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A Study on Grassroots Digital Governance Mechanisms from the Perspective of Service Providers: An Exploration Based on Wenzhou's Practices

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Abstract

Digital transformation represents a crucial direction for modernizing grassroots governance. This study adopts a "structure-process-function" analytical framework to systematically examine the internal logic and operational mechanisms underlying service providers' participation in grassroots digital governance, with Wenzhou's practices as the research object. Findings reveal that service providers assume multiple roles in grassroots digital governance as technology enablers, service providers, resource integrators, and innovation drivers, yet face challenges including ambiguous role positioning, inefficient coordination mechanisms, and difficulties in balancing interests. Three typical models are identified: technology-enabling, government-enterprise collaborative, and platform-operating. Three major operational mechanisms are constructed: functional substitution mechanism, resource-coordination mechanism, and multi-stakeholder interaction mechanism. Based on these findings, the study proposes safeguard measures including improved policy support, strengthened resource coordination, enhanced capacity building, and reinforced ethical governance, as well as recommendations for establishing a comprehensive risk prevention and control system across the entire governance chain. These findings offer significant reference value for advancing the construction of a grassroots digital governance system and elevating the level of modernization in grassroots governance.

Keywords

Service provider; grassroots governance; digital governance; operational mechanism.

1. Introduction

The deep integration of digital technologies into social governance has positioned grassroots digital governance as a pivotal direction for modernizing national governance. The 20th National Congress of the Communist Party of China explicitly emphasized the need to "improve the social governance system, perfect the social governance framework of joint construction, joint governance, and shared benefits, and enhance the effectiveness of social governance," providing fundamental guidance for grassroots digital governance. Driven by policy initiatives and technological advancements, diverse grassroots digital governance practices have emerged nationwide. As an important pilot city for digital reform in Zhejiang Province, Wenzhou has actively explored innovative approaches to grassroots digital governance, developing a distinctive governance model characterized by "all-round grid-based management" as its foundation, the "four-platform framework for grassroots governance" as its support, and "digital empowerment" as its hallmark feature.

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In this context, various service providers have gradually become essential participants in grassroots digital governance, offering technological support, platform operations, and service guarantees for governance's digital transformation. However, as service providers deepen their involvement in grassroots governance, new issues and challenges have emerged: First, the role positioning of service providers remains unclear, with ambiguous boundaries of rights and responsibilities within the governance system; second, collaboration mechanisms between government and enterprises are insufficiently developed, leading to phenomena such as data silos, fragmented resources, and conflicting interests; third, the degree of standardization and regularization in service providers' governance participation is inadequate, hindering the full realization of governance effectiveness. Therefore, systematically studying the grassroots digital governance mechanism from the perspective of service providers holds significant theoretical value and practical relevance.

2. Research Methodology

2.1. Section Headings

2.1.1. Sub-section Headings

This study adopts the "structure-process-function" analytical framework to systematically explore the internal logic and operational mechanisms underlying service providers' participation in grassroots digital governance. This framework analyzes the mechanisms of service providers' participation from three dimensions: the structural dimension focuses on positional relationships and allocation of rights and responsibilities within the grassroots digital governance system; the process dimension focuses on dynamic processes and interactive relationships through which service providers engage in governance; and the functional dimension focuses on the effectiveness and value realization resulting from service providers' participation.

The research employs a case-study approach, selecting representative cases including S Community in Hangzhou, L District in Nanjing, and W Village in Deqing for in-depth analysis. Comparative analysis is conducted to identify and distill typical models and operational mechanisms underlying service providers' involvement in grassroots digital governance. Primary data is gathered through interviews with heads of government departments, service provider representatives, community workers, and resident representatives to ensure a solid empirical foundation.

3. Current Status of Grassroots Digital Governance in Wenzhou and the Role of Service Providers

3.1. Current Status of Grassroots Digital Governance in Wenzhou

As a region with a thriving private economy, Wenzhou's grassroots governance exhibits distinct regional characteristics. In recent years, Wenzhou has actively promoted digital governance at the grassroots level with remarkable results: First, the governance framework has basically taken shape. Since 2017, Wenzhou has implemented a "generalist grid" governance model across the city, dividing communities into multiple grids and assigning dedicated grid workers to ensure that "people move within the grids and matters are handled within the grids." Simultaneously, Wenzhou has established the "four platforms for grassroots governance"—comprehensive governance, integrated law enforcement, market supervision, and convenient public services—providing a foundational framework for digital grassroots governance. Second, digital technologies have been widely adopted. Wenzhou has extensively applied digital technologies such as big data, artificial intelligence, and the Internet of Things in grassroots

governance (e.g., smart access control systems, video surveillance, and digital ledgers), thereby enhancing governance precision and efficiency. Third, a pattern of multi-stakeholder participation has begun to take shape. Wenzhou has actively explored a collaborative governance model involving government, market, and society, encouraging diverse actors—including enterprises and social organizations—to participate in grassroots governance..

3.2. Current Status of Grassroots Digital Governance in Wenzhou

As an important stakeholder in grassroots digital governance, service providers play multiple roles in Wenzhou's grassroots digital governance:

First, the technology enablers. Service providers offer technological support for grassroots digital governance, including hardware equipment, software systems, and platform operations. For instance, Wenzhou Jinya Tuo Trading Co., Ltd. participates in the collaborative operation of a digital platform for comprehensive social governance, providing technical services such as facial recognition, big data mining, and mobile positioning to help enhance the intelligence level of governance.

Second, service providers. Service providers directly participate in the production and delivery of public services, such as community-based elderly care, childcare, and environmental sanitation. Through professional and market-oriented operations, service providers can enhance the quality and efficiency of services, thereby meeting residents' diverse service needs.

Third, resource integrators. By adopting a platform-based operational model, service providers integrate resources from multiple sources—including government, market, and society—to achieve optimal resource allocation. For example, some community service platforms integrate resources from local businesses, volunteers, and social organizations to provide residents with one-stop services.

Fourth, innovation drivers. Leveraging their technological strengths and market acumen, service providers continuously drive innovation in grassroots governance—such as developing user-friendly mini-programs tailored to community needs and pioneering innovative community service models—thereby injecting fresh vitality into grassroots governance.

3.3. Dilemmas and Challenges Faced by Service Providers

Despite the significant role service providers play in grassroots digital governance, their participation faces several challenges:

First, ambiguous role positioning. The legal status and boundaries of authority and responsibility of service providers in grassroots governance remain unclear, often leaving them in an "awkward identity" in governance practice. Service providers are required to assume certain public functions while their status as market entities inevitably drives them to pursue economic interests, creating a dual identity that easily leads to role conflicts.

Second, inefficient coordination mechanisms. The coordination mechanism among service providers and key stakeholders such as government, communities, and residents is insufficiently developed, leading to information asymmetry, misaligned objectives, and lack of coordinated action. Particularly regarding data sharing, due to privacy protection and security concerns, service providers face difficulties obtaining comprehensive data necessary for effective governance.

Third, challenges in balancing interests. For service providers engaging in grassroots governance, it is crucial to strike a balance between public welfare and profitability. Overly pursuing economic gains could harm public interest, while placing too much emphasis on public welfare alone might jeopardize the enterprise's sustainable development.

Fourth, digital ethical risks. Service providers may face digital ethical risks such as data security concerns, privacy protection challenges, and algorithmic discrimination during their participation in grassroots governance.

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4. Case Study on Service Providers' Participation in Grassroots Digital Governance

4.1. Hangzhou S Community: The "Cloud Assistant" and Government-Enterprise Collaboration Model

S Community in Hangzhou's Shangcheng District has established a digital governance model featuring residents "placing orders" and the community "accepting orders" through the "Government WeChat" platform and the "Cloud Assistant" mini-program. The community has integrated its original 300+ resident WeChat groups into the Government WeChat backend for unified management, and seamlessly connected with mini-programs such as "Century Morning Tea" and "Century Cloud Residence" to encourage resident participation in community governance. Under this model, service providers primarily assume the roles of technical support and platform operation, providing the community with digital tools and operational services. As of June 2021, the mini-program had published 547 posts across various modules with 13,955 registered users. The number of effectively filed "incident reports" reached 919, with a case closure rate of 100%, significantly enhancing both governance efficiency and resident engagement.

4.2. Deqing W Village: "Digital Rural One-Map" and Platform Operation Model

W Village in Deqing County has leveraged geographic information technology and the "City Brain" to build a "Digital Rural Map" covering five key areas: rural planning, business operations, environment, services, and governance, thereby achieving a digital transformation of rural governance. The platform integrates 18 layers, including electronic maps, remote-sensing imagery, and three-dimensional real-scene maps, creating a digital "twin" of the village and enabling real-time monitoring and precise management of rural resources. In this model, service providers—acting as both platform operators and technical service providers—take charge of the platform's development, maintenance, and updates, while also offering villagers technical training and operational support. The platform aggregates data from 58 departments across 282 categories and shares data in real time with 15 systems, thus realizing data interconnectivity and coordinated business processing.

4.3. Case Comparison and Implications

Through comparative analysis of the cases, three typical models for service providers' involvement in grassroots digital governance are identified: the technology-empowerment model, the government-enterprise collaboration model, and the platform-operation model. The technology-empowerment model is suitable for communities with weak technological foundations and insufficient internal digital capabilities; the government-enterprise collaboration model is appropriate for regions facing heavy governance tasks and with strong demands for collaboration among diverse stakeholders; and the platform-operation model is well-suited for areas with a relatively solid digital foundation and strong needs for platform-based governance. Grassroots communities can select the model that best fits their specific circumstances or combine multiple models to develop a service-provider engagement mechanism aligned with their unique characteristics.

5. Construction of an Operational Mechanism for Grassroots Digital Governance from the Service Provider Perspective

5.1. "Structure-Process-Function" Analytical Framework

From the service provider perspective, this study constructs a three-dimensional analytical framework—"structure-process-function"—to systematically grasp the internal logic and

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operational mechanisms underlying service providers' participation in grassroots digital governance.

The structural dimension focuses on the relational positioning and allocation of rights and responsibilities of service providers within the grassroots digital governance system, including their role positioning, boundaries of authority and responsibility, and organizational forms in relation to other actors such as government, communities, and residents.

The process dimension focuses on the dynamic processes and interactive relationships involved in service providers' engagement in grassroots digital governance, including aspects such as government-enterprise collaboration, resource integration, service delivery, and performance evaluation.

The functional dimension focuses on the effectiveness and value realization resulting from service providers' participation in grassroots digital governance, encompassing functions such as public service delivery, integration of social resources, innovation in governance technologies, and promotion of resident participation.

5.2. Operational Mechanisms for Service Providers' Participation in Grassroots Digital Governance

5.2.1. Functional Substitution Mechanism

The functional substitution mechanism refers to service providers, through specialized and market-oriented operations, substituting for the government in assuming certain governance functions, thereby enhancing governance efficiency and professionalism. This mechanism primarily includes:

Technological function substitution: Service providers leverage their technological strengths to take on functions such as technical support, system maintenance, and platform operation in grassroots governance, addressing government's technical capability shortcomings.

Service function substitution: Service providers, through market-oriented operations, take on the production and supply of certain public services—such as community-based elderly care, childcare, and environmental sanitation—thereby enhancing the quality and efficiency of these services.

Management function substitution: Service providers participate in daily community management tasks, such as grid-based patrols, incident reporting, and data collection, thereby alleviating the pressure caused by insufficient grassroots manpower.

5.2.2. Resource Coordination Mechanism

The resource coordination mechanism refers to the optimization of resource allocation and synergistic efficiency achieved by integrating resources from multiple stakeholders, including government, market, and society. This mechanism primarily includes:

Data resource collaboration: Build a unified data-sharing platform to break down data silos across departments and administrative levels, enabling the integrated application of government data and social data.

Collaborative use of technological resources: Integrate technological resources from government, enterprises, research institutions, and other entities to build an integrated R&D and application system combining industry, academia, research, and application.

Collaborative human resource management: Establish a collaborative working mechanism involving diverse stakeholders, including government personnel, enterprise employees, community workers, and volunteers.

Financial resource coordination: Broaden funding sources for grassroots governance through various approaches such as government procurement of services, project partnerships, and social venture capital.

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5.2.3. Multi-Stakeholder Interaction Mechanism

The multi-stakeholder interaction mechanism refers to the establishment of interactive platforms and consultation channels among diverse actors—including government, service providers, community organizations, and residents—to create a healthy and mutually reinforcing governance ecosystem. This mechanism primarily includes:

Information interaction mechanism: Establish open and transparent channels for information sharing and communication to ensure all stakeholders can obtain governance information in a timely and accurate manner.

Consultative interaction mechanism: Establish multi-level and multi-form consultative platforms, such as residents' deliberation councils, joint community meetings, and online consultation platforms.

Action and interaction mechanism: Establish a collaborative action mechanism involving multiple stakeholders, such as joint inspections, coordinated responses, and cooperative projects.

Interactive evaluation mechanism: Establish an evaluation system involving multiple stakeholders and introduce evaluation methods such as third-party assessments and resident satisfaction surveys.

6. Safeguard Measures and Risk Prevention for Service Providers' Participation in Grassroots Digital Governance

6.1. Safeguard Measures

To ensure service providers' effective participation in grassroots digital governance, it is necessary to establish a comprehensive support system from four dimensions: policy, resources, capacity, and ethics.

At the policy and institutional level, it is necessary to refine relevant laws, regulations, and policy frameworks, clearly defining the legal status, boundaries of rights and responsibilities, and behavioral norms for service providers in grassroots digital governance.

At the resource level, it is necessary to increase fiscal investment and establish special funds to support service providers' participation in grassroots governance. At the same time, a data-sharing mechanism should be established to open up governance-related data resources to service providers while ensuring security and privacy.

In terms of capacity building, it is necessary to strengthen training and guidance for service providers, enhancing their professional skills, governance capabilities, and ethical awareness.

From the perspective of ethical safeguards, it is necessary to establish digital ethical norms and clearly define ethical requirements for service providers regarding data usage, algorithm application, and other related aspects.

6.2. Risk Prevention and Control

Service providers participating in grassroots digital governance may face various risks, necessitating the establishment of a comprehensive risk prevention and control system across the entire chain:

Risk identification: Establish a risk monitoring and identification mechanism to promptly detect potential risks.

Risk assessment: Establish a risk assessment indicator system to conduct both qualitative and quantitative assessments of risks.

Risk alert: Establish a risk alert mechanism and focus monitoring on high-risk areas and critical links.

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Risk management: Develop a risk contingency plan and clearly define handling procedures and responsible parties for different types of risks.

Risk remediation: Establish a risk remediation and accountability mechanism to assess and address impacts caused by risk events.

7. Conclusions and Recommendations

Based on the service provider perspective, this study systematically explores the grassroots digital governance mechanisms in Wenzhou, arriving at the following key findings:

First, service providers have become indispensable stakeholders in the grassroots digital governance system, playing an irreplaceable role in areas such as technological empowerment, service provision, and resource integration. As digital governance continues to deepen, the role of service providers will become even more critical, and their level and degree of involvement will directly affect the effectiveness of grassroots digital governance.

Second, for service providers to engage effectively in grassroots digital governance, it is essential to establish a scientific operational mechanism. The "structure-process-function" analytical framework and the three key operational mechanisms—functional substitution, resource synergy, and multi-stakeholder interaction—proposed in this study provide both theoretical tools and practical pathways for understanding and supporting service providers' participation in governance.

Third, service providers participating in grassroots digital governance face multiple challenges, including ambiguous role definitions, inefficient coordination mechanisms, and difficulties in balancing interests. Therefore, it is necessary to establish a comprehensive support system from multiple dimensions—such as policy, resources, capabilities, and ethics—and at the same time, build and improve risk prevention and control mechanisms to ensure the participation process is standardized, effective, and sustainable.

Fourth, digital governance at the grassroots level in different regions and at different stages has varying demands on service providers. Therefore, based on their own characteristics and needs, organizations should select an appropriate participation model for service providers—such as a technology empowerment model, a government-enterprise collaboration model, a platform operation model, or a combination of several models.

Based on the above conclusions, this study proposes the following recommendations:

1. Further clarify the boundaries of rights and responsibilities for service providers in grassroots digital governance, and establish a governance structure characterized by "government leadership, enterprise collaboration, and social participation."

2. Improve the mechanism for government-enterprise collaboration, strengthening data sharing, technological synergy, and integrated resource management.

3. Reinforce digital ethical governance to prevent risks related to data security and privacy protection.

4. Promote the formation of a new pattern of grassroots digital governance featuring co-construction, co-governance, and shared benefits, thereby enhancing the modernization level of grassroots governance.

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