# Research on the digital ability level of rural residents in Liaoning Province under the background of digital countryside

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*Abstract:* This paper aims to study the digital literacy level of rural residents in Liaoning Province under the background of digital countryside. Through field research and data analysis of some rural areas in Liaoning Province, this study explores the current situation and problems of rural residents in terms of digital technology awareness, digital device usage, digital information acquisition and processing, and digital economy participation. In order to promote the sustainable development of digital village construction, this paper puts forward some strategies and suggestions to improve the digital ability of rural residents in Liaoning Province.

## 1. Introduction

### 1.1 Research background

With the rapid development of information technology, digital rural construction has become an important strategic measure to promote rural revitalization. Digital countryside refers to the digital transformation of various aspects of rural production, life, ecology, culture, etc. relying on modern information technology. In the construction of digital rural areas, the digital literacy level of rural residents plays a crucial role. With the implementation of relevant policies, the rural mobile Internet has accelerated its extension and the traditional digital gap has been greatly narrowed. However, there are still significant differences in the understanding and application of information between urban and rural areas, and the differentiation of information capabilities, as a result of economic differentiation, has become a new digital divide, bringing numerous obstacles to rural digitization. [1]As a major agricultural province in China, Liaoning Province actively promotes the construction of digital villages. However, the varying levels of digital literacy among rural residents have become an important factor restricting the development of digital villages.

### 1.2 Research purpose and significance

This study aims to gain a deeper understanding of the digital literacy level of rural residents in Liaoning Province, analyze the existing problems and reasons, and provide scientific basis and policy recommendations for improving the digital literacy of rural residents. By enhancing the

digital capabilities of rural residents, it can promote the widespread application of digital technology in rural areas, advance the modernization process of agriculture and rural areas, narrow the digital divide between urban and rural areas, and achieve the strategic goal of rural revitalization.

## 2. The connotation and significance of digital rural construction

## 2.1 The connotation of digital rural construction

A pandemic has disrupted the lives of most people in society, but it has also opened up many new development channels. For example, after the epidemic problem was solved, the mature online direct selling method entered the public's attention and officially became a new sales channel. At the same time, some rural people with strong acceptance and willingness to accept learning began to sell their crops, which had been in a slow sales process, to the world through the online platform, solving the basic livelihood problems of individuals. The construction of digital rural areas covers multiple aspects such as digitalization of rural infrastructure, digitalization of agricultural production, digitalization of rural governance, and digitalization of farmers' lives. Through the construction of a high-speed and stable information network, intelligent agricultural equipment has been promoted, and the digital governance platform has been built, providing convenient digital life services, and realizing the comprehensive digital transformation of rural areas.

## 2.2 The significance of digital rural construction

The significance of digital rural construction is profound and extensive. It is not only an important engine to promote rural revitalization, but also a key path to achieve modernization of agriculture and rural areas. The main significance of digital rural construction is as follows:

### 2.2.1 Improve agricultural production efficiency

The construction of digital rural areas has significantly improved the automation and informatization level of agricultural production by introducing advanced agricultural technologies and intelligent equipment. For example, IoT technology can achieve real-time monitoring of farmland environment and provide accurate farmland management suggestions for farmers; Big data analysis can help farmers predict market trends, adjust production plans, and improve crop yield and quality. The application of these technologies not only improves agricultural production efficiency, but also reduces production costs and increases farmers' income.

### 2.2.2 Promote rural economic development

The construction of digital rural areas has promoted the development of new industrial forms such as rural e-commerce and smart agriculture, injecting new vitality into the upgrading and transformation of rural industries. Through e-commerce platforms, high-quality agricultural products can be sold to a wider market, expanding the channels for farmers to increase their income. At the same time, the construction of digital rural areas has also promoted the deep integration of agriculture and other industries, such as the rise of models such as "agriculture+tourism" and "agriculture+culture", providing strong support for the diversified development of rural economy.

### 2.2.3 Improving the quality of life for farmers

Digital village construction enables farmers to enjoy better education, medical care, culture and

other services through the popularization of Internet, mobile network and other infrastructure. The construction of remote medical systems enables farmers to enjoy high-quality medical services right at their doorstep; The popularization of online educational resources enables rural students to access a wider range of higher quality educational content. The improvement of these services not only enhances the quality of life for farmers, but also strengthens their sense of gain and happiness

### 2.2.4 Promote rural revitalization

The construction of digital countryside is an important breakthrough and key measure for rural revitalization. By optimizing the rural industrial structure and improving rural infrastructure, digital rural construction has promoted the comprehensive revitalization of rural areas. For example, building characteristic towns, cultural tourism projects, etc. can attract more tourists to come for sightseeing and tourism, and drive the development of the local economy; Promoting advanced agricultural technologies and management models can improve agricultural production efficiency and quality, providing strong support for rural revitalization.

### 2.2.5 Promote urban-rural integration and common prosperity

The construction of digital countryside breaks down the information barriers and resource bottlenecks between urban and rural areas, promoting resource sharing and complementary advantages between urban and rural areas. Through the widespread application of digital technology, rural residents can more conveniently participate in urban socio-economic activities, promoting interaction and cooperation between urban and rural areas. At the same time, the construction of digital rural areas has also promoted the diversified development of rural industries, providing more employment opportunities and income channels for rural populations, and helping to achieve common prosperity between urban and rural areas.

In summary, the construction of digital rural areas is of great significance in improving agricultural production efficiency, promoting rural economic development, improving farmers' quality of life, promoting rural revitalization, and promoting urban-rural integration and common prosperity. Therefore, we should actively support and participate in the construction of digital rural areas, and jointly promote the process of modernization of agriculture and rural areas.

### 3. Analysis of the Current Status of Digital Literacy among Rural Residents in Liaoning Province

Regarding the current situation of digital literacy among rural residents in Liaoning Province, the following is a detailed analysis from different perspectives:

### 3.1 Construction of digital infrastructure

In recent years, Liaoning Province has achieved significant results in the construction of digital villages. For example, Liaoning Unicom, as a national team for digital information operation services serving the Northeast revitalization strategy and the construction of a "Digital Liaoning, Smart Manufacturing Strong Province", continues to promote the construction of rural communication infrastructure. Starting from 2022, Liaoning Unicom's cumulative investment in digital rural areas has exceeded 600 million yuan, with over a thousand new 900M mobile network base stations and more than 20000 new broadband ports built. The network coverage rate of administrative villages has reached 100%, and the network service capacity of rural areas in the province has been greatly improved.

In addition, Liaoning Province actively promotes the "TV Village Connection" project, which

delivers high-definition and rich TV programs to rural households to meet their entertainment needs. The construction of these infrastructures provides a solid foundation for rural residents to enhance their digital capabilities.

## 3.2 Improvement of digital literacy among rural residents

With the popularization and application of digital technology, the digital literacy of rural residents in Liaoning Province is also constantly improving. They begin to gradually understand and master the basic operation methods of digital devices such as the Internet and smart phones, and can obtain information, communicate and carry out online transactions and other activities through the network.

At the same time, Liaoning Province actively carries out digital skills training and promotion activities to help rural residents improve their digital literacy and skill levels. These training and promotion activities include various forms such as online courses, on-site teaching, demonstration guidance, etc. aiming to help rural residents better adapt to the development needs of the digital age. Therefore, in the process of digital rural construction, the information infrastructure conditions are already in place, which can provide effective equipment and technological environment for the development of digital rural areas. [2]

## 3.3 Application of digital technology

Driven by digital technology, the way of production and life of rural residents in Liaoning Province is undergoing profound changes. They began to use digital technology to optimize the agricultural production process and improve the efficiency and quality of agricultural production. For example, through the application of advanced technologies such as intelligent agricultural machinery equipment and precision agriculture management system, rural residents can realize real-time monitoring of farmland environment, accurate management of growth cycle of crop and quality traceability of agricultural products.

In addition, rural residents have also begun to use digital technology for agricultural product sales and brand promotion. They sell agricultural products to a wider market through e-commerce platforms, expanding channels for increasing income. At the same time, they also utilize social media and other channels for brand promotion and marketing, enhancing the visibility and reputation of agricultural products.

## 3.4 Challenges and Issues Faced

Although the digital capabilities of rural residents in Liaoning Province are constantly improving, they still face some challenges and problems. For example, some rural residents have relatively low acceptance and application ability of digital technology due to age, cultural and other factors. At the same time, the construction of digital infrastructure in some regions is still not perfect, which restricts the popularization and application of digital technology.

To address these issues, Liaoning Province needs to continue to strengthen the construction of digital infrastructure, improve network coverage and service quality. At the same time, it is necessary to strengthen digital skills training and promotion activities to help rural residents improve their digital literacy and skill levels. In addition, it is necessary to strengthen policy guidance and support, encourage more social forces to participate in the construction of digital rural areas, and promote the deep integration and development of digital technology and agriculture and rural areas.

In summary, the digital capabilities of rural residents in Liaoning Province are constantly

improving, but there is still a need to further strengthen the construction of digital infrastructure, improve digital literacy and skill levels, and promote the deep integration of digital technology with agriculture and rural areas.

## 4. Analysis of Factors Affecting the Digital Literacy of Rural Residents in Liaoning Province

According to the analysis of the questionnaire survey results, we have learned that there are several factors that affect the digital literacy level of rural residents in Liaoning Province, including:

### 4.1 Personal factors

### 4.1.1 Age and Educational Level

Older and less educated residents have relatively weaker digital abilities. This is because their ability to accept and learn new things is relatively poor.

### 4.1.2 Gender

The survey found that male residents have slightly higher abilities in using digital devices and participating in the digital economy than female residents.

### 4.1.3 Income level

Residents with higher incomes are more capable of purchasing digital devices and paying for digital services, thereby improving their level of digital capabilities.

### 4.2 Family factors

### 4.2.1 Family economic status

Residents with better family economic conditions are more likely to have digital equipment and access to the Internet, thus improving their digital capabilities.

### 4.2.2 The influence of family members

If there are digital technology enthusiasts or work related to digital technology among family members, it will have a positive impact on the digital abilities of other members.

### 4.3 Social factors

### 4.3.1 Construction of rural information infrastructure

The incomplete construction of information infrastructure, limited network coverage, slow network speed, aging of some facilities, and low operational efficiency have led to the inability of rural power grids to meet the growing demand for electricity, which has hindered the improvement of digital capabilities of rural residents.[3]

### 4.3.2 Digital Education and Training

Digital education and training resources are relatively scarce in rural areas, and residents lack the opportunity to learn digital technologies
Opportunities and channels.

### 4.3.3 Social support and atmosphere

The level of social support and promotional atmosphere for the construction of digital rural areas will also affect the improvement of rural residents' digital abilities. If all sectors of society can actively participate in the construction of digital villages and provide more support and assistance to rural residents, it will help improve their digital literacy level.

## 5. Strategies for Enhancing the Digital Literacy of Rural Residents in Liaoning Province

### 5.1 Strengthen digital education and training

We can carry out a variety of digital education and training activities for rural residents of different ages and different levels of education. We can hold training courses, lectures, online courses and other forms to improve their cognitive level and ability to use digital technology.

We can strengthen the digital education and training for rural teachers, and improve their ability to apply information technology, so as to better carry out the digital education and teaching work.

We encourage enterprises, social organizations and other organizations to participate in digital education and training to provide more learning opportunities and resources for rural residents.

### 5.2 Improve the construction of rural information infrastructure

We could increase the investment in the construction of rural information infrastructure, improve the network coverage and network speed, and provide a good digital environment for rural residents.

We will promote the development of 5G networks in rural areas to provide faster and more stable network support for digital rural development.

We can strengthen the popularization of digital terminal equipment in rural areas and improve the ownership rate of digital equipment among rural residents.

### 5.3 Promote the development of the digital economy

We will increase the support for rural e-commerce, improve the e-commerce service system, and improve the participation of rural residents in e-commerce. Online sales of agricultural products can be promoted through the construction of rural e-commerce service stations, training of e-commerce talents, and other means. When e-commerce is fully developed in rural areas, the digital economy will inevitably sink to rural areas, promoting balanced development in various regions.[4]

We encourage rural residents to develop digital agriculture and smart agriculture, and raise the digital level of agricultural production. Precision and intelligent management of agricultural production can be achieved through the promotion of intelligent agricultural equipment and the construction of agricultural Internet of Things.

We promote the development of digital finance in rural areas and provide convenient financial services for rural residents. By promoting digital financial products such as mobile payments and online lending, the financial literacy and digital economy participation ability of rural residents can be improved.

### 5.4 Create a favorable atmosphere for digital rural construction

We strengthen the publicity and promotion of digital rural construction, and improve the awareness and participation of rural residents in digital rural construction. The significance and achievements of digital rural construction can be promoted through media such as television, radio,

and the internet, inspiring the enthusiasm and initiative of rural residents.

We encourage rural residents to actively participate in the construction of digital countryside and give full play to their main role. Rural residents can participate in the decision-making, implementation, and supervision process of digital rural construction by establishing village councils, digital rural volunteer teams, and other means.

We will strengthen the construction of rural digital culture and enrich the spiritual and cultural life of rural residents. More digital cultural resources can be provided to rural residents through the construction of digital libraries, digital cultural centers, and other means.

## 6. Conclusion

Promoting high-quality development in rural areas, digital rural construction is an important approach. The development of digitalization provides more choices for the path of rural revitalization, especially for county-level economies that can create digital rural samples with local characteristics according to local conditions. The construction of digital countryside is an important strategic measure to achieve rural revitalization, and the digital capability level of rural residents is a key factor in the construction of digital countryside. This study analyzes the current situation of digital capability of rural residents in Liaoning Province and finds that there are certain problems in their digital technology cognition, digital equipment use, digital information acquisition and processing, and digital economy participation. The factors that affect the digital capability of rural residents mainly include personal factors, family factors, and social factors. In order to improve the digital capability level of rural residents in Liaoning Province, it is necessary to strengthen digital education and training, improve rural information infrastructure construction, promote the development of digital economy, and create a good atmosphere for digital countryside construction. Only through joint efforts from all parties can we enhance the digital capabilities of rural residents, promote the sustainable development of digital rural construction, and achieve the strategic goal of rural revitalization.

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