

# Study on the Governance Model of “Digital Countryside” in Liaoning Province Enabled by 5G Technology

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**Abstract:** With the rapid development of digital economy, the construction of digital countryside is profoundly changing the face of China’s rural areas. Taking Liaoning Province as an example, based on the analysis of the current situation of digital village construction in the province, this paper focuses on how 5G and other cutting-edge information technologies can empower the governance model of digital village in Liaoning Province. This paper first reviews the current situation of Liaoning digital village in terms of infrastructure, network coverage, digital services and governance mechanism, and analyzes the existing problems. This paper analyzes the innovative governance model of digital countryside in Liaoning Province enabled by 5G technology, and further puts forward the path to improve the governance of digital countryside in Liaoning Province.

**Keywords:** 5G; Liaoning Province; Digital village; Rural governance

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Along with China’s economic and social transformation and upgrading, the digital economy has become an important engine to drive economic growth and improve social efficiency. Driven by the digital economy, the construction of digital countryside has risen rapidly, becoming an important starting point for promoting rural revitalization and realizing urban and rural integration. Cutting-edge information technologies such as 5G provide strong support for the construction of digital villages, and are a key driving force to break the digital divide between urban and rural areas and promote intelligent agriculture and rural areas. Liaoning Province is an important province in northeast China, with obvious advantages in agricultural resources, but there are also problems such as weak rural infrastructure and low income of farmers. On the basis of summarizing the process of digital village construction in Liaoning Province, this paper intends to focus on how 5G and other cutting-edge technologies can enable the innovation of digital village governance in Liaoning Province, and provide decision-making support for the implementation of the rural revitalization strategy in Liaoning Province.

## 1. Construction status of “digital village” in Liaoning Province

### 1.1 Status of infrastructure construction and network coverage

In recent years, Liaoning Province has increased its investment in rural information infrastructure, and has made certain progress in the construction of rural broadband networks, public service terminals, and information service stations, providing farmers with more convenient information services and public services. By the end of 2020, the number of rural fiber broadband users in the province has reached 10.728 million, and the rural fiber broadband penetration rate has reached 85.8%. A total of 32,000 rural public service terminals have been built in the province, covering all administrative villages. A total of 17,000 rural information service stations have been built in the province, covering all natural villages<sup>[1]</sup>.

### 1.2 Current situation of digital service supply

In terms of government services, Liaoning Province has vigorously promoted the informatization construction of government services, realized the sharing of government data resources and the one-netcom operation, improved the facilitation and intelligence

level of government services, made rural residents more efficient and convenient, and significantly improved their satisfaction with government services. In terms of financial services, Liaoning Province supports the development of inclusive finance, encourages financial institutions to expand the coverage of rural areas, enrich the supply of rural financial products, and provide financial support for agricultural production and rural development.

### **1.3 Current situation of governance mechanism and security policy**

Governance mechanism is the organizational guarantee and operation mode of digital rural construction, and security policy is the legal guarantee and incentive means of digital rural construction. Liaoning Province attaches great importance to the construction of digital rural governance mechanisms and policy systems, with provincial, municipal and county multi-level leading institutions as the leader, clear the division of responsibilities among various departments at all levels in the construction of digital villages, forming a work pattern of overall promotion, providing organizational guarantee for the construction of digital villages, actively promoting the data information sharing mechanism, and encouraging inter-departmental and inter-regional data resource interconnection and sharing.

## **2. A new model of digital rural governance in Liaoning Province enabled by 5G technology**

### **2.1 Smart agricultural production mode**

Liaoning Province, as an important agricultural province in Northeast China, has vast black land and developed planting industry, and 5G technology provides important support for the construction of smart agricultural production mode. 5G technology provides important support for the construction of intelligent and refined modern agricultural production mode, including: the establishment of 5G-driven refined field management system, real-time monitoring of soil and crop growth, scientific analysis using agricultural big data and artificial intelligence, accurate fertilization and ploughing plan, accurate early warning and control of diseases and pests; The use of 5G sensors, visualization and mobile management means to achieve environmental optimization monitoring of greenhouses and livestock farms to ensure the rapid and healthy growth of facility crops and livestock; The application of agricultural machinery robots supported by 5G technology can realize the automation of land turning, seeding and other operations, greatly improving labor efficiency and reducing intensity.

### **2.2 Green environmental governance model**

Liaoning Province, as the economic center of northeast China, has a rapid industrial development, but it also faces the problem of heavy environmental pollution. The development of green and environmentally friendly digital villages is of great significance to the realization of high-quality development in Liaoning Province. The model includes: extensive application of 5G and Internet of Things technology in the digital rural demonstration zone, establishment of real-time intelligent environmental monitoring system, and comprehensive monitoring of water resources, atmosphere and soil; The use of 5G network to build a smart waste disposal system, intelligent waste collection job scheduling, reduce unnecessary jobs; Use 5G network broadcast to carry out environmental protection education, popularize environmental protection knowledge to rural residents, and improve environmental awareness.

### **2.3 Huimin service supply mode**

Traditional public service supply in rural areas generally has the problem of “the last mile”, which cannot meet the growing demand of farmers for a better life. 5G technology provides an important support for Liaoning Province to build a more convenient and efficient service supply mode for benefiting the people. The modes include: building a smart medical service platform based on 5G network to solve the problem of difficulty in seeing a doctor; Use 5G and virtual reality technology to build an immersive online education platform to provide high-quality courses and teaching resources for rural children; Establish a unified 5G-driven one-stop platform for people’s livelihood services, bringing together government services, postal services, cultural services, e-commerce and other service content.

## **3. 5G technology**

### **3.1 Accelerate the construction of digital infrastructure**

Digital infrastructure is the key to the vigorous development of digital countryside, Liaoning Province should attach great importance to the construction of digital infrastructure, and take effective measures to accelerate the construction progress: (1) Liaoning Province should vigorously promote the large-scale deployment of 5G and other wireless networks in rural areas to ensure that by 2025, major administrative villages can achieve full 5G coverage, and key industrial parks should also achieve 5G and above coverage, so as to consolidate the network foundation of digital rural development; (2) Increase investment and build core facilities such

as data centers and cloud computing platforms to provide stable computing and storage capabilities to support various applications in digital countryside; (3) Strengthen the deployment and construction of various IoT sensing facilities, such as environmental monitoring equipment, which can provide massive data sources for smart agriculture.

### **3.2 Expand the supply channels of precision digital services**

Liaoning Province should, on the basis of continuing to do a good job in universal digital services, focus on expanding more targeted precision digital services to improve service quality and satisfaction: (1) Research and development of precision digital applications for local agriculture characteristics, such as the design of intelligent whole-process management systems for superior agricultural products, accurate growth monitoring and decision-making assistance, to improve agricultural production efficiency and quality; (2) Establish accurate push services combined with actual conditions, such as automatically pushing breeding knowledge according to the date of birth and real-time push prevention and control tips according to the epidemic situation to achieve accurate information supply; (3) Then rely on user data to achieve labeled and precise services, such as automatically recommending age-appropriate educational content for children users and proactively providing health knowledge for elderly users to achieve diversified services <sup>[2]</sup>.

### **3.3 Improve the digital literacy of rural residents**

Improving the digital literacy of rural residents is an important part of promoting the construction of digital countryside. Liaoning Province should attach great importance to the digital skills training of rural residents, and take various ways to comprehensively improve farmers' digital cognition and application ability: (1) Provide systematic digital skills training for rural residents, and the course content can cover daily needs such as smartphone use, network security, online shopping, and mobile payment, so that farmers can truly grasp the ability to use digital technology to improve their lives; (2) Take various forms of publicity and training such as lectures and experience activities to let farmers personally feel the convenience brought by digital life and increase their interest in participating in digital activities; (3) Select typical villages to set up digital training bases, conduct key training, promote training experience, set up village-level volunteer teams, provide follow-up services and guidance, and solve problems encountered by farmers in digital applications.

### **3.4 Improve the governance system and support policies**

A sound governance system and supporting policies are the institutional guarantee for promoting the sustainable and healthy development of digital village in Liaoning Province: (1) Clearly establish a unified digital village work leading department, responsible for top-level design, policy formulation and work coordination, give full play to the leading role of the government, and organize relevant departments under the guidance of the coordinating department, scientific division of labor according to functions, close cooperation, and form a work force; (2) Establish and improve the legal and policy system for the development of digital countryside, formulate the planning outline for the development of digital countryside at the provincial level, and translate it into the short-term, medium-term and long-term implementation plan, so as to align it with the regional economic and social development goals and plans, and form a policy synergy; (3) Increase financial support for the construction of digital villages, set up special funds to ensure the funding needs of 5G network construction, 5G application demonstration, talent training and other aspects, and provide continuous impetus.

## **4. Conclusion**

The construction of digital countryside is an important starting point to realize rural revitalization, and also an effective way to narrow the gap between urban and rural areas and promote coordinated regional development. Making full use of new technologies such as 5G to promote the construction of digital countryside will not only release new driving forces for agricultural and rural development, but also allow farmers to access fairer and more convenient public services, lead a happier and richer life, lead rural revitalization with scientific and technological innovation, and accelerate the construction of a new development pattern featuring the deep integration of digital technology and the real economy.

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