

# *Situation of the Integration of Sports, Tourism, and Agriculture in Supporting Rural Revitalization in Guangxi*

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**Abstract:** Through an in-depth analysis of the current situation of rural revitalization in Guangxi, this paper explores the potential and concrete practice of the "sports tourism and agriculture" integration model in promoting rural economy, culture and ecology. The results of the study show that the integration of "sports tourism and agriculture" not only enhances the attractiveness of rural tourism, but also promotes agricultural efficiency and farmers' income, which helps to realize the sustainable development of the countryside. The results of a five-month experiment with 10 pilot villages and 10 control villages showed that the model had a significant upgrading effect in terms of economic, social and ecological benefits. On the economic front, the average gross income of the pilot villages grew from an initial 12 million yuan to 13.5 million yuan, an average monthly increase of 2.5%. In terms of social benefits, resident satisfaction in the pilot villages increased from 70% to 80%, with an average monthly increase of 2%; the employment rate in the pilot villages increased from 60% to 75%, with an average monthly increase of 3%. In terms of ecological benefits, the vegetation coverage rate in the pilot villages increased from 40% to 52%, with an average monthly increase of 2.4%. From the above data, it is concluded that the integration model of "sports, tourism and agriculture" can significantly improve the economic, social and ecological benefits of the countryside, providing a feasible path and strong support for rural revitalization.

## 1. Introduction

In recent years, the implementation of China's rural revitalization strategy has become an important issue in national development. As a province with rich natural resources and unique ethnic culture, Guangxi faces many challenges in its rural economic development, including economic lag, population loss and fragile ecological environment. The traditional development model often focuses on a single area, failing to effectively integrate resources and realize comprehensive development. Based on this, this paper proposes a "sports, tourism and agriculture" integration model, which aims to provide new paths and solutions for rural revitalization in Guangxi

by integrating sports, tourism and agricultural resources.

Through field research and data analysis, this paper verifies the actual effect of the "sports, tourism and agriculture" integration model in Guangxi's countryside, and the results show that this model has a significant role in promoting the rural economy, enhancing social benefits and improving the ecological environment. By comparing the changes in the indicators of the pilot villages with those of the control villages, this paper summarizes the successful experience of the "body, tourism and agriculture" integration model and puts forward corresponding policy recommendations, which provide a reference for the rural revitalization of other regions.

The structure of this paper is as follows: firstly, this paper introduces the background and significance of the research, and clearly puts forward the necessity and goal of the integration model of "sports, tourism and agriculture". Secondly, this paper elaborates the methods and steps of field research, and shows some data and analysis results. Next, the paper describes the specific design and implementation process of the integration model, covering the construction of sports facilities, planning of tourism routes, promotion of agricultural specialty products and ecological environmental protection. Finally, through data analysis, this paper discusses the economic, social and ecological benefits of the model implementation and summarizes the research conclusions and policy recommendations.

## 2. Related Works

Existing studies mainly focus on rural tourism, agricultural modernization, sports industry development and other single areas. For example, Wijijayanti T et al. argued that rural tourism was a potential driver of development in both urban and rural areas, and that in rural environments, tourism destinations contributed to community empowerment and sustainable local economic development, and that the development of rural tourism was based on the potential of the village as a tourism product [1]. Tourism can play an important role in diversifying the rural economy and its expansion in rural areas contributes to demographic and economic sustainability and provides a basis for achieving sustainable rural development. In this regard, Nooripoor M et al. aimed to investigate the relationship between tourism and rural development in Doroodzan area of Marvdasht town, Iran [2]. Rural tourism and its impact on rural economic development has been an important and dynamic area of research since 2004. Ruiz-Real J L et al. contributed to the field by showing the current state of research on rural tourism, identifying trends and suggesting future research directions and themes [3]. Rural community tourism initiatives in developed and developing countries have their own strengths and weaknesses and face different barriers and conditions for tourism development, mainly due to the different environments in which they operate. Zielinski S et al. identified the main conditions explaining these differences by reviewing 103 site-specific case studies and other empirical literature [4]. Kumar S aimed to analyze the interrelationships among the factors that contributed to the development of rural tourism. Despite the huge potential of this tourism segment, there is a lack of consistent instruments and measures for the overall development of rural tourism in India. They identified 14 influencing factors, of which 9 were from literature review and 5 from expert opinion [5]. In the context of globalization, the importance of the concept of sustainable development in solving the problems of the development of local tourism systems is becoming more and more important. Polukhina A et al. discussed the sustainable development of rural tourism as one of the most promising sectors of the domestic tourism industry on the example of the Russian tourism industry [6]. Calero C reviewed the literature of regional economics and economic geography to identify theoretical models in the context of tourism in an attempt to explain the role of tourism in regional development and growth and its practical applications [7]. Overall, these studies have achieved some results in their respective fields, but have not yet developed a

comprehensive solution.

By analyzing the existing literature, it can be seen that some scholars try to combine tourism and agriculture, for example, He Y et al. explored the impact of rural tourism on farmers' sustainable income using Chinese provincial panel data from 2003 to 2020, using a mediated effects model. Based on the results of the empirical analysis, they also put forward suggestions to promote farmers' sustainable income [8]. Whether or not farm management becomes more efficient in carrying out tourism activities is a key issue in promoting agro-tourism. Therefore, Ohe Y used data envelopment analysis to assess the efficiency of educational dairy farms offering educational tourism services from both theoretical and empirical perspectives [9]. With the development of leisure agriculture and consumer behavior, people should pay more attention to the consumer experience. Shuai et al. conducted a comparative analysis of the behavior of leisure agriculture tourists in Xuzhou City by using data from 2004 and 2019, studied the behavioral change process, and analyzed the influence of tourists' characteristics on the consumer behavior of leisure agriculture through the Heckman two-step model [10]. Other studies have also attempted to combine sports, tourism and agriculture, but due to the lack of systematic research, they often face many difficulties in actual operation. In view of this, this paper proposes a "sports, tourism and agriculture" integration model that organically combines sports, tourism and agriculture, with the aim of overcoming the shortcomings of existing models and promoting rural revitalization.

### 3. Methods

#### 3.1. Field Research

In order to assess the actual effects of the "Sports, Tourism and Agriculture" integration model in Guangxi villages, we selected several pilot villages for field research and set up control villages that did not implement the model for comparison. The research period was 5 months, and the research covered the main indicators of economic, social and ecological aspects. The following are the specific research steps and part of the data presentation [11].

##### 3.1.1. Research steps

Selection of research villages: 10 pilot villages and 10 control villages are selected to ensure that the villages are comparable in terms of geographic location, population size and economic level.

Data collection: Economic data (farmers' income and tourism revenue), social data (residents' satisfaction and employment rate), and ecological data (vegetation cover and water quality index) are collected regularly on a monthly basis for each village. Where the income growth rate can be expressed by equation (1):

$$G_{income} = \left( \frac{I_{final} - I_{initial}}{I_{initial}} \right) \times 100\% \quad (1)$$

Where in equation (1),  $G_{income}$  denotes the income growth rate,  $I_{final}$  denotes the final income, and  $I_{initial}$  denotes the initial income.

Interviews and questionnaires: first-hand data and feedback were obtained through visits and interviews with local farmers and village cadres, as well as the distribution of resident satisfaction questionnaires.

Data collation and analysis: Collating and statistically analyzing the data collected to assess the specific impact of the integration model of "sports, tourism and agriculture".

### 3.1.2. Data presentation

Table 1-3 is a table for the presentation of some of the research data.

Table 1: Economic data

Month	Trial Villages Income(RMB)	Control Villages Income(RMB)
1	1200	1200
2	1240	1206
3	1285	1212

Table 2: Social data

Month	Trial Villages Satisfaction (%)	Control Villages Satisfaction (%)	Trial Villages Employment (%)	Control Villages Employment (%)
1	70	70	60	60
2	74	71	66	61
3	77	72	69	62

Table 3: Ecological data

Month	Trial Villages Vegetation Cover (%)	Control Villages Vegetation Cover (%)	Trial Villages Water Quality Index	Control Villages Water Quality Index
1	40	40	70	70
2	44	41	74	71
3	48	42	76	72

In some of the sample data in Tables 1-3, the pilot villages showed different degrees of improvement in economic, social and ecological benefits, while the changes in the control villages were more moderate.

## 3.2. Designing the Integration Model

In order to achieve the goal of "sports, tourism and agriculture" integration to help rural revitalization in Guangxi, we designed a comprehensive integration model based on field research. By integrating sports, tourism and agricultural resources, the model aims to promote rural economic development, enhance social benefits and improve the ecological environment [12].

### 3.2.1. Construction of sports facilities

We first constructed a series of sports facilities in the pilot villages, including basketball courts, soccer fields, fitness paths and so on. These facilities not only meet the fitness needs of local residents, but also attract sports enthusiasts from neighboring areas to come and experience. The construction of sports facilities can enhance the physical quality of villagers, enrich the cultural life of villages and promote social harmony. The construction cost of sports facilities can be expressed by equation (2):

$$C_{total} = C_{land} + C_{equ} + C_{labor} \quad (2)$$

Where in equation (2),  $C_{total}$  denotes the total cost,  $C_{land}$  denotes the cost of land,  $C_{equ}$  is the cost of equipment, and  $C_{labor}$  denotes the cost of labor.

### **3.2.2. Tourism Route Planning**

In order to improve the tourism attractiveness of the countryside, we have integrated and optimized the existing tourism resources and planned several special tourism routes. These routes include natural scenery tours, folk culture tours and agricultural experience tours. Specific measures include:

Natural scenery tours: developing local landscape resources, setting up observation platforms and trails, and providing ecotourism services.

Folk culture tour: excavating and displaying local ethnic culture, organizing traditional festivals to attract tourists' participation.

Agricultural experience tour: cooperating with local farmers to open agricultural experience programs, such as picking fruits, planting vegetables, breeding livestock and poultry, etc., so that tourists can experience rural life first-hand.

### **3.2.3. Promotion of agricultural specialties**

In terms of agriculture, we encourage pilot villages to develop specialty agriculture and enhance the added value of agricultural products. Specific measures include:

Introducing new varieties: cooperating with agricultural research institutes to introduce high-yield, high-quality crop and breeding varieties to improve the efficiency of agricultural production.

Branding: creating brands of agricultural products with local characteristics and enhance market competitiveness by registering trademarks and applying for geographical indications.

Online and offline sales: utilizing e-commerce platforms and farmers' markets to broaden the sales channels of agricultural products and increase farmers' income.

### **3.2.4. Environmental protection and ecological construction**

In the process of implementing the "Sports, Tourism and Agriculture" integration model, we always pay attention to environmental protection and ecological construction. Specific measures include:

Vegetation restoration: carrying out afforestation and ecological restoration projects to increase vegetation coverage and improve the ecological environment.

Water resource management: constructing sewage treatment facilities, popularizing water-saving irrigation techniques for farmland, and protecting water resources.

Environmental protection education: raising villagers' awareness of environmental protection through publicity and training, and promoting sustainable development.

### **3.2.5. Community participation and training**

In order to ensure the effective implementation of the "Sports, Tourism and Agriculture" integration model, we focus on community participation and training. Specific measures include:

Community participation: encouraging villagers to actively participate in the design and implementation of the project to enhance their sense of ownership and participation.

Skills training: regular training in agricultural technology, tourism services and sports management will be organized to improve villagers' skills and employability.

Through the above measures, we have designed a comprehensive and systematic "body tourism and agriculture" integration model, aiming to promote the revitalization and sustainable development of Guangxi's countryside in various aspects. This model not only focuses on economic benefits, but also on social and ecological benefits, aiming to realize the overall progress of the

countryside [13].

### **3.3. Project Implementation**

#### **3.3.1. Construction of sports facilities**

First, we initiated the construction of sports facilities in each pilot village. The project implementation included the following aspects:

Site selection and planning: according to the geographical environment and residents' needs in each village, suitable sites were identified for the construction of sports facilities such as basketball courts, soccer fields, badminton courts and fitness paths.

Infrastructure development: laying out fields, installing sports equipment and fitness equipment, and ensuring that all facilities meet safety standards.

Operation and management training: providing training for village cadres and volunteers in facility maintenance and management to ensure the long-term use and management of the facilities.

In the process of implementation, we focus on communicating with villagers and listening to their opinions and suggestions so that the sports facilities can better meet the needs of villagers [14].

#### **3.3.2. Tourist route planning and development**

Next, we carried out the planning and development of tourism routes. Specific steps include:

Resource integration: comprehensively sorting out and integrating the natural landscape, historical sites and cultural resources within the countryside, and determine the key tourism projects to be developed.

Route design: designing a number of tourist routes, including hiking tours, cycling tours, folklore experience tours, etc., and produce detailed route maps and guidebooks.

Infrastructure construction: building and improving infrastructure such as tourist trails, observation decks, signage and visitor reception centers to enhance the quality of tourist services.

Publicity and promotion: through the Internet and traditional media, we widely publicize rural tourism resources to attract tourists to visit and experience them.

During the development of tourism routes, we work closely with local villagers, cultural groups and tourism companies to ensure the sustainable development of tourism projects.

#### **3.3.3. Promotion of agricultural specialties**

In agriculture, we have implemented a series of measures to promote specialty agricultural products in villages:

Introduction and testing of new varieties: in cooperation with agricultural research institutions, new high-yield crops suitable for the local climate and soil have been introduced and planting tests have been conducted in pilot villages.

Brand building: designing unified packaging and brand logos for agricultural products, apply for geographical indication certification, and enhance the market recognition and competitiveness of agricultural products.

Sales channel expansion: cooperating with e-commerce platforms and supermarket chains to establish direct sales channels for agricultural products, while organizing agricultural product exhibitions in villages to directly face consumers.

In this process, we have actively mobilized and trained farmers, upgraded their planting techniques and marketing capabilities, and helped them adapt to the requirements of modern agriculture.



### **3.3.4. Environmental protection and ecological construction**

We attach great importance to environmental protection and ecological construction in project implementation, and specific measures include:

Tree-planting: organizing large-scale tree-planting activities in each pilot village to restore and expand the area of forested land and increase the vegetation cover.

Water resource management: constructing sewage treatment systems and ecological wetlands, promoting water-saving irrigation techniques, and protecting and improving local water quality.

Environmental protection publicity: through village radio broadcasts, publicity brochures and lectures on environmental protection, villagers' awareness of environmental protection and their ability to protect the ecosystem have been raised.

These measures have not only improved the ecological environment of the villages, but also provided a solid environmental foundation for the long-term implementation of the "sports, tourism and agriculture" integration model.

### **3.3.5. Community participation and training**

In order to ensure the smooth implementation and sustainable development of the project, we have vigorously promoted community participation and training:

Community mobilization: villagers were mobilized to actively participate in project implementation through villagers' meetings and symposiums, and a villagers' supervisory committee was set up to monitor project progress.

Skills training: experts in agriculture, tourism and sports are invited to conduct regular technical training for villagers to improve their professional skills and employability.

Demonstration: selecting some farmers and project leaders as demonstration points, through their successful experience, to drive other villagers to participate in and implement the "sports, tourism and agriculture" integration model.

Through the above measures, we have ensured the smooth implementation of the "sports, tourism and agriculture" integration model in the pilot villages and accumulated valuable experience for subsequent promotion and replication.

## **4. Results and Discussion**

### **4.1. Experiment on the Evaluation of Economic Growth Indicators**

In an experiment to assess economic growth indicators, this paper evaluates the impact of the "body-tourism-agriculture" integration model on the rural economy. A number of villages in Guangxi were selected as pilots for the experiment, through the implementation of the model, and compared with the control villages that did not implement the model. The experimental period was 5 months, and the data of farmers' income and tourism income of each village were collected after the experiment, as shown in Figure 1.

As shown in Figure 1, the average total revenue of the pilot villages grew from an initial 12 million ¥ to 13.5 million ¥ in five months, with an average monthly growth rate of 2.5%. In contrast, the average gross income of the control villages increased from 12 million ¥ to 12.3 million ¥, with an average monthly growth rate of only 0.5%. From the conclusions of the above data, it is clear that the adoption of the "sports, tourism and agriculture" integration model can significantly boost the rural economy and increase farmers' incomes in a short period of time.

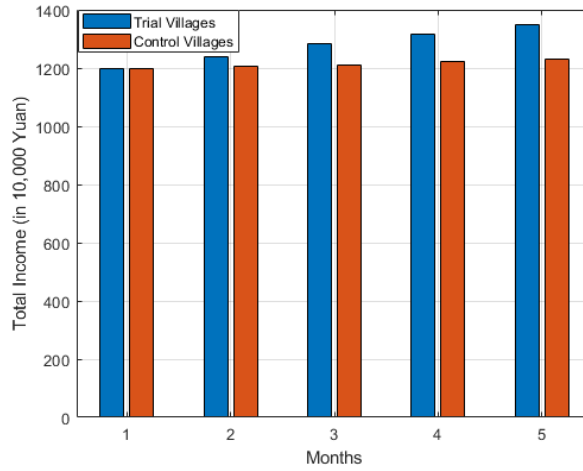


Figure 1: Assessment of economic growth indicators

#### 4.2. Transparency and Security Enhancement Experiment

In order to assess the impact of the “sports, tourism and agriculture” integration model on the social benefits of villages, this paper selected a number of villages in Guangxi as pilots and compared them with control villages where the model was not implemented. After the experiment, satisfaction and employment rate data of residents in various rural areas were collected, and satisfaction and employment rates were plotted into a line graph to visually display the social benefits after the implementation of the model. The specific data is shown in Figure 2:

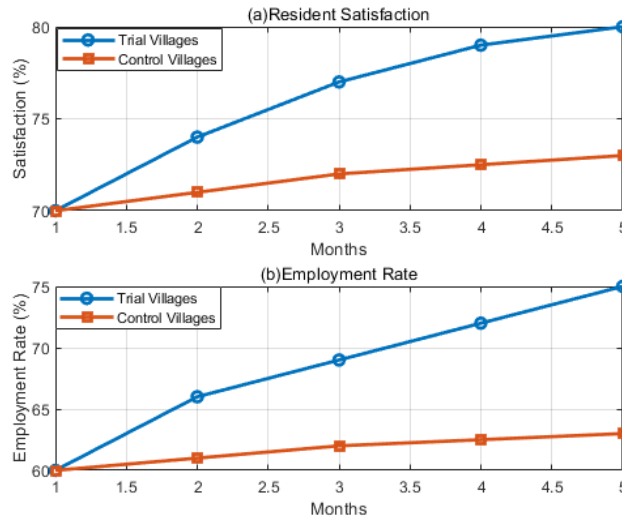


Figure 2: Transparency and security enhancement assessment

Figures 2(a-b) show resident satisfaction and employment rates before and after the implementation of the “body-tourism-agriculture” integration model, respectively. In Figure 2, resident satisfaction in the pilot villages increased from 70% to 80% in five months, with a monthly increase of 2%. In contrast, satisfaction in the control villages increased from 70% to 73%, an increase of 0.6% per month. In addition, the employment rate in the pilot villages increased from 60% to 75%, an increase of 3% per month. In contrast, the employment rate in the control villages increased from 60% to 63%, an increase of 0.6% per month. These results indicate that the “sport, tourism and agriculture” integration model has significantly increased the social benefits of the



villages.

### 4.3. Eco-Efficiency Index Evaluation Experiment

In the study on the assessment of rural eco-efficiency indicators, it was explored how the integration mode of “physical tourism and agriculture” affects the eco-efficiency of rural areas. For this purpose, several villages in Guangxi were selected as the study object, and similar villages were also selected as the control group. The study lasted for five months, during which data on vegetation cover and water quality index were collected and analyzed. The specific data situation is shown in Figure 3:

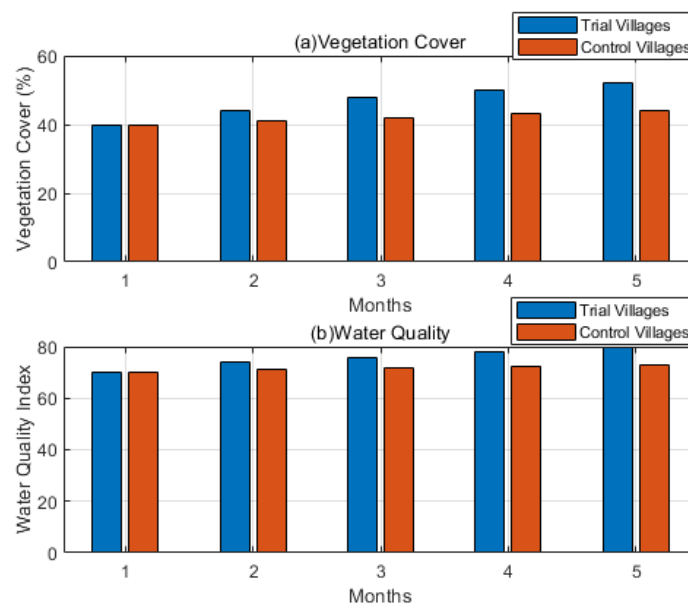


Figure 3: Assessment based on eco-efficiency indicators

Figure 3(a-b) shows the vegetation cover and water quality index, respectively. In Figure 3, we observed that the vegetation cover of the pilot villages increased significantly after the implementation of the “body-tourism-agriculture” integration model. Specifically, the vegetation cover in the pilot villages increased from 40% to 52% over the five-month study period, with an average monthly increase of 2.4%. In contrast, vegetation cover in the control villages increased less, from 40% to 44%, with an average monthly growth rate of 0.8%. In terms of water quality improvement, the water quality index of the pilot villages increased from 70 to 80, with an average monthly increase of 2 points, while the water quality index of the control villages increased from 70 to 73, with an average monthly increase of only 0.6 points. From the above data, it can be concluded that the adoption of the “body tourism and agriculture” integration model has a significant effect on the improvement of the rural ecological environment.

### 5. Conclusion

This study verifies the effectiveness of the "sports, tourism and agriculture" integration model in Guangxi's rural revitalization through field research and data analysis. By integrating sports, tourism and agricultural resources, the model significantly improves the economic, social and ecological benefits of villages. Specifically, the economic income, resident satisfaction and ecological environment of the pilot villages were significantly improved. However, there are some limitations in this study, such as the short research period, which may not fully capture the

long-term effects. Future research could expand the sample size and extend the research period to further explore the adaptability of the rural revitalization strategy in different regions and the potential application of the "body-tourism-agriculture" integration model in other provinces, so as to provide more comprehensive strategic recommendations for China's rural revitalization.

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