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RESEARCH ON FACTORS AFFECTING SOCIAL STABILITY RISK BASED ON DEMEATEL-ISM

Sun Wenqi[1], Luo Xuechun[2], Zhou Zaohong[3],*

[1]Huihe Construction Consulting Company, Jiangxi General Institute of Architectural Design and Research, No.66, Shengfu Beier Road, Donghu District, Nanchang City, Jiangxi Province, 330013, PR. China

[2]Department of Engineering Management, Jiangxi University of Finance and Economics, No. 665, Yuping West Street, Nanchang, Jiangxi Province, 330013, PR. China

[3]Department of Engineering Management, Jiangxi University of Finance and Economics, No. 665, Yuping West Street, Nanchang, Jiangxi Province, 330013, PR. China

Abstract

Aiming at the social stability risk factors and other problems existing in road upgrading and reconstruction project construction, combined with practical examples, based on risk identification, the DEMEATEL-ISM method was used to establish a multi-level hierarchical structure model of social stability risk, and the social stability risk was estimated and analyzed. On this basis, the interaction mechanism between the factors affecting social stability is analyzed, the key risk factors of project construction are found out, and the corresponding measures are proposed to provide objective basis and mathematical model for the project to enhance and optimize the ability of risk prevention and solution.

Keywords: Risks to social stability, DEMEATEL-ISM, Road engineering

1. Introduction

Risk refers to the social stability between various subjects in social system, because of the interest coordination inconsistencies, contradictions and conflicts to achieve a certain degree, leading to social system chaotic social order and social environment of disharmony risk (Huang Dechun, & Feng Tongzu, 2020, p. 224-230), it is the direct embodiment of social vulnerability, it is the result of social injustice damage and affect the social benign operation (Gu Hui. 2018, p. 158-164). Economic and social development in our country is faced with how to scientifically handle relationship among economic development, environmental protection, social harmony, how to correctly identify all kinds of social risk types and factors of the project, the project is how to effectively guard against and dissolve the high environmental risk caused by all kinds of social risk, prevent or reduce environmental mass incidents happen, alleviate and eliminate environmental mass incidents caused by social harm, how to break the high environmental risk in the process of engineering construction "government decision - protests - project ran aground" vicious reaction process, has become China's reform, development and economic and social development problem (Zhang Xiaochen & Shi Guoqing, et al. 2018, p. 288-296).

Social stability risk assessment refers to the scientific and systematic prediction, analysis and assessment of factors that may affect social stability before the introduction or approval of project decisions, and the formulation of risk response strategies and preplans, so as to effectively avoid, prevent, reduce, control and deal with the risks that may threaten social stability (Yang Xiong & Liu Cheng, 2010, p. 32-36). Domestic researchers have explored and analyzed the risk assessment of social stability from multiple perspectives, and the research topics include evaluation criteria, regulatory significance, model construction, theoretical paradigm, etc. (Liu Zezhao & Zhu Zhengwei, 2015, p. 118-128). There are also scholars focusing on the risk society, public risk perception (Hu Xiangming & Wang Feng, 2014, p. 102-108), national governance (Huang Jie & Zhu Zhengwei, 2016, p. 61-68), big data, stakeholders (Liang Yukun & Ma Zhendong, 2010, p. 164-167) and citizen participation and other perspectives to analyze the risk of social stability. Qian Xuesen & Yu Jingyuan (1990, p. 3-10+64) proposed a qualitative to quantitative comprehensive integration method based on the study of complex giant systems, which can be applied to complex social systems such as social risk management. Song Linfei (1999, p. 69-76) constructed the "Social risk monitoring and alarm indicator system".Niu Wenyuan (2001, p. 15-20) proposed the theory of social combustion and the early warning system of social stability; The comprehensive analysis framework of risk and hazard crisis proposed by Tong Xing et al.(2008, p. 35-45); Zhu Demi(2014, p. 58-66) studied the social theoretical framework of social stability risk assessment. Zhu Zhengwei et al.(2016, p. 61-68) believed that mass disturbances caused by major issues are rooted in the difference of risk perception among different stakeholders and the resulting response behaviors.

Some scholars may affect social stability risk factors (Yang Xiong & Liu Cheng, 2010, p. 32-36) is divided into three aspects: one is the project itself caused the contradiction, because the project construction in the benefit of the masses at the same time, inevitably involved in land requisition, housing demolition, resettlement sensitive issues such as security, climate change, easy to trigger social conflicts and mass incidents; The second is the contradiction brought by the differentiation of interest groups. Due to the different group consciousness and group belonging of different interest subjects, the content, structure and orientation of values change, which inevitably leads to new conflicts of values. Third, conflicts and disputes involving national interests. When the generating factors of social stability risk gather together, accumulate and catalyze each other, and exceed the maximum critical threshold that the social system can bear, the social stability risk will turn into a public crisis (Gu Hui. 2018, p. 158-164). The report of the 19th National Congress regards "public participation" as an important part of building a social governance pattern of joint construction, shared governance and shared benefits and an important means of correctly handling contradictions among the people (Zhang Changzheng, Zhang Lei & Hua Jian, 2018, p. 83-89 + 93). Typical risk management includes risk identification, risk assessment, risk decision-making and implementation of management actions.

Social stability risk assessment is also a process in which all parties reach value consensus through full communication, exchange and consultation. It is an important means to obtain public understanding, support and even active participation, especially from the public, who are negatively affected by major projects (Gu Hui. 2018, p. 158-164). The existing evaluation methods include cost-benefit analysis to predict the project input-output ratio; Technical feasibility analysis of integrated project environment and advantages and disadvantages; The analytic hierarchy process (Hu Xiangming & Wang Feng, 2014, p. 102-108) is used to measure the weight relationship among various elements of the environment.

2. Method

ISM (Interpretive Structural Modeling) is a model that is developed to study complex systems. Based on tools such as directed graph, matrix and computer technology, a multi-level hierarchical structure model is constructed (POLAT & RMAC, 2011, p. 169-174). DEMATEL (Decision Making Trial and Evaluation Lab), which is a scientific method based on graph theory and matrix to simplify the complex system structure (Gu Xuesong & Chi Guotai, 2010, p. 508-514). The combined model in this paper integrates the centrality and causation of DEMATEL into the multi-level hierarchical structure of ISM, which can not only clarify the hierarchical relationship of various influencing factors but also study the relative importance of constraints, so as to make the analysis result more objective and reasonable.

The steps to build the composite model are as follows:

1) Determine the set of influencing factors :

$$A = \{a_i | i = 1, 2, \cdots, n\} \quad (1)$$

2) Determine the factor influence scale, and determine the mutual influence relationship between the factors through expert knowledge and experience, and get the direct influence matrix $V=[v_{ij}]_{n\times n}$. v_{ij} represents the influence degree of factor ai on factor a_j. When $i=j$, $v_{ij}=0$.

3) Calculate the direct impact matrix V to obtain the normalized direct impact matrix X.

$$X = [X_{ij}]_{n\times n} = \frac{V}{\max \sum_{j=1}^{n} V_{ij}} \quad (2)$$

4) Calculate the comprehensive impact matrix T.

$$T = [T_{ij}]_{n\times n} = X(I - X)^{-1} \quad (3)$$

I is the identity matrix;

5) The influence degree f_i, the influence degree e_i, the center degree z_i and the reason degree y_i of the constraint factors were calculated. The calculation formula is as follows:

$$f_i = \sum_{j=1}^{n} T_{ij}, 1 \le i \le n \quad (4)$$

$$e_i = \sum_{j=1}^{n} T_{ij}, 1 \le i \le n \quad (5)$$

$$z_i = f_i + e_i \quad (6)$$

$$y_i = f_i - e_i \quad (7)$$

6) Draw the cause and result diagram:

Cartesian coordinate system is drawn with the degree of center as the abscissa and the degree of cause as the ordinate.

7) Calculate the overall impact matrix H.

$$H = \lfloor H_{ij} \rfloor_{n \times n} = T + I \qquad (8)$$

8) Determine the threshold value λ(Xue Wei1 & Geng Zhiwei, et al. 2019, p. 99-104.):

$$\lambda = \alpha + \beta \qquad (9)$$

Where, and respectively refer to the mean value and standard deviation of the comprehensive influence matrix *T*. Different lambda values have different logical relationships with the influencing factors (Sun Jing, 2018). The choice of lambda is more subjective based on expert experience, while replacing it with the sum of the mean and standard deviation based on the statistical distribution is more objective, which can reduce the influence of subjectivity.

9) Calculate the standardized reachable matrix K:

$$K = \lfloor K_{ij} \rfloor_{n \times n} \quad (\text{If } H_{ij} > \lambda, \text{ then } H_{ij}=1; \text{ If } H_{ij} \le \lambda, K_{ij}=0) \qquad (10)$$

10) According to the reachability matrix, the reachability set R_i and antecedent set S_i of each influencing factor are determined. R_i is composed of the index set corresponding to all the columns with index 1 in the ith row of the reachable matrix; S_i consists of the set of indices corresponding to all rows with index 1 in the ith column of the reachable matrix.

11) Verify:

$$R_i = R_i \cap S_i, \ (i=1,2,\ldots,n) \qquad (11)$$

If it is true, then a_i is the highest level factor. At this time, row *i* and column *i* are deleted in *K*, and the calculation is repeated until all factors are deleted.

(12) Draw the hierarchical structure diagram of factors according to the order of factors to be deleted, and establish the structural model.

3. Analysis of examples

Changwang Road upgrading project is located in Nanchang High-tech Zone, bordering Ziyang Avenue in the north and Aixihu South Road in the south. The geographical location is obvious, and the surrounding is residential land, superior natural environment, convenient transportation, suitable for business and living. According to the preliminary on-site engineering geological survey of Nanchang Bureau of Natural Resources and the situation of surrounding blocks, the site has good engineering geological conditions, and there are no unfavorable geological conditions such as faults, karst caves, soft soil and collapsible soil, so it is suitable for the construction of this project.

3.1 Project risk identification

Risk identification is the top priority in risk management. Risk identification and prevention and relevant intervention measures taken in advance during the formation and diffusion of social stability risks are important means to defuse social stability risks of large engineering projects (Huang Dechun, He Zhengqi & Zhang Changzheng, 2019, p. 60-67). Common risk identification methods include expert investigation, scene analysis (Chen Jianxiao, 2007, p. 73-76), checklist method, environmental scanning method, project structure decomposition method, Monte Carlo simulation method, statistics and probability method (Liang Yukun & Ma Zhendong, 2010, p.

164-167), etc. Characteristics according to the project, on the basis of investigation and risk identification and reference for the similar project information, risk according to the on-the-spot investigation to collect information, using the method of topic study, from the policy planning and project approval procedures, land house acquisition scheme, technical economy, ecological environment, project management, economic and social effect, safety and health, with eight aspects such as social mutual eligibility for analysis.

Submitted on the basis of risk analysis, the expert group to discuss it further in combination with risk factors for CRT, in accordance with the requirements of the reference index, the comprehensive judgment of every factor the influence degree of the risk degree of the project, will think after expert analysis to identify high risk probability, risk degree of major risk factors for proposed projects identified as the main social stability risk factors, consensus don't make 21 risk factors, as shown in table 1.

Table 1. Summary of qualitative analysis results of major social stability risks

Types of Risk	Serial	Factors	Number	Stages	Possibility
Policy planning and approval	1	Project approval and approval	W_{11}	decision	less
	2	Industrial policy and development plan	W_{12}	decision	less
Land expropriation scheme	3	The scope of land and house expropriation and requisition	W_{21}	preparation	less
	4	Compensation funds and standards for land and house expropriation and requisition	W_{22}	preparation	less
	5	Demolition process	W_{26}	construction	less
	6	Pipeline relocation and greening relocation plan	W_{28}	decision	less
	7	Other local compensation	W_{29}	preparation	less
Technical economy	8	Engineering proposal	W_{31}	construction	less
	9	Financing and security	W_{33}	preparation, construction	medium
Impact on the ecological environment	10	Emission of air pollutants	W_{41}	construction	medium
	11	Discharge of water pollutants	W_{42}	construction	medium
	12	Noise and vibration effects	W_{43}	construction,operation	medium
	13	Public open activity space, green space and ecological environment	W_{49}	construction	less
Project management	14	Six management systems of project units	W_{52}	construction,operation	less
	15	Civilized construction and quality management	W_{54}	construction	medium
Economic and social implications	16	The impact on the employment and lives of local people	W_{65}	construction,operation	less
	17	Floating population management	W_{69}	preparation,construction	medium
	18	Business impact	W_{610}	construction,operation	less
safety and sanitation	19	Construction safety, hygiene and occupational health	W_{71}	preparation, construction	medium
	20	Public order and public safety	W_{73}	construction,operation	medium
Social compatibility	21	The inclusiveness and mutual adaptability of the society to the proposed project	W_{81}	decision, construction, operation	less

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As can be seen from Table 1, there is a certain correlation among risk factors, so it is necessary to analyze the correlation among risk factors of social stability.

3.2 Construction of multi-level hierarchical structure model based on DEMEATEL-ISM

3.2.1 Directly affects the construction of the matrix

Taking ISM method as the central model and DEMATEL method as the auxiliary model, the structure model of enterprise emergency capacity is constructed. By consulting a large number of relevant literature's (Li Qiong & Zhan Xiaqing, 2020, p. 72-81; Qiu Yishan, Zhang Yunbo & Qi Shenjun, 2019, p. 612-20; Tian Zhongxing, Yang Xinmiao & Zhou Sien, 2018, p. 265-269; Zhu Zhengwei, Wang Qiong & Guo Xuesong, 2016, p. 61-68), designing questionnaires and issuing questionnaires to relevant experts, Delphi method was adopted to determine the relationship between each factor index and establish the direct impact matrix, as shown in Table 2.

Note: 3 is strongly correlated, 2 is moderately correlated, 1 is weakly correlated, and 0 is not directly correlated.

3.2.2 Obtain the global impact matrix and draw the causal diagram

The direct influence matrix was calculated by the formula of each step, and the comprehensive influence matrix was obtained, so as to obtain the influence degree f_i, the influence degree e_i, the center degree z_i and the cause degree y_i of each factor, as shown in Table 3.

Table 2 directly affects the matrix

Factors	11	12	21	22	26	28	29	31	33	41	42	43	49	52	54	65	69	610	71	73	81
11	0	2	2	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0
12	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
21	0	2	0	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
22	0	3	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0
26	2	0	2	2	0	2	2	0	2	0	0	0	0	2	0	3	0	0	0	0	2
28	0	2	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
29	0	2	2	2	0	0	0	2	0	0	0	0	0	0	0	2	0	2	0	0	2
31	0	0	0	0	0	0	0	0	2	2	2	2	0	2	2	0	2	0	3	2	0
33	0	2	2	0	2	0	2	2	0	0	0	0	0	0	0	0	0	2	0	0	2
41	0	3	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	2	0	2
42	0	3	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	2	0	2
43	0	3	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	2	0	2
49	0	2	0	0	0	2	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0
52	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
54	0	2	0	0	0	0	0	2	2	2	2	2	0	2	0	0	0	0	2	2	0
65	0	2	0	2	0	0	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0
69	0	3	0	3	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	2	0
610	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	0	0	0	2
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	2	0
73	2	0	2	2	2	0	0	0	2	0	0	0	0	0	2	2	2	0	2	0	2
81	0	2	0	0	0	2	0	2	2	0	0	0	0	0	2	2	0	2	0	2	0

Table 3 Influence degree, influence degree, cause degree and center degree of each factor

Factors	Influence	Be Impacted	Centrality	Reason
W_{11}	0.9792	1.0422	2.0214	-0.0630
W_{12}	0.9423	4.0024	4.9447	-3.0601
W_{21}	0.7779	2.0877	2.8656	-1.3099
W_{22}	0.9876	2.0526	3.0402	-1.0650
W_{26}	2.1347	1.4643	3.5990	0.6704
W_{28}	0.9715	0.6452	1.6167	0.3264
W_{29}	1.6894	0.9557	2.6451	0.7337
W_{31}	2.5117	1.9796	4.4914	0.5321
W_{33}	1.8550	2.4049	4.2599	-0.5498
W_{41}	1.8004	0.5978	2.3982	1.2026
W_{42}	1.8004	0.5978	2.3982	1.2026
W_{43}	1.8004	0.5978	2.3982	1.2026
W_{49}	1.3091	0.1645	1.4736	1.1446
W_{52}	0.6510	0.8442	1.4952	-0.1932
W_{54}	2.3750	1.9980	4.3731	0.3770
W_{65}	1.1804	2.6882	3.8685	-1.5078
W_{69}	1.4935	0.8592	2.3527	0.6344
W_{610}	1.3293	1.6570	2.9863	-0.3277
W_{71}	0.9041	1.7258	2.6299	-0.8218
W_{73}	2.4852	1.9553	4.4405	0.5300
W_{81}	2.1650	1.8230	3.9881	0.3420

Taking the degree of centrality as the abscissa and the degree of causation as the ordinate, the causation diagram among the influencing factors was drawn. As shown in figure 1.

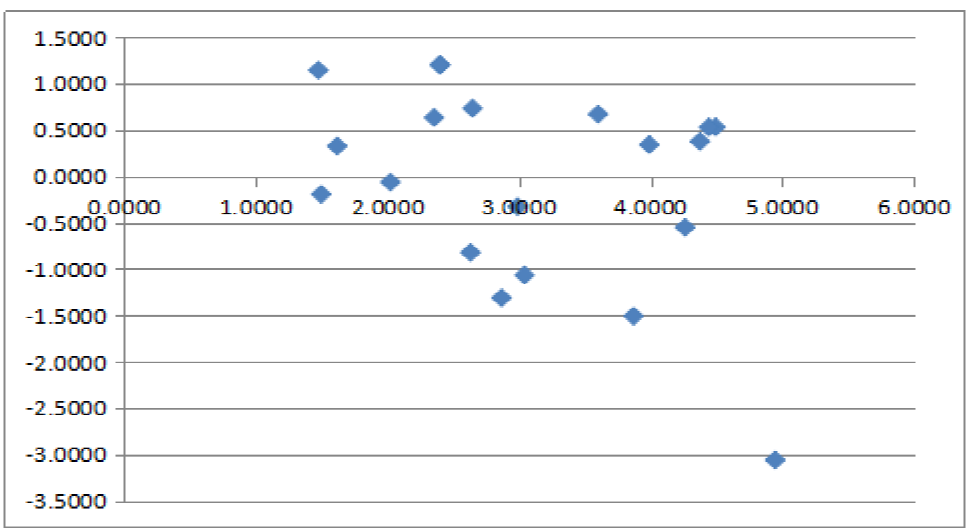

Figure 1. Causality diagram among influencing factors

Further construct the overall impact matrix, as shown in Table 4.

Table 4 Global impact matrix

Factors	11	12	21	22	26	28	29	31	33	41	42	43	49	52	54	65	69	610	71	73	81
11	1	0.2	0.1	0.1	0	0	0	0	0.1	0	0	0	0	0	0	0.1	0	0	0.1	0	0
12	0.1	1.1	0.1	0.1	0	0	0	0	0.1	0	0	0	0	0	0	0.1	0	0	0	0.1	0
21	0	0.2	1.1	0.2	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0.2	0.2	1	0	0	0	0	0.1	0	0	0	0	0	0	0.1	0	0.1	0	0	0
26	0.1	0.2	0.2	0.2	1.1	0.1	0.1	0.1	0.2	0	0	0	0	0.1	0	0.2	0	0.1	0	0.1	0.2
28	0	0.2	0	0	0.1	1	0	0	0	0	0	0	0.1	0	0	0.1	0	0.1	0	0	0
29	0	0.2	0.2	0.2	0	0	1	0.2	0.1	0	0	0	0	0	0.1	0.2	0	0.2	0	0.1	0.1
31	0	0.2	0.1	0.1	0.1	0	0	1.1	0.2	0.1	0.1	0.1	0	0.1	0.2	0.1	0.1	0.1	0.3	0.2	0.1
33	0	0.2	0.2	0.1	0.1	0	0.1	0.2	1.1	0	0	0	0	0	0.1	0.1	0	0.2	0	0.1	0.2
41	0	0.3	0.1	0.1	0.1	0	0	0.2	0.1	1	0	0	0	0	0.2	0.1	0	0	0.2	0.1	0.2
42	0	0.3	0.1	0.1	0.1	0	0	0.2	0.1	0	1	0	0	0	0.2	0.1	0	0	0.2	0.1	0.2
43	0	0.3	0.1	0.1	0.1	0	0	0.2	0.1	0	0	1	0	0	0.2	0.1	0	0	0.2	0.1	0.2
49	0	0.2	0.1	0.1	0	0.1	0	0.1	0.1	0	0	0	1	0	0	0.2	0	0	0	0.1	0
52	0	0	0	0	0.1	0	0	0	0	0	0	0	0	1	0.1	0	0	0	0	0	0
54	0.1	0.3	0.1	0.1	0.1	0	0	0.2	0.2	0.1	0.1	0.1	0	0.1	1.1	0.1	0	0.1	0.2	0.2	0.1
65	0	0.2	0.1	0.1	0	0	0.1	0.1	0.1	0	0	0	0	0	0	1.1	0	0.2	0	0	0.1
69	0	0.3	0.1	0.2	0	0	0	0	0.1	0	0	0	0	0	0.1	0.2	1	0.1	0	0.2	0
610	0	0.2	0	0.1	0	0	0	0.1	0.1	0	0	0	0	0	0.1	0.2	0.1	1	0	0.1	0.1
71	0	0.1	0	0	0	0	0	0	0.1	0	0	0	0	0	0.1	0.1	0	0	1	0.1	0
73	0.1	0.2	0.2	0.2	0.1	0	0.1	0.1	0.2	0	0	0	0	0	0.2	0.2	0.1	0.1	0.2	1.1	0.2
81	0	0.2	0.1	0.1	0.1	0.1	0	0.2	0.2	0	0	0	0	0	0.2	0.2	0.1	0.2	0.1	0.2	1.1

3.2.3 Construction of reachability matrix

The element mean and standard deviation of the comprehensive impact matrix were calculated, and the threshold value =0.0729+0.09810.17 was obtained, and the reachable matrix was further calculated, as shown in Table 5.

Table 5 Accessibility matrix

Factors	11	12	21	22	26	28	29	31	33	41	42	43	49	52	54	65	69	610	71	73	81
11	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	1	1	1	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
28	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
31	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	1	0
33	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
41	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
42	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
43	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
49	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
54	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	1	0
65	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
69	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
610	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
73	0	1	1	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1	1
81	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	1	0	1	1

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3.2.4 Establishment of structural model

The index set of each level is calculated by using the formula, as shown in Table 6.

Table 6 Reachable sets and antecedent sets

	reachable set	Antecedent set	R∩S
W_{11}	11,12	11	11
W_{12}	12	11,12,22,26,29,31,33,41,42, 43,49,54,65,69,610,73,81	12
W_{21}	21,22	21,26,33,73	21
W_{22}	12,22	21,22,26,69,73	22
W_{26}	12,21,22,26,33,65	26	26
W_{28}	28	28	28
W_{29}	12,29,65	29	29
W_{31}	12,31,33,54,71,73	31,54,81	31,54
W_{33}	12,21,33	26,31,33,54,73,81	33
W_{41}	12,41,54	41	41
W_{42}	12,42,54	42	42
W_{43}	12,43,54	43	43
W_{49}	12,49	49	49
W_{52}	52	52	52
W_{54}	12,31,33,54,71,73	31,41,42,43,54,73,81	31,54,73
W_{65}	12,65	26,29,65,69,610,73,81	12,65
W_{69}	12,22,65,69	69	69
W_{610}	12,65,610	610,81	610
W_{71}	71	31,54,71	71
W_{73}	12,21,22,33,54,65,73,81	31,54,73,81	54,73,81
W_{81}	12,31,33,54,65,610,73,81	73,81	73,81

There exists $R_i \cap S_i = R_i$ in this level of W_{12}、W_{28}、W_{52}、W_{65}、W_{71}, so these five factors are the highest elements of this level, and the index of the first level is {W_{12} W_{28} W_{52} W_{65} W_{71}}, and their corresponding rows and columns are deleted to obtain the second-level accessible set and antefactor set.The principle is the same as above, and the index set of the second layer is {W_{11} W_{22} W_{29} W_{49} W_{610}}, the index set of the third layer is {W_{21} W_{69}}, the index set of the fourth layer is {W_{33}}, the index set of the fifth layer is {W_{26} W_{54} W_{73}}, the index set of the sixth layer is {W_{31} W_{41} W_{42} W_{43}}, and the index set of the seventh layer is {W_{81}}.Based on the above results, the reordering reduced reachable matrix is obtained, as shown in Table 7.

Table 7 Reordering reduced reachability matrix

Factor	12	28	52	65	71	11	22	29	49	610	21	69	33	26	54	73	31	41	42	43	81
12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
49	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
610	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
69	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
33	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
26	1	0	0	1	0	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0
54	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0
73	1	0	0	1	0	0	1	0	0	0	1	0	1	0	1	1	0	0	0	0	1
31	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0
41	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
42	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
43	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
81	1	0	0	1	0	0	0	0	0	1	0	0	1	0	1	1	1	0	0	0	1

The influence factors at the same level are placed at the same level and connected in turn by arrows according to the levels and accessible paths of the influence factors, that is, a multi-level hierarchical structure model of the influence factors of the project's social stability risk is formed, as shown in Figure 2.

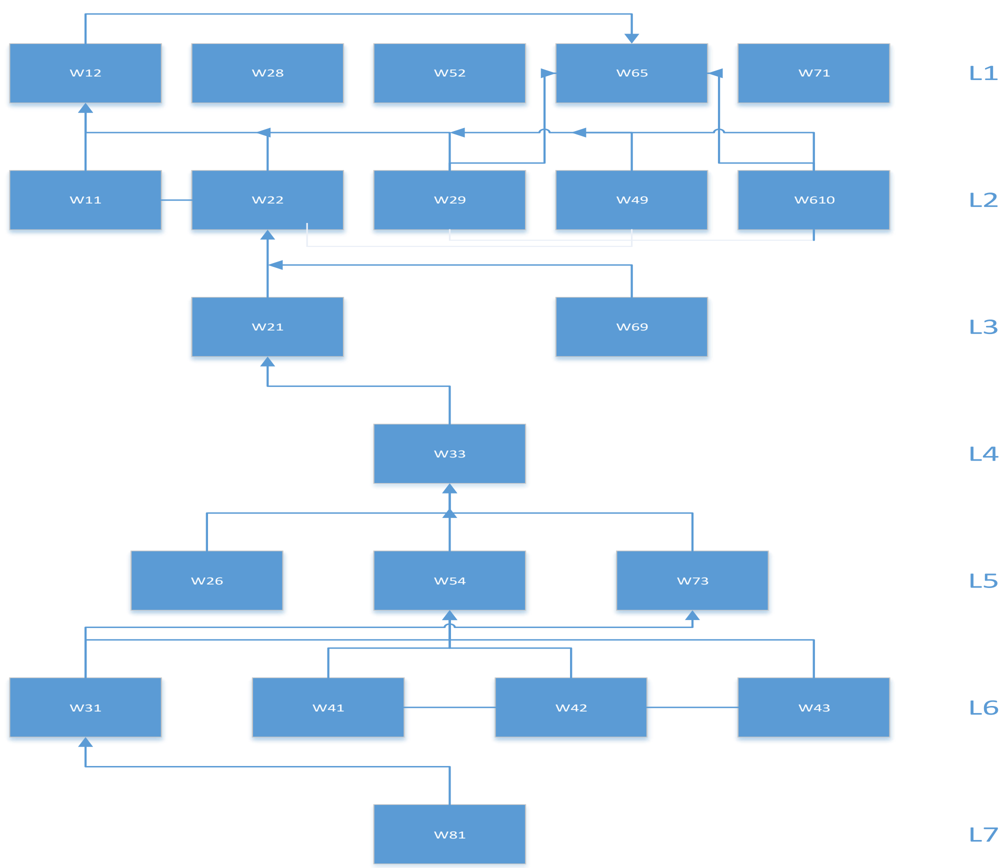

Figure 2 Multilevel hierarchical structure model of social stability risk

3.3 Analysis of results

The social stability risk factors of the project have the characteristics of multi-level hierarchical structure, so the system theory method should be used to analyze the social stability risk factors of the project. The following conclusions can be drawn from Figure 2: Risk factors of social stability can be divided into seven levels of indicators. The 21 key influencing factors are divided into three categories, namely, the direct influencing factors of the top layer (the first layer), the indirect influencing factors of the middle layer (the second to the sixth layer) and the fundamental influencing factors of the bottom layer (the seventh layer).

The top-level direct influencing factors are the most direct manifestation of the project's social stability risk. For example, the impact of local people's employment and life on W65 and construction safety, health and occupational health W71 will directly affect social stability. Secondly, the three top-level factors of line relocation and green migration scheme W28, six management systems of project units W52 and construction safety, health and occupational health W71 are relatively independent and not directly affected by other factors. It is worth noting that there is a correlation between the two top-level direct influencing factors -- industrial policy and development planning W12 and local people's employment and life impact W65, indicating that industrial policy and development planning will affect the employment and life of local people. Finally, the influence of the top-level factors on the risk is often transmitted through the influence layers of the middle layer and the bottom layer, and acts in coordination with the middle layer and/or the bottom layer.

The second to the sixth layers are the indirect influencing factors of the middle layer, including 15 items in total. The influencing factors of the middle layer mostly act in coordination with the fundamental influencing factors of the bottom layer on the direct influencing factors of the top layer and then influence the risk of social stability. The financing and security of W33 have an exclusive layer and are closely related to other influencing factors, indicating that the financial security can act synergistic with most factors on the risk of social stability and is one of the bases for other factors to influence.

At the seventh level of social inclusion of proposed projects and their mutual adaptability W81 as the underlying fundamental factors, directly or indirectly affect the remaining 20 factors, and this project "is broad, is directly related to the vital interests of the broad masses of the people's" (Hua Jian, Deng Li ＆Zhang Changzheng, 2017, p. 46-50) the characteristics of closely related, in the process of its construction and operation, along with the population - resources - environment, social, and economic function of the complex system adjustment, recovery and reconstruction (TILT ＆BRAUN, 2009, p. 49-57), is the project need to focus on the primary factors affecting social stability. This result is also the reason why the report to the 19th National Congress of the Communist Party of China points out that "China's social contradictions and problems are intertwined", and puts forward that "we must resolutely fight a tough battle to prevent and defuse major risks, eliminate poverty, and prevent and control pollution" and "strengthen the construction of mechanisms for preventing and resolving social contradictions".

4. Conclusion

Exist due to the social stability of the project risk factors are interdependent and interactional relationship, combining with the actual project cases, the application of DEMATEL-ISM method, from the analysis of risk factors, the interaction relationship between the elements of affecting the social risk quantitative analysis, through the calculation of comprehensive effect coefficient of risk factors, to determine the risk level of the project, and then find out the key risk factors affecting project social stability, and provides the corresponding effective measures. This provides a practical and effective method for the risk analysis of social stability.

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