

The Influence of the Application of Digital Technology on Public Management in Smart Cities

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Abstract: The development of smart cities has brought about the wide application of digital technology and had a far-reaching impact on public management. This paper aims at analyzing the application of digital technology in smart cities, discussing the influence of digital technology on public management, and analyzing its potential opportunities and challenges. First of all, the application of digital technology provides comprehensive and timely data collection and processing capabilities, and provides new ideas and means for the decision-making and implementation of public management. Secondly, the application of digital technology strengthens the ability of information sharing and collaborative work in public management, and improves the scientificity and transparency of government decision-making. However, the application of digital technology also faces some challenges and hidden worries. Data privacy and security issues are one of them. If it is not properly protected, it may lead to data leakage and abuse, thus damaging public rights and social stability. Therefore, in order to give full play to the role of digital technology in public management, the government should strengthen the formulation of relevant policies and regulations, the public should enhance their awareness of digital technology, and the government, enterprises and all sectors of society should work together to achieve the sustainable development goal of digital technology in public management.

1. Introduction

1.1 Research background and significance

With the continuous development and popularization of digital technology, the construction of smart cities has become one of the important directions of urban development. The application of digital technology in smart cities can not only improve the operation efficiency and management level of cities, but also provide more convenient and efficient public services for residents. The application of digital technology has become an important trend and development direction in the field of public management, which is of great significance for improving the efficiency and quality of public management and promoting the sustainable development of cities.

However, the application of digital technology will also bring a series of challenges and hidden worries, such as data privacy and security issues, digital divide and so on, which may further aggravate the inequality in society and damage the public's rights and interests and social stability.

Therefore, how to give full play to the role of digital technology in public management and solve related problems and challenges has become an important topic of current research.

1.2 Research purposes and problems

This paper aims to explore the application and influence of digital technology in public management of smart cities, analyze the potential role and challenges of digital technology in public management, and put forward corresponding solutions and policy suggestions.

Specifically, the research questions of this paper include:

What are the application fields and functions of digital technology in public management of smart cities?

What is the potential impact of digital technology on public management?

What are the challenges and hidden concerns in the application of digital technology?

How to solve the problems and challenges in the application of digital technology?

1.3 Research methods and structure

By combining literature review and case analysis, this paper discusses the application and influence of digital technology in public management of smart cities through combing and analyzing relevant literature and practical cases, and puts forward corresponding solutions and policy suggestions.

The structure of this paper is divided into seven parts: introduction, an overview of the application of digital technology in smart cities, the impact of digital technology on public management, challenges and hidden concerns in the application of digital technology, solutions and policy suggestions, conclusions and references. The second part will focus on the application of digital technology in smart cities, and discuss the application fields and functions of digital technology in smart cities.

2. Overview of the application of digital technology in smart cities.

2.1 The concept and characteristics of smart cities

Smart city refers to an urban form that comprehensively upgrades and innovates the city's infrastructure, public services and social management by using digital technology and information and communication technology, so as to improve the city's operating efficiency, quality of life and sustainable development ability. The goal of building a smart city is to realize the intelligent, green and sustainable development of the city and the improvement of people's happiness index.

The characteristics of smart cities include: informationization, intelligence, internetization, sustainable development and people-centered. Informatization refers to digitizing, integrating and sharing all kinds of information in the city through digital technology and information communication technology, so as to improve the ability of information acquisition, analysis and utilization. Intelligentization refers to the ability to make all kinds of facilities and services in the city have independent perception, independent decision-making and independent implementation through artificial intelligence, big data and Internet of Things. Internetization refers to the seamless connection and collaborative work of various facilities and services inside and outside the city through the Internet and mobile Internet technology. Sustainable development refers to the coordinated development of urban economy, environment and society with the support of digital technology, and the efficient utilization of resources and environmental protection. People-centered refers to putting the needs and interests of residents at the core of urban development and providing more convenient,

efficient and personalized public services through digital technology.

2.2 The application of digital technology in public management of smart cities

Digital technology is widely used in the public management of smart cities, involving urban transportation, environmental protection, public safety, education, medical care and social welfare.

Urban traffic: Digital technology can be applied to traffic management, traffic information release, traffic flow monitoring and traffic signal control to improve traffic efficiency and reduce traffic congestion.

Environmental protection: Digital technology can be applied to environmental monitoring, environmental data analysis and environmental governance to realize real-time monitoring and early warning of environmental quality and promote refined management of environmental protection.

Public safety: Digital technology can be applied to public safety monitoring, emergency rescue and public security management to improve the city's safety prevention and emergency response capabilities.

Education: Digital technology can be applied to the sharing of educational resources and the personalization of educational services, so as to improve the quality and fairness of education.

Health care: Digital technology can be applied to medical information management, telemedicine and health monitoring to improve the efficiency and quality of medical and health services.

Social welfare: Digital technology can be applied to the integration of social welfare resources and the precision of social assistance to improve the coverage and effect of social welfare.

2.3 The role of digital technology in the public management of smart cities

Digital technology plays an important role in the public management of smart cities, including improving management efficiency, optimizing resource allocation, improving public services and promoting urban sustainable development.

Digital technology can achieve rapid acquisition and processing of information, improve the scientificity and accuracy of decision-making, and improve the efficiency and effectiveness of public management.

Digital technology can realize resource sharing and allocation, improve resource utilization efficiency and fairness, and optimize urban resource allocation.

Digital technology can provide personalized public services, meet the diverse needs of residents, and improve the quality and satisfaction of public services.

Digital technology can realize the intelligence and greening of the city, promote the coordinated development of the economy, environment and society of the city, and realize the sustainable development goal of the city.

In a word, the application and function of digital technology in the public management of smart cities are various, which can improve the operation efficiency of cities, improve the quality of life of residents and promote the sustainable development of cities. However, the application of digital technology also faces some challenges and hidden worries, and the next part will focus on these issues.

3. Challenges and hidden worries of digital technology in public management of smart cities.

The application and function of digital technology in public management of smart cities cannot be ignored, but there are also some challenges and hidden concerns. This part will focus on the challenges and hidden worries of digital technology in the public management of smart cities, including data security, digital divide, privacy protection and social differentiation.

3.1 Data security issues

The application of digital technology in public management of smart cities needs a lot of data, including personal information of residents, traffic flow information and environmental monitoring data. However, the security and privacy protection of these data has become an important issue in the application of digital technology. Problems such as data leakage and data abuse may lead to violations of residents' personal privacy and even social instability.

3.2 Digital Divide Problem

The application of digital technology in the public management of smart cities requires extensive digital capabilities and technical support. However, the digital divide has become an important issue in the application of digital technology. Digital divide refers to the differences in the application and popularization of digital technology between different regions and different social groups, which may aggravate social differentiation.

3.3 Privacy protection issues

The application of digital technology in the public management of smart cities needs to involve the personal information of residents, so privacy protection has become an important issue in the application of digital technology. Residents' personal information may be abused and leaked, resulting in violations of personal privacy. Therefore, the application of digital technology needs to strengthen privacy protection measures to ensure that residents' personal information is fully protected.

3.4 Social differentiation

The application of digital technology in public management of smart cities may aggravate social differentiation, which may be a manifestation of the digital divide. The application of digital technology needs a wide range of digital capabilities and technical support, but some social groups may lack these capabilities and support, leading to inequality and unfairness in the application of digital technology.

All the above problems need to be solved through reasonable policies and technical means. For example, in terms of data security, data security can be ensured by strengthening measures such as data encryption, data backup and data rights management; In terms of digital divide, we can narrow the gap by strengthening the popularization and technical support of digital technology; In terms of privacy protection, we can ensure that residents' personal information is fully protected by strengthening privacy protection regulations and technical means; In the aspect of social differentiation, we can alleviate the problem of social differentiation by strengthening the fairness and sustainability of digital technology application.

In a word, the application and function of digital technology in public management of smart cities are various, but there are also some challenges and hidden concerns. In the application of digital technology, these problems need to be fully considered and solved through reasonable policies and technical means. Only in this way can we truly achieve the goal of public management in smart cities and provide residents with more convenient, efficient and personalized public services.

4. Challenges and solutions of digital technology application in public management of smart cities.

The application of digital technology in public management of smart cities has great potential in improving the efficiency of public services and optimizing the allocation of resources. However, the application of digital technology faces a series of challenges and hidden worries. This part will discuss the main challenges of digital technology application in public management of smart cities, and put forward corresponding solutions.

4.1 Data security and privacy protection issues

The application of digital technology needs a lot of data support, including personal information, traffic flow information, environmental monitoring data and so on. However, the security and privacy protection of these data has become an important issue in the application of digital technology. Problems such as data leakage and data abuse may lead to violations of residents' personal privacy and even social instability. Therefore, strengthening data security and privacy protection measures is an important task in the application of digital technology.

In order to solve the problem of data security and privacy protection, the following measures can be taken:

First, strengthen data encryption and data backup. By encrypting data, it can effectively prevent data from being illegally obtained and abused. At the same time, we need to make regular data backup to prevent data from loss and damage.

Second, strengthen the management of data rights. Establishing a perfect data authority management mechanism ensures that only authorized personnel can access and use data, thus effectively protecting the security and privacy of data.

Finally, privacy protection regulations and technical means should be strengthened. In addition, laws and regulations, which are supposed to be formulated and improved with relevant privacy protection, are necessary to be clarified for the collection and the use of personal information of residents. At the same time, advanced technical means, such as data desensitization and data anonymization, are adopted to protect the security and privacy of residents' personal information.

4.2 Digital Divide Problem

The application of digital technology in the public management of smart cities requires extensive digital capabilities and technical support. However, the digital divide has become an important issue in the application of digital technology. Digital divide refers to the differences in the application and popularization of digital technology between different regions and different social groups, which may aggravate social differentiation.

In order to solve the digital divide, the following measures can be taken:

First, strengthening the popularization and technical support of digital technology. Through technical training and technical support, we will improve the digital ability of residents and public managers and narrow the digital divide.

Secondly, promoting the fair and sustainable development of digital technology. In the application of digital technology, we should pay attention to fairness and sustainability, and avoid the application of digital technology to aggravate social differentiation. For example, differentiated pricing strategies can be adopted to reduce the cost of digital technology application and benefit more social groups.

Finally, strengthening the guidance and support of the government. The government can increase investment in the application of digital technology, provide financial and technical support, and promote the popularization and application of digital technology in different regions and different

social groups.

4.3 Social differentiation

The application of digital technology in public management of smart cities may aggravate social differentiation, which may be a manifestation of the digital divide. The application of digital technology needs a wide range of digital capabilities and technical support, but some social groups may lack these capabilities and support, leading to inequality and unfairness in the application of digital technology.

In order to alleviate the problem of social differentiation, the following measures can be taken:

First, strengthening the fairness and sustainability of the application of digital technology. In the application of digital technology, we should pay attention to fairness and sustainability, and avoid the application of digital technology to aggravate social differentiation. For example, differentiated pricing strategies can be adopted to reduce the cost of digital technology application and benefit more social groups.

Secondly, strengthening social participation and public feedback. In the process of digital technology application, we should fully consider the needs and opinions of residents, strengthen social participation, and ensure the fairness and impartiality of digital technology application.

Finally, strengthening social education and training. Through the education and training of digital technology, we can improve the digital ability of residents and public managers and promote the popularization and fair development of digital technology application.

To sum up, the application of digital technology in public management of smart cities is facing a series of challenges and hidden worries. In the application of digital technology, it is necessary to strengthen data security and privacy protection, solve the problem of digital divide and alleviate the problem of social differentiation. Only through reasonable policies and technical means can we achieve the goal of digital technology application and provide residents with more convenient, efficient and personalized public services.

5. Prospects and suggestions for the application of digital technology in public management of smart cities.

5.1 The prospect of digital technology application

The application of digital technology in public management of smart cities has broad prospects. Digital technology can improve the efficiency and quality of public management and provide residents with more convenient, efficient and personalized public services. For example, through digital technology, intelligent traffic management can be realized and the efficiency and safety of transportation can be improved; Through digital technology, intelligent environmental management can be realized and the effect and level of environmental protection can be improved; Through digital technology, intelligent medical management can be realized and the quality and efficiency of medical services can be improved.

The application of digital technology can also promote the sustainable development of cities. Digital technology can improve the efficiency of resource utilization, reduce energy consumption and environmental pollution, and promote the green development of cities. For example, through digital technology, smart energy management can be realized, and energy utilization efficiency and renewable energy utilization rate can be improved; Through digital technology, we can realize intelligent water management, improve the utilization efficiency of water resources and protect the water environment.

The application of digital technology can also promote the innovation and development of cities.

Digital technology can promote industrial upgrading and innovation and entrepreneurship, and promote the transformation and upgrading of urban economy. For example, through digital technology, we can realize the management of smart industrial parks and provide support and services for innovation and entrepreneurship; Through digital technology, intelligent business management can be realized and the efficiency and quality of business services can be improved.

5.2 Suggestions

In order to promote the application of digital technology in the public management of smart cities and realize the goal of smart cities, the following suggestions can be taken:

The government should formulate relevant policies and plans, and make clear the application direction and goal of digital technology in public management. The government should also provide financial and technical support to promote the application of digital technology in public management of smart cities.

In the application of digital technology, data security and privacy protection should be strengthened to ensure that residents' personal information and privacy are not infringed. The government and related enterprises should establish a sound data security management system and strengthen the supervision and protection of data security.

The government and relevant institutions should increase training and investment in digital capabilities and technical support. Through technical training and technical support, we will improve the digital ability of residents and public managers and promote the application of digital technology in public management of smart cities.

In the process of digital technology application, we should fully consider the needs and opinions of residents, strengthen social participation, and ensure the fairness and impartiality of digital technology application. The government and relevant institutions should establish a sound feedback mechanism, listen to residents' opinions and suggestions, and promote the democratization and popularization of digital technology application.

The application of digital technology is a global problem, which needs the cooperation and communication of all countries. The government and relevant institutions should strengthen international cooperation, learn from the experience and practices of other countries, and promote the application of digital technology in public management of smart cities.

To sum up, the application of digital technology in public management of smart cities has broad prospects. However, the application of digital technology also faces some challenges and hidden worries, such as data security and privacy protection, digital divide, social differentiation and so on. In order to overcome these problems, we need the joint efforts of the government, enterprises and all walks of life. Only through reasonable policies and technical means can we achieve the goal of digital technology application and provide residents with more convenient, efficient and personalized public services.

6. Case study of smart city

In order to better understand the application of digital technology in the public management of smart cities, this part will discuss the specific application and effect of digital technology in the public management of smart cities through case analysis and empirical research.

6.1 Case Study: Shanghai Smart City Public Management Platform

As the economic center of China and an international metropolis, Shanghai actively promotes the construction of smart cities and implements the application of digital technology in public

management. Shanghai Smart City Public Management Platform is an important measure launched by the Shanghai Municipal Government, which aims to integrate the data and resources of various departments in the city and provide comprehensive, efficient and intelligent public management services.

The platform realizes the integration and sharing of government data through digital technology. Different government departments can upload their own data to the platform, and other departments can obtain corresponding data as needed to realize information sharing and collaborative work. In this way, the problem of information islands between government departments has been solved, and the efficiency and quality of government work have been improved.

In addition, Shanghai Smart City Public Management Platform also provides a series of online services to facilitate residents to handle various government affairs. Residents can apply for all kinds of certificates, pay water and electricity bills, and make medical appointments online through the platform, which avoids the traditional waiting in line and cumbersome procedures and improves the efficiency and convenience.

The empirical study shows that the application of Shanghai smart city public management platform has achieved remarkable results. First of all, information sharing and collaborative work between government departments have been effectively promoted, which has improved the efficiency and collaborative ability of government work ^[1]. Secondly, the convenience and efficiency of residents' work have been greatly improved, greatly reducing the time and energy costs of residents ^[2]. Finally, the platform also promoted the interaction and communication between the government and residents, and enhanced the credibility and image of the government ^[3].

6.2 Conclusion

This paper studies the application of digital technology in public management of smart cities, and draws the following conclusions:

First of all, digital technology has broad application prospects in public management of smart cities, which can improve the efficiency and quality of public services.

Secondly, in order to promote the application of digital technology in the public management of smart cities, it is necessary to strengthen policy support and planning guidance, strengthen data security and privacy protection, strengthen digital capabilities and technical support, strengthen social participation and public feedback, and strengthen international cooperation and exchanges.

Finally, through case analysis and empirical research, it is proved that the application of digital technology in public management of smart cities has achieved remarkable results, which has improved the convenience and efficiency of government services and ensured information security.

7. Prospects and challenges of digital technology application in public management of smart cities.

The application of digital technology in public management of smart cities has brought many positive impacts on the development of cities and the lives of residents. However, there are also some challenges and problems in the application of digital technology. This part will discuss the prospects and challenges of digital technology application, and put forward corresponding countermeasures.

7.1 The prospect of digital technology application

The application of digital technology in public management of smart cities has broad prospects. First of all, digital technology can improve the efficiency and quality of public services. Through online service and data integration and sharing, the speed and efficiency of government affairs have

been significantly improved, and residents can handle various government affairs more conveniently and quickly. At the same time, digital technology can also provide personalized services and customize public management according to residents' needs and preferences.

Secondly, digital technology can promote the interaction and participation between the government and residents. Through online platforms and mobile applications, the government can timely release policy information, announcements and notices, and residents can obtain relevant information anytime and anywhere and participate in the discussion and decision-making of public affairs. This interaction and participation mechanism can enhance the transparency and credibility of the government and improve the governance efficiency of the government.^[4]

In addition, digital technology can also provide data support and decision analysis. Through data collection, integration and analysis, the government can better understand the operation of the city and the needs of residents, and provide scientific basis for policy making and decision-making.^[5] At the same time, digital technology can also help the government to carry out risk early warning and emergency response, and improve the safety and coping ability of the city.

7.2 Challenges of Digital Technology Application

The application of digital technology in the public management of smart cities also faces some challenges and problems. First of all, data security and privacy protection is an important challenge. With the application of digital technology, a large amount of personal and sensitive information is collected and processed. If it is not properly protected, it may lead to the risk of information leakage and abuse. Therefore, the government needs to strengthen data security technology and management measures to ensure that residents' personal information and privacy are not infringed.

Secondly, the digital divide is another challenge. Although digital technology can improve the convenience and efficiency of public services, for some vulnerable groups and areas with large digital divide, they may not be able to enjoy the benefits brought by digital technology.^[6] The government needs to take measures, including providing training and education and improving infrastructure, to narrow the digital divide and ensure that the application of digital technology benefits all residents.

In addition, the application of digital technology is also facing technical and management challenges. With the rapid development of digital technology, the government needs to keep up with and update the technology to maintain its technical ability and competitiveness. At the same time, the application of digital technology needs effective management and supervision to ensure the correct use of technology and the sustainability of operation.

7.3 Coping strategies

In order to give full play to the role of digital technology in public management of smart cities, the government can adopt the following strategies:

First, strengthening policy support and planning guidance. The government needs to issue relevant policies and regulations to clarify the application scope and requirements of digital technology in public management. At the same time, the government also needs to formulate the planning and development goals of digital technology, and clarify the direction and focus of development.

Second, strengthening data security and privacy protection. The government needs to strengthen data security technology and management measures to ensure that residents' personal information and privacy are not infringed. The government can also strengthen data sharing and openness, provide data security and credibility, and promote the rational use and innovative application of data.

In addition, strengthening digital capabilities and technical support. The government needs to strengthen the R&D and application ability of digital technology, cultivate and introduce relevant talents, and improve the level of technology and innovation ability. At the same time, the government

can also cooperate with enterprises and research institutions to jointly promote the development and application of digital technology.

Finally, strengthening social participation and public feedback. The government needs to actively listen to the needs and opinions of residents, and improve the pertinence and operability of policies through public participation and public opinion surveys. The government can also establish channels and mechanisms for residents' feedback to solve residents' problems and difficulties in time.

To sum up, the application of digital technology in the public management of smart cities has broad prospects, which can improve the efficiency and quality of public services and promote the interaction and participation between the government and residents. However, there are also some challenges and problems in the application of digital technology, which require the government to take corresponding strategies and measures to deal with them. Through policy support and planning guidance, data security and privacy protection, digital capability and technical support, social participation and public feedback, we can realize the benign development of digital technology application and bring more opportunities and benefits to public management of smart cities.

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