Research on Optimization of Public Services in Urban Smart Community under the Environment of Internet of Things

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Keywords: IoT environment; Urban wisdom; Optimization of community public service

Abstract: In the construction of smart cities, the IoT (Internet of Things) technology has improved the work efficiency of related urban construction fields in China through the application of transportation, agriculture and so on, and also improved the quality and level of life of urban residents to a certain extent. Many places actively adapt to this transformation and change, and accelerate the construction of smart cities, so as to improve the level of government public services and social governance. The application of IoT technology in smart city construction is more efficient and makes it more widely used. Therefore, it is necessary to fully combine the characteristics and development trends of IoT technology, make a more detailed study on the application of IoT technology in smart city construction and formulate relevant implementation strategies. Based on the current situation and problems of smart community construction, this paper discusses the ways to use IoT technology to improve the intensive and intelligent level of community infrastructure, promote and expand the scope of government information sharing, and ensure the equalization of basic public services.

1. Introduction

As a multi technology composite technology system, the IoT (Internet of Things) has played a more and more important role for people with the development of the times [1]. Especially in the construction of smart city, the IoT technology has improved the work efficiency in relevant urban construction fields in China through the application in transportation, agriculture and so on, and also improved the quality of life and standard of urban residents [2]. In the next decade, the development and application of the "IoT" will have a far-reaching impact on the development of China's "digital city" and "smart city" and people's life. With China's transformation from a planned economy to a market economy, the unified unit social system disintegrated rapidly, the original public service functions such as education, medical treatment and pension were gradually stripped from the unit, and the social members basically realized the transformation from "unit person" to "social person" [3]. Many places actively adapt to this transformation and change, and accelerate the construction of smart cities, in order to improve the level of government public services and social governance [4]. It has become an important task and goal of community governance reform and community public service model innovation in all parts of China to build community community by using information technology, establish a pluralistic cooperative governance mechanism among government, enterprises and society, and form a holistic governance system[5]. The application of IoT technology in smart city construction is more efficient and makes it more widely used. Therefore, it is necessary to fully combine the characteristics and development trends of IoT technology, make a more detailed study on the application of IoT technology in smart city construction and formulate relevant implementation strategies.

As the basic practice of smart city construction, smart community undertakes the mission of social management, government affairs and market services, including the introduction of digital community, smart elderly care and smart medical care. The construction of smart community affects people's life and behavior in a subtle way. It can provide convenient and intelligent life services for residents, improve the management and service ability and level of managers, and create more modern, information-based and intelligent new livable cities and communities for the public [6]. It is the smallest unit and the most basic self-governing organization of urban

governance. In formulating and implementing smart city planning schemes with different characteristics, efforts are made to build smart communities as an important starting point and carrier platform. Urban management has experienced an important course from "digital urban management" to "digital city" and then to "smart city". The wide application of "IoT" technology in urban management is one of the important symbols of "smart city".

2. Application of IoT technology in smart city construction

2.1. Deep transformation of community public service supply mode by wisdom community construction

In the process of promoting the construction of smart community, "by strengthening the integration of resource allocation and changing the mode of information transmission", it has promoted the deep integration of modern information technology and community public services, resulting in profound changes in the supply of community public services [7]. Community construction takes resident service as the core, focuses on the living elements of community residents such as "food, housing, travel, shopping, entertainment and health", relies on the information construction of community service, comprehensively integrates community data resources, and creates a new model of community management and service based on information and intelligence, which puts forward higher requirements for regional resource allocation. Smart community is a new concept of community management. It makes full use of mobile Internet, cloud computing and IoT to form intelligent and information-based community management [8]. According to the entrustment contract, the property management is entrusted by the property owner to maintain and manage the building construction, environmental security, greening environment, public facilities, sanitation and transportation of the property, and provide diversified paid services to the property owner. At present, the whole country has accumulated some practical experience in the construction of smart communities, providing residents, enterprises and governments with an application system of information services such as smart property, smart services and smart government affairs [9]. In the Internet age, residents have put forward higher requirements for property management, and the work of property management is constantly improving, and the fields of property management are constantly expanding. Modern property companies are not only managing, but also providing high-quality services to meet the needs of residents.

2.2. The impact of "IoT" technology on our urban life

The "IoT" is gradually entering our lives, and its application will greatly improve our lives, bring great changes to our lives, and make the scenes in science fiction truly appear in our real life. The "IoT" era has quietly arrived. The technology of "IoT" will play an increasingly important role in the field of urban management in the next few years. Deploy IoT sensing terminal equipment in urban smart community, and strengthen the application of IoT technology in the fields of home control, security monitoring, lighting control, environmental control, and population flow monitoring, so as to basically form a smart community infrastructure integrating sensing, convergence and interaction. Through the "IoT" technology, things are connected, GPS positioning devices are installed on relevant operation vehicles and personnel, and monitoring probes set up on key road sections are supplemented, and relevant field information is connected with the system supervision and command platform, so as to complete monitoring, inquiry and case supervision and filing. The intelligent transportation service system based on IoT technology is composed of large screen display, outfield information collection, control center, command and decision-making, data analysis, dispatching and information release modules. "IoT" technology can also be widely used in intelligent transportation (roads, bridges, buses, parking lots, etc.), intelligent buildings (green lighting, safety testing, etc.), cultural relics and historic sites protection, modern logistics management, food safety control, retail industry, digital medical treatment and other fields. "IoT" is not only the trend of scientific and technological progress, but also the need of national development strategy. It is the third wave of the world information industry after computer and

Internet. The rise and wide application of "IoT" will have an important impact on urban management and services in the future.

3. Integrated governance strategy of intelligent community public service

3.1. Problems and causes of public service supply in smart community

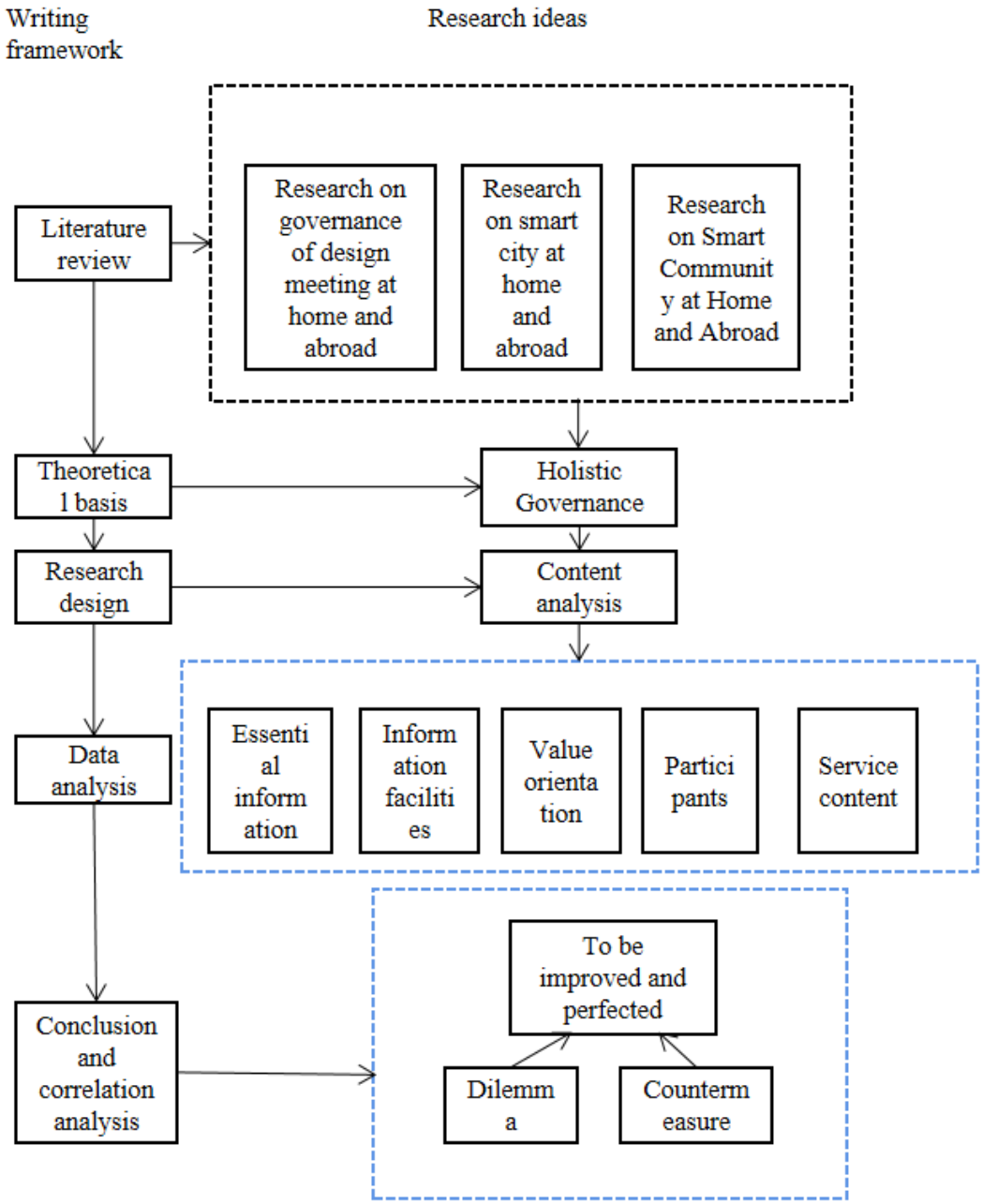

Figure 1 General framework of research

With the acceleration of China's urbanization and social transformation, the public's awareness of the main interests has become increasingly prominent, and the awareness of rights has been unprecedentedly high. The traditional government's single and one-way community public service model has been severely challenged. Around the problems of repositioning the community value, building an efficient and unified management system, and realizing the governance model of diversified cooperation, a lot of explorations and innovations have been carried out throughout the country. In the process of building a smart community, departments such as education, science and technology, culture and art, medical and health care, ecological protection, social security and social

security all hope to provide high-quality public services in the building of a smart community, and a large number of institutions and enterprises involved in Internet, mobile communication, radio and television, real estate, security and home appliances have also entered the building of a smart community. Establish a smart community demonstration site, with perfect infrastructure, efficient community service and governance level, diversified community public services, intelligent convenience and benefit service capabilities, and good policies, organizations, talents, funds and other guarantee conditions. Based on the holistic governance theory, combined with the current situation and difficulties of smart community public service, this paper constructs a scientific and feasible smart community public service promotion strategy. The overall framework of the paper is shown in Figure 1.

The structure of residents living in the community is generally complex. They not only have different personal needs for public services, but also have different understanding of smart community, and their technology application ability is also uneven. In the process of promoting the supply of public services in smart communities, some departments and institutions pay more attention to the development and utilization of hardware facilities such as smart devices and service platforms, and lack follow-up technical training for community residents, resulting in a gap between the cognitive level and practical operation ability of community residents and the rapid development of new generation information technology, In addition, some operating procedures designed by designers are too cumbersome and complicated, and community staff lack careful service guidance, which leads to community residents' maladjustment to the intelligent supply of public services. Therefore, it is necessary to carry out overall layout, overall planning and overall operation of smart communities, integrate resources, realize resource sharing and interaction, and improve the operational efficiency and economies of scale of smart communities.

3.2. The path choice of optimizing the wisdom supply of community public service

The core of intelligent community construction is intelligent community public service, in which "wisdom" emphasizes people's value demands. Therefore, when designing the governance scheme, it is necessary to take the actual needs of community residents as the guide, strengthen the cooperation among multiple subjects, increase the information resources sharing, build and improve the mechanism of trust participation and professional personnel training, and form the overall governance scheme of public services in smart communities. Pay attention to the continuing education of the existing social workers, and pay attention to their growth space and ability training. Organize them to receive professional and systematic courses or training regularly or irregularly, improve their business level and comprehensive quality, and promote the "intellectualization" of the talent team in the smart community. To optimize the smart supply of community public services, we need to accurately subdivide the roles and roles of different supply subjects according to the characteristics, contents and processes of smart community public services, so as to ensure that each subject performs its own duties and operates smoothly. The construction content of smart community is also more and more extensive. In this sample of 316 news articles, Internet, IoT and cloud computing are the most frequently mentioned words related to information construction, with word frequencies of 302,190,135 respectively. Next are big data, mobile network technology and artificial intelligence, with word frequencies of 93, 86 and 23 respectively. Moreover, with the advancement of time and the development of technology, there are certain laws when various technologies are mentioned in the news, as shown in Table 1.

Table 1 vocabulary frequency of information construction

Age	Internet	Mobile network technology	Big data	Cloud computing	IoT	Artificial intelligence age
	Mention frequency/total frequency					
2016	32/300	7/85	11/91	11/135	21/190	1/23
2017	41/300	13/85	14/91	15/135	26/190	2/23
2018	60/300	15/85	20/91	25/135	31/190	4/23
2019	74/300	19/85	21/91	33/135	46/190	7/23
2020	90/300	28/85	26/91	67/135	67/190	8/23

The composition of the community is closely related to the role of people. The construction of smart community is also people-centered. Therefore, the important goal of smart community construction is to provide services that satisfy residents. Smart community is built on the basis of new generation information technology such as big data and Internet, which has high requirements for management talents or professionals. "Talent" plays an important role in community public service, and the effectiveness of smart community depends on the construction of professional service talents and teams. See Figure 2 for the overall governance scheme of smart community public service.

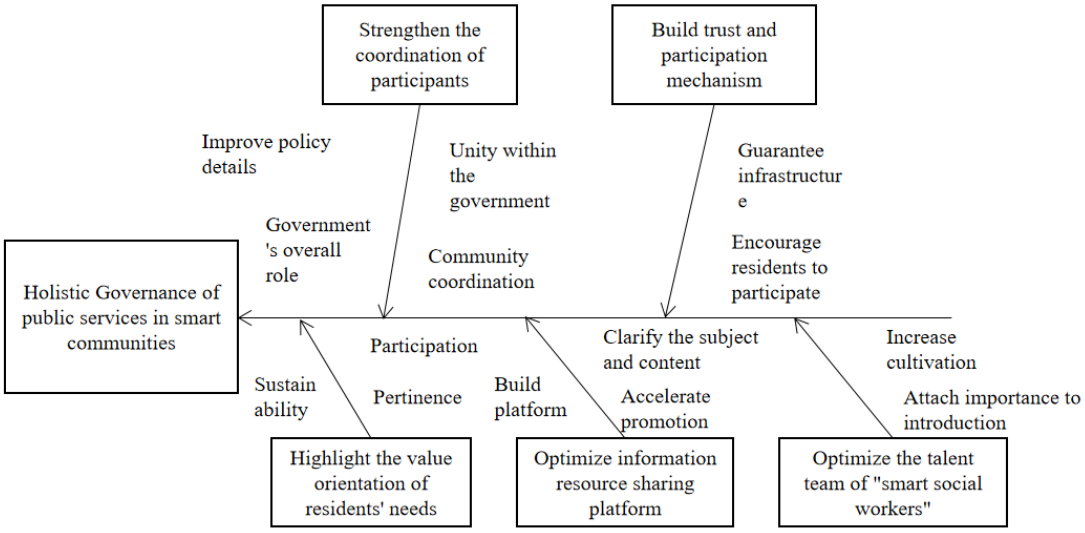

Figure 2 Overall governance plan for public services of smart community

For non-governmental organizations, enterprises and other third-party organizations, they mainly undertake public services outsourced by the community in the forms of contract outsourcing, public-private joint venture and BOT (Build-Operate-Transfer). For community neighborhood committees and other administrative departments, it is necessary to speed up the establishment and improvement of the close cooperation among diverse subjects and the institutional mechanism for the coordination of interests among them, and truly fulfill their roles and responsibilities as supervisors of community public service supply, so as to truly ensure the supply quantity, scale and quality level of public services.

4. Conclusions

To sum up, during the construction of smart city, IoT technology shows broad application prospects, and has been applied and promoted in smart transportation, smart medical treatment, smart logistics and other aspects, with remarkable results. At present, the resource allocation, investment risk, information security and other problems faced by the construction and operation of smart communities have greatly affected the construction level of urban informatization and digitization. We should make full use of the new generation of information and communication technology represented by IoT technology to accelerate the construction of smart communities, improve the management efficiency of government communities and balance the allocation of service resources Build a convenient urban public service system and build a smart community with interconnected things. Governments and enterprises must correctly understand the application value of IoT technology, actively learn from successful technology application cases at home and abroad, build a perfect technology application system, and give full play to the advantages of IoT. Today, we learn the "IoT" technology, understand and master the "IoT" technology, in order to better use the "IoT" technology tomorrow, improve the urban environment and change the city appearance; Join the "IoT" life and create a pleasant, livable and happier future.

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