Research on the Mechanism of Community Governance in the Context of Science and Technology Innovation

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Abstract: This paper explores the transformation and challenges of grassroots social governance mechanisms in the context of technological innovation. The paper first analyzes the driving role of technological innovation in grassroots social governance, highlighting its key features, including intelligent participation, information application, and agile disposal. Through the example of COVID-19 prevention and control, the paper deeply analyzes the manifestation of these features in practice and their improvement space. Then, the paper reveals the difficulties faced in the upgrading of grassroots social governance, such as the unevenness of intelligent participation, the problem of information data applicability, and the special challenges of agile disposal. Finally, based on these problems, the paper proposes new mechanisms for grassroots social governance in the context of China's modernization, including building a balanced mechanism for intelligent participation, innovating to maximize the suitability of governance technologies, and optimizing the decision-making mechanism for flexible responses.

Keywords: grassroots governance, technological innovation, social governance.

The profound transformation of social governance is being led by technological innovation, providing a powerful impetus for exploring new models of grassroots social governance. Research and practice in grassroots social governance are entering a new stage, with significant changes taking place in its connotation, means, logic, mechanisms, and system, all driven by technological innovation. In the wave of technological innovation, the modernization of grassroots social governance is a specific embodiment of technological innovation in the field of social governance. What is grassroots social governance modernization under technological innovation, and what should its appearance be like? Clearly defining these questions is the key to the research. For example, the outbreak of the COVID-19 pandemic not only tested the resilience of governments around the world, but also provided a practical stage for innovation in grassroots social governance. Some effective control and governance experiences are still of great reference value today. Therefore, this paper takes the pandemic control as an example, analyzes the control experience and its improvement space from the perspective of governance, and uses inductive logic to summarize the key elements of grassroots social governance under technological

innovation, in order to answer the dual challenges of grassroots social governance in the realm of fact and ideal.

1. Key Characteristics of Grassroots Social Governance under Technological Innovation

In the current context, the connotation of grassroots social governance has been widely recognized, namely, the participation of multiple stakeholders, including grassroots governments, social organizations, and residents, in solving social problems and promoting social harmony through coordinating relationships and regulating social behavior. Under the drive of technological innovation, grassroots social governance has shown some new key features:

1.1 Intelligent Participation Feature

The purpose of grassroots social governance is to bring about a happy life for the people. The interests of the public should be placed at the forefront of governance. On the one hand, the public's behavior should be incorporated into the system of order, with rights guaranteed and obligations fulfilled to achieve the purpose of rights-based governance; on the other hand, the public also participates in the process of govern.[1]

Meanwhile, technological innovation has made public participation in grassroots social governance more intelligent. Through digital platforms, the public can conveniently participate in the governance process, express their interests and demands, and monitor government behavior. In the epidemic prevention and control, the application of digital tools such as health codes and travel history codes not only improved the efficiency of epidemic prevention and control, but also reflected the subject responsibility and duty fulfillment of the public in intelligent participation. This intelligent participation model, driven by data, achieves rapid transmission and feedback of governance information and enhances interaction and cooperation between the public and grassroots government.

1.2 Information Application Characteristics

The application of big data, cloud computing, etc. has made the decision-making process in grassroots social governance more data-driven and scientific. With the rapid development of big data, cloud computing, 5G, artificial intelligence, and the Internet of Things, the application of information technology has become the core driving force for the development of all fields of society. "The convergence of the great social transformation and the big data era is posing huge challenges to China's social governance practices while also preparing new conditions for the institutional optimization and governance innovation."[2]

Informatization plays a key role in grassroots social governance. On the one hand, information technology realizes efficient access to information and provides conditions for effective information mastery, risk identification and precise governance. On the other hand, information sharing also makes it possible to interact among multiple subjects and respond quickly to risk prevention in grassroots social governance. In epidemic prevention and control, the "place code", the itinerary card, the three-code health code information platform, the nucleic acid

detection information system, the epidemic prevention and control public number, and the personnel information registration platform are all important technical means of information technology in epidemic prevention and control, providing a scientific basis for rapid detection of abnormal situations, timely response, accurate prediction of the development situation, and the formulation of prevention and control measures. The application of information technology in grass-roots social governance has gradually formed a new pattern of grass-roots social governance supported by information technology, through the integration of multi-party governance resources, to build a multi-governance platform to meet the demands of diverse governance and promote the participation of multiple subjects.

1.3 Characteristics of agile disposal

Scientific and technological innovation has endowed grassroots social governance with more flexible and diversified means of response. In the face of the high complexity and uncertainty of urban governance, China has gradually formed a governance mechanism driven by the two wheels of technology application and institutional reform, and it is necessary to explore a faster and more agile mechanism and form to promote the transformation and upgrading of grassroots governance. Especially on the basis of digital technology, an agile disposal mode is practiced in reality, that is, in order to cope with the changing internal and external environment, skillfully combined with technical resources and applications, and adopted a quick and flexible method to deal with. In epidemic prevention and control, this kind of agile management is widely used and highlighted based on the urgency of virus infection. This kind of agile disposal has its unique characteristics in governance object, governance rhythm, governance mode and governance relationship. In terms of governance objects, agile governance formulates policies and carries out governance according to the needs of the public and the suggestions of front-line staff. In terms of the pace of governance, "Agile governance emphasizes that even in the face of new problems, the government must compress the decision-making chain, react and intervene faster and earlier before the problem fully emerges, especially where the public interest is involved."[3]In terms of governance methods, agile governance can make timely adjustments to adapt to new situations and problems according to the actual situation in the process of policy implementation, so as to avoid policy failures and save policy costs. In terms of governance relations, agile governance pays more attention to information sharing and cooperation among governance subjects to ensure that more timely and flexible adjustments are made in the governance process.

2. The upgrading of community-level social governance cannot be ignored

With the in-depth application of scientific and technological innovation, governance capacity has been significantly improved, and a "technology +" governance method has continuously updated the connotation of governance, so has grass-roots social governance, which has entered the 2.0 version. With the change of technology embedment and governance model, some new problems and unresolved problems are troubling how to upgrade grassroots social governance, and it can be said that there are some key problems to be solved, which cannot be ignored.

2.1 The imbalance of intelligent participation

Due to the characteristics of strong infection and fast spread of the epidemic, as well as the requirements of systems and policies, the public's willingness to participate and channel factors have weakened, and the problem of participation degree has been highlighted, especially which links can be involved and to what extent. In general, in the face of the epidemic, public participation in grassroots social governance in many localities still lacks precision. On the one hand, some public participation only stays on the surface, and on the other hand, some public participation is "all-inclusive", which is the lack of precision of public participation.

This is especially reflected in the decision-making of grassroots affairs. In the survey, it is found that some communities incorporate public decision-making participation and supervision participation into the system design, such as the public can participate in decision-making through hearings, sincere discussions, and adopting opinions. However, in fact, this kind of decision is mainly decided by the leader's intention, the leader's decision making and other ways, and there are symbolic and inductive implementation problems, such as the leader reading the document after acclamation, the use of information asymmetry to induce decision-making, voting by a show of hands but obviously suggestive, and even some local grassroots there is no public decision-making participation.

In epidemic prevention and control, the public in some grassroots areas mainly undertake some affairs and manpower work, and the public has no corresponding channels for information contact, communication, and suggestions, nor is it difficult to participate in any process of decision-making and decision-making. The epidemic prevention and control decision-making has been completed by leaders, and the public is more often assigned to participate in some basic work such as handling, distribution, guarding, and measurement. Further speaking, this way of public participation does not form a collective wisdom, resolve the conflict risk situation, more stay in the implementation of leadership orders or manpower shortage and supplement the surface, there is no depth of collaborative solution.

On the whole, although intelligent participation provides more convenient channels for the public to participate, it is worth pondering whether the channels are really smooth. In addition, the difference in digital ability between different regions and different groups leads to the imbalance of intelligent participation. Some elderly people and low-income groups may find it difficult to effectively participate in the governance process due to the lack of digital skills, which affects the fairness and inclusiveness of grassroots social governance to a certain extent. Looking at the epidemic prevention and control process, although the public has been widely involved in the surface, the degree and effect of participation need to be considered.

2.2 Applicability of information and data

The extensive application of informatization in grass-roots social governance has changed the traditional way of grass-roots governance, not only expanded the field space of grass-roots social governance, improved governance efficiency and saved governance costs to a certain extent, but the current application of grass-roots social governance informatization still has a realistic dilemma that the integration of

informatization and grass-roots social governance is insufficient.

Firstly, the accuracy of information is not high. In epidemic prevention and control, the application of GPS information technology makes real-time epidemic monitoring and early warning possible. As long as there are close contacts or suspected infected people in a certain area, the health code information of the people who have been to the area will be changed from green code to red code in the first time. However, there are also errors in the application of digital information technology, resulting in the determination results inconsistent with the actual situation. This has led to frequent misjudgments and misjudgments of the epidemic, which is easy to cause panic among the people and bring inconvenience to the people's travel.

Secondly, information management is not standardized. Information technology facilitates the collection and monitoring of population information, but it also produces the boundary problem of information rights, especially the problem of personal privacy and information security. In order to grasp the spread of the epidemic situation in a timely manner, the identity, location, itinerary and other information of the population are included in the real-time monitoring, which also exposes the privacy and information of individuals to the sun. In the absence of information management norms, the privacy of individuals in the data sharing platform is facing great threats and challenges.

Thirdly, the program burden increases unwarranted. For the public, excessive reliance on information technology will sometimes increase the burden of procedures, reduce work efficiency virtually, and affect the convenience of public travel. For example, during the epidemic prevention and control period, "scanning code + temperature measurement" is a necessary process for entering various public places, which leads to carrying mobile phones and ensuring that the mobile phone is sufficient and the network is smooth becoming a necessary condition for travel, which increases the burden of public travel to some extent.

Fourthly, the degree of information sharing is not high. In epidemic prevention and control, although there is a unified national health code, the effect of "information island" still exists. Due to the incongruous information sources, the exclusion of information platforms, the disconnection of information processing, and the non-sharing of information application by relevant departments of provinces and cities, information barriers are serious, and information technology cannot play the role of integrating and managing information, coordinating governance resources, and saving governance costs.

2.3 Agile handling of special problems

Based on data technology and digital technology, agile disposal has a reliable premise, which is not only a new model of technology application combined with innovation mechanism, but also a transformation to data thinking and digital paradigm, that is, data as the core, the result of data examples, and the final decision judgment and subsequent behavior, even based on machine learning and deep learning. This behavior has long been simulated and predicted, such as systems developed by some scientific institutes that can accurately predict when outbreaks

will end in certain regions. It is precisely because the standardized and structured epidemic transmission law and prevention and control mode have been simulated by the data, there is a unique agile disposal mode and what the corresponding effect is. On the one hand, agile processing relies on data technology to inherit the common problems of technology, such as information accuracy and security issues mentioned above; On the other hand, agile disposal is a unique rapid coping mechanism based on technology, which has its own effect problems, especially in the personality level.

In a broad sense, agile disposal is combined with standardized solutions to respond quickly and improve the overall efficiency of disposal. However, in the sense of focusing on individual or personality, it is difficult for agile treatment to adapt to some special personality situations. For example, based on the needs of agile treatment, the underlying diseases of infected persons are ignored when the infected persons are isolated. In common, agile disposal should not be thought about, infected people should be isolated as soon as possible, which is no problem for ordinary people, but for the infected people with basic diseases, even serious diseases, it is necessary to make more refined measures and programs, which is obviously contrary to the word agile. For example, in order to ensure that patients entering the hospital during the epidemic are not infectious, especially patients with fever, they need to go through a series of testing and inspection procedures before they can enter the hospital and specific consulting rooms and wards, which invisibly delays the treatment of the original emergency conditions.

In addition, there are "temperature" cases where the disposal is mechanized and the treatment is lacking. Agile handling is known for rapid response, including rapid testing, rapid isolation, rapid containment, etc., which often makes it difficult for the public to adapt to temporary changes, such as being locked in the office without any preparation, entering isolation without explaining goodbye to the child, and even some family members having difficulty entering the hospital to visit their seriously ill relatives due to epidemic prevention needs. These are all emotional burdens and disadvantages brought by agile handling.

3. New mechanisms for social governance at the grassroots level in the context of Chinese-style modernization

Faced with the opportunities and challenges brought by scientific and technological innovation, grass-roots social governance needs to explore new mechanisms to realize the modernization and efficiency of governance

3.1 Building a balanced mechanism for intelligent participation

At present, basic consensus has been reached on the grass-roots social governance mode of "systematically promoting the cooperative participation of multiple subjects in grass-roots social governance" and "adhering to the basic principles of co-construction, co-governance and sharing" [4]Among many governance subjects, the public, as the core subject, should be accurately included through mechanism optimization, and this inclusion method should always uphold the principle of synergy, not only between the public and the main body of the unit, but also between the public and the public, so as to generate new impetus. In this regard, it is necessary to reiterate the necessity of public participation. Grassroots

social governance aims to solve the problems of the people, and must act in the public interest. Public participation can better raise the voice to clarify the needs, as stated in our Constitution, "all power belongs to the people", and the public has the right to participate in solving their own problems and providing the most reliable support.

In the current context, it is difficult to improve the effectiveness of public participation in governance without the factors of system, culture and technology, especially how to give play to technological advantages. A new paradigm is proposed under the background of scientific and technological innovation. For example, the combination of technology and innovation optimize the ways of public participation, such as online participation, post-participation, etc., and use digital technology to break the space-time barrier and automatic analysis ability of data technology to improve participation efficiency. Another example is the development of technology and standards, in the face of specific public affairs, the number of public participants, conditions and other factors are also completely dependent on the automatic matching of technology, notification and feedback. In general, in view of the imbalance of intelligent participation, grass-roots governments should strengthen the cultivation and popularization of digital skills, and improve the digital ability of the public. At the same time, diverse channels of participation should be established to ensure that different groups can effectively participate in the governance process. In addition, through policy guidance and social mobilization, all sectors of society can be encouraged to participate in digital construction and promote the balanced development of intelligent participation.

3.2 Maximizing the application of innovation to promote governance technologies

"In recent years, the development of technologies such as Internet of Things, artificial intelligence and big data has further broadened the scope of collaborative governance in intelligent society" [5]With the highly coupled advantages of human-machine objects, grassroots social governance is difficult to talk about development without technology, and the development of intelligent technology not only breaks through the limitations of time and space, changes the social form of people, but also forms the subjective transformation of modern people to intelligent agents. It can be said that "technology +" has become a trend, and it is also the core key point to improve the ability of grassroots social governance. How to grasp this key point? It is still necessary to solve the problem in combination with the proposition of grassroots social governance. At this stage, grassroots social governance and technology integration are still limited, including technology itself and human interest factors.

For the former, it is a question of technology. On the one hand, efforts should be made in hardware, algorithm, operation, environment and other aspects, especially the accuracy of the algorithm also determines the effectiveness of the final information. On the other hand, the application possibility of innovative technology, with the development of artificial intelligence technology, such as machine learning, deep learning, etc., provides new possibilities for information governance, and it is necessary to further explore the possibility of automatic classification, early warning,

and even automatic generation of governance schemes in grass-roots social governance.

Therefore, for the latter, it is a normative issue, whether it is information opening, management, or information procedures and protection, it is inseparable from the premise of laws and regulations and social rules, and then determine the way and degree of information opening and protection, and behind this is a game of various legal interests. This also brings difficulty to grassroots social governance. In different situations, the protection boundaries of different interests are not obvious, and it is not an either-or relationship, which depends on the subjective judgment of the rulers. In epidemic prevention and control, whether to collect public travel information, how often to collect it, and the specific accuracy of the trip should not only consider the areas and issues related to personal privacy, but also make a comprehensive judgment based on public health interests and risks. Again, if entering a specific place whether to show the health code, travel code, detection code (that is, the so-called program burden), it is the same, which is the premise of normative documents, weighing risks and benefits to make subjective judgments.

3.3 Optimize decision-making mechanisms for flexible responses

In the face of social risks, on the one hand, it relies on digital technology to calculate quickly; On the other hand, it corresponds to the standards already set, thus connecting further action measures. Similar to the general factory assembly line, in the face of typed social risk behavior to be "mass production" governance. However, the complexity of social behavior determines the personalization of some behaviors, and for these behaviors, if only the mechanical copy of the old way, it will also lead to the rationality of these measures. As in the above cases, the procedures for serious or acute patients to enter the hospital during the epidemic, and the inspection burden for patients' families to visit the hospital have made some epidemic prevention and control behaviors criticized as lacking in humanity. Therefore, in terms of flexible response, grassroots governments should establish a scientific decision-making mechanism to ensure the stability and coherence of governance strategies. By collecting and analyzing real-time data, grass-roots governments can more accurately grasp social dynamics and risk trends, and provide a scientific basis for formulating effective governance strategies. At the same time, cross-departmental and cross-regional collaboration and communication should be strengthened to achieve optimal allocation and sharing of governance resources. In response to emergencies, emergency plans should be quickly activated to ensure the orderly conduct of governance work, and it should be clear that in some cases, technology is only a means rather than an end, digital governance is only a supplement to good governance, and flexible response also requires the participation of human decision-making.

References:

[1] See Wang Jing. The Generation Logic, Practical Model, and Development Path of Mass Participation in Basic Social Governance in the New Era. Journal of Hohai University (Philosophy and Social Sciences), 2023, 25(2): 100-101.

[2] Meng Tian-Guang, ZHAO Juan. Intelligent Social Governance driven by Big Data: Theoretical

construction and governance system [J]. E-government, 2018, (8) : 2-11.
[3] Zhao Jing, Xue LAN, WU Guansheng. Agile thinking leading the transformation of urban governance: An analysis of multi-city governance practices [J]. Chinese Administration,2021,No.434(08):49
[4] Yang Min, Li Mingde. Research on Multi-subject Cooperative Promotion of Grassroots Social Governance [J]. Theoretical Guide,2022,No.456(11):89.
[5] Lv Peng, Bi Sipeng, Guan Zhengqing et al. Collaborative governance in Intelligent Society: Research Status and development trend [J]. Journal of South China Normal University (Natural Science Edition),2023,55(01):19.