

Study on the Impact of Rural Transportation on the Development of Rural Areas in the Context of Rural Revitalization — Taking Xuyong County as an Example

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ABSTRACT

Rural transportation is an important link to realize rural revitalization. With the in-depth development of rural revitalization strategy, the requirements for rural transportation capacity are increasing day by day. It is necessary to consider the impact of rural transportation on the development of rural areas. This study selects the relevant data of Xuyong County from 2019 to 2021 and explores the impact path of rural transportation. According to results, rural transportation plays a promoting role in rural industrial integration, the optimization of resource allocation and external communication. Besides, this will help to further understand the relationship between rural transportation and rural revitalization, and has great reference significance for rural areas to realize rural revitalization from the perspective of transportation.

Keywords: Rural revitalization, Rural transportation, Industrial integration, Resource allocation.

1. INTRODUCTION

"In order to achieve rural revitalization, it is necessary to develop the transportation first." Rural transportation is an indispensable link in rural revitalization [1]. The establishment of a more efficient rural transportation system plays a role in promoting the integration of passenger and freight postal services, trade logistics and other industries, improving the bargaining power of rural labor force and narrowing the income gap between urban and rural residents. Xuyong County is located in the mountainous area in the south of Luzhou, Sichuan Province. The mountainous terrain hinders the development of rural transportation, the urbanization rate is only 34.91% [2], and the level of social and economic development is relatively backward. Therefore, it is the key assistance object under the strategy of rural revitalization in Sichuan Province. Studying the working practice of developing rural transportation in Xuyong County is of great significance for clarifying the influence path of local rural transportation to promote rural revitalization, exploring the universal experience of

rural transportation modernization and helping to realize the overall revitalization of rural areas.

Scholars have obtained rich research results on transportation and regional economic development. Scholars in China and foreign countries generally believe that increasing investment in transportation infrastructure construction in rural areas is conducive to regional economic development. For example, Donagh believes that the development of passenger services in rural areas of Ireland is conducive to the employment of local residents [3]. Arrow takes transportation infrastructure as public capital investment into the total production function to analyze the "growth effect" [4]. Cao Yangchun and Ning Ling, domestic scholars, believe that the construction of transportation facilities is an important link in the construction of rural infrastructure and an important indicator to measure rural revitalization [5]. Xu Xing and Wu Qunqi believe that inclining the allocation of infrastructure resources to rural areas will help to improve the accumulation of human capital [6] [8]. Liu Zhenhua believes that transportation plays a role as a bridge in realizing rural revitalization [7].

On the basis of previous scholars' research, there is still an expandable research space for the development of rural transportation in underdeveloped rural areas. What role does rural transportation play in foreign exchange and economic development in rural areas? How to effectively develop rural transportation in rural areas facing the problems of marketization, informatization and resource allocation? Based on the research of previous scholars, this study reviews the development of rural transportation in Xuyong County, condenses the practical experience, and discusses the role and influence mechanism of transportation on regional revitalization from the perspective of rural transportation, so as to provide reference for the development of rural transportation in underdeveloped rural areas.

2. DEVELOPMENT STATUS OF RURAL TRANSPORTATION IN XUYONG COUNTY

Rural transportation is to connect villages in different regions with villages as hubs and villages as links. Going through the inconvenience of economic development hindered by traffic closure, Xuyong County vigorously develop rural transportation. According to data, there were 835 km of rural roads and 1853.2 km of village roads in Xuyong County in 2019 [9] [10] (all up to the "engineering standard for highway" (JTG B01-2003). Compared with that in 2018, the total length of rural roads increased by 256.8 km, of which the total length of rural roads accounted for about 24% of the total length of the city, and the passenger transportation accessibility rate of administrative villages reached 100%, forming a huge and perfect transportation network in rural areas.

In the past, when there was a lack of efficient transport, villagers in Xuyong County could only travel between villages by foot, mule and other primitive means, and if they wanted to travel to the county town, they could only go there by motorbike or privately operated unlicensed taxis in the countryside, which took several hours in traveling due to geographical factors such as the mountainous terrain and many rivers. The handicrafts and agricultural products produced in the villages of Xuyong County need to be transported to the county market by primitive means such as "shoulder pole and mule", and it is also difficult to transport fertilisers, pesticides and other production and living materials produced in the county to the villages, greatly hindering

production and trading activities between urban and rural areas. Nowadays, with the improvement of rural transportation, at least one flag stop has been set up in each village, and vehicles leave regularly and at a fixed point, which greatly improves the travel efficiency and cargo carrying capacity. In addition to personnel exchanges, it also promotes production and trading activities. Rural transportation has built a bridge between villages and counties, villages and villages.

3. PRACTICE OF RURAL TRANSPORTATION IN XUYONG COUNTY

In addition to extending in all directions, transportation should also have complete transportation services. "Getting rich, happiness and safety" is the simplest understanding of transportation [11]. Xuyong County promotes the high-quality development of rural transportation based on the existing rural routes, which is mainly reflected in the operation subject, operation mode and operation content of rural transportation.

3.1 Market-oriented Reform

It is obviously the most appropriate way to participate in the operation of rural transportation by means of "government support and supervision and enterprise operation", which can prevent corruption and waste of public resources to a great extent. Rural roads are public infrastructures and belong to the category of public resources. Because the operation of rural transportation has a certain threshold, rent-seeking behavior and bribery and corruption are easy to occur in the operation process [12]. Therefore, the rural transportation business of Xuyong County is mainly undertaken by four joint-stock limited liability companies, which form a business alliance in the form of shares, adopt the operation mode of intensive operation and corporate management, and implement the management system of unified personnel employment, unified assessment, reward and punishment, unified operation scheduling, unified freight rate management and unified revenue accounting. Four operating companies are bonded with economic benefits, share profits and risks, and promote them to continuously improve the quality of supply services. Through market-oriented reform, the allocation efficiency of road resources will be improved, the total supply will be expanded, and more villagers can enjoy rural transportation services.

However, the government of Xuyong County has not completely given up the field of rural transportation. And enterprises have the characteristics of pursuing profits, road resources have certain benefits. If the rural transportation is completely marketed, four operators will form a monopoly in the field of rural transportation, improve the ticket price, reduce the service quality provided, and obtain more economic benefits. The government of Xuyong County has gradually changed its original management mode of "integration of supervision and management" to a market-oriented reform mode of "separation of management and operation", from a direct participant to a supervisor and supporter, and from the government being responsible for the operation of rural roads to the main body of rural roads being responsible to the government. From the perspective of game theory, there will be a "push-and-pull" phenomenon in the evolution of operators' progressive strategies. In short, under the supervision of the government, rural transportation operators are more inclined to provide legal and compliant services [13].

3.2 Block Management

The so-called block management is to distinguish different administrative townships within the jurisdiction of Xuyong County, divide areas according to the road mileage, population, transportation demand and other factors contained in each administrative township, allocate vehicles according to the needs of different areas, set up customized rural buses for special periods such as returning home for agriculture and holidays, arrange vehicles in areas with large regional demand according to shifts, and book vehicles in areas with small regional demand. With the increasing mileage of rural roads, the degree of village group integration is also deepening. At the same time, it also puts forward the requirements of high-quality development for rural transportation integration. Few managers pay attention to the extensive development of rural transportation. Due to the gap in the practical basis of development, the focus of development is also different [14]. If the village group has rich cultivated land resources, the rural transportation will tend to the cargo transportation of agricultural products. The village group is densely populated and at the transportation node, the rural transportation will prefer passenger transportation. Therefore, adopting the operation mode according to local conditions and special methods in special areas can make more effective

use of rural road resources and promote the efficient allocation of public resources.

3.3 Informatization Development

Improving the informatization level of rural roads can greatly improve the comprehensive management level of rural transportation operation, and is also an important guarantee for its stable development [15]. In 2020, the government of Xuyong County guided the construction of the first rural transportation information service platform, and realized the digital management of transportation vehicles and drivers for the first time. Villagers can book vehicles through the hotline, or play a part of the supervision role through the supervision hotline, which not only improves the transportation efficiency, but also improves the villagers' sense of efficacy. In addition, the informatization process of rural transportation promotes the construction of rural digital roads. Managers form a digital map corresponding to the rural road map in the background through the passenger and freight information and rural road information fed back by vehicles, which is stored in the database. Rural transportation data is the core of rural economic development [16]. These data reflect the transportation demand of a region in real time and can provide technical support for block management. Areas with large freight demand are labelled as production places in the data, and those with tidal personnel flow are labelled as labor dispatch places in the data, which is transformed from road data into economic data. And then, people can better grasp the regional development trend and make good use of rural transportation to promote rural revitalization.

3.4 Construction of Long-term Mechanism

The so-called long-term mechanism is to establish a basic service system of rural passenger transport dominated by township regional passenger transport and supplemented by public transport and reservation response. Besides, rural transportation at this stage is still dominated by small passenger vehicles. It is necessary to grasp the adaptability between small vehicles and rural roads and give full play to the transportation flexibility of small vehicles. Remote areas far away from cities and towns still need small passenger cars to act as the main force due to road conditions and other factors. On this basis, it is suggested to make good use of the advantages of the original rural transportation network, small express business,

and build the "first kilometer" and "last kilometer" of travel and rural logistics.

Rural transportation in Xuyong County is developing towards urban public transportation. In the surrounding areas of cities and towns, the lines with transformation conditions are transformed into public transportation. Urban buses have high requirements for driving roads. Public transportation can transform narrow and dangerous roads, increase road bearing capacity, build high-quality rural roads, and lay a foundation for high-quality development of rural transportation. Rural transportation is public transportation. Large passenger cars are used to replace small cars, which has greater transportation volume and faster speed. In this way, the time cost of villagers is reduced. As the main body of rural transportation, small cars are more flexible, but it is easy to cause traffic safety accidents in areas with dense flow of people and poor road conditions. Under the condition of more fixed stations, public transportation also reduces the frequency of traffic accidents to a certain extent and ensures the travel safety of villagers. The benefits brought by public transportation not only stay at the level of transportation efficiency, but also further improve the villagers' sense of experience in using rural transportation. The biggest difference between traditional rural transportation and public transportation is reflected in ticket purchase [17]. In the aspect of traditional rural transportation, one person has one ticket, which is regarded as ticket purchase when getting on the bus. Vehicle overload and other situations occur from time to time, and manual ticket counting gives vehicle drivers the operation space to seek gray benefits. Public transport adopts the way of "one seat, one ticket", and has a standardized process from ticket purchase to waiting to ticket check. To a certain extent, it avoids the negative impact of traditional rural transportation, builds a convenient and fast transportation system more effectively, and promotes the long-term development of communication activities between regions.

4. THE ROLE OF RURAL TRANSPORTATION IN XUYONG COUNTY

Due to geographical conditions and the level of economic development, the main roads in Xuyong County are still rural and village roads. Rural roads assume the responsibility of connecting villages with the county. Villagers carry out production transactions, communication and other activities

around rural roads. The exchange of means of production between counties and villages needs to be carried out around rural roads. Therefore, rural roads are at the core of the overall development of Xuyong County. For Xuyong County, transport revitalization is rural road revitalization, involving rural road renovation and information management. The significance of roads lies in the socio-economic activities carried by transport [18]. From the perspective of road science, the series of socio-economic activities carried out through rural transportation between villages in Xuyong County is where the real value of rural transportation lies, rather than simply in the transportation of passengers and goods undertaken by rural roads.

4.1 Promoting the Integrated Development of Multiple Industries in the Countryside

Industrial prosperity is the most important development direction of rural revitalization. In the document "Rural Revitalization Strategy (2018-2022)" issued by the State Council in 2018, it is also clearly pointed out to build a beautiful countryside with "industrial prosperity, livable ecology, civilized rural style, effective governance and affluent life", and put industrial prosperity in the first place of development, which is enough to prove its importance.

There are 26 townships within the jurisdiction of Xuyong County. Each township is far away, and small-scale clusters of villages are scattered among townships. The industries involved in different townships are also different. For example, Chishui town mainly develops tourism, Jiangmen Town mainly develops industry, etc. the industrial distribution shows the characteristics of multiple distribution points, wide coverage and scattered business. In the past, the extensive development and decentralized distribution of rural industries became the primary factor restricting the prosperity of industries, making it unable to exert the agglomeration effect. However, with the development of rural transportation, the coverage of logistics nodes in rural areas has increased rapidly. The integrated development model of passenger and freight transportation promotes the integrated development of industries in all townships of Xuyong County. For example, industrial products produced in Jiangmen Town, such as pesticides and fertilizers, can be quickly transported to other areas to provide guarantee for agricultural development. The eliminated industrial parks in Jiangmen Town

can also be reused to develop characteristic tourism based on rural transportation, promote industrial transformation and improve the level of economic development.

The quality of rural transportation is related to the basis of industrial integration and development. Some rural roads can not bear the weight of large trucks. In the season with more rain, it will even cause landslides and other disasters, which not only hinder transportation, but also threaten the life safety of villagers. The most basic thing of rural transportation is to transform rural roads and improve the infrastructure construction level of rural roads. The roads built in accordance with the "Technical Standard for Highway Engineering (JTG B01-2003)" can carry passenger and freight transportation of all specifications, improve the carrying capacity and transportation efficiency, and lay a solid foundation for the development of rural industries.

4.2 Narrowing the Income Gap Between Urban and Rural Residents

Increasing investment in transportation infrastructure in rural areas helps to promote the rational allocation of resources between urban and rural areas [3]. Before rural transportation is opened, the products produced by villagers can not be sold, and the income of villagers is low, which makes them unable to bear higher prices for reproduction. Therefore, a vicious circle is formed. Rural transportation enables agricultural products and handicraft products produced in villages and towns to enter the county. The price of products is affected by the level of economic development. Products that could only be circulated between villages and towns have obtained higher prices, which directly increase the income of villagers. In addition to engaging in agricultural production, there are also a large number of labor forces who go to the county to work. These villagers bear the dual responsibilities of engaging in industry and farming. Because the seasonal fluctuation of their working hours does not meet the sustainability characteristics of some jobs, the villagers are in a bad position in the employment relationship. However, with the development of rural transportation, the impact of the distance on farming and working is weakened, and villagers can complete agricultural production without affecting their work, which greatly improves the bargaining power of villagers on their own labor force, and promotes the year-on-year growth of

villagers' income. With the continuous development of rural transportation, villages and towns have been able to undertake the functions of some central counties. The two-way flow of products and labor between villages and towns and counties has formed an urban development pattern similar to that of satellite cities. By absorbing the industries migrated from the county, the township not only alleviates the urban disease of the Central County, but also improves the infrastructure construction of the township and promotes the improvement of the level of economic development.

4.3 Promoting Exchanges Between Rural Areas and External Areas

Since ancient times, the road has been a bridge for foreign exchange and communication. Any behavior of external closure may lead to the backwardness of regional development level. Xuyong County is close to the Yunnan-Guizhou region, there are southern Sichuan transportation routes, and there is more urgent need for communication with the outside world. In 2016, with the opening of S22 Yixu Expressway and Xugu Expressway, Xuyong County is more closely connected to the surrounding cities. With the gathering of the traveling population, it has also brought different thoughts and cultures. While absorbing the cultures of other regions, it is also conducive for Xuyong County to spread its own characteristic cultures such as the culture of Miao nationality and Yi nationality, papermaking technology and Longguishan stone carving culture, so as to improve its own cultural influence. The development of rural transportation makes Xuyong County quickly get rid of the isolated state and integrate into the broader political, economic and cultural fields.

5. CONCLUSION

This study illustrates the significance of rural transportation in the revitalization of rural areas for the conduct of production and business activities, and shows that rural transportation has a catalytic role in the economic development of rural areas and in inter-regional economic exchange. For less developed rural areas, the construction of a good rural transportation system is urgent and important for the overall revitalization of the countryside.

The development of rural transportation is a complex social and economic process, and is a process of constantly injecting new forces on the

basis of activating the existing rural elements. It not only plays a simple role in passenger and cargo transportation, but is of great significance in the integration of multiple industries, industrial prosperity, rational allocation of urban and rural resources, and opening up channels of external communication.

The development of high-quality rural transportation needs to be approached from the perspectives of market-oriented reform, regional management, information development and the construction of long-term mechanisms. Enterprise ownership is an effective incentive mechanism for developing rural transportation, but also requires government policy support and regulation to avoid breeding corruption. Efficient use of rural road resources and reliance on the Internet to carry out refined management of rural transportation can play a facilitating role. Building long-term mechanisms plays a role in initiating, catalyzing and safeguarding the development of rural transportation. It is required to examine its development from a broader perspective and a higher position of rural revitalization, create conditions for expanding, strengthening and optimizing rural transportation, maintain the vigorous vitality of rural economic development, and provide inexhaustible driving force for rural revitalization.

This study collects relevant data on the development of rural transportation in Xuyong County in recent years, analyzes the development measures of Xuyong County government, probes into the impact path of rural transportation on the local area, and explains the role of rural transportation in promoting rural revitalization. However, there are some limitations. This study collects and counts some data publicly released by Xuyong County, but has little understanding of the general situation of rural transportation development in other counties in the region, resulting in the lack of macro data support in this study. In addition, the empirical part of this study lacks quantitative data indicators, which can not judge the applicability to the current situation mathematically. In the follow-up research, relevant data will be collected and further verified.

AUTHORS' CONTRIBUTIONS

This paper is independently completed by Qiaoxin Hu.

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