



Digital Innovation Technologies in the Preservation and Inheritance of Traditional Villages: A Case Study of Yanguan Ancient Town

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ABSTRACT

This study employs questionnaire surveys, interviews, and observational methods, using Yanguan Ancient Town in Haining City, Jiaxing, as a case study. It explores how to conduct research on the preservation and development of rural ancient towns in the context of "digital reform." By integrating the natural resources and historical relics of Yanguan Ancient Town, this study uncovers the potential of its unique "Tidal Etiquette" culture and identifies the main challenges it faces: low level of digitalization, outdated development models, and insufficient promotional efforts. Consequently, this research team proposes leveraging digital reform as a breakthrough, combined with the "Tidal Etiquette" culture, to create a new identity for Yanguan Ancient Town. This approach aims to break away from the traditional mindset and models of ancient town preservation and development, achieving the goal of "old town, new spirit."

Keywords: Yanguan Ancient Town; Digital Reform; Rural Ancient Town; Preservation and Development; Innovation and Entrepreneurship

1. Introduction

Ancient towns are substantial carriers of cultural heritage, serving as primary witnesses to historical changes and providing the most direct reflection of local customs and traditions. However, with the rapid pace of industrialization and urbanization in China, traditional systems for preserving ancient towns can no longer meet the demands of contemporary development. Problems such as "prioritizing development over preservation" and "excessive and repetitive packaging" have emerged. Therefore, there is a pressing need for new approaches that are aligned with current realities and can adapt to future societal developments, ensuring sustainable growth.

Integrating digital technologies into the development of ancient towns and promoting "cloud tourism" can satisfy people's curiosity and enhance the visibility of these historical sites. This study focuses on the "Tidal Etiquette" culture of Yanguan Ancient Town, implementing comprehensive reform policies to establish a novel preservation and development system for ancient towns. This approach aims to provide new insights into the contemporary preservation and development of ancient towns, ensuring their sustainability and cultural integrity.

2. Current Development Status of Rural Ancient Towns under the Digital Reform Context

2.1 Development Background of Rural Ancient Towns

In the wake of rapid economic growth and rising GDP, China has increasingly focused on enhancing its cultural soft power, aiming for a balanced development of economy and culture. Ancient towns have witnessed swift development in recent years, with "ancient town tourism" emerging as a favored travel choice. However, the pressure of commercialization has pushed many ancient towns into developmental bottlenecks, with some even experiencing stagnation.

For instance, Suzhou in Jiangsu Province has enacted the "Regulations on the Protection of Jiangnan Water Towns in Suzhou," preserving the traditional layout and appearance of its ancient towns, thereby maintaining their authenticity and integrity. Similarly, Jiaxing City has implemented the "Regulations on the Protection of Jiangnan Water Towns in Jiaxing," which strengthen the protection and management of its ancient towns, safeguard cultural heritage, and promote sustainable development. These policies have injected new vitality into ancient towns.

2.2 Current Status of Yanguan Ancient Town

To gain an in-depth understanding of ancient towns, this study conducted a field investigation in Yanguan Ancient Town, surveying tourists, residents, and staff. A total of 500 questionnaires were distributed, with 459 valid responses collected.

2.2.1. Tourism Development Driven by the Tidal Viewing Area but Exhibiting Instability

Survey results indicate that nearly 90% of respondents consider the Tidal Viewing Area to be the most impressive feature of Yanguan Ancient Town. As a renowned spot for tidal viewing, Yanguan attracts numerous tourists, thus stimulating the local tourism industry. However, the limited peak tidal viewing period results in highly uneven visitor numbers, with stark contrasts between peak and off-peak seasons, impeding sustainable development.

2.2.2. Accelerated Digital Reform but Insufficient Public Awareness

Despite the acceleration of digital reform, public awareness remains inadequate. The majority of respondents are unaware of the specifics of digital reform, with only a few possessing superficial knowledge. This highlights an urgent need to enhance the dissemination of digital reform information to effectively integrate it into daily life.

2.2.3. Innovation and Entrepreneurship Driving Digital Development

Approximately 62.79% of respondents believe that Yanguan Ancient Town is currently on a positive developmental trajectory and are optimistic about its future. Additionally, 69.77% perceive digital reform as beneficial for the protection and development of the town, hoping it can address existing deficiencies. Innovation and entrepreneurship are viewed as key drivers, such as using digital technology to accurately predict tidal times and notify tourists, or promoting "cloud tourism" to allow virtual tidal viewing, thus mitigating safety risks.

2.2.4. Favorable Conditions for Development but Significant Challenges in Preservation

The survey reveals that local government policies provide substantial support for Yanguan Ancient Town, and increased media promotion has attracted numerous visitors. However, several challenges persist in preserving ancient buildings: modern and commercial developments have led to the construction of commercial buildings that clash with the town's traditional style, compromising the architectural landscape; the town's remote location and poor transportation limit its development potential, posing risks of demolition and conversion into economic development zones; and as a third-tier city, Haining struggles to attract talent, resulting in a shortage of skilled professionals for architectural preservation.

From our survey, we have identified the main obstacles in the protection and development of ancient towns like Yanguan: (1) the inevitable conflict between modernization/commercialization and preservation; (2) low visitor civility causing irreversible damage to the town; (3) the lack of distinctive features among many ancient towns, leading to aesthetic fatigue among tourists; and (4) remote locations causing transportation challenges and hindering development. In response, our group has reviewed literature, conducted comparative analyses, and explored potential solutions tailored to Yanguan Ancient Town's specific issues and current status.

3. Strategies for the Protection and Development of Rural Ancient Towns

3.1 Establishing a Digital Brain for Ancient Towns

With rising living standards, tourist attractions have proliferated, and ancient towns, as cultural carriers, attract numerous visitors. However, this influx places a significant burden on the preservation of these towns. Visitors often lack awareness of preservation, leading to indiscriminate littering and damage to historical sites. The pressures of modernization and commercialization exacerbate the conflict between development and preservation, making the protection of ancient towns an urgent priority.

3.1.1. Developing a Yanguan Ancient Town Website for Visitor Self-Monitoring

By regularly publishing scenic photos and educational videos on the Yanguan Ancient Town website and official WeChat account, visitor awareness and behavior can be improved. Establishing a blacklist system to document and publicize uncivilized behaviors will promote self-regulation among tourists. Additionally, an online interactive message board can be optimized to monitor and address real-time issues, ensuring the site's protection.

3.1.2. "Cloud Tourism+" to Protect Ancient Town Ecology

Utilizing short videos, live streaming, and VR technology, "cloud tourism" can offer a comprehensive virtual tour of the town, providing detailed views that might surpass on-site experiences. This approach not only protects the ecological environment but also mitigates the impact of commercialization and large tourist crowds on the town's cultural and architectural integrity.

3.1.3. Digital Restoration

Traditional methods of restoring ancient buildings, such as on-site exploration and manual surveying, are time-consuming, labor-intensive, and can cause damage. Digital restoration technologies offer higher precision and minimal error, allowing for the simulation of restoration processes to identify quality

and safety issues in advance. This enables restoration personnel to complete tasks more safely and efficiently. Moreover, digital restoration can preserve the restoration process through text, images, and videos, enhancing the protection and transmission of cultural heritage.

3.2 "Digital + Cultural Tourism" Model

Yanguan Ancient Town, located in Haining, Jiaxing, Zhejiang Province, is not as well-known as other famous ancient towns like Xidi and Hongcun. However, its unique geographical location has fostered the distinctive "Tidal Rite" culture. Situated on the northern bank of the Qiantang River, Yanguan is renowned for its spectacular tidal bore and is the hometown of the esteemed martial arts novelist Jin Yong. Despite its remote location, Yanguan boasts a rich cultural heritage. Leveraging this unique culture with digital promotion can offset the disadvantages of its geographic remoteness.

3.2.1. Developing Diverse Digital Promotion Strategies

Survey results indicate that Yanguan Ancient Town's visitor numbers are relatively low, highlighting the need for increased promotion. The comprehensive digital reform work deployed at the 2021 Zhejiang Provincial Digital Reform Conference presents an ideal opportunity for development. By harnessing digital reform, Yanguan can enhance its visibility, combining the tidal culture of Yanguan with the broader Zhejiang cultural heritage. High-quality videos showcasing the Qiantang River tide can be released on short video platforms during peak viewing seasons to attract visitors. Additionally, events such as poetry recitations and knowledge competitions related to Wang Guowei, whose residence is in Yanguan, can enrich the cultural atmosphere while boosting the town's profile. The pandemic has limited offline activities, but digital platforms enable efficient online events like recitation contests.

3.2.2. Creating New "Tidal" and "Rite" Ancient Town Brands

"Tidal" Ancient Town: Integrating Zhejiang's tidal culture with its spirit, which was refined in 2006 as "seeking truth, pragmatism, integrity, harmony, openness, and strength," and further emphasized by President Xi Jinping during the 2016 G20 Hangzhou Summit. Tidal viewing is integral to Yanguan. Adding traditional music that rises and falls with the tide can enhance the experience. To balance seasonal tourist disparities, a digital simulation room can be established, recreating the sights, sounds, and smells of the tide, offering an immersive experience even indoors.

"Rite" Ancient Town: The central area of Yanguan Ancient Town features attractions like the Temple of the Sea God, Jin Yong Academy, and Wang Guowei's former residence. AR and 3D projection technologies can recreate historical scenes, allowing visitors to experience the town's original lifestyle through AR glasses. Additionally, events such as "Teacher Appreciation Ceremonies" can be introduced, with a Hanfu pavilion set up within the town. Combining the Confucian "Rite" culture with interactive experiences, visitors can wear traditional Hanfu and participate in reenacted school sessions, guided by staff playing NPC roles, to deeply engage with the town's cultural heritage.

4. Benefits of Protecting and Developing Rural Ancient Towns

4.1. Benefits of "Digital Reform"

"Digital reform" emerges as an inevitable trend in today's information-driven society, presenting a unique synergy when integrated with the preservation and advancement of ancient towns. Through the establishment of intelligent systems, utilization of online platforms such as short videos for marketing, and harnessing artificial intelligence, digital reform amplifies the visibility of ancient towns, augments operational efficiency, refines management frameworks, and catalyzes the growth of related industries. Its significance is particularly pronounced in the augmentation of both economic and societal dividends, as elaborated below:

4.1.1. Augmenting Ancient Town Visibility and Prestige for Indigenous Economic Advancement

The burgeoning tourism industry in contemporary times offers a fertile ground for the resurgence of ancient towns. With their trove of cultural heritage and enigmatic allure, ancient towns epitomize tranquility and a bygone era's essence, rendering tourism development as an apt paradigm. By infusing digital technology into ancient townscapes—through digital screens installation, VR experiences offering visitors a glimpse into antiquated town life, and leveraging AI to provide immersive virtual tidal encounters—unique experiences are cultivated for visitors. Elevated experiential quotient naturally draws more tourists, thereby propelling economic prosperity.

4.1.2. Alleviating Dependency on Inexpensive Labor

Amidst the crest of digital reform, the application of artificial intelligence assumes the mantle of replacing numerous manual labor tasks, ranging from automated ticketing to intelligent sweeping mechanisms. This metamorphosis not only obviates redundant labor but also augments data collection efficiency. Upon the establishment of a digital ecosystem, departments attain streamlined coordination and seamless information dissemination, culminating in heightened operational efficacy, reduced error margins, and cost optimization.

4.1.3. Facilitating Tidal Power Generation for Economic Dividends

The Tidal Bore Park stands as Yanguan Ancient Town's quintessential attraction. Quoting Mao Zedong's poignant observation post-witnessing the tidal bore, "A thousand miles of waves come rolling in, snowflakes fly towards Diaoyutai," encapsulating its awe-inspiring grandeur. Tidal waters, besides offering visual opulence, harbor the potential for energy harnessing during the ebb and flow phases, thereby proffering a renewable energy source. Tidal power generation, with its environmental amiability, cost-effectiveness, and substantial output, promises immense economic windfalls. Through the amalgamation of tidal power with sectors like aquaculture, water management, and transportation, amplified economic dividends ensue.

4.1.4. Holistic Preservation of Ancient Town Safety

The deployment of digital systems—ranging from sewage discharge to fire prevention mechanisms—enables real-time vigilance over ancient towns. Integrated emergency protocols and apparatuses assure prompt responsiveness to anomalies, thereby fortifying the town's safety quotient.

4.2. Unique Benefits Inherent to Ancient Towns

Yanguan Ancient Town, boasting a two-millennium lineage and a distinctive tidal culture, harbors colossal developmental potential. The protection and development of ancient towns yield substantial societal benefits encompassing spiritual enrichment and cultural legacy perpetuation. Nonetheless, many ancient towns grapple with a common quandary: a paucity of distinctiveness and rampant homogenization. To surmount this challenge, innovative developmental models warrant exploration.

4.2.1. Enriching Residents' Spiritual Quotient

Culture emerges as the crucible of millennia-spanning human spiritual ferment, constituting a town's essence. Haining shadow puppetry, an intangible cultural heritage, teeters on the brink of extinction but finds a reprieve in Yanguan Ancient Town. The unique "Haiyan dialect" stands as one of China's renowned Ming Dynasty four major operatic forms. Safeguarding Yanguan Ancient Town translates to preserving shadow puppetry and intangible cultural heritage, ensuring the town's cultural legacy continues to illuminate China's annals. Heightened cultural activities furnish residents and visitors with diversified daily pursuits, enabling locals to savor Haining shadow puppetry amidst the "emptiness after a fresh rain," or delve into Chen Yuanlong's joys and sorrows amidst the misty drizzle.

4.2.2. Pioneering Innovative Development Paradigms for Ancient Towns

Yanguan Ancient Town's vista leans towards monotony, with infrastructure lacunae and a dearth of distinctiveness. By leveraging digitization and cultural innovation—manifested through the creation of exquisite cultural artifacts and the cultivation of exclusive cultural brands—Yanguan Ancient Town's unique ethos is accentuated. This pioneering developmental paradigm not only burnishes the town's allure but also heightens its tourist magnetism.

4.2.3. Championing Exemplary Traditional Cultural Tenets

Ancient towns emerge as the cultural marrow and spiritual epicenter of the Chinese nation, embodying its resplendent cultural tapestry and venerating its historical bequest. Yanguan Ancient Town's architectural vestiges—such as the Temple of the Sea God and the Jin Yong Academy—beckon with profound historical import, encapsulating residents' yearnings for an enriched existence. Each facet of ancient town culture harbors treasures of yore, deserving preservation and exaltation.

5. Limitations of the Study

In the investigation into the preservation and advancement of rural ancient towns, focusing on Yanguan Ancient Town as a representative case, several limitations become apparent:

5.1. Restrictive Sample Population

The survey predominantly comprised tourists, constituting 70% of respondents, with scenic area staff and local residents accounting for a mere 30%. The uneven distribution of respondents was exacerbated by the low foot traffic on the survey day, with many businesses closed and local residents absent due to work commitments. A balanced representation of these three respondent groups—tourists, staff, and residents—is essential to ensure comprehensive insights into the town's dynamics and challenges. Each group offers unique perspectives, from tourist experiences to local insights and institutional knowledge, contributing to a holistic understanding of the town's needs and potential solutions.

5.2. Ambiguity Regarding Implementability of Measures

While proposed measures for Yanguan Ancient Town's preservation and development were based on successful case studies, their applicability remains uncertain. Each ancient town possesses distinct characteristics, necessitating tailored approaches to address specific challenges and opportunities. The study did not thoroughly investigate the feasibility of implementing these measures in Yanguan Ancient Town, underscoring the need for further research to assess their practicality and effectiveness within the town's context.

5.3. Limited Availability of Primary Data in Certain Areas

During on-site investigation, certain sections of the town, such as Zhaixiangfu Street and the northern segment of Chaoyun Street, were undergoing renovation and inaccessible to the public due to safety concerns. Consequently, gathering first-hand observations and data from these areas was impossible, relying instead on secondary sources for analysis. This limitation may have resulted in incomplete information and compromised the depth of insights into these specific locations.

6. Conclusion

As society undergoes rapid transformation propelled by digitalization and technological advancements, ancient towns like Yanguan stand as cultural treasures, embodying centuries of heritage and tradition. Yet, amidst the surge in tourism and modernization, these towns face unprecedented challenges to their preservation and sustainable development.

The study has shed light on the pivotal role of digital reform in addressing these challenges, offering insights into leveraging technological innovations to enhance the efficiency of preservation efforts while fostering holistic development. Acknowledging the limitations outlined above is crucial for refining future research endeavors and ensuring the validity and reliability of findings. By addressing these limitations and embracing a multidimensional approach that integrates local context, stakeholder perspectives, and best practices, a more resilient and inclusive path can be charted for the preservation and advancement of ancient towns like Yanguan, safeguarding their cultural heritage for generations to come.

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