

Article

Factors Influencing Emergency Management Performance in China's Prismatic County-Level Governance

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Abstract: Emergency management performance (EMP) at the county level in China plays a critical role in linking counties to serve as a bridge between urban and rural areas. This study explores the factors that influence EMP within China's county-level governance by applying Riggs' administrative ecology theory. The study examines the impact of normative constraints, favor politics, cooperative politics, and charismatic politics directly on EMP collectively and individually. This study analyzes empirical data using structural equation modeling from Jiangsu Province, which includes a survey of 300 emergency management personnel. The results show that normative constraints have the most significant positive influence on EMP, followed by charismatic politics, cooperative politics, and favor politics. The study highlights the mixed practices of traditional and modern administrative contexts, with the "prismatic" administrative model offering an adaptive governance approach during China's societal transition. This study advances the theoretical understanding of transitional governance systems and provides practical recommendations for policymakers to improve EMP in county-level governance frameworks.

Keywords: emergency management performance; county-level governance; prismatic administrative model; normative constraints; structural equation modeling



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1. Introduction

The Chinese government places significant emphasis on the effectiveness of emergency management (EM) as a vital aspect of governance, particularly at the county level. Counties bridge urban and rural areas, serving as a critical and essential interface between directives of top-level policy and grassroots implementation [1]. Counties' intermediary positions make them fundamental for coordination between centralized plans and local responses in managing emergencies [2]. In recent years, China has encountered natural disasters [3], public health crises [4], and environmental hazards [5], each of which are increasingly complex emergency scenarios demanding highly efficient EM practices. For instance, the COVID-19 pandemic underscored the urgency of EM structure resilience at the county level, where managing emergencies requires prompt response and coordination [6]. In response, the Ministry of Emergency Management was established by the government in 2018 to centralize all efforts and push toward a comprehensive "all-hazards, all-process, all-subjects" approach [7]. However, there are substantial challenges, particularly in transitioning these high-level policy structure to actionable grassroots county-level frameworks [8].

While national-level EM and top-down management systems have been extensively explored, a notable gap remains in understanding the unique challenges of EM at the county level in China [9]. The current literature primarily addresses National EM structures designs and reforms, grassroots level crisis response capacities, and the systems adaptive capacity to manage emergent threats [8]. However, these studies do not fully account for China's unique administrative position and limitation of resources faced by county-level

EM [10,11]. Counties operate and adhere to centralized mandates from top-level design [12] while managing practical limitations such as workforce shortages, budget constraints, and interdepartmental coordination [6,13]. Incorporating sustainable practices in EM, particularly at the county level, is crucial for improving the long-term effectiveness and resilience of the governance system. Ensuring that EM frameworks are sustainable not only strengthens response capacities during natural or man-made emergency situations but also builds a system that is adaptable to future environmental, social, and economic challenges, substantially underscoring the need for dedicated study towards a more sustainable model for prismatic county governance.

Given this context, this study focuses on addressing key research questions: What are the primary factors influencing emergency management performance (EMP) at the county level in China? How do normative constraints, favor politics, cooperative politics and charismatic politics interact with modern administrative norms to shape EMP? This study aims to fill this gap by focusing these questions explicitly on the operational, structural, and cultural dynamics within county-level EM and by centering these questions on these areas, offering practical insights for improving EMP through adaptive governance structures.

This study employs Riggs' administrative ecology theory to examine county-level EMP in China. Riggs' theory categorizes societies into three fused, prismatic, and diffracted administrative models [14], which is particularly relevant for understanding China's county-level emergency management. The prismatic model specifically characterizes counties in transitions, where traditional structures and systems coexist and sometimes conflict with modern administrative practices, leading to unique administrative environment embodying in a "prismatic" model [15]. Therefore, this framework is ideal and allows us to analyze how both historical and contemporary governance practices influence EMP. Specifically, the county-level administrative approach has mixed features of both traditional societies accenting interpersonal relations and favor-based politics with components of a modern bureaucratic system driven by normative constraints. It is important to recognize that administrative structures in China differ from previous studies using Riggs' model to categorizes administrative systems as fused, prismatic or diffracted in a different historical and political context [16]. While Rigg's prismatic model is particularly useful for understanding transitional societies, China's county governance presents unique challenge due to its political structure and varying local autonomy at county level. Although Riggs' prismatic model captures some of these complexities, this study calls for a more nuanced interpretation of the prismatic model to better reflect the complex dynamics of county-level emergency management. By exploring these dynamics, the prismatic model offers valuable insights into the county's complex EM structure and its implications for emergency management performance.

This study makes novel contributions; firstly, the study provides an extensive analysis of county-level EMP by applying Riggs' administrative ecology theory and offers a theoretical foundation suited appropriately to understand transitional administrative environment. Secondly, this study identifies four critical factors: normative constraints, favor politics, cooperative politics, and charismatic politics that primarily influence EMP in China's counties. This study models these factors and uncovers their distinct and combined effects on EMP. Finally, this study provides practical insights utilizing empirical data from Jiangsu Province and establishes a basis for applying these findings to other counties within China and in similar governance systems. In doing so, this research also contributes to the broader public administration literature in transitional societies and not only to understanding EMP at county level. Furthermore, it offers policymakers and urban planners a replicable framework that can be adapted to strengthen county-level EMP through targeted strategies tailored to the specific challenges of transitional governance structures.

This paper proceeds as follows: Section 2 details how each factor is theorized to impact EMP in research model and hypothesis. Section 3 covers the methodology of data collection and sampling used to gather empirical evidence from Jiangsu Province. Section 4 describes the structural equation model approach for analyzing the factors affecting EMP,

followed by a discussion of the findings. The final section concludes the results, discusses implications for county-level EMP, and offers recommendations for future research and policy adjustments.

2. Model Construction and Research Hypothesis

2.1. Model Construction

2.1.1. Relevant Research Overview

In a risk society, EMP evaluation has increasingly become a research field that the academic circle pays more attention to as more mature research results emerge. When the United Nations stipulated the indicators for government crisis management performance evaluation, it proposed that the government crisis management indicators must be sustainable, measurable, achievable, relevant, and timely [17]. To a certain extent, these requirements have a great guiding role for follow-up researches. Based on British practice, British scholar Jones constructed an EMP evaluation framework from the perspective of British disaster managers and took the “Capability Maturity Model” as the basis of this framework. On the basis of literature research, Bhakta Bhandari et al. [18] established a conceptual theoretical model of organizational performance based on the four organizational characteristics of adaptability, leadership, stability (mission and direction) and stakeholder communication. It is found that internal influencing factors (adaptability, leadership, stability) have a greater impact on organizational performance, while external factors (stakeholder communication) actually exert less effect. Owen et al. [19] believed that EMP evaluation was closely related to the interests of existing stakeholders, and the actual operation process was complex and diverse, making it difficult to be objective and fair.

Overall, the above scholars have focused on the value and ability of emergency management staff and their communication and coordination with stakeholders to explore the factors that affect EMP. However, emergency management is not a one-way mechanical process of providing services, but a comprehensive governance process with risk and disaster response as the fundamental task closely related to factors like social environment, regional characteristics, economic level, and service objects. In this regard, many scholars have broadened their research perspectives, involving social risks, emergency management tasks, and social environments. Furthermore, Becerra-Fernandez et al. [20] used complexity and dynamics as research focus to examine their influences on EMP evaluation. They divided task structure complexity into three dimensions: component complexity, interaction complexity, and program rigidity. Task dynamic uncertainty is then divided into three dimensions: task novelty, task unanalyzability, and task importance. On this basis, they explored the mediating role of knowledge-sharing factors and knowledge integration factors between emergency management task characteristics and performance. Liu and Wang [21] constructed a balanced scorecard performance evaluation framework for government emergency management organizations based on the practice of the Chinese government. Specifically, it is composed by four dimensions including centering on citizens (service quality, citizen orientation, service efficiency and crisis record), public investment (financial responsibility and management motivation), internal operation perspective (organization management, process management, employee management and degree of informatization) and innovation and learning (innovation aspect and learning aspect). Tian et al. [22] innovatively proposed the concept of “emergency management maturity” and took the accident emergency management capability as the evaluation object and applied it to the performance evaluation of accident emergency management.

Due to the various fields and contents of EMP evaluation, scholars also have their own concerns in the research process. Liu [23] focused on EMP evaluation of mass emergencies, believing that evaluation in this area has unconventional features such as conflicting value judgments, structural embeddedness, and semantic ambiguity. On this basis, Liu [23] constructed an EMP evaluation index system including core indicators such as efficiency, fairness, convergence, stability, and adaptability. Lu [24] mainly studied the EMP evaluation of the public health system, specifically taking the handling of public health emergencies as

an example, carrying out theoretical discussion and realistic investigation on the scientific value and feasible basis of the integration of EMP evaluation and emergency management practice. By adopting AHP to improve BSC, Yang [25] developed a performance evaluation index system for government crisis management in four dimensions, including people, resources and environment, internal control and management, innovation, and growth.

The application of Riggs' administrative ecology theory has been the subject of considerable debate [15]. The model offers a useful framework for understanding governance in transitional societies like China. However, the centralized political system of China presents complexities that the model may not fully capture. While previous studies have applied Riggs' model to other transitional societies [16], the unique characteristics of Chinese governance can be easily overlooked, such as top down structure and the varying autonomy at the county level [26]. In the Chinese context, national policies and local adaptations influence emergency management, creating a governance environment that is prismatic in nature. This study shapes these insights, suggesting that Riggs' prismatic model can be adapted to better reflect the unique political landscape of China, especially in the context of county-level emergency management, where traditional practices and modern governance systems often coexist in complex ways.

To sum up, there have been studies from various perspectives on EMP evaluation in academic circles so far. However, due to the realistic complexity of operation and its infancy stage of development in China, the related studies are mostly based on theoretical and management system frameworks. The research results are rarely used in practical emergency management events; therefore, to some extent, there is a disconnect between theory and practice.

2.1.2. Theoretical Framework

According to the administrative ecology theory of Fred W. Riggs, a famous American administrative ecologist, there are three basic social forms in human history: traditional agricultural society, transitional society, and modern industrial society [14]. Due to differences in the speed of social change and transformation in a country or region, there may be three social forms in a country or region in the same historical time and space [27]. In China, the reform and opening up that started in 1978 has greatly promoted the transformation of China from a traditional agricultural society to a modern industrial society. In this process, affected by deep structures such as economic appearance, geographical resources, human resources and local culture, counties in China are in a transitional period from a traditional agricultural society to modern industrial society [28]. Since its administrative model not only maintains some characteristics of traditional society, but also has some modern society factors, it conforms to the "prismatic" administrative model mentioned in Riggs' administrative ecology (Table 1). According to this theoretical explanation, this study believes that discussions and researches on the generation mechanism of county EMP need to fully combine the special geographical environment and political structure of counties in China, so as to form a more explanatory model of influencing factors in China's county EMP (Figure 1).

First of all, the normative political guidance in the process of modern administrative system is an indispensable factor to promote the performance of county-level emergency management. Affected by the transformation of socialization, the county society has not only established a bureaucratic organizational structure, but also formed the administrative principles of professional division of labor, legalism, and matter-based approach [29], and greatly improved the EMP of the county. Secondly, as the "junction" between the city and the countryside, tradition and modernity, the county's emergency management will inevitably be affected by human and political factors under the rural traditional background [30]. It is this kind of favor politics based on the informal relationship network that enables the emergency management bureau to avoid the chaotic whirlpool of unclear power and responsibility and promote the steady improvement of county-level EMP under the normal operation of communication and coordination [31]. Thirdly, in the transition period

and ambiguity period of the emergency management system reform, the intergovernmental cooperation and the division of departmental powers and responsibilities are still unclear, and it is difficult to rely solely on strong administrative authority to promote county-level emergency management. Under the pressure of territorial responsibility and administrative accountability, it provides the necessary soil for the development of “friendship and cooperation politics” among county departments [32]. Though strict administrative authority should be recognized as protocols and structures develop, strict administration with departmental cooperation enforces order and avoids chaos. Finally, the county-level emergency management model is driven by personal factors. It is manifested that leaders related to emergency management use their unique leadership qualities to attract subordinates and the masses to follow and participate in emergency management. Instead of coercive administrative power, it is easier to consolidate the results of emergency management and improve EMP.

Table 1. Riggs’ theory of administrative ecology.

	Fused Administration	Prismatic Administration	Diffraction Administration
Economic factors	“Reciprocal-recombination” structure, “redistributing” administrative system Significant family effect	“Fair-limited market” “market” and “identity” influencing administration	“Market-enterprise” structure, Marketization of administrative system
Social factors	Government behaviors influenced by family (clan) Pluralistic society	Similar to traditional society	Various and active organizations, Close relation between administration and groups
Communication network	Conflicts and misunderstandings in administration	Smoother than traditional society, Lower assimilation than modern society	Unitary society Helpful in administrative solution
Symbolic system	“Divine right of kings” Administration not responsible for people	Complicated and diversified	“Sovereignty in people” Administration responsible for people
Political framework	Integration of politics and administration “Bureaucracy”	Politics and administration have not been completely separated	Division between administration and politics Administration serving politics

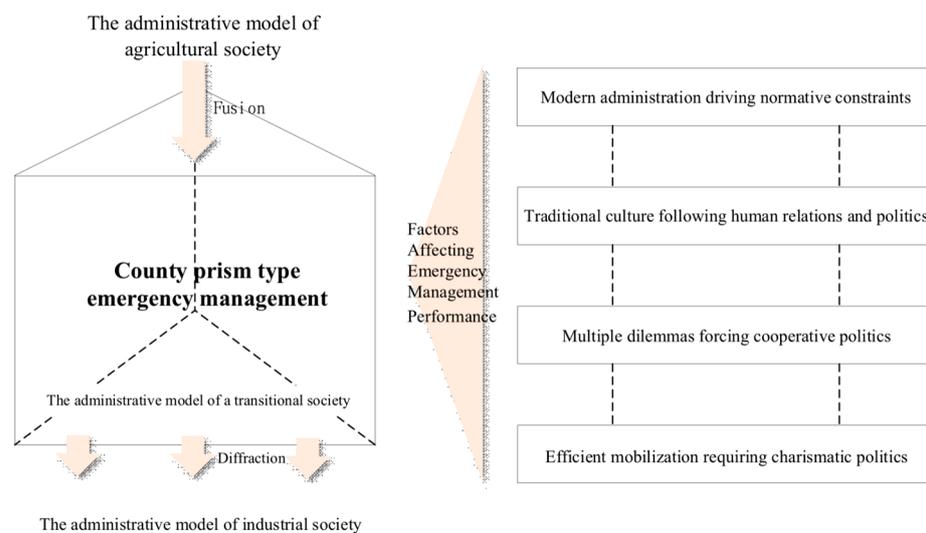


Figure 1. The model of influencing factors of prismatic county-level EMP.

Therefore, on the basis of previous studies, this study combines the characteristics of heterogeneity, complexity and uncertainty of county-level emergency management. According to the principles of operability and realizability of the assessment, normative constraints, favor politics, cooperative politics and charismatic politics are taken as the

important factors affecting the performance of county-level emergency management in this paper.

2.2. Research Hypothesis

Based on a literature review, relevant theories, and field research results, this paper contends that normative constraints, favor politics, cooperative politics, and charismatic politics are important factors affecting county-level EMP evaluation, which are latent variables in the model [33]. According to these four exogenous latent variables, a structural path diagram (STD) and basic path assumptions are designed (Figure 2 and Table 2). STD (Figure 2) represents the hypothesized relationships followed by the theoretical framework of the study. Each of the paths in the figure reflect the proposed causal relationship as defined in the basic path hypothesis (H1 to H8) in Table 2. The primary goal of the study is to test these hypotheses using structural equation modeling and estimating path coefficients that quantify the strength and direction of these relationships. At the same time, measurable variables are indicators used to measure latent variables, which can be directly observed or measured. Therefore, the measurable variables of the 4 latent variables are designed, and the questionnaire design is carried out on the measurable variables.

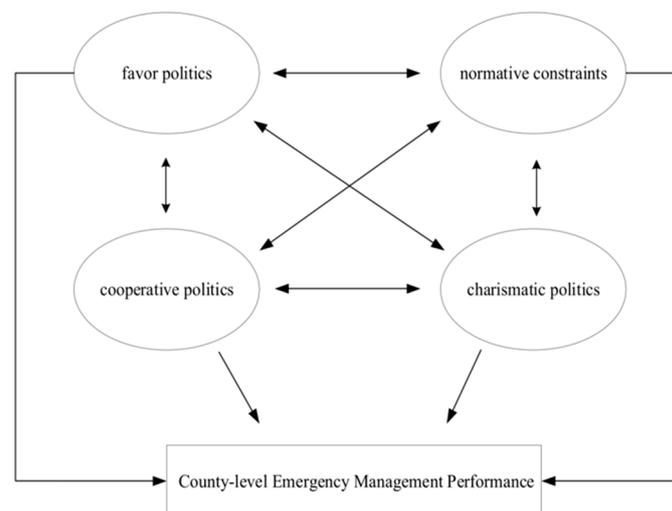


Figure 2. Structure path diagram.

Table 2. Basic path hypotheses (H1, H2, H3, . . . , H8).

Basic Path Hypotheses
H1: Normative constraint has an impact on county EMP paths
H2: Favor politics has an impact on county EMP paths
H3: Cooperative politics has an impact on county EMP path
H4: Charismatic politics has an impact on county EMP paths
H5: Normative constraint has an impact on favor politics, cooperative politics, and charismatic politics paths
H6: Favor politics has an impact on normative constraints, cooperative politics, and charismatic politics paths
H7: Cooperative politics has an impact on normative constraints, favor politics, and charismatic politics paths
H8: Charismatic politics has an impact on normative constraints, favor politics, and cooperative politics paths

3. Data Collection and Sample Characteristics

3.1. Sample Selection

Promoting the extension of emergency management construction to the grassroots is a key link to get through the “last mile” of emergency management, build a people’s

defense line for disaster prevention, reduction and relief, and strive to ensure social stability and the safety of people's lives and property. In order to better explore the internal codes of the performance improvement of county-level emergency management in China, this study conducts investigations and research in Jiangsu Province. Jiangsu Province has a total area of 107,200 square kilometers and governs 13 prefecture-level cities. It is also an economically developed province in China. However, the rapid economic development of Jiangsu is accompanied by a large number of emergency risks. In recent years, serious accidents such as Kunshan 8.2 Incident [34], Yancheng 3.21 Incident [35], and Wuxi Traffic Incident [36] have exacerbated the severe situation of emergency management. In the historical intersection of the decisive period of building a well-off society in an all-round way and the two-centenary goals, it is urgent to strengthen the construction of emergency management at the grassroots level in Jiangsu Province.

Therefore, in order to make the survey results more scientific and comprehensive, this study focuses on emergency management personnel from county-level emergency management bureaus, public security bureaus, health committees, and various townships in Jiangsu Province, using a hybrid research approach that combines quantitative and qualitative methods such as questionnaire surveys, field observations, and in-depth individual interviews. This survey comprehensively considers factors such as accuracy, cost, and feasibility of survey implementation and adopts a simple random stratified sampling method for calculation. Based on the previous social survey experience of the research group, 340 questionnaires were finally distributed, and 300 valid questionnaires were recovered, with an effective rate of 88.2%. The questionnaire was distributed with the support of relevant government agencies and staff, whose support deserves heartfelt gratitude.

Before the formal questionnaire survey, the investigators would briefly introduce the research and questionnaire survey to the respondents, and then the respondents completed the questionnaire independently under the explanation of the investigators. Each questionnaire survey took approximately 5 to 7 min, and all respondents were compensated for their time and assistance. All information obtained from the questionnaire was anonymous and would be strictly confidential. Each respondent completed a written informed consent form to demonstrate that participation in this study is voluntary.

3.2. Questionnaire Design

The design of the questionnaire in this paper is mainly based on the integration of relevant scholars' researches, measurement models, and evaluation systems and combined with the assumptions about the factors that affect the county-level EMP. The questionnaire strives to measure the relevant factors comprehensively and accurately and objectively and truly find out the factors that affect the performance of county-level emergency management. A total of 56 questions were designed, corresponding to 14 observed variables, reflecting 4 exogenous latent variables and 1 endogenous latent variable. Among them, the four exogenous latent variables are normative constraints, favor politics, cooperative politics and charismatic politics, and one endogenous latent variable is county-level EMP.

Since it is difficult for a single question to effectively and truly reflect some observed variables in this paper, these observed variables are jointly reflected by multiple survey questions. Specifically, the latent variable of favor politics (F1) is represented by three observation variables: human relationship (X1), interpersonal trust (X2), and relational authority (X3); the latent variables of normative constraints (F2) are represented by three observation variables: organizational system (X4), emergency mechanism (X5), and emergency legal system (X6); factors of cooperative politics (F3) are represented by three observation variables: vertical cooperation (X7), horizontal cooperation (X8), and diagonal cooperation (X9); factors of charismatic politics (F4) are represented by vision incentives (X10) and risk-taking behaviors (X11), care about environment (X12), care about subordinates (X13), and unconventional behavior (X14) are five observation variables. The specific scoring adopts the Likert five-level scale method [37], and the questionnaire sets a 1–5 scoring interval for the topic. The survey concludes that the favor politics measurable indicators have an

average mean (3.69–4.07) and standard deviation (0.648–0.698). Normative constraints response averages of three measurable indicators were found (3.66–4.05) while standard deviation (0.673–0.761). Cooperative politics and charismatic politics have an average mean between (3.71–4.04) and (3.65–4.03) with standard deviation ranging between (0.715–0.778), respectively. Lastly, county-level EMP has an average mean of (3.88–3.99) and standard deviation of (0.682–0.771). The meaning of the measurable variables of the model along with descriptive analysis including average mean and standard deviation are shown in Table 3. The reliability and validity are discussed in the results section.

Table 3. Variable description and descriptive analysis of county-level EMP.

Latent Variables	Observed Variables	Indicator Value ¹	Avg.	St.D
Favor politics (F ₁)	human relations (X ₁)	Human relations	4.07	0.648
	interpersonal trust (X ₂)	Human trust	3.97	0.664
	relational authority (X ₃)	Relationship authority	3.69	0.698
Normative constraints (F ₂)	organizational system (X ₄)	Organization system perspective	4.05	0.673
	emergency mechanism (X ₅)	Management mechanism perspective	3.95	0.761
	emergency legal system (X ₆)	Management legislation perspective	3.66	0.725
Cooperative politics (F ₃)	vertical cooperation (X ₇)	Vertical cooperation situation	3.71	0.776
	horizontal cooperation (X ₈)	Cooperation within same level	3.94	0.747
	oblique cooperation (X ₉)	Cross-level cooperation	4.04	0.746
Charismatic politics (F ₄)	vision motivation (X ₁₀)	Leader's encouragement	4.03	0.715
	risk-taking behavior (X ₁₁)	Initiative of leading cadres	3.98	0.778
	concern for the circumstances(X ₁₂)	Leader's knowledge of current situation	3.86	0.776
	concern for subordinates (X ₁₃)	Leader's reaction to subordinates concern	3.76	0.738
County-level EMP (F ₅)	unconventional behavior (X ₁₄)	Leader's unconventional actions in emergency	3.65	0.771
	Structure performance (Y ₁)	Management system, mechanism, legislation functioning situation	3.91	0.712
	Process performance (Y ₂)	Four-stage functioning situation	3.99	0.682
	Result performance (Y ₃)	Management satisfying people's concern	3.88	0.771

¹ The index value is based on the Likert five-level scale, specifically 1~5: 1 means very poor; 2 means relatively poor; 3 means average; 4 means relatively good; 5 means very good.

4. Research Methods and Structural Equation Modeling

4.1. Model Setting

This study aims to explore the influencing mechanism of prismatic county-level emergency management performance. Since the influence mechanism is only a trait or an abstract concept, it is difficult to be directly measured or observed. However, the structural equation model can reflect the latent variables that are difficult to measure with the help of a set of directly measurable indicator variables [38]. Additionally, it can deal with several dependent variables at the same time, allowing the independent variable and dependent variable to have different degrees of measurement error or residual error, and having flexibility in the analyzing between variables [39]. Therefore, this study adopts structural equation modeling to study the factors influencing prismatic county-level emergency management performance, with its measurement and structural equations as follows:

$$\text{Measurement equation : } X = \Lambda_x \xi + \delta \quad (1)$$

$$Y = \Lambda_y \eta + \varepsilon \quad (2)$$

$$\text{Structural Equation : } \eta = B\eta + \Gamma\xi + \zeta \quad (3)$$

The measurement equation includes exogenous latent variable measurement equation Formula (1) and endogenous latent variable measurement equation Formula (2). Among them, ε has no correlation with η , ξ , and δ , while δ has no correlation with ξ , η and ε . Λ_x and Λ_y are the factor loadings of the index variables (X, Y), while δ and ε are the

measurement errors of the obvious variables, and ξ and η are the exogenous latent variables and endogenous latent variables, respectively. In the structural equation Formula (3) of the model, there is no correlation between ξ and ζ . B is the structural coefficient matrix between endogenous latent variables, which describes the interaction between endogenous latent variables η ; Γ is the structural coefficient matrix between exogenous latent variables and endogenous latent variables, which explains the impact of exogenous latent variables ξ on the endogenous latent variable η ; ζ is the equation error of the structural equation model, that is, the residual error of the part that cannot be explained by the exogenous latent variable to the endogenous latent variable.

4.2. Scientific Verification of Samples

4.2.1. Reliability Test of Sample Data

This study mainly adopts the internal consistency index to measure the reliability of the questionnaire data and uses the Cronbach's Alpha coefficient method on the SPSS21.0 statistical software for data analysis. After the reliability test, the Cronbach's Alpha value is 0.959, and the number of items is 17. The reliability test results of the five latent variables in the questionnaire are shown in Table 4.

Table 4. Reliability test results of latent variables.

Latent Variable	Cronbach's Alpha	No. of Measurable Variables
Favor politics	0.784	3
Normative constraints	0.854	3
Cooperative politics	0.904	3
Charismatic politics	0.876	5
County-level EMP	0.814	3

A reliability coefficient result of the total scale above 0.8 is the prerequisite for the questionnaire to meet the reliability test, and 0.7~0.8 is also acceptable. The reliability statistics of the total scale show that the Cronbach's Alpha coefficient is 0.959, and the Alpha coefficients of the subscales are all above 0.7, which indicates that the reliability of the questionnaire has passed the test. The reliability of the sample data is relatively high, and the initial hypothesis path of the research is applicable.

4.2.2. Validity Test of Sample Data

In this paper, the KMO test and the Bartlett spherical test are employed to test the validity of the questionnaire (as shown in Table 5). From the test results, the KMO value of the sample data is 0.964, and the significance of the Bartlett sphericity test reaches 0.000, indicating a correlation between the various constituent variables of the county-level EMP influencing factors. The questionnaire has good structural validity and can perform factor analysis.

Table 5. Validity test of questionnaire scale.

KMO Sampling Suitability Quantity		0.964
Bartlett's test of sphericity	Approximate chi-square	3859.092
	Degrees of freedom	136.000
	Significant	0.000

4.3. Model Fitting

Combined with the basic path hypotheses, variable design and sample data of the influencing factors of county-level EMP, Amos23.0 software was employed to fit the structural equation model, with the initial model obtained in Figure 3.

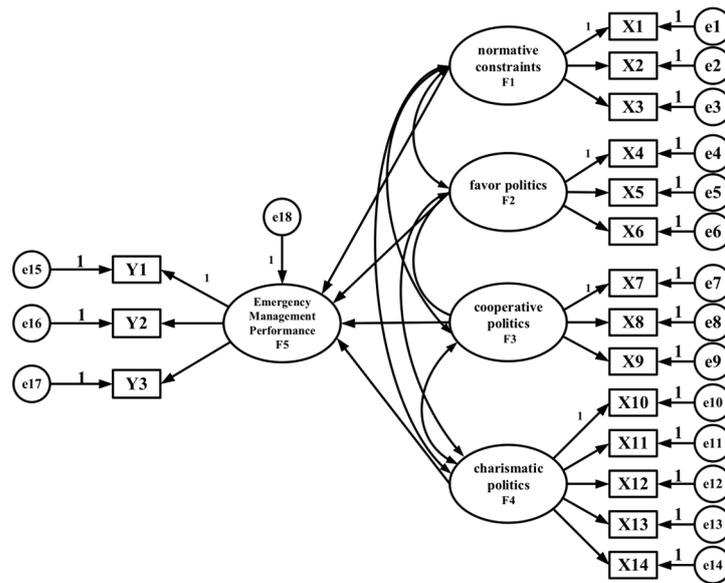


Figure 3. Initial structural equation model path.

According to the path diagram 1 of the initial structural equation model, through the first Calculate Estimate calculation of Amos Graphics, the fitting value of the initial structural equation model was obtained. The fitting effect and evaluation criteria of the initial model are shown in Table 6.

Table 6. Evaluation index system and fitting results of the overall structural equation fitness.

Index	Evaluation Standard	Initial Fit Value	Result	
Absolute Fit Index	χ^2/df	$\chi^2/df < 3$	247.503/109	excellent
	GFI	Above 0.9	0.909	excellent
	RMSEA	Below 0.08	0.065	excellent
	ECVI	Theoretical model value should be less than the saturated model and the independent model value.	1.122	negative
Relative Fit Index	NFI	Above 0.9	0.937	excellent
	IFI	Above 0.9	0.964	excellent
	TLI	Above 0.9	0.955	excellent
	CFI	Above 0.9	0.964	excellent
	AIC	The smaller the better.	335.503	excellent
Information Index	PNFI	Above 0.5	0.751	excellent
	PCFI	Above 0.5	0.772	excellent

By comparing the initial model fitting results and evaluation standards of the factors that affect county-level EMP, it can be found that the initial model fits the sample data well, and many indexes basically meet the requirements. However, the ECVI in the absolute fitting index did not reach the ideal standard, and the chi-square value of the model is relatively large. In order to make the model explain the results more scientifically and accurately, the initial model needs to be further revised.

5. Model Modification, Optimal Results and Summary

5.1. Model Modification

Due to the poor fitting effect of the initial structural equation model, it is necessary to further revise the initial model of the influencing factors of county-level EMP in order to improve the model fit. Since the sample data passed the scientific test of reliability and validity, and the reliability of the questionnaire is good, the questionnaire indicators, namely the measurable variables of the latent variables, will not be modified. Amos

software also gives the covariance modification index MI (Modification Indices) while giving the model test results. If the MI values of some variables are large, it means that the original hypothetical model did not take into account the covariation relationship among these variables, so that the path analysis conditions cannot be achieved [40]. According to the MI value, following the principle of releasing only one parameter at a time, this paper revises the hypothetical model successively until the optimal model is achieved.

According to the correction index MI displayed by the Amos software, firstly, the maximum covariance correction index MI between the error variable e1 and the error variable e15 is 18.152, which needs to be corrected (Table 7). If the residual correlation path between human relationship (X1) and county-level emergency management structure performance (Y1) is increased, the degrees of freedom and chi-square value of the model will decrease. From a practical point of view, the higher the degree of human relations, the more phenomena such as “do me a favor” and “give me a face” occurred during the emergency management work in the county. The better the degree of execution of command orders in emergency management, the better the effects of static structures such as standardized emergency management systems, mechanisms, and legal systems. The structural performance of emergency management is mainly affected by static factors such as the emergency management system, mechanism and legal system, so there is a correlation between the two, so the relevant paths of e1 and e15 are added.

Table 7. Initial model modification index.

Modifications	Adding Residual Modification Paths	Covariance Modification Index	MI	Par Change
First revision	X1↔Y1	e1↔e15	18.152	0.054
Second revision	X10↔X11	e10↔e11	13.241	0.052

The second model revision found that the MI value of e10 and e11 was 13.241, the largest, which needs to be revised to increase the residual correlation path between vision incentive (X10) and risk-taking behavior (X11). In fact, the more leading cadres can take the initiative to deal with risks, the better their vision and motivation to subordinates will be, so the related paths of e10 and e11 will be increased. After two rounds of corrections, all the fitting indicators of the model have reached the ideal state, and no corrections will be made at this time. The final corrected model fitting values are shown in Table 8.

Table 8. Calculation results of the revised model fitting index.

Fit	χ^2 (df)	GFI	RMSEA	ECVI	NFI	IFI	TLI	CFI	AIC	PNFI	PCFI
Results	212.560 (107)	0.922	0.057	1.019	0.946	0.972	0.965	0.972	304.560	0.744	0.765

Table 8 shows that the chi-square value and degrees of freedom of the model are significantly reduced. The fitting indices have been greatly improved, especially the ECVI value in the initial structural equation model is 1.122 (Table 6) and theoretical model values should be less than saturated and independent model values, and after second revision ECVI reaches 1.019, which is smaller than the saturation model value (1.023) and independent model value (13.307), indicating that the model fits better with the sample data [28]. In addition, the parameters of the revised model are still significant at the 1% level, indicating that the significance level of the revised model is high and the path is better.

5.2. The Optimal Result of the Modified Model

After two rounds of modification to the initial model, the optimal model of the influencing factors of county-level EMP is obtained. Based on Amos23.0 software, the modified standardized path fitting graph is drawn, as shown in Figure 4.

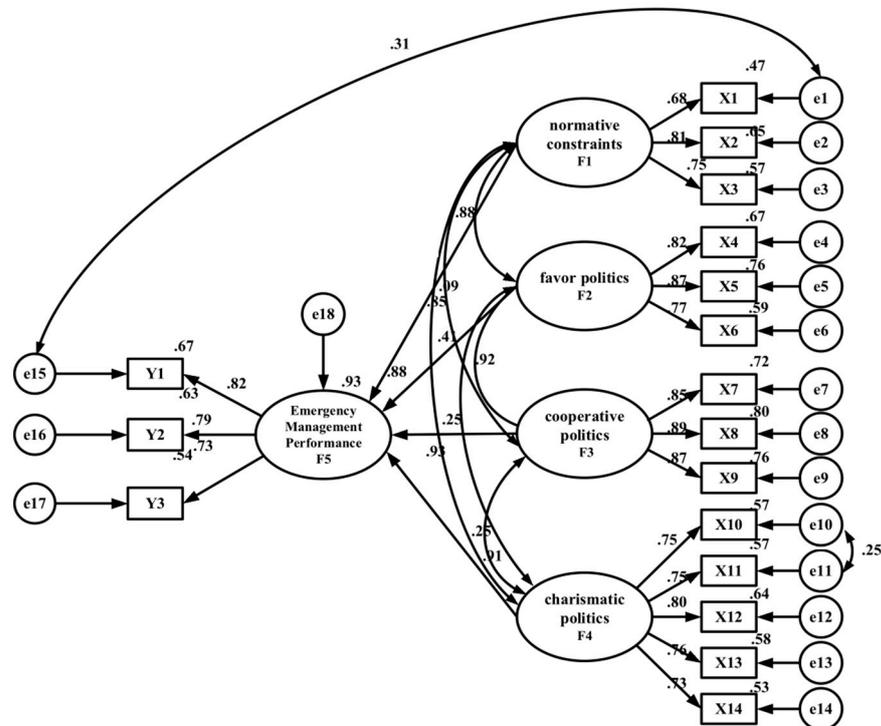


Figure 4. Path-fitting diagram of optimized county-level EMP influencing factors.

After standardizing sample data, each path coefficient of the optimized model can be obtained (Table 8). According to statistics, it is found that the Critical Ratio (C. R.) of the path coefficients among favor politics, normative constraints, cooperative politics, and charismatic politics, which affect county emergency performance, range from 0.72 to 20.654. P in Table 9 is the statistical test probability of C. R. The significance of each path coefficient can be tested by the p value. It can be seen that there are significant differences in each path relationship of the optimized model under the 99% confidence level.

5.3. Analysis of Empirical Results of Structural Equations

Table 9 and Figure 3 show the modified structural equation model standardized path coefficient analysis results and path conduction effect between all observed variables of the model and their corresponding latent variables reached the 1% level of significance, which shows that the observed variables selected by the model can reflect the corresponding latent variables.

5.3.1. Latent Variable Level

The four exogenous latent variables of favor politics, normative constraints, cooperative politics, and charismatic politics are all positively correlated with county-level EMP at the 1% significance level. The correlation coefficients are 0.087, 0.409, 0.246, and 0.253, respectively, indicating that the normative constraints influenced by modern factors have the strongest influence on county-level EMP at this stage, while the effects of favor politics, cooperation politics, and charm politics on county-level EMP are relatively less significant.

Table 9. Estimation of each path coefficient of the optimization model ¹.

Path Relationship	Estimate-S	S. E.	C. R.	p
F5←F1	0.087	0.159	0.72	***
F5←F2	0.409	0.216	2.005	***
F5←F3	0.246	0.117	1.864	***
F5←F4	0.253	0.198	1.387	***
X1←F1	0.683			
X2←F1	0.807	0.098	12.25	***
X3←F1	0.754	0.104	11.405	***
X4←F2	0.818			
X5←F2	0.874	0.066	18.409	***
X6←F2	0.767	0.068	14.933	***
X7←F3	0.848			
X8←F3	0.894	0.049	20.654	***
X9←F3	0.874	0.051	19.322	***
X10←F4	0.754			
X11←F4	0.755	0.071	15.452	***
X12←F4	0.802	0.08	14.435	***
X13←F4	0.764	0.078	13.433	***
X14←F4	0.729	0.082	12.719	***
Y1←F5	0.818			
Y2←F5	0.795	0.059	15.829	***
Y3←F5	0.732	0.069	13.957	***

¹ Estimate-S is the standardized path coefficient; S. E. is the standard error; C. R. is the critical ratio; *** indicates that the *p* significance level is less than 0.001.

5.3.2. Conduction Path Coefficient Layer

Among the observed variables included in human relations and political factors, the factor loadings of human relations, interpersonal trust, and relational authority are 0.683, 0.807, and 0.754, respectively. The influence of interpersonal trust is significantly greater than the degree of influence of human relations and relational authority on human relations politics, indicating that the relationship of trust between people plays a decisive role in the formation of human-political factors. Among the observed variables included in normative constraints, the factor loadings of organizational system and emergency mechanism on normative constraints were 0.818 and 0.874, both exceeding 0.8, indicating that these two observed variables can largely reflect normative constraints. A latent variable, while the observation variable of emergency legal system has relatively little influence. Under the latent variable of cooperative politics factor, the factor loadings of the three observed variables vertical cooperation, horizontal cooperation and oblique cooperation are 0.848, 0.894 and 0.874, respectively, which indicates that vertical, horizontal, and oblique cooperation are important factors in cooperative politics, it has a strong explanatory power for cooperative politics, and to a certain extent, it also shows that vertical, horizontal and oblique cooperative politics have positive effects on county EMP. Under the latent variable of charismatic politics, the factor loading of the observed variable focusing on the environment is 0.802, and the factor loadings of other observed variables are all below 0.8, which indicates that the perception of external risks by leading cadres in the county plays an important role in charismatic politics. At the same time, it also shows that the stronger the perception of the leading cadres to the risks inside and outside the county, the better the EMP of the county.

5.3.3. Observation Variable Level

According to the path coefficients of the optimization model, it can be seen that 14 observed variable factors (human relations, interpersonal trust, relationship authority, organizational system, emergency mechanism, emergency legal system, vertical cooperation, horizontal cooperation, oblique cooperation, vision incentive, risk-taking behavior, caring about the environment, caring about subordinates, and unconventional behaviors)

have different degrees of positive impact on county-level EMP. The greater the value of these factors, the better the management performance.

5.4. *The Connotation of Structural Equations' Empirical Results*

5.4.1. Favor Politics

As the “junction” between city and countryside, tradition and modernity, county emergency management is inevitably profoundly affected by traditional favor and political factors and plays a key role in improving EMP. Generally speaking, the improvement of county-level EMP is closely related to the rational allocation of governance and financial power within the county [41]. At the same time, traditional favor politics often functions as an important factor affecting county-level public affairs governance and financial resource allocation. Affected by the limited financial resources, running the department to make money has gradually become a relatively common political phenomenon in China’s political system [42,43]. Especially as a marginal department among the county government departments, if the emergency management department wants to take a share of the county’s finance, it needs to rely on the human relationship established between the leaders of the emergency management department and the leaders of the financial department. On the other hand, the complexity and cross-domain nature of emergency management affairs make it difficult for the emergency management department to achieve the desired governance effect, which requires the cooperation of other relevant departments. However, administrative procedures based on proceduralism, and departmentalism not only make it difficult to establish a healthy cooperative relationship between departments but also often delay opportunities for combat. At that time, the politics of human relations based on informal relations would provide a communication channel for inter-departmental collaboration and help improve EMP. Furthermore, the key to good EMP is not only the emergency management department, but also the close cooperation of the county people. Since the county is still a rural society, interpersonal trust based on human relations has established a good contract relationship between the government and the masses, which greatly reduces the cost of policy implementation, thereby improving the governance efficiency of emergency management in the county.

5.4.2. Normative Constraints

The key to the formation of the “prismatic” administrative model is to absorb the institutional factors from modernity, which provides institutional guarantees for the improvement of administrative performance in the transitional period. Since China established the emergency management system in 2003, the institutionalized, systematized, and standardized emergency management system has provided institutional compliance for the improvement of county-level EMP [10]. The emergency plan includes an emergency management, command, and rescue plan that guides the county to deal with public emergencies such as natural disasters, accidents, public health incidents, and social security incidents. Its planned and targeted emergency arrangements provide action for the county emergency management guide. As a critical part of the county emergency management system, the emergency management system is a general term for a series of systems and systems related to emergency management in the county, such as institutional settings, affiliation, and division of authority. It reflects the degree of standardization and institutionalization of county-level emergency management organizations. It provides institutionalized and standardized institutional basis and organizational guarantee for emergency management in counties. It can improve the efficiency of emergency management to a certain extent, thereby improving the performance of county-level emergency management. The emergency management mechanism is also the basis for the emergency management system to play its role. The development of emergency management needs to rely on emergency information reporting mechanisms, emergency response mechanisms, emergency linkage mechanisms of functional departments, and other related mechanisms [18]. These formal management mechanisms make the emergency management work have rules to

follow. Therefore, the more perfect the emergency management mechanism is, the better the county-level EMP will be.

5.4.3. Cooperative Politics

While building a multi-governance pattern has become the basic consensus of modern government governance [44], the formation logic of multi-governance at the county level has its particularity. Under the county-level emergency management model, the characteristics of departmental responsibilities and functional positioning in the transitional society are not yet clear, which makes county-level emergency management inevitably have overlapping characteristics. This feature makes the development of county emergency management inseparable from cooperation and contact with other levels of government or other departments. Vertical cooperation reflects communication and cooperation with the superior functional departments, which usually hold more power and resources. Therefore, the closer mutual communication and cooperation, the more conducive to the development of emergency management in the county. Horizontal cooperation reflects the connection with other government departments at the same level. According to the three-determined plan of the Emergency Management Bureau, it is responsible for coordinating the emergency management work in the county, and other departments cooperate to carry out. Without the cooperation of other departments, the Emergency Management Bureau seems to have lost its arms in the process of carrying out its work. Therefore, the collaboration of other departments is the key link for the effective development of emergency management, and the horizontal cooperation between other departments at the same level is directly proportional to the performance of emergency management. Diagonal cooperation reflects communication with other departments of different levels of government. To a certain extent, oblique cooperation can broaden access to emergency management resources, expand the influence of work results, and promote the improvement of EMP.

5.4.4. Charismatic Politics

According to Weber's charismatic authority theory, charismatic leaders use their personal character, ability, performance, and prestige to show their personal charisma to the public and gain recognition, before exercising power [45]. According to Conger's description of the characteristics of charismatic leadership, vision motivation, risk-taking behavior, attention to the environment, concern for subordinates, and unconventional behavior are the five major characteristics of charismatic leadership behavior. Among them, vision motivation shows that the leading cadres motivate their subordinates to work hard. To a certain extent, the leading cadres' good vision for the future can make the subordinates set the correct goal of serving the public and public safety, thus improving their work enthusiasm; risk-taking behavior can prompt subordinates to break through certain conventional thinking, better adapt to complex and changeable risk environments, and innovate ideas for improving emergency management capabilities; paying attention to the external risk environment can prompt subordinates to perceive changes in internal and external risks in their daily life, and take effective emergency measures in a timely manner, so that emergency work can be shifted to the front end; paying attention to subordinates can allow leading cadres to take targeted incentives and human care in a timely manner according to the different needs of subordinates, which can better improve subordinates' work enthusiasm and organizational creativity; unconventional behavior can encourage subordinates to break the routine. It brings a sense of novelty in emergency management work and encourages subordinates to dare to innovate in emergency management work, thereby improving county-level EMP.

6. Conclusions

This study found that previous studies mainly focused on the top-level design and grass-roots governance of emergency management with lack of attention to the EMP at the county level which is a linking role. This study also explored the specific impact mechanism

of each factor on county EMP, and verifies the relationship between the above four factors and county EMP. It is found that favor politics, normative constraints, cooperative politics, and charismatic politics all have significant positive correlations with county-level EMP. Among them, the influence factor of normative constraints is the largest (0.409), followed by charismatic politics (0.253), cooperative politics (0.246) and favor politics (0.087). The result showed that in counties, as the urban–rural “junction” zone in the process of rapid urbanization in China rapidly spreads, the normative factors under modernity have a strong influence on improving the county EMP. However, traditional favor politics, politics of cooperation, and politics of charm can also coexist with modern factors and have a positive effect on the performance of county-level emergency management.

According to Riggs’ administrative ecology, understanding the generative logic of county-level EMP should not be limited to the county administrative system. It is also necessary to examine the influence of the state and social system on the operation and power distribution of county emergency management organizations in the currently transitional period of China’s society. On the one hand, affected by traditional culture and economic development, county emergency management operation shows the characteristics of heterogeneity of resource allocation, overlapping of institutional functions, and formalism brought about by administrative inertia, which make it difficult to effectively deal with complex emergency management tasks by relying on a single formal administrative system [46]. On the other hand, this emergency management model does not mean that it will bring inefficiency in county EMP. On the contrary, it has become an effective means to force county governments to implement emergency management goals, resulting in special forms of political reciprocity, unique administrative communication networks and political cooperation mechanisms such as favor politics and cooperative politics. In other words, it is precisely because of the joint attributes of the county government’s unique administrative system, limited resource implementation, local cultural dependence, and unfinished system reform, that it brings flexibility and grounded freedom to emergency management operations. Integrating sustainable practices into resource management, governance framework, and policy development is essential for transitional societies’ sustainable governance. The incorporation of sustainable and adaptive emergency management systems will not only improve the efficiency of the county-level response to current challenges but also enhance the capacity of these systems to deal with future crises. A flexible and down-to-earth free execution space has become the key code to effectively crack the predicament of county-level emergency management.

During the transition period, China’s county emergency management conforms to the characteristics of “prismatic” administrative model mentioned in Riggs’ administrative ecology. Through further thinking, the county-level prismatic emergency management model is the result of the combined effect of the specific administrative system and political culture of developing countries. It is also a true portrayal of China’s governance and China’s solution at the county level in the process of governance modernization. From a higher level, this also reflects the social development tension manifested by developing countries or regions facing traditional and modern factors in the process of social change or transformation, that is, retaining the administrative inertia under the influence of traditional cultural factors to a certain extent. This also shows the vulnerability under the impact of the modern technological system. From the perspective of the social development process, with the advancement of social transformation, the prismatic administrative form of the county will gradually transform into the integrated administrative ecology of the modern industrial society. Realizing the evolutionary route from centralization to decentralization, from unity to pluralism, from regulation to service, and from rule of man to rule of law involves the modifications of multiple factors such as politics, economy, culture, and environment.

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