

# Research on the Impact of Ecological Economy on the Development of Agricultural Modernization in Southern Sichuan based on the Big Data

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## Abstract

The development of science and technology has provided a material basis for data collection, transmission and storage. Economic development, especially the progress of agriculture, has brought huge demand for the application of big data in the agricultural field. With the improvement of people's living standards and quality, green environmental protection has become the theme of the development of the current era. People are paying more and more attention to clean production and efficient development, and the concept of ecological economy is deeply rooted in the hearts of the people. The era of agricultural big data has come, with richer basic data, more convenient data collection, and more diversified data analysis. Southern Sichuan has superior human geography and unique advantages in natural conditions. It should overcome difficulties such as difficulty in guaranteeing data authenticity, threats to security, processing platforms to be improved, and lack of human resources, and take advantage of the historical opportunities of the current urban-rural integration development. Promote green agriculture and ecological agriculture, realize the transformation and upgrading of agricultural industrialization, cater to the national sustainable development strategy, promote regional economic cooperation, and complete agricultural modernization as soon as possible.

## Keywords

Big Data; Ecological Economy; Agricultural Development in Southern Sichuan; Agricultural Modernization; Regional Economy.

## 1. Introduction

With the continuous advancement of reform and opening up, my country's economy is achieving a new leap. Its nominal GDP ranks second in the world, and it is gradually moving from a large economic aggregate to an economic power. After missing the opportunities of the first two industrial revolutions, under the strong leadership of the Communist Party of my country, our country seized the historical opportunity of the third revolution in science and technology, followed the internationally advanced pace to develop science and technology, and some science and technology remained at the forefront of the world. . The development of economy, the further advancement of the division of labor in socialization, and the advancement of science and technology have closely linked all regions of the country, and each region has gradually formed a unity with local economic characteristics. With the development of social economy, traditional agricultural production has been unable to meet the increasing needs of the people, and the backward agricultural production methods can no longer meet the requirements of economic development. More and more regions have begun to explore the path of agricultural modernization. The modern science and technology, especially the upgrading of electronic computer technology, has brought information technology into thousands of

households, and the cost of data transmission and storage is getting lower and lower, and the big data technology represented by cloud storage is gradually emerging. In recent years, information dissemination has become more and more convenient, and people have gradually realized the importance of energy conservation, environmental protection and cleaner production. The progress of society has brought about the increase of people's income and the improvement of living standards, the development of ecological economy, and the realization of a healthy life have become the common demands of the current society. The southern Sichuan region is located in the southern part of the Sichuan Basin. It has similar humanistic and geographic characteristics. The regional economy has a certain degree of complementarity. The Sichuan Basin has been a famous agricultural area in my country since ancient times. It has abundant precipitation, warm and humid summer, humid climate, suitable temperature, and soil Fertile, with unique natural conditions. Utilizing the unique geographical advantages of southern Sichuan to develop the ecological economy, and using the big data of modern science and technology to support the promotion of agricultural modernization has become the only way for the southern Sichuan to get rid of poverty and achieve the transformation and upgrading of agricultural industrialization.

## **2. New Connotations of Ecological Economy and Agricultural Modernization**

### **2.1. Ecological Economy is Integrated into the Concept of Green Health**

The scientific development concept puts forward that it is necessary to promote the coordination of ecological environmental protection and economic development, and not to destroy the far-reaching ecological environment in pursuit of temporary economic benefits. The development of ecological economy is an inherent requirement of the scientific development concept and has become a new one since the 21st century. Economic development model. The traditional economic development concept does not include the cost of environmental damage and waste of resources into the economic accounting indicators. Therefore, one-sided pursuit of economic development causes huge damage to the environment and is not conducive to long-term economic development and social progress. The use of resources is continuous in time. It is inevitable for people to extract and use resources in order to survive. However, contemporary people and future generations have equal rights to survival. In the process of promoting economic development, we cannot implement resources exhausted and fished. The exploitation of this kind is harmful to the interests of future generations. Some resources are spatially malleable, just as a river may flow through two countries or regions. When using water resources, we should pay attention to their spatial malleability and not harm the interests of other regions. Through the improvement of science and technology, the pursuit of reducing energy consumption and increasing efficiency, and effectively alleviating the contradiction between limited resources and unlimited demand in time and space, the development of ecological economy has integrated the concept of green and health in modern society, and it is necessary to achieve economic development and To achieve low consumption and high efficiency.

### **2.2. Agricultural Modernization Requires Improved Production Efficiency**

Agricultural modernization is the inevitable trend of economic development and the inevitable result of the level of agricultural development reaching a certain stage. In the early stage of the development of agricultural modernization, the main pursuit is to modernize the means of production and scientific production technology, improve the level of production through the improvement of agricultural production tools, reduce the labor intensity of producers, and increase the efficiency of agricultural production. But with the continuous progress of society,

agricultural modernization has also been given new connotations. In the initial stage of economic development, agriculture has laid the foundation of the national economy and provided primitive accumulation for industrial development. My country has gradually entered the period of industrialization and has begun to gradually focus on the improvement of agricultural production efficiency. My country is a traditional agricultural country, but its agricultural production efficiency is low and it started late, so the demand for promoting agricultural modernization is even stronger. Under the trend of further adjustment of my country's economic structure, it is necessary to rely on the modernization of agricultural management methods, the modernization of agricultural services and the modernization of the agricultural production environment to transform and upgrade agricultural industrialization. Agricultural production has high requirements on the natural environment. On the basis of natural advantages, using science and technology to improve agricultural production conditions, while introducing advanced agricultural management concepts, and promoting agricultural modernization, will help realize a virtuous industrial cycle and maintain the country's economy. Strategic security.

### **3. Characteristics of Agricultural Modernization Development in Southern Sichuan in the New Period**

#### **3.1. The Basic Data is More Abundant**

In the era of big data, data collection and recording are more convenient, which makes the amount of data continue to grow, and various basic agricultural data are more abundant. Promoted by the modern statistical system, various statistical data have been effectively collected, the agricultural development database has become more and more sophisticated, and statistical methods have become more advanced, the statistical frequency has been optimized, and some data have been automatically collected, expanding the types and scope of data collection. The southern Sichuan region covers multiple counties and districts. The main agricultural production methods, agricultural management methods, and agricultural products processing and sales methods in each region have their own characteristics. If only individual sample data collection is used to analyze agricultural development, it will be difficult to cover the entire southern Sichuan region. With diversified agricultural production characteristics, it will become more difficult to organize and summarize regional production experience. However, data analysis through big data collection and establishment of scientific models can minimize errors on the basis of large samples, and make decisions and development for agricultural operations. Strategic planning provides a scientific basis. At the same time, under the guidance of abundant data, it can effectively reduce the lag of agricultural production and operation, and provide data guarantee for scientific forecasts of agricultural production and operation.

#### **3.2. Data Acquisition is More Efficient**

The development of science and technology has improved the efficiency of data collection and analysis, and data transmission channels have become more diversified. Through automated instruments and equipment, data collection can be realized around the clock. At the same time, the wide application of modern Internet communication technology makes data collection free from the shackles of wired data transmission channels. It provides technical support for long-term diversified and three-dimensional data collection. People can collect and analyze data through data receiving equipment and electronic computers without leaving home. The continuous innovation of electronic information software promotes the iterative upgrade of data processing methods. Invalid data can be automatically identified. A large amount of unstructured data can be processed by technical software to form systematic structured data,

which provides a basis for agricultural production and decision-making planning. . The traditional data acquisition methods that rely on personal experience and individual collection have been completely changed. The improvement of data acquisition efficiency will enable people to devote more limited energy to improving agricultural production technology and improving management models, effectively promoting the smooth realization of agricultural modernization .

### **3.3. The Trend of Data Analysis Diversification is Obvious**

In the traditional data collection method, the data is collected through relatively primitive methods such as paper and pen records, and the analysis often relies on manual calculation, which has a low accuracy rate and is difficult to process large samples. Modern science and technology have realized the electronic transmission of data. The analysis of data can be carried out by relying on electronic computer software. The original single analysis is transformed into diversified analysis, and the original mechanized analysis is transformed into intelligent analysis. Using an automated and intelligent data analysis platform can effectively analyze unstructured data and identify erroneous data. Although the number of analyzed data has greatly increased, analysis methods and analysis efficiency have been greatly improved. Diversified data analysis methods make it possible to compare the space and time of large sample data. Data analysis can be conducted on the development space of agricultural modernization in southern Sichuan. Data collection and targeted research can be conducted through the proportion and progress of agricultural industrialization development. Can use the quantity and efficiency of production and marketing of agricultural products for exploration and comparison.

## **4. Southern Sichuan Agriculture Faces Challenges in the Context of Big Data**

### **4.1. Data Authenticity is Difficult to Guarantee**

In addition to obtaining first-hand data through information collection, data information publicly released in various channels is also one of the important sources of agricultural data. In the Internet society, everyone is a data disseminator, and the release and dissemination of information is more convenient. It is often difficult for ordinary people to verify the identity of the data publisher and the authenticity of the information released. In the case that the authenticity of the data cannot be guaranteed, it becomes very difficult to select valid data from the vast array of data, which increases the difficulty of data processing and collection. Especially for data that changes frequently in prices of agricultural products and is difficult to automatically collect through machinery and equipment, only large samples can be collected by means of online platform information uploading and resource sharing. Once large quantities of data are distorted, decision-making failures will occur. May bring huge economic losses.

### **4.2. Data Security is Threatened**

The convenience of data collection has further reduced the threshold for data storage, the cost of data storage has been lower, the price of storage media has been further reduced, and the diversification of data storage options has resulted in uneven data storage security, and some storage methods with poor conditions It is difficult to guarantee data security. Agriculture is the foundation of the national economy, and agricultural data is an important strategic data. It should be properly preserved to prevent leakage. However, the current agricultural data is often collected in rural areas. The contacts of data collection and transmission are often not well-educated, and data security Insufficient attention is paid to data leakage or distortion, and data security is threatened. The current market competition is becoming increasingly fierce. The fierce competition in the agricultural market may make criminals take risks by stealing or

destroying agricultural production data, disrupting the strategic judgment of agricultural production and disrupting the pace of agricultural modernization.

### **4.3. The Data Processing Platform Needs to be Improved**

A large amount of data will be generated in the process of agricultural production and management, and a large number of economic indicators will be generated in the process of analyzing and processing these data. The calculation of these economic indicators requires the support of data collection and agricultural information. According to the characteristics of agricultural production, data can be analyzed and processed in a targeted manner. However, my country has not yet established a unified agricultural data analysis and processing platform. The research and promotion of agricultural industrialization are still in the stage of independent governance. Improve the efficiency of agricultural industrialization development. Through regional economic cooperation, building an ecological agriculture demonstration zone and promoting the coordinated development of agricultural economy has become an important way for the transformation and upgrading of agricultural industrialization in southern Sichuan. The establishment of a scientific agricultural data platform will effectively improve the organization and coordination capabilities between regions. As regional agricultural production changes, other regions can respond quickly and seize opportunities in time to maximize benefits.

### **4.4. A Serious Shortage of Data Analysis Talents**

If the data cannot be effectively analyzed, even comprehensive and timely data will not be able to play its due role. Data analysis and processing need to rely on complex data processing software, which has higher requirements for staff's programming level, logical analysis ability and information system quality. Although my country has implemented software technology talent incubation and training projects since the beginning of the 21st century, and established software vocational and technical colleges in some schools with better running conditions, and vigorously cultivated software technology talents, due to the particularity of agricultural data, the information Collection, effectiveness screening, and information system construction are quite different from data analysis in other economic industries. It is difficult to quickly apply existing data analysis models in other industries to the field of agricultural data analysis. my country's agricultural development has been in a weak position for a long time. College graduates often do not choose agriculture as the first industry choice when choosing jobs. This has caused a serious shortage of agricultural data analysis talents in my country for a long time, and the convenience of data is used to promote the development of agricultural modernization. insufficient.

## **5. The Impact of Ecological Economic Development in Southern Sichuan on Agricultural Modernization**

### **5.1. Realize the Coordinated Development of Rural Environment and Agricultural Economy**

The natural environment in southern Sichuan is conducive to the development of ecological agriculture. The establishment of a green, healthy and sustainable concept is not only conducive to protecting the natural environment, but also conducive to the formation of a good humane environment. A neat village appearance and scientific agricultural production and management concepts are conducive to the formation of a harmonious neighborhood atmosphere. The process of gradual modernization of agriculture is also a process of human use and transformation of nature. It is a process of harmonious development between man and nature. Only by realizing the harmonious development of man and nature and coordinating the rural environment with the agricultural economy can we truly realize agricultural modernization.

The painful lessons of the western industrialization process made us realize that a healthy industrial chain cannot be truly realized by simply transporting primitive accumulation from agriculture to industry. Only by adhering to the concept of healthy, green and sustainable at the beginning of development can we realize the recycling of resources. For a long time, the agricultural development in southern Sichuan has a strong geographical advantage. The improvement of national economic strength has promoted the industrialization of agriculture in southern Sichuan. The development of ecological agriculture has been used to establish a scientific artificial ecosystem and promote regional agricultural development by leaps and bounds.

## **5.2. Weakening the Impact of Market Failures to Achieve Stable Operations**

Because agricultural products are produced in the natural environment, their supply varies greatly with seasons. However, different regions have different demands for different agricultural products due to different cultural environments and social habits. Increasing the added value of agricultural products and promoting the stability of supply and demand curves have become important means to gain an advantageous position in fierce market competition. Through the development of ecological economy, pollution-free agricultural products can be achieved and differentiated competition with agricultural products in other regions. In the current stage of social development, no matter how the agricultural product market fluctuates, people's demand for green agricultural and sideline products has continued. The promotion of green agricultural products can weaken the negative impact of market failures and help achieve stable operations. Southern Sichuan has established a green and pollution-free intensive, large-scale, and industrialized agricultural development path, which has increased labor productivity and realized the efficient integration of various agricultural resources. Using big data analysis, timely analysis and prediction of agricultural product cost fluctuations and market price fluctuations, truly integrating science and technology into agricultural production, effectively promoting the process of agricultural modernization.

## **5.3. Promote the Construction of Rural Grassroots Institutional System**

In-depth promotion of the concept of sustainable development and the development of an ecological economy have become the common goal of the people across the country. The concept of harmony and greenness is implemented in the process of promoting agricultural modernization, and it has played a standard and guiding role in the construction of institutions and mechanisms. The country vigorously promotes the development of ecological economy, will improve various laws and regulations, use rules and regulations to coordinate and manage the rural economic development environment, change backward ideologies, promote scientific rural lifestyle agricultural production methods, and fundamentally promote agriculture Smooth implementation of modernization. In the traditional concept, farmers do not pay enough attention to environmental protection, and their awareness of green production is not strong. Some industries with heavy pollution such as aquaculture ignore the investment in environmental protection and the construction of environmental protection facilities. Under the concept of developing an ecological economy, the southern Sichuan region has established a series of rural grassroots systems, requiring that while realizing the transformation of agricultural industrialization, seize opportunities for technological development, implement environmental protection responsibilities, and clarify a series of behaviors that have a significant impact on the rural environment. Its disposal method. At the same time, while developing the economy, the ecological environment has been included in the grassroots management assessment indicators, and environmental protection responsibilities have been implemented, which is conducive to making up for the lack of grassroots ecological environment system construction and laying the institutional foundation for promoting agricultural modernization.

#### 5.4. Optimize the Development Mode of Industrial Structure Upgrade

The development of ecological economy advocates scientifically optimizing the agricultural ecological structure, while realizing agricultural industrialization, constructing an ecological development system, and actively introducing advanced ecological agricultural business models. The economic ties between various regions in southern Sichuan have been continuously strengthened, with agricultural products as the link to achieve complementary advantages. By building a regional economic cooperation community and building a data sharing platform, all regions can form an organic whole in each region, and let the innovation-driven development strategy truly take effect. With the economic development entering the new normal trend, agricultural production should actively realize innovation-driven leadership, transform traditional industrial development methods, and attach importance to the added value of agricultural products. With the improvement of people's living standards, urban consumers' demand for green and healthy agricultural products is getting higher and higher. Under the guidance of ecological economy, southern Sichuan is actively developing green agriculture and organic agriculture to cater to the current popular urban consumer market and promote upgrading and innovation of the industrial structure of ecological agriculture.

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