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Making Technology More Intelligent: Seeking the "Local Characteristics" of Digital Rural Governance

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ABSTRACT

Digital rural governance is the cornerstone of modernizing national governance, therefore exploring digital rural governance has become an important topic. The "locality" of digital countryside refers to the need to pay attention to the uniqueness of rural society, and to break through a single operating mode in the interaction between modern and traditional. As an efficient governance tool, digital technology can help rural development, but it cannot be limited to universal linear processes. It should be embedded in the natural environment, social status, and core needs of rural areas, and closely integrate technology with the characteristics and practices of rural areas. Only then can technology truly empower rural areas. On the premise of respecting the development laws of different types of rural areas, a basic path for the "locality" of digital rural areas is constructed through typical cases to promote the modernization process of digital rural governance.

KEYWORDS

Digital Village; Locality Digital Technology; Rural Governance.

1. INTRODUCTION

Since the dawn of the 21st century, digital technology, information technology, and artificial intelligence have flourished, finding deep applications in various fields worldwide. For China, the era of big data has also arrived quietly, sparking heated discussions in academia around topics such as digital cities, smart communities, and online platforms. Simultaneously, traditional rural society is also embracing a crucial opportunity for transformation and development, with rural governance undergoing comprehensive innovation under the impact of digital technology. To forge a modern rural governance system, technology serves as a robust support. It is imperative to harness the "wings of digitalization" and optimize "rural governance".

In response to the new trends of rural transformation brought about by the era of big data, China has repeatedly emphasized the important role of digital technology in rural development since the 19th National Congress of the Communist Party of China. In 2018, the CPC Central Committee and the State Council issued the "Opinions on Implementing the Strategy for Rural Revitalization", proposing the "implementation of a digital rural strategy to develop digital agriculture". In 2019, the "Outline for the Development Strategy of Digital Villages" provided detailed regulations on key tasks and strategic objectives for digital rural construction. In 2020, the "Notice on Carrying out the National Pilot Work for Digital Villages" encouraged pilot areas to innovate the governance mechanism of digital villages. In 2022, the "Implementation Plan for Rural Construction Action" pointed out the need to "promote the deep integration of digital technology with rural production and life", which undoubtedly points out the practical direction for accelerating the construction of digital villages.

Guided by both national policies and practical needs, digital technologies have been widely introduced to rural areas, playing a positive role in enhancing the level of public services and social governance in rural areas[1], promoting scientific decision-making in rural governance[2], and improving the governance level and efficiency of grassroots party organizations[3]. However, it should also be noted that many villages have encountered issues of digital technologies not fitting in well during this process. The modernization forces assisting rural governance have presented significant tensions, such as the digital divide[4] and spatial barriers[5]. This is also the inherent root cause of the current "unwise technology" that makes it difficult to effectively optimize rural governance.

As the practical field of digital rural governance, the countryside is not only a testing ground for new technology applications but also a place where villagers have lived and produced for generations. While digital technology can inject new momentum into rural governance, it also profoundly affects the structural relationships in rural society. This indicates that focusing solely on the top-down embedding of digital technology is one-sided. Instead, we should focus on the unique characteristics of the countryside and pay attention to the transformation of the "traditional-modern" relationship in the process of local social governance[6], which is to seek the "localness" of digital rural governance as proposed in this paper. From the perspective of "localness", this paper explores the excellent practices of digital governance in three villages, constructs the basic path of "localness" in digital rural governance, and hopes to achieve efficiency improvement in grassroots social digital governance.

2. LITERATURE REVIEW AND ANALYTICAL PERSPECTIVE

2.1. Literature Review

Rural areas serve as the foundation for China's evolution towards a modern society, and also the root cause of challenges encountered during this evolution[7]. For rural societies that have been based on tradition and bound by human relationships for thousands of years, the sudden influx of new technologies centered on digitalization in the new era inevitably leads to a sense of "discomfort" and "rejection" in the villages, making it difficult to achieve the desired effect of technology empowering rural governance. Therefore, in recent years, analyzing the failures of digital rural governance and exploring effective governance methods has become a popular research topic in academia, with research mainly conducted from three aspects: objective phenomena, essential mechanisms, and path exploration.

Firstly, it depicts the objective phenomena of digital rural governance failure. Overall, most digital rural governance currently suffers from common failures such as alienation from the masses, neglect of tradition, and false information[8]. These failures are specifically manifested in the tension between digital governance and rural governance concepts, the imbalance between digital governance rationality and rural governance emotions, and the impact of digital technology on traditional rural governance structures[9]. On this basis, some researchers further propose that digital rural failure is also reflected in inaccurate positioning of digital development goals, inadequate understanding of digitalization by relevant personnel, and incomplete integration of digital scenarios with rural contexts[10]. Secondly, it explains the essential mechanism of digital rural governance failure. Different scholars approach from different research perspectives. Some scholars propose that the failure of digital rural governance can be explained from three perspectives: local participation, value recognition, and resource supply[11]. Others, starting from tools, power, and space, argue that the traps in these three aspects are highly likely to lead to the lagging of digital rural governance platforms[12]. Furthermore, the subject of rural governance is also an important focus for scholars. The dislocation of the governance subject and the rural environment is not conducive to building the resilience of the governance system, thus hindering the smooth progress of digital rural

governance[13]. Thirdly, it explores the optimization path for digital rural governance failure[14]. Some scholars take the subject as a breakthrough point, arguing that through the role transformation of the subject and digital empowerment, collaborative governance relationships can be reshaped to address digital rural governance failure. Others take space as a breakthrough point, proposing to resolve failures through the rational construction of practical space, the reorganization of social space relationships, and the value reshaping of cultural space[15].

Through a review of relevant literature on digital rural governance, it is clear that there exists a significant gap between current digital governance and rural governance. The digital technology introduced to rural areas has not effectively empowered rural governance. Many scholars have analyzed the reasons and proposed optimization paths, laying the foundation for this paper's analysis, but also indicating certain room for expansion. Firstly, in the face of digital rural governance failures, previous studies have often approached from a technological perspective, attempting to address challenges by enhancing the "technological aspect" of digital rural areas, without effectively highlighting the "local characteristics" of the villages themselves. Secondly, most existing research has focused on analyzing failure phenomena from the perspective of external mechanisms in digital rural areas, with insufficient attention paid to endogenous perspectives. However, the operation and implementation of digital rural areas can only be achieved within the meso-level regional society and micro-level actions[16]. Therefore, to address the failures in digital rural governance and make technology more intelligent, this paper chooses "local characteristics" as an analytical perspective, truly focusing on the villages themselves and seeking paths to enhance the effectiveness of digital governance in rural society from actual needs and regional characteristics.

2.2. Literature Review

"Locality" is an important concept proposed by the renowned anthropologist Clifford Geertz in his research on foreign cultures. By reflecting on the concepts, systems, and transformations of human knowledge since the 1960s, Geertz interpreted "locality" as "regional knowledge with cultural characteristics." "Place" actually carries the connotations of "uniqueness" and "relativity," defined within spatial limits, signifying "differences in different fields." As a symbolic cultural marker of knowledge, "locality" is a text and interpretation that "describes actions and reveals the origins of three-dimensional culture." The original intention behind proposing "locality" is to oppose specific discourses such as "Western centrism"[17]. Its true core message is "regionalization" and "uniqueness," seeking to find specific knowledge within commonly accepted universal knowledge and cultivate a differentiated perspective. Essentially, "locality" is not only a starting point and attitude, but also, more importantly, a methodology, the origin of "deep description.".

In China, scholars also study "localism" from a sociological perspective. "Localism" is naturally closely related to place, and places definitely have geographical boundaries. In a static state, "localism" refers to local characteristics, that is, the social, cultural, political, and economic traits that arise within a specific locality. However, with socio-economic development, the boundaries of places are broken, and certain attributes formed through various exchanges between places can also become "localism"[18]. Therefore, it can be said that compared to traditionality and nativeness, "localism" not only embodies these characteristics but also transcends them, possessing significant reproductive capabilities. From a global perspective, modernity is essentially a form of "localism" practice, which can be understood as a specific form operating in the process of action. In general, only concepts that are generated in specific contexts and undergo relational and empirical research can be called "local cognition".

Against the backdrop of emerging technologies becoming the dominant discourse in various fields globally, digital technology is an indispensable and crucial component for achieving high-quality and efficient development in rural China. It will serve as an urgently needed driving force for rural revitalization, comprehensively promoting rural transformation and upgrading. However, there is a

core issue in this process: whether the digital technology introduced to the countryside can successfully overcome the problem of "not fitting in" and be promoted to various regions. In fact, this requires us to pay attention to the "local characteristics" of rural society itself and its diverse patterns and forms during the development process. When technology platforms, technical services, technical organizations, etc. successfully match and integrate with the "local characteristics" of rural society, digital technology truly achieves intelligent application and transformation. In other words, the "local" practice of digital technology is the key to high-quality development of rural society in the future, and it is also an important reason why this article adopts "local characteristics" as an analytical perspective.

3. THREE CASES OF DIGITAL RURAL GOVERNANCE

3.1. Case Selection

This article selects three villages as case study subjects, primarily based on the following three considerations. Firstly, the geographical distribution of the villages is representative. These three villages are located in Guizhou Province in the southwest, Hubei Province in the central region, and Zhejiang Province in the east, which to some extent cover different types of villages in different regions and with varying levels of development in China. They can be regarded as three typical epitomes of rural development in our country. Secondly, the digital construction of the villages is typical. Dongzhai Village in Guizhou, as a traditional village, has its core appeal in utilizing traditional resources to promote tourism development; Minzhu Village in Hubei, as a village with ordinary qualifications in all aspects, has its core appeal in stimulating villagers' initiative to participate in village-level public affairs governance; Wusi Village in Zhejiang, as a leading village with strong economic strength and solid governance foundation, has its core appeal in promoting industrial development and improving villagers' quality of life. And it just so happens that in these three villages, digital technology in the countryside has captured the inherent appeals of the villages and empowered them, helping the villages achieve optimized governance. Thirdly, the availability of village information. The three selected villages are all villages with relatively advanced digital rural governance experiences nationwide, with more reports and interviews on the internet, and more comprehensive and detailed records, which is conducive to the collection and selection of relevant information.

3.2. Dongzhai, Guizhou: Digital-driven Demand-oriented Governance

The Dong Village is located in Zhaoxing Town, Liping County, Qiandongnan Miao and Dong Autonomous Prefecture, Guizhou Province. It is situated at the junction of Guizhou, Yunnan, and Guangxi provinces, and is 50 kilometers away from Liping County. Covering an area of 0.18 square kilometers, the Dong Village has more than 1,000 households. Due to the majority of its residents being of the Dong ethnic group, it has been rated as the "No. 1 Dong Village". As a traditional village, the Dong Village has a relatively well-preserved ecosystem, rich ethnic culture, and beautiful ecological environment. It is a key target for the protection and development of ethnic village tourism in Guizhou Province.

For Dongzhai, tourism serves as a pillar industry, serving as both the foundation for the economic development of traditional villages and the backbone for the transformation of cultural values. Consequently, village governance and tourism development stand as the core aspirations of Dongzhai, and they are also the aspects that urgently require digital technology empowerment. In terms of the digital village construction in Dongzhai, digital infrastructure construction is the prerequisite, followed by empowering various governance entities through dimensions such as digital resources and digital platforms.

In terms of infrastructure construction, the advancement of digital rural governance has been well-established through wireless network coverage, smart tourism facilities, and smart transportation. Since the tourism industry has developed significantly, the governance entities in Dongzhai have become more diverse, encompassing local residents, foreign tourists, tourism operators, cultural tourism companies, and other entities. Most of these entities are predominantly young people, which has, to some extent, increased the difficulty of rural governance. Faced with the increasingly complex number and types of entities, Dongzhai's approach is to aggregate various governance entities through digital platforms such as WeChat groups, travel software (Meituan, Ctrip, etc.), and social media, and to gather information from both inside and outside the village, achieving the effects of expanding the governance field, innovating governance methods, and stimulating the vitality of the entities. It is worth mentioning that, based on the local characteristics and actual needs of Dongzhai, VR tours, smart tourism systems, digital exhibitions, and other technologies developed through digital technology empowerment can be used both as tourism attractions and as governance tools. This can not only enhance the local tourism benefits but also break down barriers to information circulation, increase opportunities and dividends for governance entities, improve governance efficiency, and ultimately achieve collaborative governance among diverse entities. At the same time, through the use of digital platforms, governance entities have also achieved a genuine connection between technology and democracy, enhancing their digital literacy and honing their governance capabilities.

At the 2023 Dongnian Huotang Festival, the Dong village no longer relied solely on traditional offline promotion. Instead, it leveraged online channels such as mini-programs, video accounts, official accounts, and various apps to spread the joy of the traditional festival and the charm of the Dong ethnic group. Furthermore, live streaming rooms were set up in the countryside, allowing thousands of viewers to experience the awe-inspiring Dong drum tower, the fervor of the Lusheng dance, and the passing of the sacred fire in the Huotang ceremony through their screens. This has created a beautiful brand for the Dong village. With the help of digital technology, not only have the traditional folk activities in the Dong village been revitalized, but it has also provided more convenient services for tourists. Many tourists have expressed, "Booking tickets this year is very convenient. We booked tickets for the long table banquet on the Dong village's cloud service mini-program and simply verified them with a QR code." Undoubtedly, this is the kind of digital technology that the Dong village truly needs and wants.

3.3. Yicheng, Hubei: Digitalization Activates Participatory Governance

Yicheng, a national garden city, is located in the transitional zone between the northern Hubei uplands and the Jianghan Plain, and is part of Xiangyang City, Hubei Province. In 2020, Yicheng became a national pilot city for digital villages, embarking on a new model of rural digital governance. It partnered with DingTalk to establish a digital governance platform called "Bai Xing Tong" in towns and villages. The following text will mainly detail the digital village construction in Minzhu Village, Yicheng. Minzhu Village is located in the northwest of Lehe Town, Yicheng, with convenient transportation and a simple rural lifestyle. The village has 461 households with a total of 1,972 villagers, covering an area of 4.66 square kilometers.

For villages with mid-range economic and regional development levels, it is difficult to balance industrial development and rural governance in a short period of time. Generally, one of the two is prioritized. Democratic villages place the focus on rural governance and hope that digital technology can assist in this regard. Generally speaking, in traditional rural governance models where digital technology has not yet been introduced, the village committee, although an autonomous organization, undertakes more tasks assigned by the township government. Therefore, it is accustomed to passively paying attention to village public services and lacks proactive participation, especially among villagers. Before the pilot project of digital villages in Democratic Village, like most villages, public affairs decisions were made through the convening of village meetings according to the requirements of the township government. This form of decision-making tends to be procedural and patterned,

making it difficult to touch the core of public affairs and mobilize the enthusiasm of the majority of villagers to reflect their ideas and make suggestions. Especially when it comes to public issues involving conflict mediation and dispute resolution, it is impossible to identify and effectively solve problems in a timely manner through forums and meetings. This will only lead to the accumulation and intensification of contradictions among villagers, eventually escalating to the level that requires mediation by the town people's court.

Regarding the pilot application of "YiHuiGuan" in Minzhu Village, it has been found that the introduction of digital technology provides a platform for resolving conflicts and disputes within the village. The platform serves as an intermediary element between villagers and the village committee, enabling all parties to spontaneously participate in the entire process of public affairs. This is because the digital field can increase the opportunities for the village committee to make proactive decisions and enhance their confidence in participating in governance. On this basis, it can also promptly respond to the needs and opinions raised by villagers, greatly eliminating the vacuum state and suspension issues between the two parties. This process particularly enhances the sense of experience and achievement of the village committee. At the same time, after digital technology has enhanced the initiative of the village committee, they adopt embedded governance policies and become powerful executors of public affairs in the village. This not only narrows the gap between the two parties but also plays an important role in attracting villagers to actively participate in public affairs governance, thereby stimulating bidirectional participatory governance.

The "Yihui Guan" platform pioneered by Yicheng has been fully applied in Minzhu Village and has received high praise. In April 2022, some villagers reported on the platform that the construction of a production workshop by a certain enterprise in the village had damaged the drainage ditches in the fields, which would affect the normal harvesting of wheat and sowing of rice. After the village committee members collected this issue on the platform, they immediately went to the site for inspection. After confirming the situation, they communicated with the enterprise and contacted the construction team to rebuild the ditches, quickly and effectively solving the problem. Many villagers said that they never expected the issues reported on the platform to be resolved so quickly and well. This platform has indeed played a significant role. Villagers have a channel to express their ideas and report problems, and these issues are not only taken seriously but also quickly and effectively addressed. Such digital technology applications will undoubtedly greatly activate participatory governance.

3.4. Deqing, Zhejiang: Digital-enabled Development-oriented Governance

Deqing, a county under Huzhou City in Zhejiang Province, is situated in the very heart of the Hangzhou-Jiaxing-Huzhou Plain and is located in the hinterland of the Yangtze River Delta. It is among the top 100 counties in China for comprehensive strength and is also one of the first batch of beautiful rural demonstration counties in Zhejiang Province. In 2018, the first United Nations World Geographic Information Conference was held here, and Deqing seized this opportunity to establish the province's first county-level "urban brain" smart platform. The following text will mainly detail the digital rural construction of Wusi Village in Deqing. Wusi Village is located in the northwest of Deqing County, at the foothills of Moganshan Mountain. The village covers an area of 5.61 square kilometers and has a total population of over 1,600. It has successively won honors such as "National Civilized Village".

For villages like Wusi Village, which possess strong economic development capabilities and a solid foundation in rural governance, achieving further development is their core aspiration, and this is also what digital technology needs to promote. Since 2019, Wusi Village, as a pilot village for "holistic intelligent governance" in Deqing County, has explored and established the "One Digital Village, One Map" model, and on this basis, has constructed an overall framework system of "135".

The overall construction process of "Digital Village One Map" can be divided into three stages: The first stage focuses on "visibility", establishing a "one map" for village management to comprehensively grasp village affairs information; the second stage focuses on "usability", further upgrading the "one map" by adding practical functional modules; the third stage focuses on "analyzability", iteratively upgrading the village "smart brain" to build an integrated digital platform system architecture consisting of platform foundation layer, service support layer, and application expansion layer. Essentially, "Digital Village One Map" is a multi-scenario, multi-business collaboration, and dynamically interactive digital village panorama based on geographic information systems and big data technology.

The "135" framework can also be understood from three aspects. Firstly, "1" refers to a rural governance data base, which is realized through channels such as government data access, on-site data collection, and IoT sensing device push, relying on the "City Brain". Secondly, "3" refers to the three-module application support system of "one map, one terminal, and one center". Among them, "one map" is the digital rural panorama mentioned above, serving as a display and analysis unit for real-time dynamic presentation and analysis of the operational status of rural planning, management, and environment, providing auxiliary decision-making for rural governance. "One terminal" is a general term for rural service and governance mobile terminals, including mobile applications and mini-programs such as "ZheLiBan" and "WoDeQing" for villagers, and "ZheZhengDing" and "ZhangShangJiCeng" for grassroots cadres. As an interactive processing unit, this module opens up online interaction channels at all levels of rural governance. "One center" refers to the county-level rural digital governance center, serving as a coordination and command unit that integrates the strengths of various units, coordinates and schedules at different levels, and collaboratively solves affairs in various fields of rural governance, opening up channels for villagers' terminals, grassroots governance terminals, and back-end decision-making terminals, forming a full-field data closed-loop governance system. Lastly, "5" refers to promoting digitalization in five major fields, namely rural planning, rural management, rural services, rural environment, and rural governance, using technologies such as image recognition, satellite positioning, remote sensing imagery, and 3D real-scene maps to build a full-field digital governance system for rural areas.

Overall, through the "one framework" and "one map", Wusi Village has achieved precise governance and comprehensive intelligent governance. On the basis of enhancing the governance efficiency of the entire village, it has also promoted the deep and effective integration of digital technology and the village's real economy, giving birth to new models and new business forms. It has truly realized the integration of "industry and village" and "industry" driven by digitalization, ultimately forming the Wusi experience that can be promoted nationwide.

4. THE FUNDAMENTAL PATH TO CONSTRUCTING THE "LOCAL CHARACTER" OF DIGITAL VILLAGES

Based on the comprehensive practical situations of three cases, digital technology can indeed bring numerous benefits and conveniences to rural governance, facilitating the optimization and improvement of the rural governance system. However, China is vast, with countless villages exhibiting diverse forms and unique characteristics. In the construction of digital villages, it is inevitable to face numerous difficulties, such as differences in objective fields, divisions among local entities, and disparities in infrastructure. Especially in regions with relatively backward economic development, underdeveloped transportation, and underdeveloped information, the digital technology introduced to the countryside differs greatly from the objective realities of the villages. Such villages lack the hardware and software foundation to accommodate technology. Blindly embedding digital technology not only fails to achieve the expected results but can also backfire. In view of this, this paper selects three villages from the eastern, central, and western regions, each with varying levels of economic strength, as research objects. The purpose is to understand as much as possible about the

"local characteristics" of the villages and, on this basis, to find the integration between the original "local characteristics" and the "digitalization" of the new era, in order to promote the development of rural governance at this intersection. Combining the specific practices of the three cases, to "make technology more intelligent" and realize the digital technology taking root in the "local characteristics" of the villages, it can be summarized as three construction paths: digital technology empowering natural needs, digital technology activating rural entities, and digital technology leading endogenous development.

4.1. Digital Technology Empowers Natural Demand

The sheer number and vast differences among China's villages make it difficult to apply a "one-size-fits-all" approach to digital village construction, let alone promote it synchronously. This necessitates that relevant stakeholders thoroughly understand the natural characteristics, social landscapes, lifestyles, customs, infrastructure, and other objective scenarios of villages in advance. They must comprehensively and accurately grasp the needs of villages and closely connect with the digital technology being introduced to the countryside. This is essentially a process of investigating and understanding the objective scenarios of villages. To truly embed digital technology into the natural and social landscapes of villages and apply it to local practices, sufficient preliminary work preparation is essential, which mainly falls into three aspects. First, digital technology is utilized to establish an electronic information database for villages, collecting online information on geography, culture, economy, market, and other aspects of villages. This can reduce communication costs and improve docking efficiency. Second, the collected information is coordinated and integrated to initially summarize the resource situation and basic needs of villages, and to draw a village portrait. Third, villages themselves need to participate in relevant meetings and discussions related to digital technology being introduced to the countryside. Villages should independently express their needs, planning, and development directions to facilitate the leading role of technology.

China is a rural society, where villages have historical and cultural traditions that have lasted for thousands of years. At the same time, villages are also in the midst of the wave of the new era. Therefore, the current rural society is intertwined with tradition and modernity, and local and innovation are intermingled. However, the understanding of modernity and innovation should not be too limited. It is not simply equal to economic development and technological progress, and tradition and localism do not necessarily mean discarding and innovating. For the public sector, innovation is an important task, often provided with external support through top-down policies. This requires that the policies introduced must take into account the diversity and differences in the development needs of rural society. If we only focus on economic innovation in a one-dimensional way, the achievements can only be temporary and short-lived. In the end, villages will only face the tragic situation of losing their local characteristics and development potential. Therefore, the most ideal innovation is to find the local characteristics and heterogeneity of villages and use them as the growth point for development. This requires leveraging the advantages of digital technology in information collection and data analysis to clarify the natural state and core needs of villages. For example, the Dong village in Guizhou mentioned in Case Study 1, as a minority village, indeed emphasizes the development of local tourism, but it also means protective development of traditional architecture, culture, crafts, objects, etc. That is, moderate innovation should be carried out under the premise of "localism", and these technological means should be used to achieve the goals of protecting traditional resources, reducing operating costs, and ensuring the livelihood of villagers. It can be said that protecting the traditional resources of villages, maintaining their traditional image, and preserving their traditional significance are manifestations of valuing the "localism" of villages, and also important sources of new growth points in the process of rural development.

Digital technology brings unprecedented advantages, enabling the joint development of information collection, data transformation, data analysis, research summary, and technical consultation. This approach taps into the existing and potential growth points of rural natural landscapes, characteristic

crafts, traditional culture, folk customs, and other aspects, thus providing the internal momentum to expand corresponding business models. The application of digital technology breaks and transcends the original geographical boundaries of villages, facilitating the transmission and sharing of data information, and enhancing the convenience and efficiency of operation and management. This undoubtedly brings unexpected potential benefits to rural areas. Essentially, for villages with natural demands, what digital technology can do is to protect the differences and heterogeneity of villages, and find opportunities to promote high-quality construction and modernization transformation of rural areas. In the process of integrating digital technology with rural entities, technology should play a leading role, driving the mutual embedding of natural scenarios, inherent needs, and technical services. This is the primary path to construct the "localness" of digital villages.

4.2. Digital Technology Activates Rural Entities

The various entities in rural areas constitute the core elements of rural development. Only through the collaboration and action of these entities can all resources in the countryside be fully utilized. Therefore, the "local" practice of digital rural development inevitably involves the construction of subjectivity and the activation of rural subject consciousness. The so-called modern subjectivity encompasses both the subjectivity of national social culture and the local characteristics that nurture this social cultural subjectivity. Specifically, the social cultural subjectivity proposed in the study is primarily manifested in the behaviors and practices of individual entities, which exhibit relative independence at different individual levels and can exert a subtle influence on individual behavior. Understanding "local" essentially means grasping the living habits, behavioral patterns, and values that are shaped over time through local practices, commonly referred to as "imprints". Once such "imprints" are formed, they possess strong autonomy, stability, and even agency, capable of actively "guiding" individuals and becoming a socializing force for them[19]. Therefore, in the process of digital technology reaching rural areas, this fact needs to be respected and paid attention to.

To achieve comprehensive revitalization and high-quality development in rural areas, relying solely on the village committee and villagers as the sole entities is bound to fail. It is destined to require the joint participation, cooperation, collaboration, and effective connection of multiple entities to truly promote this complex and arduous task. Digital technology, as a governance tool and driving force that sinks down to the village level, can bond and link multiple entities through platforms, enabling them to jointly participate in the governance of public affairs in the village. This process fully demonstrates the advantages of digital technology, namely, crossing geographical boundaries, breaking interpersonal barriers, and building digital spaces, which promote the joint participation of various entities such as village committees, villagers, grassroots governments, settled enterprises, non-governmental organizations, universities, and research institutes in village construction. This forms a strong cohesive force at the entity level, especially in greatly stimulating the enthusiasm and initiative of the vast majority of villagers, in order to achieve the goal of cooperative development and optimized governance in the village. Of course, activating these entities is not a quick process. It requires a planned and strategic gradual advancement. The first step should be to establish a relationship network within the local village, encompassing families, clans, hometown elites, and cooperatives, and then expand to enterprises, universities, and social organizations that have or may have cooperative connections with the village. Finally, it should form close ties with public welfare organizations, project operators, regional development agencies, mainstream media, and other entities in a broader scope. Moreover, digitalization should also be linked with resources such as project funds and social capital, and mutually restrain each other, maximizing the potential of resources and supporting rural development.

The democratic village mentioned in Case 2 has significantly improved the previous governance situation where the village committee provided passive services and villagers treated them indifferently, by applying the digital platform "Yihui Guan". Through the platform's connection, the distance between the village committee and villagers has been narrowed, and the majority of villagers

have been truly involved in the decision-making and implementation of public affairs. They can gain a strong sense of experience and achievement in the process, and their participation naturally increases. For such villages, digital technology must distinguish and understand various subjects, grasp the intentions and abilities of participating subjects, fully mobilize their enthusiasm and initiative, and vigorously promote the process of participatory governance. Of course, in this process, subjects also need to continuously improve their digital literacy and abilities to dynamically adapt to the requirements of the data era.

4.3. Digital Technology Leads Endogenous Development

Some villages located in the eastern or central regions boast advantageous geographical locations and a solid foundation for development, thus having higher-level development needs, such as the transformation and upgrading of rural industries and improving villagers' living standards. This indicates that in the local practice of digitalization in rural areas, it is crucial to first respect the regional differences in the villages. Then, based on a clear understanding of the villages' development needs and patterns, we should identify entry points and inject technology. For such villages that require endogenous development, local characteristics are primarily manifested in resource endowments and advantageous industries. It is necessary to conduct a three-dimensional observation of the villages through digital technology, determine the steps and processes of development, and explore one-on-one based on the local characteristics of the villages.

Currently, the integration of digital technology and the rural real economy has formed four relatively typical development models. The first is the urban-rural advancement model, which takes industry as the entry point. Through the deep integration of digital technology and rural industries, it optimizes the industrial structure, improves the industrial layout, continuously fosters new business forms, and extends the industrial chain. The second is the collaborative model between professional farmers and expert teams. By providing professional training to farmers, it enhances their comprehensive abilities and promotes their development towards specialization and standardization. The third is the incentive model that attracts talents through property rights. By transforming resources into assets, funds into equity, and farmers into shareholders, it attracts talents from all over the country to gather in rural areas, addressing the "talent shortage" dilemma in rural areas and ensuring the development space and possibilities for industries. The fourth is the operation model of agricultural project research and development. Through cooperation with scientific research institutions, it develops new varieties of agricultural products such as rice, corn, and citrus, selects and trains superior seeds, establishes a standard system, and relies on big data platforms to create an integrated rural complex. For example, the Wusi Village in Zhejiang mentioned in Case Three has achieved precise governance and comprehensive intelligent management by building a "digital rural map". Based on the existing industries, it identifies growth points and uses digital technology to empower, fostering new business forms with higher efficiency and better meeting market demands.

For digital technology to successfully lead the endogenous development of rural areas, it must find a precise match with the local characteristics of the countryside and identify a suitable entry point for rural transformation and upgrading. This is indeed a challenging and tortuous process. To be precise, if digital technology is not integrated with the local characteristics and industries of the countryside, there will be no high-quality development in rural areas. This is also the core reason why it is difficult but still necessary to adhere to the search for "local characteristics". For digital technology to achieve deep integration with local industries, it is necessary to conduct preliminary research, match needs, make long-term plans, and implement effective supervision to ensure that rural areas have continuous momentum for progress. It is worth noting that although digital technology is an indispensable force in promoting rural development and governance, it is essential to ensure that villages themselves have a certain say in the face of technology. We must prevent the occurrence of technology monopolizing and villages being silenced, and cannot leave villages in a passive situation. At the same time, the technology brought to the countryside must also keep up with research trends, be updated and

optimized in real time, so that the most cutting-edge technology can be applied to rural areas as quickly as possible.

5. CONCLUSION AND DISCUSSION

Digitalization and networking development represent high-quality development, which relies far more heavily on social foundations than industrialization does. This article takes three cases of digital rural governance in Guizhou Dongzhai, Hubei Yicheng, and Zhejiang Deqing as research objects, exploring what constitutes the "localism" of digital rural governance and what are the basic paths to construct it. Undeniably, as a new tool in the new era, the digital technology introduced to rural areas has indeed utilized its own advantages to greatly empower rural development and governance. This includes but is not limited to visual technology that alleviates the heavy tasks at the grassroots level, Internet of Things (IoT) technology that covers the entire rural area and provides real-time feedback, geographic information technology that monitors the entire growth cycle of crops, and Internet technology that connects rural areas with external domestic and international markets. All of these demonstrate the remarkable achievements and infinite possibilities of digital technology applied in rural areas. At the same time, as a cutting-edge technology representing modernity and innovation, digital technology inevitably creates tension with the long-standing traditional governance models in rural areas. This requires us not to understand and analyze digital rural governance solely through technological logic, but to attach importance to the process of mutual adaptation and reconciliation between new technologies and rural society, that is, the process of seeking "localism".

The "localism" of digital villages is a realistic response to the universalism of "patternization", and it does not represent opposition to tradition and local culture. Essentially, it involves mutual penetration, integration, and balanced coexistence with traditional society in a specific rural context. Local society will not lose its traditional core due to the intervention of digital technology, and digital technology will not stop innovating and progressing due to the integration of local society. The two are by no means in an either-or, hostile competitive relationship; rather, they are in a state of symbiotic cooperation. Because for villages to develop nowadays, they cannot remain unchanged and conservative. They must embrace the wave of the times, allowing local society to undergo transformation under the influence of digitalization, thereby gaining new development opportunities.

Digital technology has achieved remarkable effectiveness and holds significant meaning for rural areas. The localization of digital villages can be regarded as a promotion of technological socialization. However, in the current situation where global uncertainties are surging, it is necessary to pay attention to preventing the unreasonable development and application of digital technology, strictly controlling digital hegemony and its power expansion, and exerting its effective function under the norms of the system. We must avoid the erosion of rural society caused by technological alienation and ensure the basic interests of rural areas to the greatest extent, laying a good foundation for balanced urban-rural development.

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