Research on the Innovation of Rural Food Tourism Development Model from the Perspective of Big Data: A Case Study of Guizhou Province

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Abstract: Digital cultural tourism has become the core driving force for promoting the high-quality development of rural food tourism in the new era, profoundly changing the supply side, demand side, and resource allocation pattern of rural food tourism. In the development practice of rural food tourism in Guizhou Province, in the face of the current situation and challenges, efforts should be made from three dimensions: big data cultural tourism, cloud computing cultural tourism, and Internet of Things cultural tourism. A new model for the development of rural food tourism with "big data, cloud computing, and Internet of Things" (referred to as "big cloud and Things") as the core should be innovatively constructed. This will accelerate the digital transformation and upgrading process of rural food tourism.

Keywords: Food tourism; Digital cultural tourism; Big data cultural tourism

1. Introduction

Gourmet tourism is a deep integration of food production and marketing with the tourist experience, and has an important impact on both supply and demand [1]. The supply side can design tourism facilities and products based on specialty food to stimulate consumption and promote the economy; the consumption side can promote the prosperity of multiple industries through tasting, experiencing, and participating. Combining specialties with sightseeing, health, and other resources to form tourism projects not only meets the needs of tourists but also helps to build brands, enhance competitiveness, and promote industrial prosperity.

Currently, digital technology has triggered changes, and the tourism industry is developing towards industrialization. The 20th Party Congress proposed to accelerate the construction of the digital economy and promote its integration with the real economy, marking the advent of the digital economy era. Digital literature and tourism have become the core engine to promote the high-quality development of tourism, and their deep integration with the cultural tourism industry, focusing on the contradiction between supply and demand in the

gourmet tourism industry chain, relying on digital technology to explore the integration of new ideas [2]. Therefore, innovating the development mode of gastronomic tourism from the perspective of digital cultural tourism is the key to meeting the demand for high-quality products and solving the problem of imbalance and insufficiency of regional development [3].

2. Literature review

Research on food tourism began with Belisle's exploration of the relationship between food and tourism in 1983 [4]. After 40 years of development, its connotation and extension have been continuously enriched. Under the comprehensive poverty alleviation and rural revitalization strategies in our country, rural food tourism has become a hot topic. The academic circle mainly focuses on its unique nature and development issues. The former analyzes the composition of value, proposes economic, tourism, and cultural significance, and summarizes regional, local, and experiential characteristics; The latter adopts methods such as models and empirical studies to analyze influencing factors and types of tourists, and proposes development strategies [5–9].

Since 2019, digital technology has been integrated with rural tourism, with research focusing on digital transformation, such as exploring the transformation path of ice and snow tourism under the digital economy, analyzing the characteristics of short videos related to rural cuisine, and putting forward development suggestions [10].

The existing research results have laid the foundation for constructing the development model, but there are deficiencies: the research perspectives are polarized, the theoretical basis is weak, and there is a lack of integrated and comprehensive research. The research methods mainly focus on qualitative and normative analysis, neglecting empirical analysis, and the progress in the application field is limited. Emphasis is placed on the application forms of digital cultural tourism, with insufficient theoretical support and analysis of digital models, which affects a comprehensive understanding.

3. A new picture of food development under the integration of culture and tourism with the digital economy

3.1. Supply-side innovation: Dual enhancement of quality and characteristics

The integration of culture and tourism with digital technology injects impetus into the food industry, promoting the advancement of quality and characteristics. Digital technology helps standardize and refine food production, pass on unique flavors, and ensure stable quality. For instance, smart cooking equipment enables time-honored brands to preserve their craftsmanship. Digital platforms broaden the channels for cultural dissemination, encouraging merchants to explore the cultural connotations of local delicacies and create regionally distinctive products. For instance, they can package snacks through short videos and other forms, transforming them into cultural experience supplies, enriching the value hierarchy, and enhancing competitiveness.

3.2. Consumption side transformation: Experience upgrade and demand release

The integration of culture and tourism with the digital economy enhances consumer experience and unleashes consumer demand. The popularization of online reservation, ordering, and electronic payment has optimized the dining process, making it convenient and efficient. For instance, mobile phone reservation for restaurants around scenic spots reduces queuing and enhance satisfaction. Digital cultural and tourism platforms have given rise to new forms of food tourism, stimulating the desire to explore. Tourists customize travel routes that include food

experiences, shifting from sightseeing to immersive cultural Tours. Their demands are personalized, scenarios are diversified, and the boundaries of consumption are expanded.

3.3. Resource allocation optimization: Precise matching and coordinated development

The integration of culture and tourism with digital technology enables precise matching of food resources with market demands and promotes the coordinated development of the industry. Big data analysis provides merchants and enterprises with market profiles, helps them grasp demand trends, and enables targeted research and development, site selection, and promotion. For instance, based on big data, they can launch healthy and creative delicacies to enhance resource utilization. The digital economy promotes the integration of the food industry with the upstream and downstream of the cultural and tourism industry chain. The food supply side is promoted through e-commerce and logistics, while cultural and tourism activities integrate food with cultural festivals, creating brand effects. Through resource sharing and complementary advantages, it drives a virtuous cycle of the regional economy.

4. Analysis of the current situation of food tourism development in Guizhou

4.1. Current situation of food development in Guizhou

Guizhou cuisine is rich in variety, featuring regional and ethnic characteristics, unique flavors, and abundant ingredients. However, the degree of development needs to be improved: The national popularity and market influence are limited, the brand construction lags behind, there is a lack of widely influential brands, most stores operate independently, with small and scattered scales, making it difficult to form an agglomeration effect and a standardized system, which restricts market expansion. The product innovation is insufficient and has not fully combined with the diverse demands of modern consumers. Its appeal needs to be enhanced.

4.2. Development model of rural food tourism in Guizhou

4.2.1. Traditional development mode

Mainly based on farmhouses, its advantages lie in the original flavor and increasing residents' income. However, its limitations include uneven service quality, weak marketing capabilities, and insufficient resource development.

4.2.2. Development of characteristic tourism routes

"Food + Ancient Towns" (such as Qingyan Ancient Town): It combines history and cuisine, but lacks sufficient transportation connections and depth of experience.

"Cuisine + Ethnic Customs" (such as Xijiang Thousand Households Miao Village): It showcases diverse cultures, but the products are monotonous (mainly for tasting), lacking the experience of making and cultural exploration.

However, there are problems with the characteristic tourism routes: the transportation convenience is not closely connected with the routes, the road conditions of some sections are poor, and the public transportation facilities are incomplete, which affects the smoothness of the experience. The design of food tourism products is monotonous, mainly focusing on tasting, lacking in-depth participation, and experience projects. This fails to meet the needs of cultural exploration, limits participation and the depth of experience, and is not conducive to long-term development and brand building.

5. The dilemma and model innovation of Guizhou's food tourism development from the perspective of digital culture and tourism

5.1. The predicament of food tourism development in Guizhou

5.1.1. Information fragmentation and weak dissemination

The information about Guizhou cuisine is scattered and lacks systematic integration. Traditional small shops rely on word-of-mouth and have not promoted themselves through digital platforms. The introduction of the online platform is brief and fails to showcase the craftsmanship, cultural connotations, and stories, making it difficult to attract tourists. Businesses operate independently, lacking unified brand promotion and marketing collaboration. Their market voices are weak, which restricts their development potential.

5.1.2. Uneven quality of tourism services and difficulties in supervision

Tourists are confronted with the problem of unstable service quality. Some catering places have poor hygiene conditions and dining environments, and there are hidden dangers in food ingredients and tableware, which affect their experience and health safety. The professional quality and level of service personnel vary greatly. In rural areas, waiters lack service awareness and skills training, resulting in a poor experience. The stores are widely spread and scattered, making it difficult for regulatory authorities to conduct comprehensive and real-time supervision and management. There are products that do not meet quality standards, which harms the interests of tourists and the overall image.

5.1.3. The food and tourism products are monotonous and lack deep integration

Product development is still in its infancy. Most activities remain at the surface level of tasting, lacking in-depth integration and innovative design with culture, folk customs, natural resources, etc. Tourists rarely participate in making, picking, or learning about historical and cultural inheritance. Their experiences are monotonous and fail to meet diverse and personalized demands. Their stay is short, and their consumption potential has not been fully tapped, which is not conducive to the long-term construction and sustainable development of the brand.

5.2. Dilemma resolution and model innovation based on cloud computing, tourism, and the Internet of Things

5.2.1. Cloud computing for tourism-driven information integration and precise marketing

Build a Guizhou Food tourism cloud platform, integrate resource data (types, restaurants, evaluations), analyze tourists' behaviors through big data, and achieve personalized recommendations; Create immersive food scenes (such as virtual streets) using VR/AR to stimulate travel interest; Rely on the social functions of the platform to encourage tourists to generate content (UGC) and expand brand promotion.

5.2.2. Internet of Things empowering the improvement of tourism service quality and intelligent supervision

Apply Internet of Things (IoT) technology in food and tourism venues to achieve intelligent monitoring and management of the entire catering service process. The food supply link monitors environmental parameters and growth processes to ensure freshness and quality safety, and uses blockchain technology for traceability. Monitor the heat control, seasoning usage, and hygiene conditions in the catering processing stage, and handle abnormal alarms to enhance safety guarantees. Develop an intelligent training and management system for service personnel, record work performance and quality data, provide training suggestions and performance evaluations, and enhance

the service experience. Regulatory authorities, with the help of intelligent supervision platforms, conduct all-around and real-time supervision of the market, promptly handle violations and safety issues, and ensure the healthy and orderly development of the market.

6. Conclusion and research prospect

6.1. Research conclusions

The rural food tourism in Guizhou needs to achieve transformation by strengthening digital infrastructure (network coverage, cloud platforms, intelligent terminals), deepening digital marketing (social media integration, online activities), enhancing smart services (intelligent systems, talent cultivation), and promoting product integration (immersive experiences, cross-border business forms). Policy support, talent cultivation, and industrial synergy are the key guarantees.

6.2. Research prospect

From a technical perspective, VR/AR, blockchain, and other technologies will be further applied (such as food ingredient traceability and virtual cultural experiences). At the market level, personalized itineraries need to be customized based on big data. At the industrial level, promote cross-border integration such as "food + health preservation/education." At the level of sustainable development, focus on ecological protection, cultural inheritance, and community participation to achieve the unification of economic, social, and environmental benefits.

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