

Innovative Paths for Digital Empowerment in Rural Revitalization of Ethnic Minority Areas

Wen Ren ¹, Feng Qi ¹ and Wei Tong ¹

¹Graduate School of Finance and Economics, Central University of Finance and Economics, Beijing, China

tongwei67@sina.com

Abstract—The integrated development of urban and rural areas is the main line and focus of the three rural issues” work in the new era, which is of great significance for solving the problems of unbalanced and inadequate development in ethnic regions and promoting the comprehensive revitalization of rural areas. Based on the review of the evolution of urban-rural relations and related theories of urban-rural integrated development, this paper analyzes the prominent problems in ethnic regions, such as the imbalance of urban-rural development, rural hollowing, lagging infrastructure and public services, and ecological environment protection. Centering on the main line of digital empowerment for rural revitalization in ethnic regions, systematic countermeasures and suggestions are put forward from the aspects of constructing a digital rural development strategy”, promoting the system integration of ‘people-industry-land’”, taking classified measures to promote the revitalization of different types of rural areas”, promoting the free flow of urban and rural production factors”, and promoting rural space reconstruction”. At the same time, based on typical case practices, the replicable and extendable experience of digital rural development is summarized, the main challenges faced are analyzed, and policy suggestions are put forward from the aspects of top-level design, financial support, resource integration, pilot demonstration, and talent cultivation, so as to provide theoretical support and practical guidance for the integrated development of urban and rural areas and rural revitalization in ethnic regions.

Index Terms—Digital empowerment, Urban-rural integration, Rural revitalization, Ethnic regions, Path innovation

I. INTRODUCTION

A. Research Background and Significance

The report of the 20th National Congress of the Communist Party of China proposed to comprehensively promote rural revitalization and promote agricultural and rural modernization” [1]. The No. 1 central document in 2022 also clearly pointed out that it is necessary to take the county as an important entry point for the integrated development of urban and rural areas” and promote the balanced allocation of urban and rural public resources” [2]. In the digital era, accelerating the construction of digital villages and promoting the deep integration of digital technology and rural revitalization are of great significance for solving the three rural issues”, narrowing the urban-rural gap, and promoting the integrated development of urban and rural areas [3]. As the shortcomings” and weak links” in comprehensively promoting rural revitalization, how to break through development difficulties and stimulate endogenous motivation under digital empowerment in ethnic regions is not only a major theoretical issue but also a practical topic related to ethnic unity, border stability, and long-term peace

and stability of the country. Exploring the experience of digital rural construction in ethnic regions is of great theoretical value and practical significance for bridging the gap between workers and peasants and between urban and rural areas, enhancing people’s sense of gain, happiness, and security.

B. Research Content and Methods

With the main line of digital empowerment for rural revitalization in ethnic regions, this paper focuses on the following contents based on sorting out relevant research results at home and abroad:

- (1) Analyze the prominent problems and bottlenecks restricting the integrated development of urban and rural areas in ethnic regions;
- (2) Summarize the application status and typical cases of digital technology in rural revitalization in ethnic regions;
- (3) Put forward systematic countermeasures and suggestions such as constructing a digital rural development strategy”, promoting the system integration of ‘people-industry-land’”, taking classified measures to promote the revitalization of different types of rural areas”, promoting the free flow of urban and rural production factors”, and “promoting rural space reconstruction”;
- (4) Put forward safeguard measures and policy suggestions from the dimensions of policy, talent, industry, foundation, and culture. In terms of research methods, this paper adopts literature research, comparative research, case analysis, and other methods, striving to extract replicable and extendable experience of digital rural construction in ethnic regions based on theoretical interpretation and case analysis, so as to provide theoretical support and practical guidance for accelerating the integrated development of urban and rural areas.

II. THEORETICAL BASIS OF URBAN-RURAL INTEGRATED DEVELOPMENT

A. Connotation and Characteristics of Urban-Rural Relations

Marxist classical writers made a profound elaboration on urban-rural relations. Marx pointed out that the urban-rural division of labor was the inevitable product of the development of human society to a certain stage, and in class society, the urban-rural relationship was embodied in the unity of opposites of exploitation and being exploited [4]. Engels emphasized that the fundamental elimination of the urban-rural opposition should follow the path of urban-rural integration [5]. It can be seen that urban-rural relations have

the characteristics of objectivity, historicity, and dynamics, and urban-rural integration is the general trend and future direction.

B. Concept and Connotation of Urban-Rural Integrated Development

The 19th National Congress of the Communist Party of China first put forward the concept of urban-rural integrated development”, emphasizing promoting the formation of a new type of workers, peasants, and urban-rural relations of mutual promotion, complementarity, full integration, and common prosperity”. The No. 1 central document in 2023 further pointed out that it is necessary to solidly promote key tasks such as rural development, rural construction, and rural governance, and improve the effectiveness of rural governance [6]. The connotation of urban-rural integrated development is mainly reflected in:

- (1) Production integration to realize mutual promotion between industry and agriculture, and urban-rural complementarity [11];
- (2) Life integration to promote the equalization of basic public services [8];
- (3) Ecological integration to follow the path of urban-rural green development [9];
- (4) Cultural integration to rejuvenate new vitality of rural civilization [10].

C. Relationship between Rural Revitalization Strategy and Urban-Rural Integrated Development

Rural revitalization and urban-rural integrated development are complementary and inherently unified. On the one hand, without agricultural and rural modernization, there will be no mutual promotion between industry and agriculture and complementarity between urban and rural areas. Agricultural and rural modernization is the foundation and prerequisite for urban-rural integrated development [11]. On the other hand, urban-rural integrated development has opened up a broad space for the comprehensive revitalization of rural areas. The synchronization of industrialization, informatization, urbanization, and agricultural modernization has injected surging power into rural development. It is necessary to systematically plan and comprehensively promote rural revitalization in the context of urban-rural integration, and follow the path of rural revitalization with Chinese characteristics. Rural revitalization is based on the people-industry-land” system integration background. Considering that the influence of cities on rural areas will weaken with the increase of distance, it is of great practical significance for realizing urban-rural integrated development, people-industry-land” system integration, rural comprehensive development and agricultural and rural modernization to give full play to the node role of new villages and towns in urban-rural integration.

D. The “People-Industry-Land” Model of Urban-Rural Integration

The city, as the product of social division of labor and industrial differentiation, has developed on the basis of rural areas

[12], and there are differences in landscape and production and living modes between the two. The functions of cities and rural areas are also relatively independent [13]. However, there is an intrinsic connection between cities and rural areas. This deep-rooted intrinsic connection is the objective existence of cities and rural areas moving towards integration. Urban-rural integration is a complex process of the integration of urban and rural subsystems, involving all aspects of cities and rural areas [14], mainly including the integration of endogenous factors such as population, industry, and land, jointly catalyzed by market factors and government policies (see Figure 1 for details). Urban-rural integration is not achieved overnight, but a multi-dimensional interactive historical process, as well as a complementary and mutually reinforcing process, including both the radiation and driving of cities to rural areas and the support of rural areas to cities.

E. The Dynamic Evolution Path of Urban-Rural Integration

Urban-rural integrated development is the inevitable product of social development and the ultimate result of productive forces development. According to the above decomposition of the three subsystems of urban-rural relations, this section depicts a three-dimensional diagram of urban-rural integration of “people-industry-land” (see Figure 2). Assuming that the starting point of urban-rural integration in a certain region is point 0, at this time, the city has not yet been born, and the urban and rural areas were originally one. With the development of productive forces and the emergence of social division of labor, cities have emerged. Due to the policy preference of the government, cities and rural areas have begun to divide, and the urban-rural relationship has evolved from the state of integrated development at point 0 to the decline of integration at point a. Line 00' is the central line of the three-dimensional diagram composed of population integration, industrial integration, and land integration, and is the path line of urban-rural integrated development. The closer to line 00', the higher the degree of urban-rural integration, and vice versa. Line 00' forms a 45° angle with P(x), I(y), and L(z). With the development of the urban and rural economy and society, the population flow between urban and rural areas is frequent, the interaction between the three industries increases, and the interaction between cities and rural areas begins to increase. The urban-rural relationship is close to line 00' from point a (near point A), indicating that the connection between cities and rural areas is increasing and the relationship is easing. With the rapid development of urbanization, the demand for labor in urban industries has increased dramatically, and a large number of rural agricultural labor has shifted to towns, and production factors such as capital and technology are concentrated in cities, resulting in obstacles to the flow of factors between urban and rural areas, especially from cities to rural areas, leading to the “hollowing out” of some rural areas. Urban-rural integration evolves from point A to point B, and the gap between urban and rural areas widens, forming a dual structure between urban and rural areas. The urban-rural relationship evolves from coordination to division and opposi-

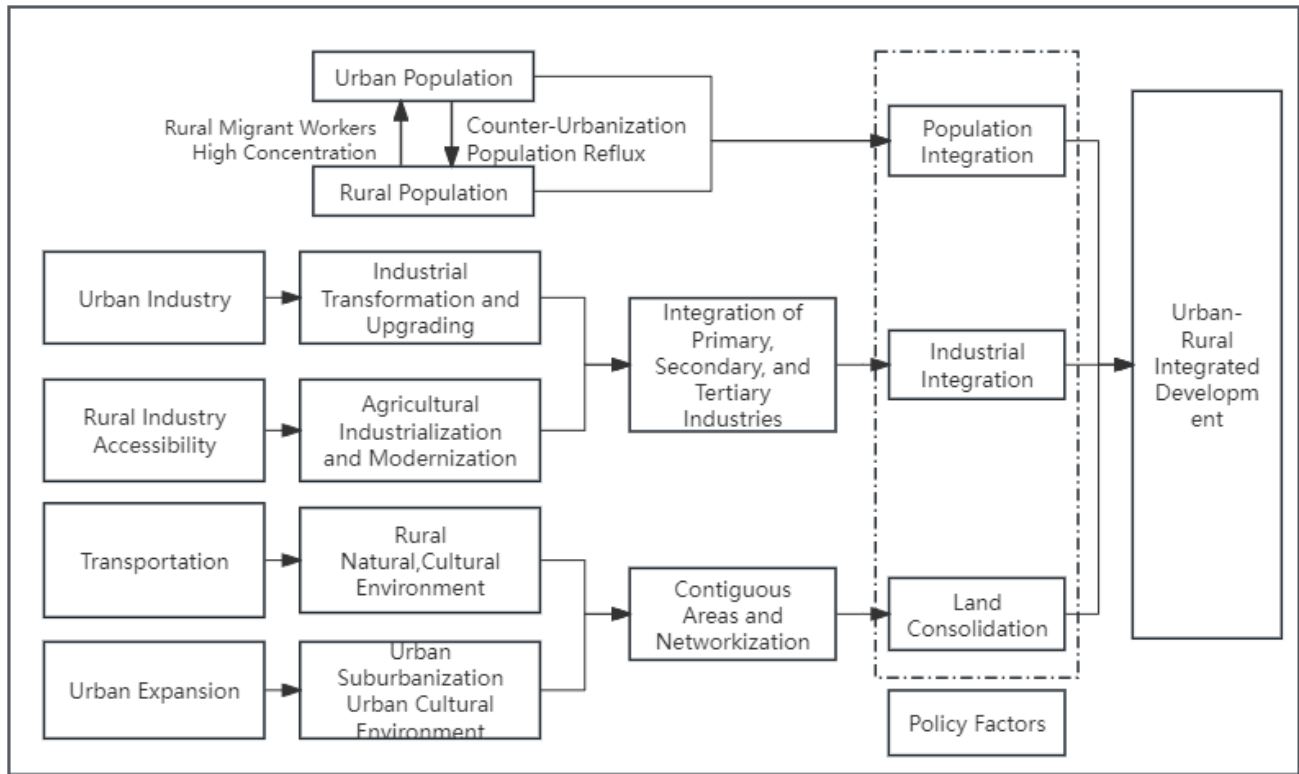


Fig. 1. Three-dimensional framework of “people-industry-land” in urban-rural integration

tion, that is, urban-rural integration changes from A→B→C, and cities lead rural development. When productive forces continue to improve and reach a certain level, the boundaries between cities and rural areas gradually blur, and the urban-rural gap narrows or even disappears. Urban-rural integration evolves from point C to point D. People can flow freely between cities and rural areas, the integration of the three industries catalyzes new business forms, the transportation network of urban-rural integration is convenient, the distance between urban and rural areas is shortened, the rural natural environment and humanistic environment are integrated with the urban humanistic environment, and urban and rural land resources are reconstructed in space, effectively promoting the interaction and integration of cities and rural areas in population, industry, and land, forming an integrated social complex of urban-rural development. Urban-rural integration evolves from point E to points F and G, while points D, F, and G are all close to line 00', that is, urban and rural areas enter a stage of high-quality integration. In general, urban-rural integration is a dynamic process, and the relationship between cities and rural areas evolves from unity → division (opposition) → coordination → integration. In the early stage, cities and rural areas are unified, and the concept of cities has not yet emerged. With the development of productive forces, after the emergence of cities, urban and rural areas gradually

show a divided and opposing relationship. When productive forces reach a certain level, the development of both cities and rural areas requires their integrated development, their influence on each other becomes deeper and deeper, and their integration degree becomes higher and higher.

III. CHALLENGES FACED BY RURAL REVITALIZATION IN ETHNIC REGIONS

Ethnic regions are located in border areas with fragile ecological environments, poor agricultural production conditions, and are the main battlefield for poverty alleviation and the key areas for rural revitalization in China. Promoting the integrated development of urban and rural areas in ethnic regions faces many difficulties and challenges.

A. Unbalanced and Inadequate Development of Urban and Rural Areas

According to data from the National Bureau of Statistics, in 2022, the urbanization rate of the eight ethnic provinces and regions in China was 58.7%, which was 4.2 percentage points lower than the national average [15]. The degree of rural modernization is also obviously lagging behind. According to data from the Ministry of Agriculture and Rural Affairs, in 2022, the per capita disposable income of rural residents in the eight ethnic provinces and regions was only 38% of that of urban residents [16]. The contradiction of the urban-rural

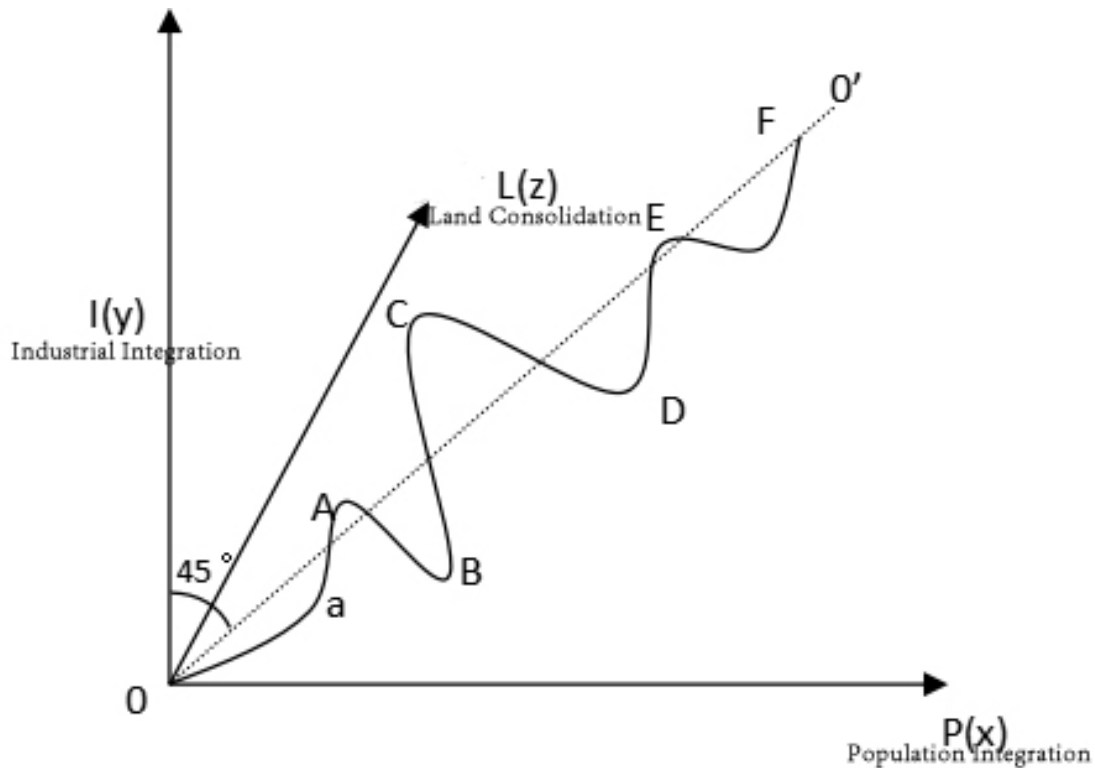


Fig. 2. The path of “people-industry-land” in urban-rural integration

dual structure is prominent, directly restricting the process of rural revitalization and urban-rural integrated development in ethnic regions.

B. Rural Population Loss and Industrial Decline

The large outflow of rural labor is a prominent problem that plagues rural development in ethnic regions. According to the *China Rural Development Report* released by the Chinese Academy of Social Sciences in 2023, in 2022, the urbanization rate of the permanent population in the Tibet Autonomous Region was 40.1%, while the urbanization rate of the registered population was only 25.5%, reflecting the objective fact that a large number of rural laborers have shifted to towns [17]. The continuous decrease of the rural population has led to labor shortages, family hollowing, and low agricultural production efficiency, and has also exacerbated the decline of rural industries.

C. Lagging Infrastructure and Public Services

The urban-rural gap in infrastructure and public services is still relatively large. Taking Xinjiang as an example, in 2022, the per capita housing area of urban residents was 39 square meters, while that of rural residents was only 30.5 square meters [18]. Among the 14 prefectures and cities in the Xinjiang Autonomous Region, 12 prefectures have a rural tap water coverage rate of less than 80% [19]. The allocation of medical care, elderly care, and other public service resources is also not reasonable. In 2022, there were

5.42 health technicians per thousand people in rural areas of Guangxi, which was only 43% of that in cities [20]. Making up for the shortcomings of public services in rural areas of ethnic regions and enabling more rural residents to benefit from the fruits of reform and development are important contents of promoting rural revitalization.

D. Increasing Pressure on Ecological Environment Protection

Ethnic regions have fragile ecological environments, and problems such as sand prevention and control, soil erosion, and rocky desertification are prominent. According to the *China Ecological Environment Status Bulletin* released by the Ministry of Ecology and Environment in 2023, in 2022, the area of desertified land in Northwest China was 202 million mu, of which the areas of desertified land in Xinjiang, Ningxia, and Inner Mongolia were 124 million mu, 23 million mu, and 18 million mu respectively, all accounting for more than 60% [21]. Protecting the green mountains and clear waters, maintaining ecological balance, and coordinating the relationship between development and protection are crucial to rural revitalization in ethnic regions.

IV. APPLICATION OF DIGITAL TECHNOLOGY IN URBAN-RURAL INTEGRATED DEVELOPMENT

A. Overview of Digital Technology

Big data, cloud computing, artificial intelligence, blockchain, and other digital technologies are advancing with each passing day, profoundly changing economic and

social development and people's production and lifestyles [22]. As a key production factor in the new era, digital technology is promoting the transformation of production methods, lifestyles, and management methods, and plays an important role in promoting the free flow of urban and rural factors, optimizing resource allocation, and driving rural transformation and upgrading.

B. Application of Digital Technology in Agricultural Production

Digital agriculture is the use of modern information technology to digitally transform various links of agricultural production, realizing the precision, intelligence, and networking of agricultural production [23]. In recent years, the Internet of Things, artificial intelligence, drones, agricultural robots, and others have been widely used in agricultural operations such as planting, management, and harvesting, greatly improving agricultural production efficiency. For example, Changji Prefecture in Xinjiang uses drones to spray pesticides on cotton, with an hourly operation volume of more than 100 mu, which is 10 times the operation efficiency of manual labor [24].

C. Application of Digital Technology in Rural E-commerce

As an important carrier of the digital economy, e-commerce provides strong support for promoting online sales of agricultural products and expanding the rural consumer market. China's rural online retail sales have grown from 35.3 billion yuan in 2015 to 2.2 trillion yuan in 2022, with an average annual growth rate of over 30

D. Application of Digital Technology in Rural Governance

Digital empowerment" is promoting the modernization of the rural governance system and governance capabilities. For example, Guizhou Province uses blockchain technology to establish a full life cycle management platform for poverty alleviation funds and projects to achieve targeted poverty alleviation and targeted poverty elimination [27]. Xide County, Liangshan Prefecture, Sichuan Province has established a smart and safe rural system integrating video surveillance, intelligent early warning, and remote interaction, and social security has significantly improved [28]. In addition, some localities use the Internet + government services" model to create new platforms for serving the people, such as digital village affairs" and rural in the palm", which greatly improves the efficiency of rural public services [29].

V. TYPICAL CASE ANALYSIS

A. Qiandongnan, Guizhou: Building a Characteristic Agricultural Industry Cluster by Relying on "Internet+"

Qiandongnan Miao and Dong Autonomous Prefecture in Guizhou is a key area for national poverty alleviation and development and a demonstration area for regional development and poverty alleviation in the Wuling Mountain area. In recent years, relying on the Internet+" action, the prefecture has vigorously developed the three cards" agricultural industries with edible fungi, tea, and vegetables as the main products.

An edible fungus big data platform has been established to realize digital control of the whole industrial chain such as fungus stick production, mushroom management, and mushroom product traceability. The Dong Township Tea Charm" blockchain e-commerce platform has been built to open up the circulation channels from tea gardens to tea cups. The development of cloud vegetable garden" smart agriculture and the promotion of the "easy vegetable purchase" digital system for connecting agriculture and supermarkets. Through digital empowerment, the prefecture achieved a rural online retail sales of 6.25 billion yuan in 2022, and the per capita net income of poor people with established files and cards reached 12,480 yuan.

B. Baise, Guangxi: Rural E-commerce Boosts Income Increase in Poverty-stricken Areas

Baise City, Guangxi is the location of 14 extremely poor counties and cities in Guangxi, and has been lagging behind in development for a long time due to mountains and poverty. Since 2015, Baise City has taken the development of rural e-commerce as an important starting point for targeted poverty alleviation and helping farmers increase their income, introduced preferential support policies, and vigorously developed the company + base + farmer" model to cultivate and strengthen a number of rural e-commerce demonstration enterprises. At present, there are more than 100,000 people engaged in rural e-commerce in the city, 60% of whom are poor households with established files and cards. In 2022, the city's online retail sales of agricultural products exceeded 5 billion yuan, an increase of 30 times compared with 2015. At the same time, the tourism + e-commerce" development model has been explored and the China-Baise E-commerce Conference has been built into a new calling card for Baise's opening up.

C. Lhasa, Tibet: Digital Technology Solves the Problem of Difficulty in Medical Treatment for Farmers and Herdsmen

Tibet has a vast territory, and many farming and pastoral areas are far away from towns, making it difficult for conventional medical resources to reach. In order to solve the problem of difficulty in seeing a doctor" for the masses, Lhasa City has used digital technology to build an Internet + medical and health" service system. Relying on the information foundation such as list publicity and village-to-village" broadband network, a telemedicine platform covering 8 counties and districts in the city has been built to realize the interconnection of medical and health institutions at the county, township and village levels. At the same time, the Internet + family doctor contract service" has been actively promoted. With the help of mobile medical terminal equipment, the masses in farming and pastoral areas can enjoy high-quality medical services without leaving their homes. At present, the coverage rate of telemedicine in medical institutions in farming and pastoral areas of the city has reached more than 95

D. Experience Summary and Enlightenment of Cases

The above cases show that digital technology has great potential in breaking through the bottleneck of rural development and stimulating endogenous motivation in ethnic regions. First, adhere to the guidance of planning, scientifically formulate digital rural development plans, and clarify development goals, key tasks and implementation paths. Second, highlight industrial drive, encourage the use of digital technology to transform and upgrade characteristic agriculture, extend the industrial chain, and increase farmers' income. Third, improve the interest linking mechanism, support new agricultural business entities to establish close interest links with farmers, and let farmers share the digital dividend. Fourth, strengthen factor guarantee, give policy preference in terms of talents, funds, technology, etc., and provide strong support for the construction of digital villages.

VI. CHALLENGES AND COUNTERMEASURES OF DIGITAL RURAL CONSTRUCTION

A. Uneven Development: Urgent Need to Bridge the Digital Divide between Urban and Rural Areas and Regions

At present, the construction of information infrastructure in ethnic regions is still relatively weak, and the penetration rate of rural broadband and the coverage rate of mobile networks are far lower than those in cities. Many remote mountain villages are still communication blind spots. At the same time, there are large differences in the development of digital villages in different regions, and the digital transformation in economically underdeveloped regions is seriously lagging behind. The construction of rural information infrastructure should be accelerated, and the effective coverage of optical fiber and 4G/5G networks in rural areas should be expanded. The central and local governments increase financial support for the construction of digital villages in ethnic regions and narrow the digital divide with the eastern region.

B. Data Silos: Urgent Need for Aggregation and Sharing of Multi-source Heterogeneous Data

At present, data related to agriculture and rural areas is scattered among various departments and units, and there are problems of "chimney-style" management and division of departments and blocks. The mechanism for data sharing and opening has not yet been established, and it is difficult to fully release the value of data elements. The construction of an agricultural and rural big data system should be accelerated, relying on the national data sharing and exchange platform to promote the sharing and exchange of agricultural data across levels, regions, systems, and departments. Formulate standards and norms for agricultural and rural data collection to improve data quality and availability. Encourage social forces to participate in the development and utilization of agricultural data, and cultivate innovative entities for digital agriculture.

C. Application Shortcomings: Room for Improvement in the Level of Intelligent Production and Management in Agriculture

Compared with industry and service industries, the level of digitalization and intelligence in agriculture is still relatively low. Many farmers have low acceptance of digital technology and are accustomed to traditional agricultural operations. The application scope of digital agricultural machinery and agricultural Internet of Things is limited. The promotion of intelligent agricultural production equipment should be vigorously promoted, and subsidies and support should be given in terms of policies and funds. Strengthen the training of farmers' digital skills and improve their ability to digitally produce and operate. Carry out pilot demonstrations of new smart agriculture, promote the digital transformation of agricultural production and management, and achieve labor reduction, efficiency increase, quality improvement, and income increase.

D. Talent Bottleneck: Need to Improve the Training System for Rural Digital Talents

There is a general lack of digital talents in rural areas, lacking both professional digital technology personnel and compound talents who understand agriculture and management. At present, there are problems such as insufficient attention, insufficient investment, and weak foundation in rural vocational education, and the channels for cultivating rural digital talents are not smooth, resulting in a serious shortage of reserves. Digital talents should be included in the overall layout of rural talent revitalization, and policies should be improved in vocational education and continuing education. Strengthen school-enterprise cooperation and school-place cooperation, and cultivate practical digital talents through multiple channels. Deepen the training of new professional farmers, include digital skills in the training content, and consolidate the talent foundation for the development of digital villages.

E. Risks and Hidden Dangers: Need to Be Alert to Digital Security and Personal Privacy Protection

In the process of rural digitalization, digital security incidents such as online fraud and data leakage occur from time to time. The awareness of network security among the broad masses of farmers is relatively weak, and their self-protection ability is not strong. Some Internet companies illegally obtain and abuse farmers' personal information, infringing on users' privacy. The construction of a digital rural governance system should be accelerated, and laws, regulations, standards and norms for digital villages should be improved to strengthen the governance of cyberspace. Strengthen the network security education of farmers and enhance their awareness and skills in prevention. Regulate the behavior of digital economy enterprises, and severely crack down on illegal acts of stealing, leaking, and illegally buying and selling farmers' personal information to effectively protect farmers' digital rights and interests.

VII. POLICY SUGGESTIONS FOR PROMOTING THE DEVELOPMENT OF DIGITAL VILLAGES IN ETHNIC REGIONS

A. Top-level Design: Formulate a Development Plan for Digital Villages in Ethnic Regions

Formulate and introduce a medium- and long-term development plan for digital villages in ethnic regions across the country, clarify the phased goals and tasks, development priorities and implementation paths. All ethnic provinces and regions should formulate their own digital rural construction plans based on their actual conditions, divide regional types, and promote them according to local conditions. Include the development of digital villages in the 14th Five-Year Plan” for national economic and social development, the national informatization development strategy, and the overall layout of Digital China” construction, and take into account the needs of rural areas in the construction of new infrastructure such as 5G networks and industrial Internet.

B. Financial Support: Establish Special Funds and Improve the Input Guarantee Mechanism

Increase financial support for the construction of digital villages in ethnic regions, and the central and local governments respectively establish special funds for digital villages, focusing on supporting the construction of information infrastructure, the development of digital factor resources, and the development of digital industries. Integrate agriculture-related funds, give play to the role of fiscal funds in leveraging, and leverage social capital investment in the construction of digital villages. Innovate investment and financing mechanisms, encourage the adoption of the government and social capital cooperation (PPP) model, attract more social forces to participate, and broaden investment channels. Establish and improve a diversified and sustainable input guarantee mechanism for the construction of digital villages.

C. Resource Integration: Promote Departmental Collaboration and Break Data Barriers

Establish a national-level coordination and promotion mechanism for the construction of digital villages, and coordinate the forces of the central and local governments and all aspects of society. Strengthen communication and collaboration between departments, formulate data sharing management measures, break down departmental data barriers, and form a work pattern of joint management and collaborative promotion at all levels and departments. Encourage all regions to strengthen horizontal linkage and explore cross-regional data sharing mechanisms. Fully mobilize the enthusiasm of farmers, new agricultural business entities, scientific research institutes, Internet companies, etc., and build a collaborative promotion mechanism led by local governments and participated by multiple parties.

D. Pilot Demonstration: Classified Promotion and Development of Digital Villages According to Local Conditions

Scientifically divide the development types of digital villages in ethnic regions and formulate differentiated promotion strategies. For suburban integrated rural areas, give full play to the location advantages adjacent to cities, take the lead in carrying out digital rural pilot demonstrations, and create a model of rural revitalization. For rural areas that are the main producing areas of agricultural products, focus on the development of digital agriculture and create an upgraded version of “Internet +” modern agriculture. For rural areas in ecological function zones, strengthen the application of digital technology in ecological environment monitoring, tourism resource development and other fields. For rural areas with characteristic industries in poverty-alleviation areas, give play to the advantages of local resource endowments, promote the digital transformation of characteristic agriculture, and drive farmers to increase their income continuously.

E. Talent Strengthening: Vigorously Cultivate Digital Talents and Stimulate Rural Vitality

Implement the digital rural talent revitalization plan, and include the cultivation of rural digital talents in the overall plan for national and regional talent development. Support colleges and universities to set up digital majors for rural areas, and cultivate a group of new digital talents who understand agriculture, love rural areas, and love farmers. Improve the mechanism for the cultivation, use, evaluation, and incentive of rural talents, vigorously cultivate rural e-commerce talents, new professional farmers, etc., and provide intellectual support for the development of digital villages. Deeply implement the action of cultivating rural innovation and entrepreneurship leaders, and encourage college students and returning youths to use digital technology to serve rural revitalization. Establish and improve the talent flow mechanism, and guide various talents to devote themselves to rural digital construction.

VIII. CONCLUSION

The deep integration of digital technology and rural revitalization is not only a key measure to solve the problem of unbalanced and inadequate development in ethnic regions, but also an important starting point for consolidating grassroots social governance in border areas and promoting ethnic unity and progress. It is necessary to adhere to the problem-oriented approach, focus on blocking points and pain points, increase policy support and factor input, and promote the construction of digital villages in a classified and orderly manner. While developing the digital economy, we must attach great importance to potential risks, strengthen the rule of law, and create a positive and healthy digital ecology. Use digitalization to comprehensively boost rural revitalization, make agriculture stronger, rural areas more beautiful, and farmers richer, and write a new chapter in the development of ethnic regions with the power of digitalization. The effective integration of digital empowerment and rural revitalization will greatly enhance the rural governance capabilities and development vitality of

ethnic regions, and promote the integrated development of urban and rural areas and coordinated regional development to a new level. At the same time, the construction of digital villages in ethnic regions has a long way to go, and there are still many challenges that need to be continuously summarized, improved, and innovatively broken through in practice and exploration. In the future, it is necessary to further strengthen theoretical research and deepen the application of digital technology in rural revitalization and urban-rural integrated development in ethnic regions. It is necessary to widely learn from the experience of digital rural development at home and abroad, and provide intellectual support for the construction of a modernized countryside with Chinese characteristics. It is necessary to adhere to openness and inclusiveness, jointly build and share digital development opportunities in open cooperation, and work together to promote the construction of a community with a shared future in cyberspace, contributing Chinese wisdom and Chinese solutions to the global poverty reduction cause and rural modernization.

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