



Research on Problems and Countermeasures of Digital Governance of Public Services in Smart City Construction

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Abstract. With the arrival of urban innovation and information age, smart city construction has become a new mode of urban development in the new era. However, there are still many problems in the current public service governance in terms of intelligence and subject coordination, and the digital intelligence and synergy of public service governance is an inevitable trend. Therefore, in view of the existing problems, this paper proposes a perfect path for the digital governance of public services in smart cities in the information age.

Keywords: Smart city · Public service governance · Digitization · Subject collaboration

1 Introduction

In the new information age, in order to cater to the development of The Times and further improve the living standards of urban residents, it has become an inevitable trend to innovate the concept of urban development, construct advanced urban development models, and finally realize the sustainable development of the city. General Secretary President Xi pointed out during his inspection in Zhejiang province in April 2020 that “cutting-edge technologies such as big data, cloud computing, blockchain and artificial intelligence will be used to promote innovation in urban management methods, management modes and management concepts, from digitalization to intelligence and then to wisdom.” Making cities smarter and smarter is the only way to modernize urban governance systems and capacity. And large cities in the construction of the wisdom of the city because the city size increasing, various elements, the constant growth of urban population, the problem such as environmental pollution, traffic congestion, and ecological destruction caused a lot of trouble to city dwellers, the traditional public service management mode has been unable to meet the demand of the current urban public services, and puts forward new requirements on the public service level. Therefore, public service management should also take the road of wisdom. And the current research on public service governance mostly exists in a single field, and there is also a lack of exploration to integrate it into the information age. From a theoretical point of view, the exploration of public service governance paths in smart cities not only combines the

two theories, but also supplements and optimizes existing research. In a practical sense, this research innovates the public governance model, and provides a certain reference for the optimization of the public service governance path and policy formulation in the construction of smart cities in the future.

2 The Trend of Public Service Governance in Smart City Construction

“Smart city” is a new goal and model of modern urban development in the information age with the development of the Internet, and a manifestation of urban construction with the concept of sustainable development [1]. Smart city is defined as the advanced form of urban informatization following digital city and smart city, and the deep integration of informatization, industrialization and urbanization. It can also be understood as a new urban development model and concept formed on the basis of comprehensive development and highly practice of advanced information technology, advanced communication technology and management science. As public service involves various levels of urban construction, the improvement of public service governance capacity has become an important factor to promote the smooth construction of smart city.

2.1 Public Service Governance of Digital Intelligence

The 2021 Smart City White Paper released at the World Digital Economy Conference and the 11th Smart City and Smart Economy Expo with the theme of “Digital Industrialization, Industrial digitization and Smart City” in October this year stressed the need to grasp the development process of smart city. New thinking, new suggestions and new measures should be put forward in view of the realistic problems faced by the current smart city construction. Slightly different from digital city, smart city emphasizes more on the information based on the participation and cooperation of the government, market and social forces to achieve urban public value shaping and unique value creation, and ultimately achieve the goal of serving urban management and development. The public service governance in this period also needs to break the shackles of tradition and realize intelligence. Urban construction and management of public service capacity must be parallel development does not have a barrel effect, relying on digital information better service response, and simple data led can not fully meet the emotional needs of the differentiation, to “technology oriented” and “social needs” reasonable integration, to achieve the public service supply mode, build “several intellectual life” trend is unstoppable.

2.2 Integration and Coordination of Public Service Governance

With the development of market economy and the arrival of comprehensive information age, more and more new stakeholders have appeared in the construction of smart city, which has spawned a variety of new governance and service social organizations. Due to the emergence of such a variety of service subjects, there are many overlapping areas and cross areas in public service governance, and public service gradually presents the characteristics of “cooperation” and “trans-regional”. Based on previous studies have

found that in the current our country city wisdom formed the mainstream of the three governance mode of public service is government-led model respectively, through the government as the main body responsible for the overall architectural construction, social organization and the market role and less critical in helping to promote the wisdom of the urban public service governance mode. On the contrary, the market-oriented model is dominated by enterprises, which are good at flexibility and maximize the efficiency of smart city construction to a large extent, greatly reduce costs and optimize resource allocation, but lack relative fairness. The most widely accepted mode, which is the current and future development trend, is the government-enterprise cooperation governance mode, which is oriented to the needs of urban residents and advocates a new mode of consultation and cooperation between the government, enterprises and other service subjects. The organic integration of multiple subjects as far as possible forms a reasonable collaborative governance system, so as to better complete service governance. Integration and synergy are not only between subjects, but also between online and offline, and between technology and administration. Under the prospect of continuous integration and development of cities and gradual increase of elements, the trend of integration and synergy of public service governance is an inevitable result.

3 Public Service Governance Performance Evaluation Formula

Drawing on Herman E. Daly's formula of ecological economic efficiency, Professor Zhu Dajian proposed that the performance of public service governance is the ratio of the satisfactory service brought to the public to the capital sacrificed to generate the service [2]. The specific formula is as follows:

$$\text{Performance of public services} = \text{service}/\text{input} = (\text{service}/\text{output}) * (\text{output}/\text{input}) \quad (1)$$

In the above formula (service/output) represents public satisfaction (output/input) represents technical efficiency, the formula is obtained:

$$\text{Public service performance} = \text{public satisfaction} \times \text{technical efficiency} \quad (2)$$

Expressed as a function:

$$P = f(s, te) \quad (3)$$

(P: public service governance performance, s:public satisfaction, te: technical efficiency).

The relationship between input, output and service in the public service governance performance formula is shown in Fig. 1.

Technical efficiency is the ratio of output to input of public services. The improvement of efficiency comes from the improvement of capital efficiency and labor efficiency of public services, that is, to ensure efficient output under effective legal supervision. Public satisfaction is whether the output of services meets the needs and preferences of the public, and reflects the meaning of whether public service governance is effective.

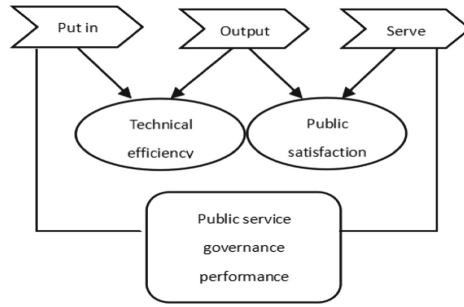


Fig. 1. Public service governance performance formula disassembly infographic

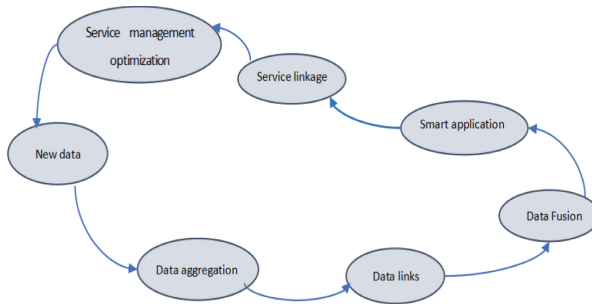


Fig. 2. Data communication chart

The ultimate pursuit of public service governance is not the maximization of unit cost output, but the public’s satisfaction with public services, so it is difficult to make complete quantitative statistics on performance. As is shown in Fig. 2.

Through the above formula for public service governance performance and the analysis of the problems faced by public service governance in the current smart city construction. In order to achieve the goal of optimizing public service governance, on the one hand, we must start from increasing public satisfaction, pursue fairness and responsiveness in service provision, and emphasize the participation of multiple subjects including the public. On the other hand, the optimization of public services in smart cities should pay special attention to the perspective of technical efficiency and build smart governance platforms through digital empowerment and functional services.

4 Practical Difficulties Faced by Public Service Governance in Smart City Construction and Analysis of Causes

4.1 Data Collaboration Structure Dilemma of Governance

Smart city public service governance lacks a reasonable overall guidance framework. Because China has not formed a universal governance model suitable for each region, the overall structure of public service governance is not perfect. For a long time, in

the public service management level to form the structure of market fragmentation, reduces the connection between the horizontal and vertical management lack of service efficiency, many departments also often appear mutual shuffle stalling phenomenon, the phenomenon of the fragmentation in the great extent hindered the progress of the collaborative governance, forming the plight of the collaborative governance, This is reflected in poor inter-city government communication, rigid and backward vertical governance structure, and different format standards and application scope of big data. The construction of smart city brings new problems to public service governance. The development of information network technology is an important link between virtual and real society, and also a catalyst for the integration of the two. The data-based governance system has changed the scale and efficiency of information dissemination, not only updating people's lifestyles and social demands, but also complicating the content of information. The existence of the phenomenon of "data island" also reduces the efficiency of information sharing. Public service governance in smart cities is a process in which the government integrates data and information to meet the basic needs and personalization of the public [3]. But currently there are many obstacles for multi-level governments to achieve data negotiation and co-governance in public services, and it is easy to form the island effect of smart city public service governance and barriers to big data dissemination. Therefore, a more flexible and efficient organizational system is needed for the governance of public services.

4.2 Limited Residents' Participation and Development of Social Organizations

First, the main body of smart city construction is urban residents. When urban residents participate in the process of urban public service governance, they can play their role as governance subjects, put forward service demands, and help the operation of public service governance. However, the current situation of low participation of residents is mainly due to the current smart city governance still remains in the mode of elitism. In the process of public service governance, most residents can only participate in simple social activities and conversations and other forms of social and cultural aspects, but do not participate in political affairs. Moreover, most residents do not have professional knowledge to participate in decision-making activities of public service governance, which is also the main reason for the decrease in participation. Secondly, there is a big difference between willingness and action. Urban residents can participate in daily management activities in the personnel, such as community party affairs representative, urban cultural management representative are mostly elderly personage, young personnel because of work, study and other reasons to lack the time to participate in daily service management. At the same time, there are still some residents who lack the awareness of exerting their dominant position in governance and the actions to make demands, which is also the reason for the low participation of residents in governance activities. Finally, there are few channels for residents to participate in the current public service governance, and most of them are still confined to the community, which has not been integrated into the construction of smart cities in a real sense. Moreover, in the information age, governance is not guided by data, and the application of information technology is not perfect. Most of them still stop at the traditional offline participation mode, and the use

of time and resources has not reached the maximum effectiveness, so the scenario-based participation in online service governance has not been realized.

The status of social organizations in today's urban governance is gradually valued, but due to the gradual trend of information data in public service governance, social organizations face many difficulties in the process of participating in public service governance and integrating into the whole governance framework. As the development of social organizations is not mature and the government has not carried out strict supervision on them, the problem of the current situation is reflected in the lack of reasonable planning of internal norms. Although the organization has formed a set of service processes but lacks a strict employment system, also organizational structure, decision-making process and other internal governance systems, making it very weak in collecting and sorting out residents' public service needs. At the same time, because social organizations are all non-profit, they generally have few sources of income, which leads to the lack of financial support and maintenance in the process of public service governance, which also leads to the loss of some volunteers and talents. Different from government departments, some social organizations do not have administrative status, so there are cases where legal status and residents' recognition are low. All these have become obstacles for social organizations to participate in public service governance.

4.3 The Dilemma of Institutional Ethics and Normative System

Wisdom city in the governance of public service activities, its internal organization more diverse than other city in the form of complex, the covered area of organizational personnel does not belong to the same core group, no liability interests bind relationship between each other, few urban agglomeration large data configuration of public service system of normative constraints, in which is difficult to form a perfect system of authority [4]. Managers due to their respective scope of administrative service and function between the lines between is not clear, "the economic man supposition" failure to form a part of the administrator to the public service consciousness, have the consciousness of "superior" error, easy to form a lazy mood, so the current lack of rigour constraint specification for staff involved in the governance. Some social organizations also make profits under the name of governance, which violates organizational ethics and also leads to the decrease of credibility of social organizations. In addition, there is a big gap in the relevant laws and regulations concerning urban public service governance. The existing laws only define the concept and connotation of governance, but do not involve the solution of specific problems, and the legal system structure is not perfect.

5 Smart City Public Service Governance Optimization Strategy

5.1 Improve Data Governance Functions and Enhance Data Collaborative Governance Capabilities

The construction of smart city relies on the guidance of data in the information age to improve the public service governance capacity. Supported by technology, the development trend led by innovation is an inevitable requirement. In order to improve the

capacity, it is necessary to combine the service supply ability, the service intelligence ability and the service response ability. The improvement of smart capacity requires big data technology to promote the transformation of smart city's public service governance mode and promote a new model governance based on "Internet+". However, relying only on big data as a technical means of public service governance in smart urban agglomeration [5] can only improve the efficiency of public service governance from the perspective of data analysis and digital decision-making, but it is easy to ignore the phenomenon of "data island" transformation, where there is data but no data flow. Therefore, the flat network information structure will better enhance the ability of data collaborative governance based on the application of big data. Through the collaborative participation of the main body in the multi-stage city, the thinking logic framework of big data is established, and the technology platform of multi-subject public service collaborative governance in smart city is built. First of all, the governance concept of data collaborative governance should be clarified, and the problem of data fragmentation should be clearly changed in the current big data governance. This is the goal of data collaborative governance and the starting point of collaborative behavior [6]. Refine the specific process of public service supply allocation, and clarify the responsibility of virtual resource allocation of multiple subjects in the allocation process. Break the barrier of closed source of data, build the network channel of information transmission among participants and modern comprehensive information service facilities through the network public service information sharing platform. Public service information digital collaborative governance after implementation, and its parallel is the wisdom of urban public service governance decision information system and service terminal implementation platform, data and information integration to do online also unified the unification of the residents, data, reason and perceptual appeal, focused on residents' service needs, Shared service data information.

Digital collaborative governance implementation of public service information, first of all need to be solved is the wisdom of the urban public service management of the construction of the decision information system and service terminal platform, data and information integration to do online also unified the unification of the residents, data, reason and perceptual appeal, focused on residents' service needs, Shared service data information.

The combination of "multi-government + multi-market" is adopted to carry out the intelligent scheme of public service governance, so as to fully realize the complementary advantages of public service resources. On the basis of data interconnection, the collaborative processing mechanism of public service data information service is established to optimize the way of data processing. Unified data standards and specifications should be formulated in the smart city public service big data platform system, and relevant data elements that affect service governance should be continuously simulated, integrated and evaluated according to the big data application situation and scope of smart city public service with different algorithms, so as to broaden information sharing channels. Improve the intelligence level of smart city public services with better data information platform [7].

5.2 Increasing the Channels for Multi-actors to Participate in Governance and Establishing a Mechanism for Stable Coordination

First embarks from the urban subject level, increase awareness of the participation of residents to urban public service management and broaden the participation channels is a top priority, to participate in the cultivation of the consciousness need multi-agent cooperation, not only need the government to increase the emphasis of the governance of public service and the importance to strengthen the propaganda of the governance of public services, increase the residents for the participation of the public service consciousness, This will directly affect the level of participation. Participation awareness can't say in his mouth, more into action, the government support, and to devolve power to a certain extent, in the governance and social organization joint guide residents actively participate in service governance, play to the mass media in the bridge of communication between different subjects, reduce the information game between different subjects, To provide reasonable and scientific ways for residents to raise public service demands, so as to better enhance the breadth and depth of residents' participation, and effectively solve the problems of public service demands and public service supply. Broaden the participation channels also rely on technical support, data and information on the Internet as the carrier, the government and residents, and other real realize the information sharing between each participation main body, break through the traditional information interaction mode, the electronic government affairs to do more standardization and responsive, guarantee citizens' right to know to push them through the channels of information involved in the governance of public service.

At the level of social organizations, the development of society and market has seen the emergence of many social organizations that are different from the government power structure. In social governance, independent resources undertake part of the social governance function, which is one of the important subjects of diversified collaborative governance [8]. To break through the dilemma of social organizations' participation, the government needs to give some support. In the face of the problem of residents' trust in social organizations, the legal status of governance subjects can be disclosed through standardized qualification certification of social organizations, and the threshold for non-profit organizations and individuals to actively participate in public service governance can be lowered. To reduce the obstacles caused by status issues in the process of governance. Although part of the social organization as part of the main body of public service supply has accumulated experience, but the current part of the organization as a result of its non-profit nature, the sustainability of volunteer service will lead to a lack of financial support, which can lead to brain drain, this requires mutual support between the main body, long-term cooperation governance, complementary advantages and disadvantages between each other, Ensure the sustainable development of various service subjects.

5.3 Repair the Ethical Mechanism and Improve Relevant Systems

If the construction of smart city wants to break through the traditional public service governance mode, it is bound to have many risks, among which moral risks to the original public service governance system must be brought forward through ethical mechanism

and legal perfection to put forward preventive measures and restraint mechanism. Intelligent urban public service system of governance is designed into multiple subject level, the era of information from the media in public life will become data, can be a potential threat, so both in ethics and management regulations need more subject to create unified standards and codes of conduct [9], in order to avoid the data in the information age into the ethical pitfalls and speculation.

Training the service consciousness of the governing body is the key point of constructing the ethical system. In the urban public service management, the responsibility of serving the residents should be clearly defined to prevent the phenomenon of “seeking personal gain” in the execution of official duties, which reflects the importance of the ethical and moral mechanism. At the same time, in order to ensure the application of information technology in public service governance, we must pay attention to the situation that data security may be threatened in the process of data sharing. Personal privacy has the risk of leakage, so we must ensure data security, and then ensure the truth, accuracy and reliability of data. The government should speed up legislative action on data security, popularize knowledge of online information dissemination, and let residents and enterprises know clearly what they can and cannot do in cyberspace, as well as the legal and ethical bottom line.

6 Conclusion

This paper believes that the building of smart city needs the support of technology and information. Smart city has become a new model and inevitable form of future urban development. Public service governance also changes its development mode with the development of smart city, and develops toward digitalization and integration and coordination. The development of public service governance in smart city is bound to face more new challenges and opportunities. As governance bodies tend to be diverse and complicated, there will be collaborative dilemma in information communication and transmission. Residents’ participation in governance and how social organizations play a full role in governance are the same issues in different stages of development. The norms of laws and relevant systems are the basis for ensuring effective governance of public services, so they cannot be missing. According to the above problems, this paper puts forward some suggestions. The first is to improve the function of data governance, improve the ability of data collaborative governance, to ensure the intelligent development of public service governance. Secondly, it is necessary to improve the channels for multi-subject participation in governance, build a stable cooperation mechanism, and ensure that residents and social organizations are not restricted in participating in governance. Finally, the legal basis of governance is guaranteed by repairing ethical mechanism and perfecting relevant system.

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