

Research on the New Quality Productive Forces Enabling the Characteristic Villages of Lingnan

-- Taking Jiangkou Tanka Village in Gaoyao as an example

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Abstract: This study focuses on the Dan people in Jiangkou Village, Gaoyao, Zhaoqing, to explore innovative practices of revitalizing rural areas through new productive forces. Addressing common challenges in traditional fishing villages along the Xijiang River-including industrial monoculture, cultural disconnection, and brain drain-the research proposes a systematic solution driven by technological innovation. Practically, it establishes an integrated "cultural tourism + arts + industry" development model, applies IoT technology to transform traditional fisheries into a "technology + fisheries + culture" ecosystem, while enhancing infrastructure and cultivating innovative talent. Theoretical breakthroughs include pioneering a "ecology-cultural" dual-dimensional analysis framework and applying digital twin technology to traditional architecture preservation. These initiatives not only establish a collaborative "industry-academia-research-application" paradigm but also develop a replicable revitalization model for Lingnan-style fishing villages, offering valuable references for high-quality rural development in the new era.

Keywords: New Productive Forces, Lingnan Countryside, Dan Culture, Industrial Integration, Rural Revitalization.

1. Foreword

During his inspection tour in Heilongjiang in September 2023, President Xi Jinping introduced the concept of new quality productive forces, emphasizing the importance of integrating scientific and technological innovation resources to lead the development of strategic emerging industries and future industries. In the context of rural revitalization and coordinated urban-rural development, new quality productive forces, centered on scientific and technological innovation, aim to empower rural industries through technology, integrate rural resources, and explore sustainable development paths for rural areas. However, at present, the Tanka fishing villages are primarily based on traditional industries with low levels of technological empowerment and insufficient production capacity. The industries are relatively monolithic, and other resources have not been utilized to develop new industries. On December 8, 2022, the Second Plenary Session of the 13th Committee of the CPC Guangdong Provincial Committee reviewed and approved the Decision of the CPC Guangdong Provincial Committee on Implementing the High-Quality Development Project for Hundreds of Counties, Thousands of Towns, and Tens of Thousands of Villages to Promote Coordinated Urban-Rural and Regional Development. This decision calls for the comprehensive implementation of the High-Quality Development Project for Hundreds of Counties, Thousands of Towns, and Tens of Thousands of Villages, with the goal of promoting high-quality development and comprehensively advancing rural revitalization. As villagers aspirations for a better life grow, traditional rural industries can no longer meet their demand for stable income, and the lack of sustained momentum in rural industry development has become increasingly evident. Many rural industries are experiencing contraction, and industrial revitalization has become a crucial approach to restructuring the rural economic structure. New quality productive forces have emerged as an effective driving force to address the challenges in rural

industry development. To promote the deep integration and innovative development of rural industries.

Based on this, the article introduces the concept of new quality productivity, analyzes it, and summarizes the fundamental characteristics of traditional rural industry development. It aims to construct an analytical framework for the empowerment of new quality productivity and explain its mechanisms of action. The article also explores the internal logic of rural industry revitalization and seeks practical implementation paths, integrating the concept of new quality productivity into planning practices to provide a theoretical foundation for the revitalization and development of rural industries.

2. Empowerment by New Productive Forces

2.1. The Connotation and Characteristics of New Productive Forces

The new quality productive forces are characterized by innovation as the primary driver, breaking away from traditional economic growth models and production development paths, and aligning with the new development philosophy. These forces are primarily driven by scientific and technological innovation, supported by digital, networked, and intelligent technologies, with data serving as a key production factor. They have a broad and revolutionary impact on the economy and society.

2.2. Current Situation of Tanka Fishing Villages

Jiangkou Fishing Village is situated in the Jiangkou area of Gaoyao, known for its vast waters and abundant fishery resources. Most villagers rely on fishing for their livelihood, which is the primary economic source for the Tanka people. Located along the Xijiang River, the village features low hills

and terraces on both banks, creating a unique landscape of mountains and water. This natural setting also serves as a shelter and anchorage for the Tanka people. Additionally, Jiangkou Village continues to preserve traditional practices such as the Tanka saltwater songs and the making of Tanka cakes for water weddings. With social and policy changes, fishermen have begun to settle on land, maintaining their

fishing traditions while engaging in river fish farming, primarily through traditional methods with lower yields. However, the villages housing and folk customs are relatively outdated, lacking new vitality to support economic and diverse development. This survey highlights the urgent need for Jiangkou Fishing Village to inject new productive forces and fresh development momentum.



Fig. 1 Map of Jiangkou fishing village



Fig. 2 Investigation of Jiangkou fishing village

2.3. New Productive Forces Empower Jiangkou Fishing Village

The industrial structure of Jiangkou Fishing Village is relatively simple, and traditional industries face challenges, but the village is rich in available resources. Our team aims to assist villagers in optimizing their industrial structure by leveraging Tanka culture and local resources to develop a distinctive tourism industry, innovating while preserving traditions. To address the low yields and efficiency in traditional fishing, we plan to introduce IoT technology and advanced equipment to boost the production of fresh river fish. We will promote the brand of fresh river fish and Tanka cakes through short videos and live broadcasts, and leverage the villages natural advantages to create a sightseeing pier and a water experience platform. We will also build a Tanka culture experience center, develop immersive projects such as fishing net weaving and cake making, and launch cultural and creative products. Traditional residences will be transformed into unique homestays, creating a comprehensive cultural and tourism ecosystem that is playable, eatable, and livable. To enhance the internal driving force for development, the project innovatively establishes a talent co-cultivation

mechanism involving universities, villages, and enterprises. A practical training base will be set up to cultivate digital skills + traditional crafts composite talents. Through a collaborative matrix of technical experts, local craftsmen, and young innovators, we aim to inject long-term momentum into the rural area.

To transform and upgrade traditional fishing villages, new productive forces must serve as the driving force. This transformation is achieved through technological revolution, innovation in resources, and industrial upgrading, forming an advanced quality state [1]. The empowerment logic aligns closely with the practices of Jiangkou Fishing Village: the integration of IoT with aquaculture breaks the constraints of time and space [2]; the value reconstruction mechanism leverages the multiplier effect of river fresh brand + Tanka culture IP to reshape the fishing, tourism, and culture value system [3]; the system evolution mechanism fosters a collaborative path of technological innovation-institutional change-organizational evolution through a talent co-cultivation model [4]. For instance, in Gaoyao Jiangkou Village, the three-stage practice of technology embedding-resource activation-system reconstruction has shown initial

success --. Smart devices have achieved technology embedding, cultural experience halls have activated intangible cultural heritage resources, and the village has completed a systemic upgrade through residential renovations, ecological governance (releasing fish for growth), and industrial integration. This project, grounded in new productive forces, aims to build a Lingnan-style village landscape system that integrates ecological economy, leisure tourism, and intangible cultural heritage inheritance, exploring innovative paths for the protection and development of rural areas in Guangdong.

3. The Theoretical Framework and Method Path of New Quality Productive Forces to Empower Rural Revitalization

3.1. Theoretical Innovation of Technology Embedding Dimension

To establish a theoretical guidance model for the digital protection of architectural heritage and intelligent ecological governance. By integrating innovative methods of new productive forces, apply intelligent monitoring and green building materials technology to develop a dynamic restoration model. Through technological empowerment, achieve precise restoration of brick and timber structures. Integrate ecological and information science theories to construct a smart governance framework of data collection-model optimization-decision support [5], forming a sustainable development paradigm of green infrastructure + smart operation and maintenance --. Spatial optimization algorithm: optimize village spatial layout using ecological big data and integrate photovoltaic building integration; use an improved ant colony algorithm to solve the optimal layout of photovoltaic panels, forming a sustainable development paradigm of green infrastructure + smart operation and maintenance. Resource circulation model: construct a material flow analysis framework for rainwater recycling systems. Carbon sink measurement method: measure soil carbon stocks using plot survey techniques.

3.2. Theoretical Breakthrough in the Dimension of Element Recombination

Construct two theoretical frameworks: the Cultural Capital Transformation Theory and the Human Capital Enhancement Theory. Develop a three-stage model of cultural decoding-digital transformation-value release. Apply grounded theory to symbolically deconstruct the unique rural culture of Jiangkou Village. Design cultural experience products, develop the cultural and creative industry, enhance the efficiency of resource value conversion in the village, and inject new momentum into economic development. Establish a talent matrix collaboration mechanism involving university experts-local craftsmen-young makers to provide long-term impetus for the sustainable development of Lingnan characteristic villages, thereby enhancing the intrinsic driving force for rural revitalization. Utilize university resources to set up practical training bases to systematically cultivate compound talents with digital skills and traditional crafts.

3.3. Theoretical Construction of Organizational Innovation Dimension

The organization innovates its methods by integrating

industrial collaboration theory and constructing models from a policy support perspective. Through the industry-university-research-application quadruple helix model, it promotes collaboration among the government, enterprises, and research institutions to establish an integrated platform for industry, university, and research collaboration. The traditional approach to poverty alleviation is transitioning to an industry upgrade driven by new productive forces, implementing a dual-wheel strategy of digital empowerment + industrial revitalization. This involves setting up e-commerce live streaming bases, cultivating the Tanka Craftsmen regional brand, and building an educational tourism + homestay + intangible cultural heritage workshop industrial chain to achieve value co-creation. By focusing on production habits, the organization introduces intelligent breeding systems through the Internet of Things to develop fisheries and animal husbandry. It also revitalizes fishing boats to develop fishing village tourism, river sightseeing, and other industries. In terms of land reform and property rights systems, it advances the three types of land reform in rural areas, allowing homesteads to be used as shares and collective business construction land to enter the market, thereby activating land resources, establishing a land transfer platform, and promoting large-scale operations.

3.4. Theoretical Paradigm Innovation and Enlightenment

This study achieves theoretical breakthroughs in three areas through the case of Gaoyao Jiangkou Village: it proposes an innovative ecological-cultural dual-dimensional analysis method tailored to the resource characteristics of Gaoyao Jiangkou Tanka Village, scientifically guiding the integration and development positioning of resources. In the study of Lingnan characteristic villages, digital twin technology is used to construct a three-dimensional model of Tanka architecture, providing precise support for building protection and micro-updates, a pioneering application of this technology in the Lingnan region. In the study of characteristic villages in Zhaoqing, a new model combining cultural and folk heritage preservation with the rural revitalization strategy is proposed, injecting new momentum into village development.

4. New Quality Productivity Helps the Development of Tanka Village in Gaoyao District, Zhaoqing

Zhaoqing, a national historical and cultural city, is one of the cradles of ancient Lingnan culture. In recent years, Gaoyao District has leveraged its unique water town resources and Tanka culture, seizing the opportunities presented by the Hundred-Thousand Project. By focusing on environmental quality improvement, the district has accelerated the renovation of commercial streets, breathing new life into the small fishing village as it continues to develop and preserve its heritage. However, this development faces common challenges typical of traditional fishing villages in the modernization process: insufficient protection and development of characteristic villages in both breadth and depth, and the underutilization of the unique village resources in Zhaoqing; economic transformation challenges, a monotonous product structure, and poor economic returns from related industries; the decline of Tanka culture, the loss of young talent, and the risk of traditional skills being lost.

These issues hinder the industrial and economic development of Tanka villages and urgently require scientific and reasonable planning to address them.

4.1. Change the Single Industrial Structure and Promote Industrial Transformation and Upgrading

Zhaoqing Gaoyao District, leveraging its unique water town resources and Tanka culture, has seized the opportunity of the Hundred-Thousand Project. By focusing on environmental quality improvement, it emphasizes long-term benefits and integrates new productive forces. The district is accelerating the transformation of commercial streets, promoting rural industrial upgrading and economic development, and rejuvenating small fishing villages through inheritance and development. With the support of various levels of party committees, governments, and other stakeholders, actions such as road renovations, the implementation of the three lines policy, the construction of cultural squares, and riverbank improvements have been carried out. These efforts promote the integration of culture and tourism, implementing integrated planning and design. By leveraging traditional ancient villages and the former residences of famous figures, the district is creating high-quality tourism routes that highlight Gaoyao Tanka culture, forming an art + industry model to boost collective economic growth. The district is also cultivating rural cultural brands and regional brands to revitalize and rejuvenate the countryside. Additionally, it is building an educational tours + homestays + intangible cultural heritage workshops industrial chain, promoting the transformation of traditional poverty alleviation to an industry-driven upgrade, with the goal of making Gaoyao District a significant demonstration area for rural cultural revitalization in the city and even the province.

4.2. Science and Technology Empower Traditional Industries to Realize Cultural Innovation and Communication

Based on the production habits and traditions of the Tanka people, the introduction of an intelligent breeding system through the Internet of Things (IoT) aims to develop the fishing and breeding industries. Using fishing as a medium, efforts will be made to promote the folk culture of the fishing industry. By leveraging the scenic beauty of the Xijiang River and the unique fishing resources of the Jiangkou fishing village, the project aims to create the Xijiang River Art Gallery, integrating the fishing and cultural tourism industries to achieve sustainable development through technology + fishing + culture, and to create a high-quality blue engine for development. Additionally, the Tanka Folk Museum and a digital museum will be established to document and disseminate Tanka culture. The strategy of digital empowerment + industrial revitalization will be implemented, guided by market demand, fully utilizing the advantages of water town culture and unique resources. The focus will be on developing new quality industries, building e-commerce live streaming platforms to directly connect with aquatic products, reducing intermediate losses, and achieving significant results through technological empowerment. This will integrate new quality productive forces, optimize resource allocation, and accelerate the construction of a high-end science and education innovation corridor. The strategy will emphasize

strengthening leading enterprises, building bases, and improving standards, exploring the integration of educational parks, science parks, and industrial parks.

4.3. Improve Infrastructure Construction and Realize Talent Return

Introduce intelligent monitoring and green building materials technology to establish a dynamic repair model. By leveraging technological advancements, we can achieve precise restoration of brick-wood structures, addressing the challenges of protecting traditional buildings and providing replicable technical solutions for rural architecture studies. For other damaged residences in Gaoyao Jiangkou Village, we aim to restore them to their former glory. This will be achieved through grid management, renovation of old residential areas, upgrading of marketplaces, smart monitoring, AI aerial photography, and the reinforcement of the five ones supervision team, all aimed at improving living conditions, enhancing urban management, and attracting talent to stay and develop in the countryside. Additionally, a collaborative talent development mechanism involving universities, villages, and enterprises will be established. This mechanism will leverage the coordination of experts, local craftsmen, and young innovators to provide intellectual support for rural transformation, attracting external attention and talent return.

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5. Conclusion

This article focuses on the Tanka Village in Gaoyao District, Zhaoqing, to explore innovative practices of empowering rural revitalization through new productive forces. Addressing the common challenges of traditional fishing villages, such as industrial singularity, cultural heritage loss, and talent outflow, the study proposes a systematic solution driven by technological innovation. In practice, it promotes an art + industry development model through industrial integration and upgrading, transforms traditional fishing with IoT technology to create a technology + fishing + culture new industry, and enhances infrastructure and talent development. Theoretically, it introduces a dual-dimensional analysis of ecology and culture method and is the first to apply digital twin technology to the preservation of traditional architecture. These explorations not only establish a new paradigm for the coordinated development of industry, academia, research, and application but also form a replicable model for revitalizing

Lingnan-characteristic fishing villages, providing valuable insights for the high-quality development of rural areas in the new era.

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