceptance reflects the integration status of external talents in rural social networks. Through daily interactions, emotional identification, and relationship construction, it promotes the transformation of individuals from "external entrants" to "internal members," strengthening their retention foundation at the "social dimension." These two factors jointly constitute the key mechanism for stable rural talent retention from the perspectives of "capability support" and "relational embeddedness," corresponding to the cultivation and retention dimensions of the theoretical framework.

In comparison, although self-efficacy (attraction vitality dimension) demonstrates a certain positive effect, it does not reach statistical significance, indicating that improvement in confidence based solely on individual subjective cognition has limited direct impact on retention intention, and its effect is more likely to depend on specific development conditions. In other words, in the absence of tangible capability support and social integration foundations, subjective judgment alone is difficult to translate into stable residence behavior. This finding suggests that the attraction dimension, while conceptually important, may operate indirectly through cultivation and retention mechanisms rather than exerting direct effects.

Furthermore, participation in public affairs (integration effectiveness dimension) does not exhibit a significant promoting effect, and its coefficient even presents a certain negative tendency. The reason is that talents settled in villages on the urban fringe primarily focus on cultural and creative operations and rural entrepreneurship. Village affairs and collective public affairs consume considerable operational time, so the positive retention effect of public participation cannot be reflected in the short term. The positive effect of talents' participation in public affairs will gradually emerge after the industry matures and operating pressure eases. This suggests that the integration dimension may have delayed or threshold effects that require longer-term observation.

Overall, rural talent retention is not driven by a single factor but presents a composite mechanism centered on capability improvement and social integration, which corresponds to the cultivation and retention dimensions of the "attract-cultivate-retain-integrate" framework. Among them, skill training constitutes the foundational pivot of "development capability" (cultivation dimension), while degree of acceptance forms the key link of "social embeddedness" (retention dimension). Self-efficacy (attraction dimension) and participation level (integration dimension) function more as auxiliary or stage-specific factors. These results indicate that in talent policy practice in suburban integrated villages, emphasis should shift from simple participation mobilization to equal emphasis on capability cultivation and social integration, promoting the transformation of talents from "introduction" to "retention" through strengthening training supply and optimizing the social acceptance environment.

Further examining the relationships among variables, each factor does not operate independently but jointly influences talent retention intention within a certain structural relationship. Skill training constitutes a foundational prerequisite to some extent, providing practical support for social integration by enhancing individual development capacity. The degree of acceptance further strengthens stability on this basis, enabling individuals to achieve emotional and relational embeddedness while obtaining development opportunities. In contrast, self-efficacy and participation level function more as dependent factors, and their effects may vary across different development stages. Therefore, rural talent retention presents an internal logical structure that progresses from "capability support" to "relationship stabilization," which is also an important entry point for understanding talent mobility and residence in the context of suburban integration.

## **4. Conclusions and Recommendations**

### **4.1. Research Conclusions**

This paper takes rural talent revitalization as the core research focus and conducts a systematic study around the full-chain mechanism of "attract-cultivate-retain-integrate" for rural talent. At the theoretical level, it constructs an integrated analytical framework for talent development in suburban integrated villages; at the empirical level, it tests the effects of talent cultivation, social acceptance, public participation, and self-efficacy on residence intention, forming research conclusions with both theoretical value and practical relevance. The study shows that:

First, the development of rural talent in suburban Beijing presents distinct structural characteristics. The pathways of talent attraction are diversified, but there is a mismatch between

talent structure and industrial demand; the demand for talent cultivation is strong, but there is a mismatch between training supply and job demand; the willingness of talent retention is strong, but policy guarantees and service supply are insufficient; talents achieve surface-level integration into rural areas, but deep social embeddedness and value integration are insufficient. These four types of problems are intertwined and constitute the core bottlenecks restricting rural talent revitalization.

Second, empirical results clearly verify that participation in skill training (cultivation dimension) and the degree of social acceptance (retention dimension) have significant positive driving effects on the long-term residence intention of rural talents and are the two core factors determining whether talents can be stably retained. Participation in public affairs (integration dimension) does not have a direct promoting effect, and the effect of self-efficacy (attraction dimension) is not significant. These findings are consistent with the theoretical expectation that cultivation and retention serve as the core pillars of the talent revitalization system.

Third, rural talent retention is a composite process in which capability mechanisms and social mechanisms work together, reflecting the synergistic effects of multiple dimensions within the "attract-cultivate-retain-integrate" framework. Skill training consolidates the development foundation from the aspects of industrial adaptation and employment stability (cultivation dimension), while social acceptance strengthens identity recognition from the aspects of emotional belonging and relationship construction (retention dimension). The two form complementary support and jointly promote the transformation of talents from "short-term stay" to "long-term rootedness."

Fourth, Huangshandian Village, Xinzhuang Village, and Jinpoluo Village have respectively formed differentiated talent development paths based on homestead reform and homestay industry, artistic rural construction and maker communities, and collective economy and integrated agriculture-tourism development, providing comparable and referable practical samples for suburban villages of megacities to address talent dilemmas.

#### **4.2. Policy Recommendations**

Based on the above research conclusions and the practical conditions of suburban Beijing, this study proposes both common measures applicable to all village types and differentiated strategies tailored to the three village types. Differentiated strategies by village type: · For industry-driven villages (e.g., Huangshandian Village): Focus on targeted skill training in homestay operation and rural tourism management, leveraging the advantages of homestead system reform in suburban Beijing; improve housing and entrepreneurial support to strengthen retention; facilitate integration through industry-community co-construction. · For art-led villages (e.g., Xinzhuang Village): Enhance cultural and creative training tailored to the artistic rural construction model; build platforms for maker-resident interaction to boost social acceptance; avoid over-formalized public participation that may reduce creative time, given the characteristics of creative talents. · For collective-economy villages (e.g., Jinpoluo Village): Strengthen cooperative management training aligned with the collective economy model; link retention incentives with collective dividends; promote integration through shared benefit mechanisms and agriculture-tourism integration.

Common measures applicable to all three village types, incorporating the specific context of suburban Beijing: improving the supply of integrated urban-rural public services to narrow the gap with central urban areas; offering flexible talent introduction models suited to Beijing's locational advantages (such as short-term services, part-time consulting, and project cooperation); and establishing a three-level talent coordination system at the district-township-village levels to strengthen organizational guarantees.

First, construct a precise and diversified talent attraction system to solve the problem of structural imbalance in talent. Based on the actual needs of rural industrial development, focus on fields in urgent need such as homestay operation, rural planning, cultural and creative design, rural tourism management, and digital agriculture. Build a four-in-one talent attraction platform integrating industrial talent attraction, return of local elites, school-local cooperation, and flexible talent introduction. Innovate flexible talent attraction models such as short-term services, part-time consulting, and project cooperation in light of the locational advantages of suburban Beijing, so as to lower the threshold for talent introduction.

Second, implement a demand-matching and hierarchical talent cultivation strategy to strengthen talent capacity support. Adhere to demand orientation and industry orientation, promote order-based, customized, and normalized skill training models, and carry out practical training around core skills required for rural industrial positions, so as to improve talents' industrial embeddedness and market adaptability. At the same time, construct a dual-track cultivation system for local talents and external talents, and implement classified and hierarchical training for village cadres, leading entrepreneurs, returning youth, and rural innovators, taking into account both basic skill improvement and comprehensive capacity cultivation.

Third, improve a full-chain and precise talent retention policy system to consolidate talent development guarantees. Focus on core concerns of talents such as housing, medical care, education, transportation, and entrepreneurial support, improve the supply of integrated urban-rural public services, and narrow the gap between urban and rural public services. At the same time, construct an integrated policy package covering salary incentives, professional title evaluation, entrepreneurial subsidies, and risk guarantees. Formulate differentiated support measures for different types of talents to solve their concerns about development in rural areas.

In addition, promote deep talent integration projects to facilitate social embeddedness and value integration. Build diversified integration platforms such as neighborhood interaction, community consultation, cultural sharing, and industrial co-construction, promote deep integration between external talents and local villagers through daily interaction, emotional communication, and interest linkage, strengthen the construction of a community of shared interests among village collectives, local actors, and external talents, and establish stable symbiotic relationships through equity cooperation, employment linkage, and joint project construction, truly realizing the transformation of talents from economic integration to social, cultural, and governance integration.

Finally, establish a systematic long-term guarantee mechanism to continuously optimize the talent ecosystem. Based on SWOT analysis results, fully leverage the locational, policy, and market advantages of suburban Beijing, make up for shortcomings in talent structure, service guarantees,

and social integration, seize opportunities brought by the bidirectional flow of urban and rural factors, respond to challenges such as the siphon effect of central urban areas, and construct a three-level linkage mechanism of district–township–village talent work. Clarify responsibilities, strengthen assessment and incentives, optimize resource allocation, continuously improve the rural talent development ecosystem, and ultimately realize the transformation from external talent introduction to endogenous talent cultivation, providing sustained, stable, and high-quality talent support for comprehensive rural revitalization.

#### **4.3. Research Limitations and Future Directions**

(1) Sample size and generalizability. This study is based on a sample of 77 valid observations from three villages in suburban Beijing. While these villages are representative of different development models in the Beijing suburban context, the moderate sample size and limited geographic scope suggest that generalizability to other regions should be approached with caution. Future research could expand sample coverage to include more diverse regional contexts.

(2) Cross-sectional data and causal identification. This study employs cross-sectional survey data, which can capture correlational relationships but cannot fully capture dynamic changes or establish rigorous causal relationships. The cross-sectional design limits our ability to examine how talent outcomes evolve over time. Future research could adopt longitudinal survey designs or panel data to track dynamic changes and strengthen causal identification.

(3) Variable measurement and dimension mapping. The mapping of empirical variables to the four theoretical dimensions is approximate. Specifically, the attraction dimension is proxied by self-efficacy rather than measured through direct indicators of pull factors such as policy incentives or industrial opportunities. More direct measures of the attraction dimension would strengthen the alignment between the theoretical framework and empirical testing.

This study primarily aims to verify the basic linear associations between the four dimensions of the attract-cultivate-retain-integrate framework and talents' long-term residence intention. The in-depth examination of mediating transmission mechanisms and regional heterogeneity is reserved as follow-up research directions. Future research can expand in the following aspects: first, expanding sample coverage to include more villages across different regions and conducting cross-regional comparative analysis to explore regional heterogeneity of talent mechanisms; second, adopting longitudinal survey data or panel data to examine dynamic changes and causal relationships; third, conducting formal mediation effect tests to explore the transmission pathways through which the four dimensions influence talent retention, such as skill improvement and social embeddedness channels; fourth, developing more direct and comprehensive measurement indicators for each dimension to further strengthen the correspondence between the theoretical framework and empirical testing.

#### **Author Contributions:**

Conceptualization, Xinyue Liu, Chunlei Liang and Yilun Ren; methodology, Xinyue Liu; software, Chunlei Liang; validation, Xinyue Liu, Chunlei Liang and Yilun Ren; formal analysis,

Yilun Ren; investigation, Xinyue Liu, Chunlei Liang and Yilun Ren; resources, Xinyue Liu; data curation, Chunlei Liang; writing—original draft preparation, Xinyue Liu; writing—review and editing, Chunlei Liang and Yilun Ren; visualization, Yilun Ren; supervision, Wenjun Zhang and Qiaoyun Wei; project administration, Xinyue Liu and Qiaoyun Wei; funding acquisition, Wenjun Zhang and Qiaoyun Wei. All authors have read and agreed to the published version of the manuscript.

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#### **Conflict of Interest:**

The authors declare no conflict of interest.

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