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Dalian's digital shield: How resilient cities respond to public crisis

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ABSTRACT

With the accelerating development of urbanization, frequent and complex public safety events continually test the coping capacity of urban systems. Enhancing the immediacy, adaptability, and resilience of cities facing crises has become a core imperative for sustainable development. This study investigates the intrinsic mechanisms enabling resilient towns to effectively manage public crises. It addresses critical governance challenges, including inadequate multi-stakeholder information sharing mechanisms, ineffective inter-departmental coordination protocols, and inefficient resource allocation systems prevalent in conventional urban governance. To tackle these systemic issues, the study meticulously develops an SFICS (Synthesis Framework for Integrated Collaborative Systems) collaborative governance analysis framework. This framework is then applied comprehensively to examine Dalian City's transformative journey toward becoming a Smart City. The research rigorously analyzes the public crisis response challenges encountered by resilient cities across five critical dimensions: initial conditions, catalytic leadership, institutional system design, collaborative processes, and continuous learning reflection. It systematically demonstrates how strategic data utilization, integrated across technology, organizational, and social resilience pillars, significantly bolsters the effectiveness and robustness of public crisis response mechanisms. The findings provide substantial theoretical insights and actionable practical strategies for refining urban emergency management systems, which contribute to fostering an advanced, integrated multi-agent collaborative governance paradigm within smart cities. This research holds significant relevance for enhancing the modernization trajectory of urban public security governance globally.

Contribution/ Originality: This study contributes to the literature by advancing the SFICS framework for resilient city governance. It offers new insights into integrating technological, organizational, and social resilience and demonstrates how digital platforms enable multi-agent collaboration to overcome fragmented crisis responses, thereby providing a model for urban governance modernization.

1. INTRODUCTION

Modern cities not only carry people's expectations and yearning for a better life but also hide many accumulated disadvantages in the process of development and expansion. Urban public crises, particularly in the face of natural disasters, safety accidents, biological safety risks, terrorist attacks, and public health emergencies, often exhibit distinct features such as vulnerability, fragmentation, frequency, complexity, and cross-regional impact. All kinds of public crises constantly test the coping ability of the urban system. They pose unprecedented challenges to urban governance capacity and governance system (CCTV.com, 2023), "Resilience and Safety" section.

The report of the 20th National Congress of the Communist Party of China put forward "promoting the modernization of the national security system and capabilities," emphasizing the need to "improve the level of public security governance," improve the ability to deal with disaster prevention, mitigation, and relief, and major public emergencies. The "14th Five-Year Plan" National Emergency System Plan further regards "scientific and technological informatization support" as an important task, requiring "strengthening technical support for emergency management equipment and accelerating the deep integration of modern information technology and emergency management services." Data is becoming a crucial production factor that significantly contributes to enhancing urban resilience and improving the capacity for resilient urban public crisis response.

Dalian, an international shipping center in Northeast Asia and a key port city in northern China, is exposed to various natural disasters, industrial safety hazards, and public health risks. These risks are a result of its distinctive geographical location and urban functional orientation. As one of the first batches of smart cities in China, Dalian City has built a relatively mature urban large data center, emergency command platform, and "urban brain" system, showing high independent operability and leading value in the innovation and practice exploration of the urban governance system, and its experience has important reference significance for similar cities.

This study selects Dalian City as a typical case, relying on the SFIC model analysis system with collaborative governance theory as the core, aiming to reveal the common law and different characteristics of the action mechanism of data element integration driving resilience enhancement in different public crisis scenarios, and provide a theoretical basis and practical samples for constructing the resilient urban governance theory system with Chinese characteristics.

2. THEORETICAL FRAMEWORK

2.1. Resilient City

Godschalk (2003) proposed the concept of "Resilient City" earlier, emphasizing the use of resilient thinking to guide urban planning to make cities more robust and adaptable (Godschalk, 2003). Since then, the concept of "resilient city" has been widely used in urban disaster reduction, emergency management and other fields to enhance urban disaster management and crisis response capacity (Zhu & Liu, 2020).

Some researchers define resilient governance as a new governance model that enhances crisis response flexibility and anti-risk ability through organization, process, technology, system, and other aspects based on collective action by multiple subjects (Zhou & Yuan, 2017). According to the urban function division, resilient cities include physical resilience, community resilience, economic resilience, organizational resilience, natural resilience and other components (Meerow, Newell, & Stults, 2016). At the structural level, urban systems can be horizontally divided into physical systems, governance networks, infrastructure, social and economic systems, and other subsystems (He & Cao, 2023), and vertically divided into urban resilience and community resilience. On this basis (Qiu, 2018; Zhang, 2021), further explains the connotation of urban resilience from three levels: structural resilience, process resilience, and system resilience (Qiu, 2018). Additionally, scholars have defined resilience governance as a novel governance model characterized by collective action-based collaboration among multiple entities. It employs multi-dimensional measures across organizations, processes, technologies, and institutions to enhance crisis response flexibility while strengthening risk resistance capabilities (Yang, 2022).

This paper explains the multi-level and systematic characteristics of resilient cities from three dimensions: technological resilience, organizational resilience, and social resilience. Technological resilience is embodied in the anti-interference ability of urban infrastructure and technical systems, which constitute the physical support of resilience; organizational resilience is manifested in the adaptation and coordination efficiency of the governance system, forming the institutional guarantee of resilience; social resilience results from the accumulation of social capital and effective public participation, laying the social foundation of resilience. These three dimensions are interrelated and synergistic, collectively shaping the organic integration of urban resilience.

2.2. SFIC Model Fit Analysis

The SFIC model is a universal contingency model proposed by Ansell and Gash after analyzing 137 collaborative governance cases using a meta-analysis strategy, i.e., the "stepwise approximation" method (Ansell & Gash, 2008). The SFIC model is widely used in the fields of environmental governance, public service, and medical construction. Its core value is to integrate the power of multiple subjects, such as government, enterprises, and social organizations, and to break the fragmentation dilemma of traditional management with the help of collaborative governance.

The structural elements of this model are highly consistent with resilient urban infrastructure and data architecture. Its analysis framework can systematically explain the operation logic of data elements in urban public crisis governance, relying on systematic and dynamic attributes. The SFIC model provides a structured analysis approach for exploring data-enabled urban public crisis governance, which is conducive to building a research paradigm with both theoretical depth and practical value.

2.3. New Construction of SFIC Analytical Framework

This paper refines the original SFIC model to enhance the SFIC analysis framework of urban resilience governance, aiming to improve its effectiveness in digitally empowered resilient cities managing public crises.

The initial condition is the realistic dilemma of resilient urban public crisis response. Internal causes such as internal resource and information asymmetry, imbalance of power allocation and system, different data standards among government departments, lagging digital transformation of grassroots governance, insufficient social mobilization, and superposition of external security risks constitute the initial motivation for promoting collaborative resilience.

Catalytic leadership plays a crucial role in transforming government approaches to public crisis management. The existing governance framework is characterized by a structural imbalance, with an overemphasis on vertical power structures and a lack of efficient horizontal coordination. There is a reliance on a singular mode of social mobilization centered around government leadership. Additionally, there is a notable absence of comprehensive emergency training for the general public, leading to a deficiency in knowledge and practical skills. Institutional barriers and limited avenues for public participation further hinder the effective integration of political and social resources.

To address these challenges, there is a pressing need to revolutionize social mobilization strategies by leveraging digital technologies to integrate emergency data resources effectively.

The response mechanism can be embedded into daily governance scenarios relying on platforms such as "One Network Communication Office" to promote the transformation of emergency management from command-based management and control to a multi-collaborative governance mode. Institutional design is to provide a clear normative framework for the process of collaborative governance of public crises. At present, there are systematic defects in urban public crisis response, such as lagging reality of emergency plans, prominent formalization of emergency drills, blocked cross-department coordination mechanisms, chaotic data standards, etc. It is imperative to enhance the emergency plan system, coordination linkage mechanisms, and daily management systems to facilitate the shift in system design from reactive responses to collaborative multi-party governance.

The collaborative process is to continuously improve the technological resilience, organizational resilience, and social resilience of the city under the joint action of digital technology, digital platform, and digital infrastructure, and under the multi-subject structure led by the government, supported by enterprises, coordinated by social organizations, and participated by the public, and finally build an efficient, intelligent, inclusive, and safe resilient city.

At the same time, combining with the connotation of resilient city, to emphasize the recovery and learning ability of organizations after experiencing a crisis, this paper fine-tunes the initial conditions, catalytic leadership, institutional design, and collaborative process to form the SFICS collaborative framework, namely initial conditions, catalytic leadership, institutional design, collaborative process, and learning reflection (Li & Cao, 2018).

The SFIC collaborative framework aligns more closely with the current stage of digitally enabled cities addressing public crises compared to the original SFIC analysis framework. Its analytical approach comprehensively encompasses the entire public crisis governance process. The modified SFICS model framework is shown in Figure 1.

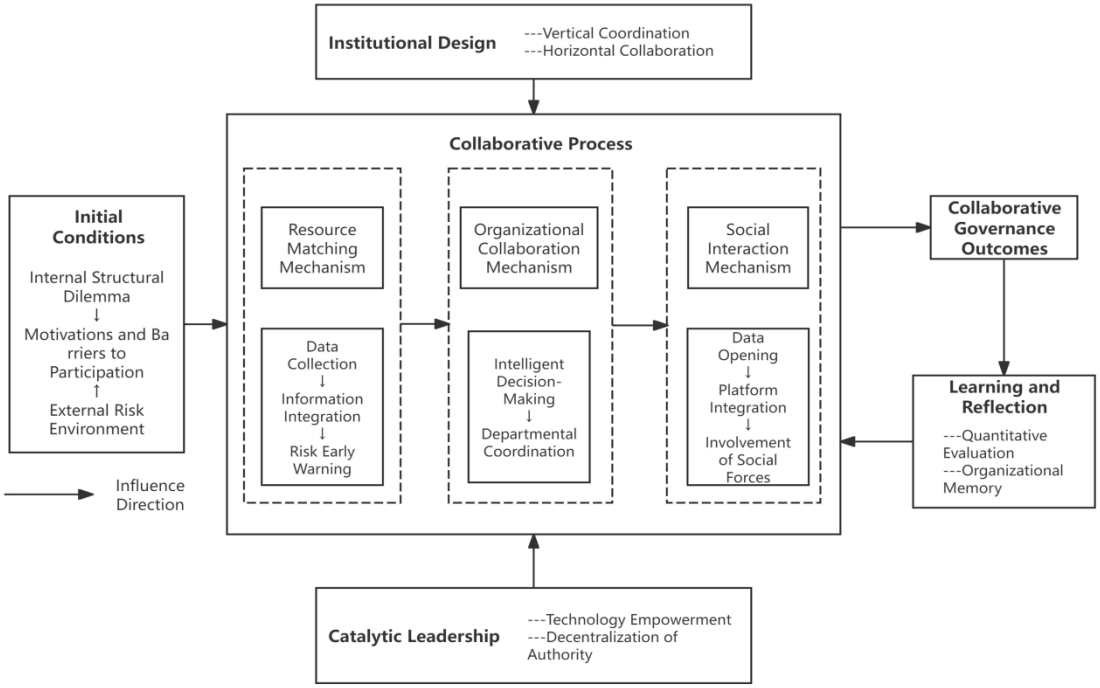

Figure 1. Map of the modified SFICS model framework, own creation.

3. THE REALISTIC DILEMMA OF COLLABORATIVE GOVERNANCE

Based on the SFICS model analysis framework, this study examines the realistic dilemmas faced by Dalian City in addressing public crises during the process of building a resilient city, from four dimensions: initial conditions, catalytic leadership, institutional design, and collaborative processes.

3.1. Dimension of Initial Conditions: Structural Obstacles of Information Transmission and Resource Allocation

Urban public crisis information transmission encounters structural challenges, such as vertical hierarchy barriers and imbalances in horizontal interdepartmental communication. Vertical transmission processes often lead to miscommunication and omission of crucial information due to technical limitations and inadequate information processing capacities. Some grassroots entities selectively disclose information to evade accountability pressures, exacerbating barriers to information sharing. At the horizontal transmission level, the lack of a coordination mechanism hinders the seamless collection and dissemination of information. Each department operates independently, leading to resource duplication and impeding the timeliness of incident response services.

Prior to digitalization, Dalian City predominantly relied on fax and other paper-based media for information dissemination. For instance, during the response to the 2018 typhoon Wambiya, meteorological, water, transportation, and other departments communicated disaster reports using fax and paper documents. Information consolidation frequently resulted in inaccuracies and significant delays. Consequently, the 760 Research Institute of China Shipbuilding Heavy Industry was delayed in responding to critical threats, leading to substantial casualties.

The current material reserve system primarily relies on static physical reserves and lacks a dynamic resource allocation mechanism that integrates peacetime and emergency needs. Information barriers between regions result

in inaccurate assessments of resource demand, leading to frequent conflicts between structural shortages and excessive material reserve allocations. The system faced a breakdown during the December 2021 epidemic in Dalian when the supply guarantee platform was hastily introduced, causing significant delays in distributing tens of thousands of individual materials. This incident highlighted the inadequate digital infrastructure for emergency resource allocation (Dalian Jinpu New Area COVID-19 Prevention and Control Headquarters, 2021).

3.2. Catalytic Leadership Dimension: Imbalance of Power and Responsibility and Insufficient Social Mobilization

Following urban public crises, local governments are granted primary responsibility for immediate response under the principle of territorial management. However, territorial departments often adhere strictly to traditional roles and responsibilities, leading to a tendency to evade responsibility when faced with crises that transcend administrative boundaries. This phenomenon, known as "isomorphic responsibilities," results in challenges within emergency management, such as conflicting commands and the dispersal of power and accountability. For instance, during the 2014 Dalian oil pipeline leakage incident, approximately 30 departments overseeing urban pipelines lacked a mechanism for sharing information, highlighting the governance challenge stemming from the "proliferation of managing entities and the fragmentation of coordination mechanisms" (Ning, 2014).

Inadequate public safety education and limited practical training contribute to deficiencies in public self-rescue and mutual rescue capabilities, a lack of avenues for non-governmental engagement, and challenges in establishing a governance framework characterized by "government leadership and social coordination." Despite the presence of 5,381 registered social organizations in Dalian as of 2019, issues such as unclear development objectives, inconsistent daily operations, and insufficient nurturing and guidance hinder the effective mobilization of social resources during public crises (Li & Lü, 2019), "Let Small Cells Release" section.

3.3. Dimension of System Design: Lack of Standard and Overriding of Mechanism

The public crisis emergency plan system has a hierarchical and classified management framework in place. However, it encounters several challenges during practical implementation. These challenges include the lack of unified technical standards among departments, formalized emergency drills, and a weak dynamic anti-risk capability. Consequently, there is a significant gap between the plan and its actual implementation. Additionally, the limited operability of cross-department coordination mechanisms, a shortage of multi-skilled professionals, and a disconnect between social engagement and digital governance further hinder the effectiveness of the Incident Response Service.

The lack of compatibility in data interfaces, conflicts in format standards, and discrepancies in data collection frequencies between the Dalian City hazardous chemicals monitoring and early warning platform and the municipal emergency platform have led to a crisis characterized by the obstruction of key information transmission. Furthermore, the absence of standardized data formats across departments during plan preparation has exacerbated the delay in disseminating early warning information, resulting in significant economic and social repercussions.

3.4. Collaborative Process Dimension: Disequilibrium of Multi-Agent Cooperation

There exists a structural imbalance in emergency cooperation among government, market, and society, characterized by the dispersion and isolation of resources among these three sectors. The absence of a centralized information-sharing platform and coordination mechanism results in resource mismatches and inefficiencies in Incident Response Service. This fragmented management approach often leads to unclear delineation of responsibilities and redundant resource allocation during rescue operations.

For instance, during the snowstorm disaster in Dalian in the winter of 2021, the lack of real-time information on the location and availability of snow removal equipment owned by construction enterprises and property companies led to improper allocation of resources. This resulted in redundant operations of snow shovels in commercial areas, while neglecting the clearing of expressways and back streets. Additionally, spontaneous participation of social

volunteers was hindered by inefficiencies and safety risks due to the absence of professional equipment and centralized dispatching protocols (Dalian Municipal People's Congress, 2024).

3.5. Learning Reflection Dimension: Crisis Feedback Cycle is Not Smooth

Currently, urban public crisis management is hindered by a lack of systematic experience accumulation. Following crisis resolution, there is a notable absence of mechanisms for comprehensive summarization and reflection, leading to superficial treatment of experiences and lessons learned, impeding the effective transformation of experiences into actionable knowledge. Information managed by various departments is dispersed, and crucial decision-making processes lack comprehensive documentation, thereby impeding thorough post-crisis analysis. Furthermore, the absence of standardized evaluation criteria and sustained monitoring mechanisms results in the failure to effectively integrate valuable practical experiences into organizational capabilities.

The impact of super typhoon "Mesak" striking Dalian in 2022 exemplifies the consequences of a 35-year gap in historical response experience to typhoon attacks, leading to a lack of relevant expertise across departments. Consequently, departments relied on traditional rainstorm response protocols. However, the convergence of a cold vortex with "Mesak" resulted in unprecedented strong winds, triggering widespread urban waterlogging, agricultural damage, traffic disruptions, and other challenges (Dalian Meteorological Bureau, 2021). The Liaoning Meteorological Department, in conjunction with the Agriculture and Rural Department, belatedly issued anti-waterlogging directives, underscoring the severe repercussions of the absence of a structured reflective learning mechanism following urban crises (National Meteorological Center & Ministry of Agriculture and Rural Affairs, 2020) "Risk Warning" section.

4. MECHANISM OF DIGITALLY EMPOWERED RESILIENT CITIES RESPONDING TO PUBLIC CRISES UNDER SFICS FRAMEWORK

4.1. Technical Resilience: Full Chain Data Empowerment

In the context of early warning systems for crises, the establishment of an advanced risk assessment framework is imperative. Leveraging big data technology enables a comprehensive analysis of diverse risk factors, facilitating the establishment of scientifically calibrated early warning thresholds and response protocols to enhance the precision of risk forecasting. Real-time collection of multidimensional data is achieved through the integration of various monitoring tools, such as urban sensors and video surveillance.

Simultaneously, the implementation of a unified data sharing mechanism is essential, amalgamating disparate data sources including Internet of Things sensors, video surveillance, and mobile devices to overcome interdepartmental data silos. This integration, facilitated by standardized data formats and exchange protocols, fosters seamless data interoperability across departments and regions, ensuring timely information dissemination, enhancing data quality, and furnishing a robust foundation for informed decision-making. Such technological advancements are pivotal in aligning with the exigencies of effective early warning systems.

Dalian City has implemented a comprehensive data monitoring system comprising 65,100 cameras, multiple automatic weather stations, and a variety of Internet of Things devices. This system enables thorough monitoring of the city's operational status. The "one network unified management" platform integrates 6 dimensions, 40 categories, and more than 2,000 data resources, with a total data volume of 220 million pieces. Through the application of intelligent algorithms such as deep learning, the platform can predict extreme weather events 72 hours in advance. The identification of major safety hazards 24 hours in advance provides decision-making support for crisis prevention and emergency management (Dalian Municipal Data Bureau, 2025), "Data Integration" section.

4.2. Organizational Resilience: Digital Collaborative Governance System

The construction of an intelligent emergency coordination system requires the deep integration of technology and mechanisms. On the one hand, by building a unified big data platform, we can break through the information barriers between departments and realize real-time sharing and dynamic analysis of risk data. Utilizing digital simulation technology enables the anticipation of disaster progression and strategic allocation of rescue resources, facilitating a prompt and coordinated response. For instance, frontline emergency responders can utilize an intelligent decision support system to swiftly formulate localized response plans.

On the other hand, relevant departments can rely on the Internet of Things, social media, and other multi-source data to perceive public demand in real time, accurately deliver information such as risk-avoidance guidance and material distribution to affected people through intelligent broadcasting and mobile phone push notifications, to guide the masses to avoid risks or participate in mutual assistance independently. Simultaneously, a public feedback system should be implemented to prompt individuals to report hazardous conditions or share helpful information via the official platform. This will facilitate a bidirectional interactive emergency communication approach.

The new national system is adopted to focus on tackling key problems and developing a new generation of information technology, to build a nationwide consistent big data platform for emergency management, to integrate multi-source data in the fields of safety production and natural disasters, to achieve vertical smoothness from the central government to the local government and horizontal connectivity between departments.

During the current implementation stage, data plays a crucial role in connecting various levels and departments, facilitating informed decision-making through enhanced data collection, sharing, and utilization mechanisms. It is imperative to establish clear boundaries for data usage through laws and regulations. This will foster information sharing while ensuring data security. Moreover, fostering mutual advancement between technological innovation and system enhancement is essential to improve the overall efficiency of the national emergency management system.

The Dalian emergency management system incorporates a comprehensive Incident Response Service support system through three core function modules: an integrated address book, duty scheduling, and notification announcements. In the category of address book module, a hierarchical authorization mechanism is adopted to ensure information security, and multi-terminal real-time inquiry is supported, which provides timely and reliable personnel contact guarantees for leaders at all levels to command emergency handling actions and inter-departmental discussions. The shift scheduling module adopts an intelligent shift scheduling design mode, and the system automatically records and stores all shift scheduling data to form a complete set of shift files.

The notification and announcement module innovatively enables the rapid transfer of information between emergency management departments at the provincial, municipal, district, and county levels. The system can not only accurately push notification announcements but also automatically record the reception status and feedback content of each unit. The one-click forwarding function significantly improves the communication efficiency and execution tracking level of emergency instructions (Dalian Emergency Management Bureau, 2023). The integration of these modules enhances the emergency management department's ability to respond rapidly and collaborate effectively in handling incidents.

4.3. Social Resilience: Digital Public Engagement Mechanisms

Through data openness and platform sharing, governments, enterprises, social organizations, and the public have formed new collaborative relationships. The government facilitates social engagement in governance by granting access to public data, excluding classified and private information. Leveraging technological expertise and innovative capacities, businesses create emergency management tools like intelligent early warning systems and resource allocation services. Social entities utilize data reservoirs to deliver precise public services. The public obtains urban governance information through mobile devices and supervises each subject. This open and collaborative model not

only mobilizes the superior resources of all parties but also forms a virtuous circle of mutual supervision, transforming emergency management from government "fighting alone" to social "common governance".

Dalian City has established a three-dimensional early warning information dissemination network. The government issues early warning information on official WeChat Official Accounts and Weibo, such as "Dalian Emergency," and cooperates with communication operators to send early warning text messages to mobile phone users in specific areas. Severe weather alerts are displayed on information screens along expressways and urban main roads. The Liaoshitong "e-code" system is utilized to broaden its application scope, enabling citizens to easily access various warning information.

When a crisis occurs, relevant government departments, enterprise units, social organizations, etc., can automatically match according to the type of event to form a temporary response network. At the same time, the system automatically pushes event information, disposal processes, and division of responsibilities. Each subject carries out collaborative disposal according to data prompts, reflecting the innovation of the governance concept of "event-centered" rather than "department-centered," allowing multiple subjects to coordinate rapidly, especially strengthening public participation.

5. CONCLUSION

This study utilizes the SFICS collaborative governance framework based on the SFIC model to systematically examine the dynamic mechanism of data-enabled resilient cities in addressing public crises. From the five levels of initial conditions, catalytic leadership, system design, collaborative process, and learning reflection, this framework identifies the root causes of problems such as information sharing obstruction, low cross-departmental collaborative efficiency, and resource allocation lag in traditional urban governance, and then proposes to take a data sharing platform as the core point. It drives the multi-agent transition from "passive response" to "intelligent collaboration" path. Taking Dalian City as an example, multi-source data integration is carried out through the platform of "one network unified management," creating a closed-loop governance system covering crisis early warning, response, and learning.

This practice shows that the key to data empowerment lies in the coordinated promotion of technological innovation and institutional change. With the data sharing platform as the core, it effectively connects the government, enterprises, and social forces, promotes all parties to shift from passive disposal to active collaboration, breaks through the shackles of the "fragmentation" system, and promotes the transformation of government, market, and social multi-subjects from "passive response" to "intelligent collaboration" with the data sharing platform as the link.

In order to crack the information island, optimized provisioning provides systematic tools. To bridge information silos, optimized provisioning offers systematic tools. By enhancing resilience through collaborative efforts in technology, organization, and society, a closed-loop governance system for early warning, response, and learning during crises is established, presenting a novel approach to innovating the smart city governance paradigm. Its value lies in the organic combination of technological innovation, organizational change, and social participation to form a more resilient modern governance system.

Despite the remarkable advancements in both theory and practical implementation of data-enabled cities, current initiatives encounter significant challenges in effectively managing public crises. The data standards of various departments are not unified, and the sharing mechanisms are defective, which causes key information to be unable to circulate immediately, reduces the efficiency of emergency decision-making, and the data formats of meteorological departments, transportation departments, medical departments, and other departments are different when the crisis occurs, which makes it difficult to carry out integration analysis quickly, thus delaying the golden opportunity for rescue.

The boundary between data privacy protection and sharing and utilization has not yet been clarified, which also restricts the depth of cross-departmental cooperation. The existing emergency response systems have struggled to keep pace with rapid technological advancements, resulting in outdated plans that diminish the efficacy of emergency drills. Moreover, the integration between daily management practices and Incident Response Services has been disjointed, with many cities still in the process of revising their emergency protocols. Furthermore, the failure to dynamically adjust emergency plans in alignment with cutting-edge technologies like the Internet of Things and artificial intelligence has rendered emergency drills perfunctory, lacking in rigorous testing of operational feasibility under real-world stress conditions.

At present, the participation of social forces is low; the masses and enterprises lack effective ways to participate. The community's risk resistance and prevention capabilities are weak. Although some cities attempt to establish volunteer platforms, they lack long-term incentive mechanisms, making it difficult to sustain public enthusiasm. The coverage rate of community emergency training remains insufficient, and residents' mutual rescue abilities are limited. Consequently, in emergencies, disorder is easily caused. Additionally, the professional rescue equipment and skills possessed by enterprises are not fully integrated into the emergency response system, leading to underutilized resources.

The application of the prior art is scattered, and it is difficult to cope with the complex situation of multiple disasters superposition; the comprehensiveness and accuracy of the early warning system need to be further improved; most urban monitoring systems are only designed for a single disaster; when a typhoon causes floods and then causes chemical accidents and other chain disasters, the early warning capability of the system shows obvious defects; iterative optimization of a data model also reflects a relatively lagging situation, and it is difficult to keep up with the rapidly changing crisis.

To construct a data-enabled urban public crisis governance system, we must realize the organic integration of technological innovation, system perfection, and social participation. Construct a standardized framework for government-enterprise data sharing, clarify the boundaries of rights and responsibilities, and establish data application rules for each participant. Adopt unified data standards and a dynamic plan update mechanism, and break down the institutional barriers of departmental division. Relying on the platform of "one network unified management," grass-roots grid members, volunteers, and other forces are integrated to build a hierarchical and classified participation structure, which not only ensures the wide coverage of data collection but also guarantees the accuracy of Incident Response Service.

Utilizing emerging technologies such as digital twins and blockchain is essential for establishing a robust governance framework that includes risk monitoring, early warning communication, emergency response, and evaluation and optimization, all while prioritizing data security. By implementing this structured approach, which includes technical support, institutional backing, and social cooperation, the progression of urban safety governance can shift from disintegration to cohesion, ultimately enhancing governance efficiency through continuous enhancement and modernization. This path requires novel institutional structures at the strategic level, as well as grassroots experimentation and knowledge accumulation. Progress is achieved through a strategy that combines pilot initiatives with broad dissemination of experiences.

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