

# GOVERNANCE STRATEGIES FOR PUBLIC HEALTH EMERGENCIES: A STRUCTURAL-PROCESS EXPLANATION OF IMPLEMENTATION MECHANISMS

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**Abstract:** This paper constructs an explanatory path for the response logic to public health emergencies based on existing implementation mechanism theories, and deeply explores and analyzes the mainstream media reporting texts from the early stage of China's COVID-19 outbreak. The study finds that the response process to public health emergencies in China follows a top-down decision-making and implementation model, where the implementation mechanism system is categorized into three types: command and control, mobilization and guidance, and communication and negotiation. The analysis of theme prominence indicates that as the epidemic prevention progresses, the shift in framework goal priorities reflects a dynamic relationship of mutual reinforcement and counterbalance. This paper enriches the research boundaries of implementation mechanism theory in empirical cases, broadens the perspectives of implementation mechanism studies, and provides insights for diversified public framework research.

**Keywords:** Public health; Public emergencies; Implementation mechanisms; Text mining

## 1 BACKGROUND

The COVID-19 pandemic has once again brought to the forefront the question of how to reconstruct and improve public health emergency response systems, capturing the attention of both the Public Sector and the public. From the perspective of response models, during the fight against COVID-19, China demonstrated a top-down decision-making and implementation model, with public central authorities directives, public local authorities responses, and the collaborative governance of grassroots departments, particularly in communities and streets. The collective action logic emerged from the involvement of society, enterprises, and the public, displaying the capacity for social mobilization to govern crises. In the context of the ongoing epidemic prevention and the accelerated construction of a strong public health system, it is essential to theoretically clarify and analyze the underlying logic and patterns of the evolution of collective action and the conflicts among actors. This will help in exploring the processes and characteristics of the emergency response mechanism to public health emergencies, which is crucial for achieving framework objectives more effectively.

Within the field of framework science, implementation mechanisms are considered as the sum of intervention methods that legitimize public sector action mechanisms [1]. The characteristics of these tools, the degree of public sector intervention [2], their frequency of use, the surrounding environment, and institutional structures all determine their role in the framework process. These tools are alternately applied to form a complete picture of China's public health emergency response mechanism within its institutional framework. Theoretically, implementation mechanisms are a key variable that connects framework goals to framework outcomes and are a concrete embodiment of public sector governance capacity. Under conditions where the target population is diverse, environmental risks are concentrated, and multiple challenges emerge, the ability of the Public Sector to break the crisis caused by public health emergencies efficiently and quickly largely depends on whether it can appropriately choose and apply implementation mechanisms [3].

This study focuses on the core question: "Which implementation mechanisms can effectively respond to public health emergencies?" From the perspective of implementation mechanism theory, the study uses resource theory, functional theory, and strategy theory as the theoretical foundation to construct an analytical framework for understanding China's response to public health emergencies. Using big data from mainstream media reports as empirical material, the study extracts the structural elements, implementation mechanisms, and development trends at different levels during the pandemic, grasps the process of framework formulation and implementation in epidemic prevention, and analyzes the goals and actions of the public Sector in responding to public health crises. This will provide theoretical insights into the development and improvement of the public health emergency management system.

## 2 THEORETICAL FOUNDATION AND ANALYTICAL FRAMEWORK

The study of implementation mechanisms includes aspects such as concepts [4], categories, perspectives and schools of thought [5-6]. Chinese scholars have conducted research on areas like tool classification and optimization [7], including studies in fields such as health [8], environment [9], technology [10], and administrative function reform [11]. The transformation from authoritative hierarchical governance to collaborative governance has driven implementation

mechanism research towards a more theoretical and systematic approach [12-14]. Social structure, ideology, civic systems, and the choice and application of implementation mechanisms by various actors form an integrated research topic. The response to major public health emergencies has become a focal point in public health research, especially regarding the structural evolution of public health emergency management, leaving ample room for comprehensive analysis of implementation mechanisms.

In its exploration, China has gradually formed a multi-dimensional governance system with public sector, market, and social interactions as key actors [15-16]. The governance process is structured as a sequence of decision-making and execution management. Since the SARS outbreak in 2003, China has gradually built a national-local two-tier emergency management system, with the "National Emergency Response Plan for Public Emergencies" establishing the framework, organizational structure, and operational mechanisms for responding to public health crises. The emergency response mechanisms for major public health emergencies dictate the top-down decision-making and implementation paths for China's public health crises, characterized by highly mobilized, multi-dimensional interactions between decision-making departments, public local authorities, and various social actors [5, 17]. These backgrounds form the institutional basis for the framework constructed in this research.

### **2.1 What Selection Pathway Do Implementation Mechanisms Follow in Responding to Public Health Emergencies?**

The evolution of implementation mechanism schools and selection analysis pathways is inherently linked. The selection and application of implementation mechanisms are balanced strategic choices made by decision-making bodies within the institutional framework, considering factors such as background, environment, target audiences, and preferences. Different preferences for implementation mechanism often reflect the decision-makers' ideologies and path dependence. Implementation mechanisms arise from institutional structures and exhibit civic characteristics in the framework process. In the specific context of public health emergencies in China, decision-making departments play a leading role in using implementation mechanism design, selection, and application to achieve governance objectives after a crisis event occurs [18-19]. Considering the practical attributes of public health emergencies, the top-down decision-making and implementation paths align with China's institutional context.

### **2.2 What Attributes Should implementation mechanisms Have to Effectively Respond to Public Health Emergencies?**

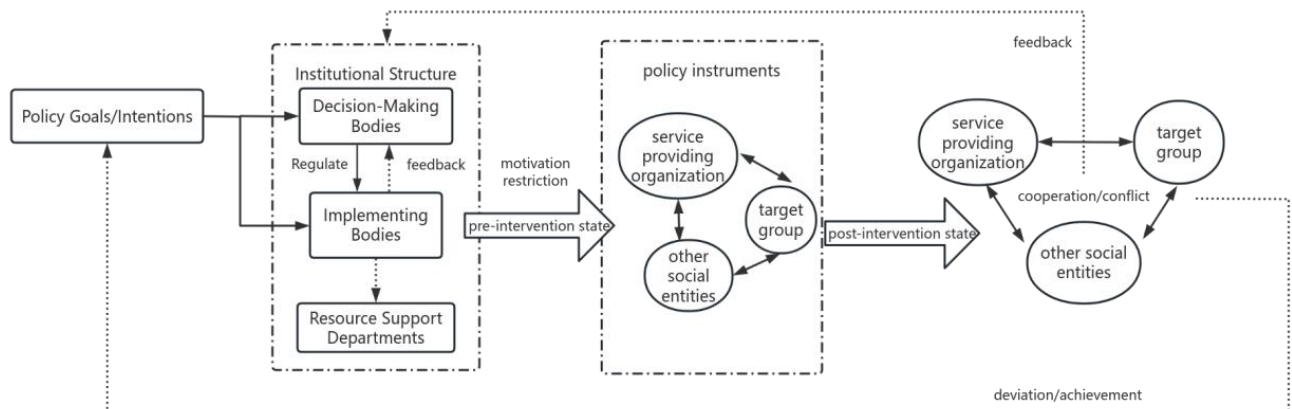
Based on the degree of public sector intervention [3], implementation mechanisms can be categorized into compulsory, mixed, and voluntary types. The multiple dimensions of framework goals and values require the comprehensive use of various implementation mechanisms to achieve the desired outcomes. The suddenness, urgency, complexity, and high risk of crisis events lead to highly concentrated public health crisis governance goals in a short time [20]. Therefore, compulsory measures are the primary implementation mechanisms in the top-down decision-making and implementation model, used to maintain social order disrupted by the crisis through unconventional supply and control measures. However, although compulsory tools are effective, they come with high costs, limited coverage, and a lack of sustainability. Voluntary and mixed implementation mechanisms can enhance the effectiveness of compulsory tools, mobilize resources for supply, and activate social actors to supplement the limitations of compulsory implementation mechanisms.

### **2.3 How Does the Implementation Mechanism System Work within the framework Community to Achieve Desired framework Outcomes?**

The higher the adaptability and appropriateness of a implementation mechanism, the more effective it is in resolving the opposing behaviors of different actors within the public health crisis response system. The appropriateness of a implementation mechanism is reflected in two aspects: Firstly, in the face of a complex social environment, framework goal priorities change at different stages of the crisis. These changes lead to different implementation mechanism systems based on contingency theory. The use and output of various implementation mechanisms will guide different framework outcomes [10]. Secondly, the target audience is also an important factor affecting the use of implementation mechanisms. Different outputs of the same implementation mechanism (such as visibility and predictability) will also lead to different framework results.

This paper follows the path of implementation mechanisms emerging from institutional structures and guiding framework outcomes. It constructs a dynamic analysis framework for the COVID-19 pandemic (Figure 1). The actors within China's modern public sector management mechanism include the interaction between the public sector, the market, and society [21]. The time dimension shows the process of decision-making and execution management. The institutional structure can be seen as the background for the output and implementation of implementation mechanisms. The implementation of implementation mechanisms is a joint effort between the public central authorities and public local authorities. The public central authorities assume the roles of guiding and supervising, while public local authorities are the specific framework implementers. Implementation mechanisms, to some extent, reflect the framework value goals, intentions, and actions of decision-makers. They guide service providers, target groups, and

other social actors to adjust their motives, goals, and strategic behaviors (such as resolving goal conflicts and promoting reciprocal cooperation, e.g., what protective measures should be taken in public places, and the reasonable range of prices and supplies). The interactions formed under the intervention of implementation mechanisms are fed back to the decision-making and implementing agencies, thus forming a dynamic process of adjusting and optimizing implementation mechanisms.



**Figure 1** Public Health Emergency Response Logic: Network-Process Pathways of Action

### 3 DATA SOURCES AND PROCESSING METHODS

After the outbreak of the COVID-19 pandemic, mainstream media reports largely reflected the ideas, approaches, and specific measures taken by decision-makers and public sectors in responding to the crisis. These reports also provided substantial direct evidence for understanding the framework process. At the same time, the growing maturity of text mining techniques has made it possible to extract information from unstructured big data texts. Based on the theoretical framework constructed above, this paper uses text mining technology to quantitatively extract implementation mechanism-related information from large-scale mainstream media reports, presenting empirical evidence of the composition, application, and other issues related to implementation mechanisms in the context of China's unique governance system for public health emergencies.

#### 3.1 Data Sources and Preprocessing

The author developed an R program to collect a portion of comprehensive news report texts from influential domestic portal websites, key newspaper digital editions, and other channels. Initial filtering was performed on articles whose titles contained any of the keywords "pneumonia," "COVID-19," "coronavirus," or "epidemic," resulting in seed texts. Using the Jaccard distance similarity method, related reports on the COVID-19 pandemic were obtained. After deduplication and manual proofreading, a total of 95,021 reports were consolidated. The jiebaR tool, with a custom word list and stop-word list, was used to segment the text of the body, retaining words longer than two characters, and forming a corpus.

#### 3.2 Data Analysis Strategy

This paper identifies and statistically analyzes the topics of news reports using topic modeling. Topic modeling is a recently developed unsupervised text clustering and dimensionality reduction method that uses words as the text feature carrier to obtain the probability distributions of topics and topic-related words. It provides an intuitive understanding of keyword combinations and document content by converting each high-dimensional unstructured text into a lower-dimensional vector (typically a one-dimensional vector with the length equal to the number of topics). This method enables text clustering and facilitates further statistical analysis [23].

The classic topic model is a multi-layer Bayesian probabilistic model, which assumes that both the prior distributions of topics and words in the corpus follow a Dirichlet distribution. It is thus also referred to as the Latent Dirichlet Allocation (LDA) model [24]. Assume there are  $M$  documents in the corpus,  $K$  topics (as specified by the researcher), and  $V$  words. For any given document in the corpus, if there is  $N$  word in document  $d$ ,  $\theta_d$  belongs to a probability distribution of  $K$  topics (i.e., the topic proportion for document  $d$ ).  $\beta_k$  is the probability distribution of words for the  $k$ -th topic, and  $Z_{d,n}$  be the probability distribution of topic assignments for the  $n$ -th word in document  $d$ . From  $Z_{d,n}$  and  $\beta_k$ , we can derive the probability  $W$  of the observed word  $W_{d,n}$ . From this, we can obtain the probability of the observed word. Based on the generated probability distributions, key parameters can be fitted and calculated, such as the proportion of specific topics in the corpus, the topic keywords, and the topic tendencies of each document. Further analysis can be performed on factors affecting topics in a specific corpus, as well as temporal trends and other information. However, the classic topic model is an unsupervised learning method, and researchers lack sufficient control over topic generation, which leads to instability in the topic calculation results. A semi-supervised topic model

based on Correlation Explanation, developed in recent years, can help alleviate this issue to some extent. The semi-supervised topic model utilizes the correlation between words in documents to achieve text clustering and topic extraction [25]. It assumes there are  $G$  words in the corpus,  $X$  represents the entire document set, and  $x_i$  represents the samples. The overall correlation information (information entropy) in the corpus is defined as follows:

$$\begin{aligned} TC(X_G) &= \sum_{i \in G} H(X_i) - H(X_G) \\ &= D_{KL}(p(x_G) || \prod_{i \in G} p(x_i)) \end{aligned} \quad (1)$$

Total correlation (TC) can be represented by the Kullback-Leibler (KL) divergence. The value of TC can be seen as a measure of the correlation between words. If TC equals 0, then  $x_i$  is completely independent. Suppose that introducing an external variable  $Y$  results in a reduction in the TC value. In this case,  $Y$  can be considered as a latent topic that is associated with a specific  $X_G$ . That is,  $Y$  "explains" a portion of the information in the document, and its importance can be calculated by the amount of reduction in TC.

$$\begin{aligned} TC(X_G; Y) &= TC(X_G) - TC(X_G | Y) \\ &= \sum_{i \in G} I(X_i; Y) - I(X_G; Y) \end{aligned} \quad (2)$$

Similar to the classic topic model, the semi-supervised topic model also requires pre-specifying  $m$  topics. The task of Correlation Explanation is to fit a model that maximizes overall TC given the number of topics. Each reduction in TC brought by  $Y_i$  serves as an important indicator of the topic's significance in the corpus and an evaluation criterion for the model. The model also allows for the calculation of key metrics, such as the prominence of different topics in the corpus, keywords and their probabilities, and the topic inclination values for individual documents. The greatest advantage of the semi-supervised topic model lies in its ability to "anchor" vocabulary words (Anchor Words) and specifically "enhance" topic clustering. This enables researchers to intervene in the extraction of topic information according to the needs of their study, making the clustering results more focused and significantly reducing the degree of ambiguity.

In this study, the semi-supervised topic model is applied to 95,021 media reports to model and analyze the keywords, representative news, and their semantic weight in the entire corpus. This analysis helps answer questions related to the composition, classification, and weight structure of implementation mechanisms. The model yields the topic inclination scores for each report, and by combining these with the temporal changes in the reports, it reveals the dynamic and time-varying characteristics of implementation mechanisms.

## 4 RESPONSE LOGIC OF PUBLIC HEALTH EMERGENCIES IN CHINA

Based on the semi-supervised topic model, media reports on the COVID-19 pandemic are decomposed into 32 topics. The behaviors and interaction patterns of the three key actors—public sector, society, and enterprises—form the response logic of China's COVID-19 crisis. This creates an integrated picture of decision-making departments formulating policies, local public sectors implementing them, disciplinary supervision, and the military's involvement, all responding through collaborative governance. The article further categorizes the 32 topics into three sections: implementation mechanism decision-making models, characteristic attributes, and implementation outcomes.

### 4.1 Institutional Structure of Implementation Mechanisms: A Top-Down Decision-Making and Implementation Model

The selection and application of implementation mechanisms in response to public health emergencies follow a top-down, centralized social resource mobilization approach. This model, typical of unconventional periods, is often characterized by high levels of legitimacy and requires a bureaucratic system with strong mobilization capabilities to effectively implement the policies.

#### 4.1.1 Bureaucratic system — The foundation for implementation mechanism design and implementation

In the response to the COVID-19 pandemic, the decision-making departments formulated plans, and public sectors at various levels implemented them (Table 1). Command and control implementation mechanisms became the primary type used. Throughout the pandemic's progression, framework deployment meetings were held to clarify framework goals and division of responsibilities. For instance, provincial and municipal public sectors were tasked with enhancing epidemic control and preventing the spread of the virus, and medical resources were organized to support Hubei province. Corresponding arrangements were also made for public opinion guidance and global health governance.

The process of implementing central policies through ministries and local public sectors is the core of framework implementation. This involved public central authorities and various ministries issuing specific COVID-19 control measures and local public sectors activating emergency response mechanisms for public health events. These actions included imposing traffic controls, health quarantines, and other mandatory measures.

**Table 1** Decision-making Model for Implementation Mechanisms

Theme Category	Theme	Keywords	Representative News Headlines
Decision-Making Models	Decision-making	framework directives, instructions	"Comprehensively Understanding and Implementing the Epidemic Control Requirements"
	Ministry and Local Actions	Implementation, coordination, prevention, precision	"On Epidemic Control and Socioeconomic Development"
	Civic Mobilization	Victory, blockade, prevention, pandemic	"Leader: Victory in Wuhan Means Victory for Hubei, Victory for Hubei Means Victory for the Nation"
Organizational Promotion	Exemplary roles	Vanguard, grassroots, role model	"Thoroughly Implementing Leader's Important Instructions"
	Problematic cadres	Disciplinary inspection, ineffectiveness, accountability, sanctions	"Dozens Held Accountable in Nine Regions of Hubei!"

#### 4.1.2 Internal incentives and constraints: The safeguard mechanism for framework goal transmission

The advantage of the top-down model lies in the public central authorities' strong resource integration and mobilization capabilities, which enhance the efficiency of crisis response. However, the model also has its drawbacks, such as framework goal conflicts between public central authorities and public local authorities, distortion and deformation of framework goals during transmission, and public local authorities' passive response or setting excessively high goals to show off their civic achievements [26]. To address the potential contradictions and conflicts in public sector behavior and ensure effective transmission of pandemic response framework goals across public sector levels, the public central authorities, within its organizational structure, deepens the actors' sense of recognition and belonging toward epidemic control through civic mobilization, and implements two specific incentive and constraint measures: the promotion of exemplary roles and accountability for problematic cadres.

#### 4.2 The Implementation Mechanism System under Multiple Framework Goals

The application of implementation mechanisms during this pandemic has been valuable in guiding, regulating, and mobilizing social actors through constraints and incentives [27], aligning individual goals with multiple framework objectives, such as controlling the pandemic, maintaining social order, and repairing the damage caused by the epidemic. Two types of instruments arise at the decision-making level. Constraint methods are predominantly manifested in command and control implementation mechanisms, while incentive methods are mainly represented by mixed implementation mechanisms such as mobilization and guidance, and communication and negotiation (Table 2).

**Table 2** Implementation Mechanisms for Pandemic Response

Theme Category	Theme	Keywords	Representative News Headlines
Command & Control	Patient Treatment & Care	Admission, medical care, field hospitals, recovery rate	"From Home Isolation to 'Complete Clearance'"
	Medical Team Support	Support, medical team, Hubei, deployment	"19 Provinces Respond with Pairing Assistance"
	Isolation Measures	Quarantine, observation, home, centralized	"Inside Wuhan's Isolation Centers"
	Transport Controls	Airport, passengers, railway, stations	"Wuhan, Ezhou, Huanggang: 'Lockdown'"
	Production & Transport of Supplies	Masks, medical, materials, protective gear	"Central Enterprises Race to Support Wuhan!"
	Market & Price Stability	Market, prices, vegetables, operations	"Joint Efforts Across Provinces to Stabilize Supplies and Prices"
	Legal Cases for Violations	Violations, crackdowns, cases, crimes	"Top Prosecutor Issues 10 Exemplary Cases of Pandemic-Related Crimes"
Mobilization & Guidance	Advocating for the production of protective equipment	Masks, medical, materials, protection	"Supporting Wuhan: Public, Private, and Foreign Enterprises in Action!"
	Resumption of Work	Work resumption, production, enterprises, orderly	"4 Departments Respond: Facilitating Full Resumption"
	SME Financing Support	Loans, support, financing, small businesses	"framework Compilation for Enterprises During COVID-19"
	Medical Research & Drug Development	Clinical, research, coronavirus, vaccine	"Effective Medications and Therapies in Clinical Trials"
	Community Organization	Community, streets, residents,	"Grassroots Organizations Battling the

Theme Category	Theme	Keywords	Representative News Headlines
Communication & Negotiation	Treatment Guidelines	prevention Respiratory, antiviral, lungs, trial	"Treatment Guidelines for COVID-19 Pneumonia"
	Psychological Interventions	Psychology, fear, emotions, counseling	"Avoiding 'Mental Breakdown' Under Pandemic Stress"
	Pandemic Reporting	Confirmed cases, new cases, reports, deaths	"New Cases Outside Hubei Decline for Four Consecutive Days"
	Personal Protection Guidelines	Crowds, disinfection, reduction, masks	"Prevention Guidelines for COVID-19"
	Rumor Control	Fear, social media, rumors	"Debunking Pandemic Rumors"
	Media Publicity	Frontline, pandemic, fight, strength	"Heroes in Action During Adversity"
	Frontline Medical Staff Coverage	Treatment, healthcare, patients, wards	"50 Days of Rescue Efforts in Wuhan Hospitals"
	Exemplary Stories	Family, return home, midnight, colleagues	"Writing Commitment on the Pandemic Frontline"

#### 4.2.1 Command and control: Effective implementation mechanisms for controlling disease spread

Command and control implementation mechanisms played an essential role in effectively curbing the spread of the pandemic during its early stages. These tools are divided into three parts: first, direct services provided by the state, such as nearly 80 billion yuan in financial funds and public sector personnel assigned to traffic control; second, regulatory measures to stabilize social and economic order, such as stabilizing market prices and controlling transportation; third, public enterprises providing public services, such as public healthcare institutions offering treatment and quarantine for infected patients. In addition to medical treatment, state-owned enterprises were also responsible for producing and transporting epidemic-related supplies.

#### 4.2.2 Mobilization and guidance, communication and negotiation: Powerful supplements to "Rigid" control tools

Mobilization and guidance, as well as communication and negotiation tools can be seen as effective complements to the command and control tools, reducing the resistance and cost of implementing command-based policies and enhancing the framework audience's recognition of coercive measures.

Mobilization and guidance implementation mechanisms operate at four levels: healthcare enterprises, technology, society and individuals. For enterprises, the goal was to encourage their active participation in the fight against the epidemic, such as private companies like Gree and Wuling switching to mask production during the pandemic. At the same time, a favorable economic environment was created for small and medium-sized enterprises, with financing support and assistance for resuming production. Mobilization also involved medical technology breakthroughs, updating treatment plans, and researching pneumonia drugs. Psychological interventions were used to relieve panic under the high-pressure conditions of the pandemic, preventing emotional anxiety from escalating into a public opinion crisis. Community organizations, as basic units, were mobilized to "fortify" the epidemic's "firewall," breaking the "last mile" of transmission. Communication and negotiation tools were primarily reflected in media reports. On one hand, regular updates on the pandemic's progress were published, presenting the trajectory of the epidemic objectively and promptly debunking rumors. On the other hand, positive public morale was encouraged, enhancing social cohesion and confidence in the fight against the pandemic.

#### 4.2.3 Functional dimension characteristics of implementation mechanisms

The selection and application of implementation mechanisms in this epidemic response followed a forced, centralized approach. However, the implementation mechanism kit still presented a diversified characteristics, with command and control, mobilization and guidance, and communication and negotiation collectively forming the structure and features of the implementation mechanisms. Command and control tools have the advantage of being financially supported by public funds, having strong mobilization capacity, and providing comprehensive, objective, and timely access to information on the progress of the epidemic. However, the rigid transmission and financial burdens can be addressed by mobilization and communication tools, which supplement and expand the tool kit. By reducing resistance to command and control tools through public opinion, these tools help coordinate collective action among medical, business, and social organizations. The diverse nature of the implementation mechanisms reflects that the response mode to the epidemic is a collective mobilization model, primarily driven by public sector enforcement, with broad participation from social groups.

### 4.3 framework Outcomes under the Implementation Mechanism System

#### 4.3.1 Contingency characteristics of implementation mechanisms: Alignment of framework goal priorities

Major public health emergencies are often accompanied by multiple framework value dimensions, making it more challenging to define the priority of framework goals. The timeline of the COVID-19 pandemic reveals that the priorities of epidemic governance goals varied at different stages. Each framework goal (epidemic control, social stability, economic recovery) corresponds to a comprehensive implementation mechanism system that includes enforcement, mobilization, and communication.

At the beginning of the pandemic, the core framework goals were controlling the epidemic's spread and treating patients, which took precedence over economic development. Even though lockdowns and traffic control would incur significant economic losses, decision-makers prioritized epidemic control. During the middle stage of the pandemic, the public sector gradually adjusted its primary framework goals, making pandemic control and economic development equally important. Financing support for small and medium-sized enterprises became a key theme alongside epidemic control. In the later stages, as the global pandemic situation evolved and domestic conditions improved, the focus shifted to economic recovery, social order restoration, and international relations. Over time, the contingency features of implementation mechanisms reflected a toolkit that aligned with the evolving framework issues and goals.

#### 4.3.2 Acceptance of implementation mechanisms by social actors

The visibility and predictability of implementation mechanisms can increase acceptance and recognition among social actors, thus reducing resistance to framework implementation. By widely disseminating knowledge about the pandemic, the awareness of pandemic control was increased, enhancing the visibility of implementation mechanisms and making the public more accepting of the inconveniences caused by measures like traffic control. For example, the timely release of data on confirmed cases, suspected cases, recoveries, and deaths increased the predictability of the policies and reinforced public confidence that the existing measures could defeat the pandemic. Table 3 shows that enterprises, experts, and individuals were all actively engaged in pandemic control actions, which is a concrete manifestation of the high acceptance and support from the public for the anti-pandemic measures, including donations, logistical support, public opinion guidance, and pandemic reflection.

**Table 3** Themes of Societal Engagement and Feedback

Theme Category	Theme	Keywords	Representative News Headlines
Models of Participation and Feedback for Social Actors	Social Donations	Donation, charity, Red Cross	"Mission Call: Trade Associations Take Action"
	New Logistics Economy	Logistics, orders, delivery, e-commerce	"Developing Contactless Delivery"
	Grassroots Pandemic Efforts	Awareness, prevention, knowledge, campaigns	"Strengthening Confidence, Solidarity, and Community Spirit"
	Economic Impact	Impact, pandemic, economy, shock	"Report on COVID-19's Impact on Chinese Enterprises"
	Expert Opinions	Nation, focus, concern, professor	"Lessons Learned from SARS"
	Urban Life under Pandemic	Awareness, outbreak, response, concern	"Perspectives on the Wuhan Epidemic"
	Global Reports	WHO, public sector, countries, Tedros	"Diamond Princess' Evacuation Completed"

## 5 CONCLUSION AND DISCUSSION

### 5.1 Conclusion

This study uses crisis governance strategies during the COVID-19 pandemic as an empirical case to explain the public sector's response logic in the context of a public health emergency. Command and control implementation mechanisms effectively addressed market failures caused by information asymmetry during the pandemic's onset, while mobilization, guidance, and communication tools bridged the rigidity of the top-down institutional structure and command-based tools.

In terms of the implementation mechanism selection path, the choice and application of implementation mechanisms is not a depoliticized process. Factors such as the civic system, institutional structure, and decision-makers' past experiences influence the design of implementation mechanisms. The implementation of these tools also depends on the corresponding framework output system [28].

Regarding the characteristics of implementation mechanisms, although institutional structures, civic ecology, and path dependency can influence the selection of implementation mechanisms, the functional characteristics of these tools become endogenous factors in the tool design process. In the top-down centralized response model, command and control tools make up the majority, but mobilization and communication tools, such as media appeals, official debunking of rumors, and fostering a supportive atmosphere for the fight against the pandemic, laid a solid foundation for enhancing the recognition of command-based policies among actors and target groups.

As for the role of implementation mechanisms, constructing the contingency characteristics of these tools enables them to align with framework goals, increasing acceptance among target groups, and subsequently feedback into the framework system to promote or hinder the realization of expected framework outcomes. The contingency characteristics of implementation mechanisms are reflected in the changes in framework goal priorities and tool display visibility as the pandemic progresses, given that the ideal assumption is that the framework goals are relatively clear. In a top-down decision-making system, if the fit with the framework goals is low, coercive implementation mechanisms and administrative orders will face significant implementation resistance and need adjustment [29].

### 5.2 Discussion

Building on existing theoretical analyses of implementation mechanisms, this study attempts to bridge the gaps between different theoretical perspectives on implementation mechanisms. As a key variable linking the framework system with other social actors, implementation mechanisms were created within the framework system to address the negative effects of the pandemic. The internalized characteristics of implementation mechanisms reflect the value dimensions of the framework system and institutional structure, while the functional characteristics of these tools are also considered within the framework system's framework. Under the influence of constraints and incentives, the behavior of actors will feedback into the decision-making body, and the strategic choices and interactions between the public sector, market, and society will manifest as the external form of crisis governance. This is consistent with the definition of action subjects in Chinese crisis governance theory.

The integration of empirical findings and theoretical insights again demonstrates that focusing on only one aspect—be it tool theory, process theory, or contingency theory—cannot provide a complete understanding of governance logic. The construction theory is more suitable for systematizing the theory of implementation mechanisms. The study suggests that further clarification is needed in the selection and implementation of implementation mechanisms. The first level is that factors such as structure and characteristics are independent variables influencing the design of implementation mechanisms, which has been well-documented in prior theoretical and practical research. The second level addresses the relationships among these independent variables during the implementation mechanism design process. The third level explores whether the actions of decision-makers, target groups, and social actors under individual rationality or informal institutions can alter or optimize the implementation mechanism system. Systematizing the theory of implementation mechanisms requires treating it as a research variable, placed within specific case scenarios of framework networks and framework processes for comparative analysis. Through multi-domain case studies, further validation of the implementation mechanism systems in different institutional structures (contexts) and framework issues can be conducted, or through a dynamic perspective on framework change, the study can reveal the mechanisms of implementation mechanism selection and implementation within a specific framework domain.

This study also makes a contribution to framework research methodology. Text data is an important carrier of framework information, but its unstructured nature increases the difficulty of analysis. The method used in this study leans toward an "inductive logic" approach in framework text analysis, wherein key information required for framework analysis is extracted by quantifying text features. The introduction of semantic analysis tools, such as topic modeling, further improves the efficiency and effectiveness of extracting large-scale framework text information. This broadens the collection dimensions of implementation mechanism variables, providing more data sources for public framework analysis.

## COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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