



# Research on the Theoretical Model of Multi-Stakeholder Collaborative Decision

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**Abstract.** The effectiveness of university emergency management relies on the scientific construction of a multi-stakeholder collaborative decision-making mechanism. Based on stakeholder theory and deliberative democracy theory, this study constructs a three-layer collaborative decision-making model of "stakeholder classification—responsibility-right matching—deliberative participation". It classifies stakeholders into core layer, close layer, and peripheral layer through Mitchell's stakeholder classification method, and designs differentiated mechanisms. By introducing Habermas' communicative rationality theory, this study builds a deliberative platform of "information sharing—idea collision—consensus formation", and demonstrates the path of procedural justice enhancing decision-making legitimacy. The research aims to provide a theoretical framework for multi-stakeholder collaboration in university emergency management and promote the paradigm transformation from "single governance" to "collaborative governance".

**Keywords:** University Emergency Management; Stakeholder; Deliberative Democracy; Collaborative Decision-making.

## 1 Introduction

China's emergency management system is undergoing a paradigm shift from "emergency response" to "full-cycle governance," with policy documents explicitly establishing multi-stakeholder collaboration as the core principle for university emergency management [1].

As the core arena for talent cultivation and knowledge innovation, universities' emergency management capabilities directly impact the safety of faculty and students' lives and property, campus stability, and even public security [4]. In recent years, campus emergencies have exhibited distinct characteristics of diversified types, complex impacts, and dynamic governance [6]. The traditional emergency management model centered on administrative hierarchies and characterized by "single-entity dominance" now faces severe challenges including blurred accountability, marginalized participation, and fragmented collaboration [7].

Domestic and international studies indicate that university emergency management must transcend the "single-center governance" paradigm [5]. Existing theories fail to

effectively address the dual demands of "multi-stakeholder participation" and "decision-making legitimacy" in higher education emergency management, lacking a systematic framework that integrates stakeholder classification and deliberative democratic mechanisms [2][3]. Therefore, developing a multi-stakeholder collaborative decision-making model incorporating stakeholder theory and deliberative democracy theory holds significant theoretical value and practical implications.

Building on stakeholder theory and deliberative democracy theory, this study proposes a theoretical model for multi-stakeholder collaborative decision-making in university emergency management. It addresses two key theoretical challenges: How to establish a collaborative framework with clearly defined responsibilities based on stakeholder attribute differences? And how can deliberative democratic mechanisms enhance the legitimacy and effectiveness of emergency decision-making through procedural justice?

This study analyzes the unique characteristics of emergency management entities in higher education institutions, adaptively modifies the Mitchell Three-Dimensional Classification Method, and proposes a dynamic stratification model of "Core Layer-Tight Layer-Peripheral Layer" to enrich the application of stakeholder theory in non-profit organization governance. By establishing a decision-making process of "stratified consultation-time-bound consensus," it provides a new analytical framework for applying deliberative democracy theory in high-pressure decision-making scenarios. A multi-stakeholder collaborative network is constructed to achieve end-to-end risk governance: peripheral layer entities provide early risk warnings, tight layer entities execute professional interventions, and core layer entities coordinate resource allocation, forming a closed-loop governance system of "prevention-intervention-recovery." This significantly enhances the systematic risk resilience of university emergency management systems.

## **2 Research Methods: Normative Analysis and Theoretical Construction**

### **2.1 Three-dimensional criteria for stakeholder classification**

This study employs normative analysis methods to deconstruct stakeholder attributes and achieves procedural design of deliberative democracy mechanisms through theoretical construction.

The three-dimensional stakeholder classification framework proposed by Mitchell provides a theoretical tool for identifying emergency management entities in higher education institutions. Considering the organizational characteristics of universities, this study conducts scenario-based analysis of each dimension to develop a practical classification framework, as shown in Table 1.

**Table 1.** Three-dimensional Classification of Stakeholders

dimension	core problem	Analysis of Emergency Management Application in Universities
legality	Does the subject have the legitimate right to participate in emergency decision-making?	School leadership (legal decision-making authority), teachers and students (rights to safety benefits), and surrounding communities (risk-related rights)
urgency	Should core needs be prioritized in emergency response?	Core layer (real-time decision-making requirements)> Tight layer (timeliness of execution requirements)> Peripheral layer (information symmetry requirements)
Powerful	Does the entity possess the actual capacity to influence decision-making?	School leadership (resource allocation authority), Security Department (on-site response authority), and Media (public opinion supervision authority)

**2.2 Principles of Procedure Design for Consultative Democracy Mechanisms**

Inclusiveness Principle: Based on the "participation of all affected parties" principle of deliberative democracy theory, ensure that the voices of different stakeholders are systematically incorporated to avoid elite capture and participation exclusion. Guarantee that all stakeholders have reasonable channels to participate in decision-making processes.

Stage-based Principle: Drawing on the four-stage theory of emergency management, the varying levels of information completeness and time pressure across different stages necessitate dynamic adjustments to negotiation mechanisms.

The principle of rule primacy: Drawing on procedural justice theory, predefining negotiation rules can reduce procedural disputes, establish consensus criteria, avoid procedural arbitrariness, and enhance decision acceptance.

**3 Theoretical Model Construction**

**3.1 Stakeholder Stratification and Synergy Mechanism Design**

Based on Mitchell's three-dimensional classification framework and considering the organizational characteristics and power structures of university emergency manage-

ment, stakeholders are categorized into three tiers: core, close, and peripheral. Tailored collaborative mechanisms are designed according to the attributes of each tier, forming a three-dimensional coordination network encompassing "strategic decision-making—professional execution—information support."

Core Layer:

1. Organizational Structure: School Emergency Management Leadership Group and Emergency Management Office.

School Emergency Management Leadership Group: Headed by the principal, with the vice-principal in charge of safety, logistics, and teaching serving as deputy leader. Emergency Management Office: As a permanent executive body, responsible for daily coordination of the leadership group, contingency plan management, and crisis early warning. Its existence ensures routine operation and professional support for core-level decision-making.

2. Collaborative Mechanism: Consensus Decision-making System, which requires all major decisions to undergo thorough discussions and obtain recognition from key stakeholders to avoid cognitive biases and excessive concentration of responsibility caused by single leadership. The operation of this mechanism follows three steps: "information sharing—idea collision—consensus attainment."

3. Decision-making rules: The "one-vote veto system" is adopted to ensure collective consensus on major decisions. Scope of application: Limited to high-risk decisions affecting the overall situation.

4. Authority and Responsibility Boundaries: Responsible for overall resource allocation, cross-departmental coordination, and external liaison;

5. Theoretical Basis: Based on principal-agent theory, the core layer acting as teachers 'and students' agents should mitigate decision-making risks through consensus mechanisms.

Tight layer:

Core Components: The emergency response framework consists of functional departments directly responsible for crisis management. Security Office: Oversees on-site order maintenance, hazard identification, and crowd evacuation guidance. University Hospital: Provides specialized medical services including casualty treatment, epidemic prevention, and psychological crisis intervention, serving as the primary force in public health emergency response. Student Affairs Office: Manages student data statistics, emotional support, and dormitory administration, acting as a vital liaison in student-related incidents. Logistics Support Department: Administrates campus infrastructure, handling emergency supplies procurement, catering services, and sanitation operations.

Collaborative Mechanism: Departments at the close layer implement task assignments based on the "Emergency Duty List," adhering to the principles of "clear boundaries, individual accountability, and vertical integration." List-based Management: A "Departmental Emergency Task Matrix" is pre-established to define core responsibilities for different event types. Autonomous Execution: Autonomous decision-making authority for frontline response is granted within the scope of duties.

**Decision-making rules:** Each department independently assumes responsibility for specific tasks based on the Emergency Duty List and regularly reports progress to the core leadership team.

**Scope of authority:** Possesses temporary decision-making authority for frontline operations, but major adjustments require approval from the core leadership team.

**Theoretical basis:** Based on the theory of specialized division of labor, task contracting is employed to enhance execution efficiency.

**Peripheral layer:**

**Core components:** The outer layer encompasses entities that, while indirectly related to university emergency management, are indispensable.

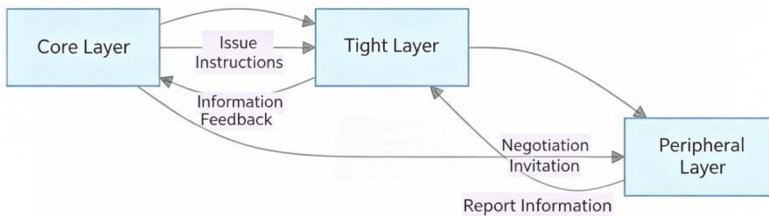
**Collaborative mechanism:** The peripheral layer does not directly participate in core decision-making, but its feedback information constitutes a critical input variable for decision-making. The mechanism design adheres to the principle of "open communication channels—categorized processing—closed-loop response," implementing an information feedback system.

**Decision rules:** Submit risk information in real-time through the online platform and participate in simplified decision voting.

**Boundary of authority and responsibility:** The peripheral layer possesses the rights to information access, proposal submission, and supervision, but lacks voting rights and veto power over proposals. Feedback opinions must be incorporated into decision-making references.

**Theoretical Basis:** Grounded in citizen participation theory, information feedback at the peripheral level constitutes symbolic participation. However, through institutionalized channel design, it can be transformed into consultative participation, aligning with the legitimate expectations of university faculty and students regarding democratic rights. Information provision at this peripheral level can mitigate decision-making information asymmetry.

The multi-agent collaborative relationship map of university emergency management is shown in Figure 1.



**Fig. 1.** Multi-stakeholder Collaborative Relationship Map of Emergency Management in Higher Education Institutions

### 3.2 Three-tier Architecture of Emergency Decision-Making Consultation Platform

#### First Layer: Information Sharing Layer

Establish a cross-entity real-time information hub where the information sharing layer serves as the foundational infrastructure for the negotiation platform, performing three core functions: multi-source data integration, cross-entity permission allocation, and full-process trajectory recording. Develop an emergency management digital middleware platform to integrate monitoring data, public sentiment information, personnel distribution, and other multi-source data. Design dedicated interface layers: the core layer displays global situational maps, the intermediate layer retrieves task tickets, and the peripheral layer submits hazard reports.

#### Second Layer: Perspective Clash Layer

##### Operation mechanism:

**Regular Consultation:** The Emergency Management Consultation Conference is held during the second week of each month, following a four-step process of "preliminary agenda review—tiered presentations—initial consensus assessment—plan revision."

**Emergency Consultation Protocol:** When an incident reaches Level II severity, an online emergency consultation meeting is initiated through the "Tencent Meeting + Emergency Decision System". Representatives from all stakeholders must submit written proposals within 30 minutes, with the system automatically extracting keywords to generate a proposal cloud map. The core group identifies key dispute points, with opposing sides each having 5 minutes for presentations while other members can provide real-time evidence through live comments. Proposal scores are calculated using the "weighted average method", with opinion weights allocated as follows: 30% for peripheral groups, 50% for close-knit groups, and 20% for the core group. Proposals scoring over 70 points advance to the consensus formation stage. The Robert's Rules of Order ensure procedural order, with the core group serving as the moderator. A reverse questioning mechanism is implemented, requiring decision proposals to receive at least one affirmative vote from peripheral group representatives before proceeding to voting.

Through the 'open agenda' of routine consultations and the 'rapid input' of emergency consultations, the principle of 'involvement of all affected parties' emphasized by Habermas is ensured, guaranteeing that diverse voices are systematically incorporated.

#### Third Layer: Consensus Formation Layer

##### Decision method:

**Core layer weight voting:** Major decisions adopt a weighted voting system, with school leadership holding 40% weight, the Emergency Office 30%, and close layer representatives 30%. **Peripheral layer consensus collection:** Decisions involving the vital interests of faculty and students require obtaining  $\geq 60\%$  support rate through questionnaire surveys.

**Technical tools:** Establish a database comprising 50 experts from both within and outside the institution to support technical decision-making. Utilize the Delphi method for multi-round convergence of expert opinions to generate evidence-based recom-

mentations; Develop a decision simulation system to simulate the impacts of different scenarios.

Theoretical foundation: Practical revision of Arrow's Impossibility Theorem, which mitigates "tyranny of the majority" and "elitist autocracy" through decentralized empowerment.

## 4 Research Conclusion

The theoretical model of multi-stakeholder collaborative decision-making in university emergency management developed in this study provides a novel paradigm for addressing challenges in traditional emergency governance through three-dimensional theoretical innovations. Breaking away from the conventional "single-center governance" framework, it establishes a differentiated collaborative mechanism based on stakeholder attributes, clearly defining the strategic decision-making role of the core layer, the professional execution role of the close layer, and the information support role of the peripheral layer. By integrating deliberative democracy theory into the emergency decision-making process, the model constructs a transition pathway from "authoritative decision-making" to "deliberative decision-making" through a three-tier architecture of "information sharing—idea collision—consensus formation."

## References

1. Wang Zhiqiang, Zhang Xiaojun. Changes in China's emergency management over the past 40 years of reform and opening-up: A perspective of the "discontinuity-equilibrium" theory [J]. *Journal of South China University of Technology (Social Sciences Edition)*, 2018,20(06):70-79. DOI: 10.19366/j.cnki.1009-055X.2018.06.008.
2. Gu Linsheng, Cui Ximeng. Wenchuan: Building a "Safety Net" for Disaster Prevention and Mitigation[J]. *China Disaster Reduction*, 2018, (09):40-45.
3. Zhang Pei. Theory and Empirical Study on Emergency Management in Higher Education Institutions Based on System Vulnerability Analysis [D]. Xi'an University of Architecture and Technology, 2013.
4. Aishwarya J, C. M S, Erin M. Interdepartmental Collaboration Model: A Support Strategy to Retain International Faculty in Counselor Education and Supervision[J]. *International Journal for the Advancement of Counselling*,2022,45(1):170-188.
5. Lv Tao. Research on Emergency System for Sudden Energy Shortages [J]. *China Population·Resources and Environment*, 2011,21(04):105-110.
6. Boin A. Boin A. The Transboundary Crisis: Why we are unprepared and the road ahead[J]. *Journal of Contingencies and Crisis Management*,2019,27(1):94-99.
7. Sha Yongzhong, Su Youli. Research on Public Service Demand Management Model Based on Social Demand Big Data [J]. *Library and Information Science*, 2023, (06):75-85.

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