Public security governance under Big Data: adaptive dilemmas and strategies

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Abstract: With the rapid development of big data technology, public security governance is facing new challenges and opportunities. Through the case analysis of A city, this paper discusses the main dilemmas of public security governance in the context of big data, and puts forward four strategy suggestions: data integration and standardization, strengthening data privacy and security, promoting cross-departmental collaboration, and optimizing data-driven decision-making mechanism to provide a framework for improving governance efficiency and effectiveness.

Key words: Big data; Public security governance; Adaptability; Governance dilemmas

Introduction

In the digital age, the contribution of big data to decision making and strategy optimization is well known. As a key to social stability and well-being, public security governance needs to leverage big data to address new challenges. Although existing studies have highlighted the application of big data in many fields, relevant research in the field of public security governance is still immature. In the face of increasing public security risks, it is particularly important to develop adaptive strategies for big data.

This paper explores the challenges of public safety governance in the big data environment and proposes case-based strategies. The suggestions aim to enhance the efficiency and innovation of data utilization in the field of public safety, while guiding relevant departments to better apply big data in practice.

1. Literature review

Public safety governance has become a hot topic in the academic and practical circles in the era of big data. Many studies have focused on the opportunities and challenges that big data brings to public security governance.

Big data technology can help public security agencies more accurately predict and respond to various risks and threats. Liu mentioned that big data can assist public security departments in recognizing crime patterns and locating crime hotspots. While Li Xuefeng highlighted data security and privacy issues that may be brought about by the application of big data in public governance.

At the same time, the traditional model of public security governance is under great pressure in the big data environment. Zhang Yulei reveals the limitations of traditional governance models in data processing and decision-making, while Zhang Jinming discusses how big data can be used to optimize the decision-making process of public safety governance.

In addition, public participation also plays a crucial role in big data-driven public security governance. Zhang Wei pointed out that the public's data contribution and participation can not only enhance the diversity and coverage of data, but also help public safety agencies better understand and respond to the needs and concerns of the public.

2. Dilemma analysis

In the era of big data, public security governance faces multiple dilemmas. Although big data has brought unprecedented opportunities for public security governance, at the same time, new challenges have also emerged.

2.1 Challenges of personnel roles and capabilities

In the current public security governance, the problem of personnel roles and capabilities is particularly prominent. Sha Yongzhong pointed out that there are difficulties in cooperation between the expert system and local governments, and there is a lack of clear responsibility mechanism and effective cooperation mechanism. In addition, Zhao also stressed that the professional ability and data literacy of diverse subjects in society have become a key bottleneck in the application of big data.

2.2 Dilemma of process design and execution

The existing public security governance process is difficult to effectively connect with the big data governance process. Sha pointed out that traditional process design often fails to adapt to the real-time and dynamic nature of data, which has a negative impact on the real-time collection, integration and application of data.

2.3 Contradiction between technology application and innovation

The rapid development of technology provides new opportunities for public safety governance, but it also brings new risks. Cao Cejun pointed out that many local governments attach too much importance to the technical value of new technologies when adopting them, while ignoring the humanistic significance and social public value behind the technology.

2.4 Problems of data quality and application

In big data-driven public security governance, data quality and application are the core issues. Zhao Fazhen and others all mentioned that the current data collection, integration and analysis processes are not yet perfect, leading to unsatisfactory data quality and application

effects.

Therefore, in order to improve the adaptability of public safety governance in the era of big data, we need to develop strategies to address existing challenges and anticipate future opportunities to ensure continued progress and innovation.

3. Case Studies

3.1 Case Background

City A in Anhui Province, China, a city with a population of about four million. In recent years, due to rapid urban expansion and increased means of transportation, the traffic accident rate in City B has increased year by year, with the average annual number of traffic accidents increasing from 1,500 in 2017 to 2,300 in 2019, especially at major transportation hubs and busy roads.

3.2 Sources of Data

In this study, we used data from multiple sources. We have anonymized all data for user privacy and data confidentiality reasons. For the record, although we have not been able to provide specific sources of data, we ensure that all data used is from reliable sources and has been properly vetted and verified.

3.3 Elaboration of the Dilemma

In 2019, there were 2,300 traffic accidents in City A, of which 35 were fatal, especially during holidays and rush hours, with the accident rate increasing by 40%. The figures have shocked the city and the city government is taking the matter seriously.

3.4 Strategy Implementation

3.4.1 Big Data tracking and forecasting:

A City's transportation department has established a big data platform in cooperation with a number of technology enterprises. By analyzing traffic flow, road conditions and historical accident data, the platform has successfully identified 20 high-risk accident hotspots and successfully predicted 80 percent of high-risk traffic accident areas.

3.4.2 Public health education and participation:

Traffic safety education application launched by City A to educate citizens and drivers on how to drive safely. The app received more than 120,000 downloads within a month of its launch, with 30,000 users taking an online traffic safety exam.

3.4.3 Cross-agency collaboration:

Subsequent collaboration with city planning, education, and police departments resulted in a 15 percent reduction in traffic congestion, a 20 percent increase in driver training participation, and a 30 percent increase in traffic violation enforcement.

3.4.4 Ongoing training and updates:

Provide training to traffic law enforcement officers on the latest traffic safety regulations and law enforcement techniques to ensure the strict implementation of traffic rules.

3.5 Effect Evaluation

Through the implementation of these strategies, the traffic accident rate in City A has been reduced by 70% by 2020, especially on sections previously considered high-risk. Citizens expressed 90 percent satisfaction with the city government's traffic safety governance.

4. Strategic proposals

Based on the case analysis of City A, we identified the main dilemmas of public security governance in the context of big data. In order to make better use of big data for public security governance and improve its adaptability, we put forward the following strategic suggestions:

4.1 Data integration and standardization

Background Description: As illustrated in the case, the diversity of data sources can lead to inconsistencies in data format, quality, and timeliness.

Strategy: Unify data collection and storage standards, promote data integration across departments and institutions, and ensure data quality and real-time.

Difficulties: The implementation of this strategy may encounter difficulties in inter-departmental cooperation, the harmonization of data formats and standards, and technical challenges in data integration.

Implementation method: Promote all departments to adopt unified data formats and standards, establish a central data warehouse, and carry out data cleaning and verification.

Expected results: Through effective data integration and standardization, the rapid flow and efficient application of data can be realized, thus improving the response speed and accuracy of public security governance.

4.2 Strengthen data privacy and security

Background Description: The personnel mobility data and health data involved in this case involve a large amount of personal privacy information.

Strategy: Establish a strict data access and use permission management mechanism, strengthen data encryption technology, and ensure the privacy and security of data in the process of collection, storage and analysis.

Difficulties: How to balance the openness and privacy of data and how to cope with evolving security threats are the main challenges to be faced when implementing this strategy.

Implementation method: Adopt the latest data encryption technology, and establish a strict data access and use permission management mechanism.

Expected effect: Strengthening data privacy and security can increase the public's trust in public security governance, thus promoting the active participation and cooperation of the public.

4.3 Promote cross-departmental synergies

Background Description: As the case shows, the phenomenon of information silos between different departments seriously hinders the effective use of data.

Strategy: Promote the establishment of cross-departmental data sharing and collaborative working mechanism, and encourage data exchange and cooperation among departments.

Difficulties: Conflicts of interest between departments, data ownership issues, and technical and administrative challenges of data sharing may be obstacles to implementing this strategy.

Implementation method: Establish a cross-departmental data sharing platform and hold regular cross-departmental collaboration meetings to share data and information.

Expected results: By promoting cross-departmental collaboration, information silos can be broken and data integration and efficient utilization can be realized.

4.4 Optimize the data-driven decision-making mechanism

Background Description: Case studies show that even with a large amount of data, how to transform data into valuable information and support decision making is still a challenge.

Strategy: Promote the application of data analysis and mining technology in public security governance, establish a data-driven decision support system, and improve the accuracy and timeliness of decision making.

Difficulties: The rapid development of technology, the technical threshold of data analysis and mining, and how to ensure the fairness and rationality of decision-making are all the problems that the implementation of this strategy needs to face.

Implementation methods: Promote the application of data analysis and mining technology in public security governance, and provide training on data analysis and mining technology for public departments to ensure that they can effectively use these technologies for decision-making. At the same time, increase resource support, such as the provision of related hardware and software equipment and expert consulting services.

Expected results: By optimizing the data-driven decision-making mechanism, the scientific, rational and fair nature of public security governance decisions can be ensured.

5. Discussion

5.1 Key Findings

By analyzing big data public security governance cases in 'A city', this study reveals key issues such as data integration, privacy security, cross-departmental collaboration and data-driven decision-making.

5.2 Strategic significance and application

The strategies proposed in this study aim to solve the dilemma of public security governance in the context of big data. These strategies not only have theoretical significance, but also have a wide range of application prospects in practical public safety management. The data-driven decision-making mechanism can significantly improve the efficiency and effectiveness of public safety governance.

6. Conclusion

The popularization of big data technology has brought new development opportunities and challenges for public security governance. Through the analysis of the case of A city, this study highlights the data integration, privacy protection, cross-departmental collaboration and data-driven decision-making that need attention in the application of big data. The experience of City A shows that despite the difficulties, the applicability and potential of big data technology is huge.

The study identified major bottlenecks in public safety governance and provided targeted suggestions to help relevant departments improve efficiency and governance effectiveness. The case analysis also identified issues that need to be addressed in practice, such as multiple sources of data, safeguarding privacy, and breaking down information silos.

To sum up, this paper provides strategies and insights for effective practice of public security governance in the era of big data, and hopes that future studies can continue to explore on this basis to promote the further development of public security governance.

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