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Retraction

Retracted: Operational Risk Assessment for International Transport Corridor: A Case Study of China-Pakistan Economic Corridor

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Discrete Dynamics in Nature and Society has retracted the article titled "Operational Risk Assessment for International Transport Corridor: A Case Study of China-Pakistan Economic Corridor" [1]. A high level of overlap was identified with a thesis by Jing Xia, who graduated from the Chongqing Academy of Agricultural Sciences, Chongqing Jiaotong University, and participated in the design and conception of the research, questionnaire design, and data collection. The authors did not have the permission to publish, and the article is therefore being retracted with the agreement of all the authors and their institution.

References

[1] Y. Lei, C. Huang, and Y. Wu, "Operational Risk Assessment for International Transport Corridor: A Case Study of China-Pakistan Economic Corridor," *Discrete Dynamics in Nature and Society*, vol. 2019, Article ID 5730746, 7 pages, 2019.

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Research Article

Operational Risk Assessment for International Transport Corridor: A Case Study of China-Pakistan Economic Corridor

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The international transport corridor is the basis and carrier of economic and trade exchanges between countries and regions. International transport corridors span different countries and regions, coupled with the long distance, complicated transportation environment and process, which determines the potential risks of the operation of the transport corridors. Therefore, accurately identifying and assessing the risk of international channels are an important prerequisite for ensuring its safe and stable operation. The expert scoring method is used to collect the basic data of risk identification, and the hesitant fuzzy decision theory is introduced. The dependent linguistic ordered weighted geometric (DLOWG) operator and the Failure Mode and Effect Analysis (FMEA) method are used in combination. Taking the China-Pakistan Economic Corridor (CPEC) as an example, evaluate the operational risks of the international transport corridor. The research results show that corruption, terrorism, and policy stability are the top three risk factors in the operation of the China-Pakistan transport corridor. The risk management and control should focus on these three types of risks and strengthen the security management along the route. Strengthen policy docking and communication, maintain political stability, and strengthen antiterrorism cooperation.

1. Introduction

International transportation corridors are important carriers for international exchanges and trades [1], and their development and decline depend on the relationships between countries and levels of international economics and trades development [2]. International transport corridors are connected to the port and stations (including air and sea ports) facilities, supported by the network of transport lines on both sides, and are responsible for public and specific transport missions between countries or internationally [3]. China-Pakistan Economic Corridor (CPEC) is a collection of infrastructure projects that are currently under construction throughout Pakistan. *CPEC* is an important skeleton of China's Belt and Road Initiative [4], and it is intended to rapidly modernize Pakistan infrastructure and strengthen its economy by the construction of modern transportation networks, numerous energy projects, and special economic zones. Moreover, it will build a modern integrated transportation corridor connecting China, Pakistan, and the Indian Ocean. And it can not only connect the Yangtze River Economic Belt with a "straight line" but also effectively connect with Central Asia, South Asia, the Middle East, and Europe. Therefore, the CPEC is considered to be a corridor of great strategic values.

International transport corridors span different countries and regions, coupled with the long distance, complicated transportation environment and process, which determines the potential risks of the operation of the transport corridors. Therefore, accurately identifying and assessing the risk of international corridor are an important prerequisite for ensuring its safe and stable operation. Ahmed et al. [5] Assess the risks faced by the energy construction project of CPEC from the perspective of energy assurance: economic burden, security threat, project completion delays, and lack of project feasibility studies. Qi and Jianming [6] utilize relevant data from the GTD, SATP, and PIPS databases to conduct a risk assessment of the terrorist threat faced at points along the CPEC. Yun [7] analyses political, economic, and security risks about CPEC based on macroscopic situations. Wenwu and Jing [8] identify the geopolitical risks of the China-Pakistan

Economic Corridor from geopolitical risks, geoeconomic risks, and geotraditional/nontraditional security risks and constructed a georisk assessment model for the China-Pakistan Economic Corridor.

Risk assessment for international corridors mainly focuses on political risk and transportation risk based on qualitative evaluation methods, and quantitative methods are rare. From the above literature reviews, we can find that there are various types of potential risks in the process of CPEC's advancement. Past researches mainly use description and discussion methods, and a little study tries to use expert evaluation (combination of qualitative and quantitative) to assess risks. Obviously, simply discussing the type of risk is not enough, and the traditional Delphi method is difficult to effectively assess the risks that are full of uncertainty and difficult to accurately describe.

Failure Mode and Effect Analysis (FMEA) is an analytical method used to determine potential failure modes and their causes, which can be used for risk assessment and management [9]. In order to deal with inherent fuzziness and uncertainty of expert judgment in risk evaluation in traditional FMEA, involving dependent linguistic ordered weighted geometric (DLOWG) operator has become very necessary [10]. The factors of risk priority number (RPN) of failure mode were treated as linguistic variables. Then linguistic judgments of a team of FMEA experts were aggregated by a developed DLOWG operator, in which the influence of unfair linguistic judging the aggregate aggregated result can be relieved by assigning low weights to those 'false' or 'biased' ones.

In this paper, the DLOWG operator and the FMEA are used to identify the operational risk factors of the CPEC, in order to identify key risks by quantitative methods, and provide suggestions for international transport risk management in CPEC.

2. Definition of International Transport Corridor Operational Risk

The history of human civilizations shows that economics development and modernizations are mainly carried out along natural or artificial corridors. Some corridors can be traced back to trade routes thousands of years ago (such as the ancient silk road), and some corridors are formed along the rivers or coastlines. In modern times, artificially constructed canals, roads, and railways have provided the basis for such corridors. Population and economic activities are mainly laid along the corridor. The generalized transport corridor is the sum of the flow of passengers and goods, the line, the vehicle, and the management system, and the transport route is the basic element of portraying the transport corridor. China's "One Belt, One Road" initiative proposes jointly building six economic corridors on the land: (1) the New Eurasian Continental Bridge Economic Corridor, (2) China-Russia Economic Corridor, (3) China-Central Asia-West Asia Economic Corridor, (4) China-Indochina Economic Corridor, (5) Bangladesh-China-India-Myanmar Economic Corridor, and (6) China-Pakistan Economic Corridor [11]. In these transnational economic corridors, international transport corridors are the backbone and foundation of the economic corridors, which carry the circulation of goods and passengers.

As the transportation pillar of China's "the Belt and Road" Initiative, the international transport corridors provide convenience for cross-border trade and shoulder the important mission of international transport. However, international corridor operations must fully consider various risks and effectively carry out risk control and management in order to maximize the international corridor's role in cross-border transportation. The operation of the international corridor refers to a normal and smooth state of the transportation system combined with various modes of transportation between countries. Therefore, the operational risk of the international transport corridor is defined as follows: the corridor itself is damaged, or the internal and external environment is disturbed, resulting in the corridor not being able to pass normally, resulting in a comprehensive loss.

3. Methodology

3.1. Hesitant Fuzzy Risk Assessment. Risk assessment is the first step in implementing risk management. It refers to the use of various systems, continuous understanding of various risks, and the analysis of potential causes of risk accidents before the occurrence of risk accidents. This is also the important link of project risk management [12]. Failure to accurately identify potential risks to the project will result in the best time to deal with these risks.

The risk assessment methods mainly include Delphi method, brainstorming method, checklist method, process combing analysis method, and data analysis method [13]. In view of the fact that the research object is the macr-operational risk of the international transportation corridor and the construction and operation of the China-Pakistan Economic Corridor is a long-term plan and there is currently no detailed operational data, the expert scoring method and the brainstorming method are used to identify the risk factors. Experts from the field of international relations research, university professors, transportation enterprise managers, and foreign experts are selected to form a FMEA expert group. The fuzzy comprehensive evaluation method is used to conduct a questionnaire survey to score the identified risk factors. In view of the shortcomings of the expert scoring method, the hesitation fuzzy set is used as the theoretical support [14, 15], and hesitant filling items are added in the questionnaire survey. If the expert's evaluation of the risk factor is uncertain, the hesitant evaluation language can be filled out multiple times to indicate uncertainty, and finally the data is further processed and calculated.

3.2. Indicators and Data. Based on the international standard "ISO31000 Risk Management Standards" [16] for risk assessment analysis, the risk factors including political risk, natural risk, environmental risk, operation and maintenance risk, and safety risk are analyzed in the form of expert group discussion. According to the results of the expert survey method and the actual situation of the transportation of CPEC, 14 risk factors were sorted out. The risk factor evaluation results are shown in Table 1.

TABLE 1: Evaluation indicators of risk factors for the operation of CPEC.

Categories	S/N	Risk factor (failure mode)	Source of risk factors (fault affecting factors)
Political risk	1	Policy stability	Changes in national policies, unsustainable policies, and separatist forces
	2	Diplomatic environment	National geopolitics, discriminatory interventions by major countries
	3	Policy change	Transportation and trade policy changes
	4	Corruption	Corridor related management, transportation, customs official's corruption
Natural risk	5	Natural force risk	Earthquakes, mudslides, mudslides, floods, lightning strikes, etc.
	6	Climate risk	Typhoon, tornado, severe cold, rainy season, high temperature, etc.
Environmental risk	7	Nationality and religion	Corridor operation affects the interests of ethnic minorities and religious forces
	8	Environmental coordination	Conflicts between surrounding ecology, human environment and channel operation
Operation and maintenance risk	9	technology	Different gauges in channel operation and different technical standards in maintenance
	10	management	Organization and management of operation and maintenance
	11	Cost	Cost sharing and operation of operation and maintenance
Security Risk	12	Terrorist activity	The destruction of the channel by terrorist activities
	13	National war	The impact of wars on countries along the route
	14	Social Security	Contradictions and factors affecting social stability along the corridor

4. Risk Identification Model for Corridor Operation

Risk identification refers to summarizing possible risk factors and ranking risk factors according to certain aspects or characteristics of the risks. Using the dependent linguistic ordered weighted geometric (DLOWG) operator, combined with FMEA method, the risk priority number (RPN) is calculated to obtain the risk factor ranking results.

4.1. The Dependent Linguistic Ordered Weighted Geometric Operator. A language assessment set is the basis for making decisions with linguistic variables. Assume discrete language scale set S= $\{s_i \mid i = 1, 2, \cdots, t\}$. The number of terms in S is generally odd, and the potential of the language terminology is $t - 1$. In order to facilitate calculation and avoid loss of decision information, based on the original discrete language scale set S, a new definition of extended continuous language set is defined as $\overline{S} = \{s_\alpha \mid \alpha \in [1, p]\}$, where $p (p > t)$ is a sufficiently large natural number. The language information operation has the following definitions.

Definition 1. Assume that $s_a, s_b \in \overline{S}$, $\lambda \in [0, 1]$, such that

(1) $s_a \oplus s_b = s_b \oplus s_a = s_{a+b}$;
(2) $s_a \otimes s_b = s_b \otimes s_a = s_{ab}$;
(3) $\lambda s_a = s_{\lambda a}$;
(4) $(s_a)^\lambda = s_{a^\lambda}$.

Definition 2. Assume that $s_a, s_b \in \overline{S}$, $\lambda \in [0, 1]$, define $dis(s_a, s_b) = |a - b|/(t - 1)$ as the distance between s_a and s_b, and $0 \leq dis(s_a, s_b) \leq 1$. $dis(s_a, s_b)$ and the tightness (s_a and s_b) are proportional. The closer s_a and s_b are, the smaller the deviation is. If $dis(s_a, s_b)$=0, thus $s_a = s_b$.

Definition 3. Supposing that LOWG: $\overline{S^n} \longrightarrow \overline{S}$, $\omega = [\omega_1, \omega_2, \cdots, \omega_n]^T$ is exponential weighted vector (linguistic weight vector), $\omega_j \in [0, 1]$, and $\sum_{j=1}^{n} \omega_j = 1$, since $LOWG_\omega(s_1, s_2, \cdots, s_n) = (s_{l_1})^{\omega_1} \otimes (s_{l_2})^{\omega_2} \otimes \cdots \otimes (s_{l_n})^{\omega_n}$, s_{lj} is the jth largest element in the linguistic variable group s_j ($j = 1, 2, \cdots, n$) and then LOWG is the n-dimensional linguistic ordered weighted geometric averaging operator.

Definition 4. Assuming that $s_1, s_2, \cdots, s_n$ is a set of linguistic evaluation variable, $s_j \in S$ ($j = 1, 2, \cdots, n$). Then define the mean of the linguistic variable $s_\mu = (1/n)(s_1 \oplus s_2 \oplus \cdots \oplus s_n)$.

Definition 5. Assuming that $s_1, s_2, \cdots, s_n$ is a set of linguistic evaluation variable, $s_j \in S$ ($j = 1, 2, \cdots, n$); s_μ is the mean of the variable. This group of variables is arranged in descending order of numerical values, and the lower row after the arrangement is labeled $(\gamma(1), \gamma(2), \cdots, \gamma(n))$. Then define the similarity of the jth large linguistic variable and s_μ as $SIM(s_{\gamma(j)}, s_\mu) = 1 - d(s_{\gamma(j)}, s_\mu)/\sum_{j=1}^{n} d(s_{\gamma(j)}, s_\mu)$.

Definition 6. Assume that w $= [w_1, w_2, \cdots, w_n]^T$ is the Weight of LOWG operator, and $w_j = SIM(s_{\gamma(j)}, s_\mu)/\sum_{j=1}^{n} SIM(s_{\gamma(j)}, s_\mu)$; thus $LOWG_w(s_1, s_2, \cdots, s_n) = (s_{\gamma(1)})^{SIM(s_{\gamma(1)}, s_\mu)/\sum_{j=1}^{n} SIM(s_{\gamma(j)}, s_\mu)} \otimes (s_{\gamma(2)})^{SIM(s_{\gamma(2)}, s_\mu)/\sum_{j=1}^{n} SIM(s_{\gamma(j)}, s_\mu)} \otimes \cdots \otimes (s_{\gamma(n)})^{SIM(s_{\gamma(n)}, s_\mu)/\sum_{j=1}^{n} SIM(s_{\gamma(j)}, s_\mu)}$, because $\sum_{j=1}^{n} SIM(s_{\gamma(j)}, s_\mu) = \sum_{j=1}^{n} SIM(s_j, s_\mu)$, $(s_{\gamma(j)})^{\sum_{j=1}^{n} SIM(s_{\gamma(j)}, s_\mu)} = (s_j)^{\sum_{j=1}^{n} SIM(s_j, s_\mu)}$; thus $LOWG_w(s_1, s_2, \cdots, s_n) = (s_1)^{SIM(s_1, s_\mu)/\sum_{j=1}^{n} SIM(s_j, s_\mu)} \otimes (s_2)^{SIM(s_2, s_\mu)/\sum_{j=1}^{n} SIM(s_j, s_\mu)} \otimes \cdots \otimes (s_n)^{SIM(s_n, s_\mu)/\sum_{j=1}^{n} SIM(s_j, s_\mu)}$, so $LOWG_w(s_1, s_2, \cdots, s_n)$ is DLOWG operator.

From the derivation process, the following conclusions can be drawn: (1) DLOWG operator calculation is

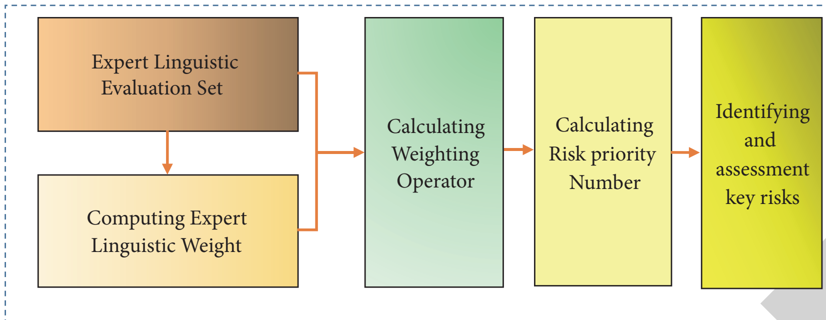

FIGURE 1: Improved FMEA risk factor identification model.

independent of variable ordering; (2) DLOWG operator calculation does not need to sort linguistic variables; (3) DLOWG operator can accurately describe expert evaluation value and average the closeness of the value and use this as a criterion to weight the evaluation value, reducing the impact of individual bias on decision-making.

4.2. Improve FMEA Evaluation Method. The Failure Mode and Effect Analysis (FMEA) evaluation method, originally proposed by the United States in the 1950s, was used for fighter operating system design [17]. In recent years, FMEA has been widely used in system reliability analysis and safety assessment. FMEA has the advantages of accurately identifying risks, determining risk impacts, and predicting ahead of time. Therefore, we use this method to identify the risk factors of international corridor operation and rank the risk factors by RPN in FMEA method.

In the FMEA method, the risk model "O, S, and D" is the Occurrence, Severity, and Detection of the risk model, respectively, and the three products are risk priority numbers, that is, $RPN = O^{\omega_O} \otimes S^{\omega_S} \otimes D^{\omega_D}$. However, the traditional FMEA method has the defects of subjective judgment, inaccurate evaluation, and simple data processing. In view of this deficiency, we propose using DLOWG operator to determine the weight of expert scores, to minimize the impact of extreme bias on the evaluation results, and to ensure the accuracy and scientific of the evaluation while considering the expert opinions. Specific steps are as follows.

Firstly, assume that the assessment expert group $\{E_k \mid 1 \leq k \leq h\}$ identifies the *nth* risk patterns and evaluates the O, S, and D of each risk model according to the risk scoring criteria and SO_i^k, SS_i^k, SD_i^k, respectively, indicate linguistic evaluation values of the experts E_k for the risk models M_i. Use Definition 3 ~ Definition 5 to calculate each group WO_i^k, WS_i^k, WD_i^k of risk model M_i given by expert $(\{E_k \mid 1 \leq k \leq h\}$, and WO_i^k, WS_i^k, WD_i^k meet $WO_i^k \geq 0, WS_i^k \geq 0, WD_i^k \geq 0$ and $\sum_{k=1}^h WO_i^k = 1, \sum_{k=1}^h WS_i^k = 1, \sum_{k=1}^h WD_i^k = 1$.

Secondly, use Definition 3 to assemble the expert com mentary set, $DLOWG_{WO_i}(SO_i^1, SO_i^2, \cdots, SO_i^h)$, and $DLOWG_{WS_i}(SS_i^1, SS_i^2, \cdots, SS_i^h)$,and $DLOWG_{WD_i}(SD_i^1, SD_i^2, \cdots, SD_i^h)$ is the weighted operator of expert E_k for O, S, and D of risk model M_i. The specific calculation method is as follows;

$$
\begin{aligned}
& DLOWG_{WO_i}\left(SO_i^1, SO_i^2, \cdots, SO_i^h\right) \\
& \quad = \left(SO_i^1\right)^{WO_i^1} \otimes \left(SO_i^2\right)^{WO_i^2} \otimes \cdots \otimes \left(SO_i^h\right)^{WO_i^h} = O_i \\
& DLOWG_{WS_i}\left(SS_i^1, SS_i^2, \cdots, SS_i^h\right) \\
& \quad = \left(SS_i^1\right)^{WS_i^1} \otimes \left(SS_i^2\right)^{WS_i^2} \otimes \cdots \otimes \left(SS_i^h\right)^{WS_i^h} = S_i \\
& DLOWG_{WD_i}\left(SD_i^1, SD_i^2, \cdots, SD_i^h\right) \\
& \quad = \left(SD_i^1\right)^{WD_i^1} \otimes \left(SD_i^2\right)^{WD_i^2} \otimes \cdots \otimes \left(SD_i^h\right)^{WD_i^h} = D_i
\end{aligned} \tag{1}
$$

Thirdly, according to the weight of Occurrence (O), severity (S), and Detection (D) of given risk model, utilize the RPN calculation formula to the evaluation result of the failure mode, and RPN_i is defined by

$$RPN_i = O_i^{\omega_O} \otimes S_i^{\omega_S} \otimes D_i^{\omega_D} \tag{2}$$

Fourthly, the order of failure modes is determined by sorting according to RPN_i. The larger RPN_i is, the higher the risk of the failure mode i. Identify key failure modes based on this principle to complete the risk identification process.

4.3. Improved FMEA Risk Factor Identification Model. Combined with the international corridor operational risk indicator system and risk factor content identification as described above and the improved FMEA risk assessment method based on DLOWG operator, an improved FMEA risk factor identification model for international channel operation is established as shown in Figure 1.

5. Identification of Corridor Operation Risk Factors

5.1. Expert Evaluation Set. In the China-Pakistan Economic Corridor Transportation Operational Risk Assessment Questionnaire, a total of 14 specific risk factors were identified in five categories as the failure mode in the FMEA assessment method M_i. In order to facilitate the filling and collection of

Table 2: Collections of linguistic terms for risk factors.

Risk Factors	Linguistic Evaluation Set									
	1	2	3	4	5	6	7	8	9	10
O	Rarely happen	Between 1 and 3	Relatively less	Between 3 and 5	Occasionally Happens	Between 5 and 7	Happens very often	Between 7 and 9	Very easy to happen	Extremely easy to happen
S	Extremely less serious	Between 1 and 3	Not serious	Between 3 and 5	General	Between 5 and 7	Serious	Between 7 and 9	Very serious	Extremely serious
D	Extremely predictable	Between 1 and 3	Easy to predict	Between 3 and 5	Need to guard against	Between 5 and 7	Hard to predict	Between 7 and 9	Hard to predict	Extremely difficult to predict

Table 3: Expert Evaluation Language Set.

Risk factor	WO	WS	WD
policy stability (M1)	(8.5,6.5,8,4)	(7,5,7,5)	(6.5,1.5,6,7)
Diplomatic environment (M2)	(8.5,6.5,6,3)	(6,5,6,4)	(8.5,2.5,6,6)
Policy change (M3)	(7.5,6.5,7,5)	(6,5,6,4)	(6,2,7,5)
Corruption (M4)	(8.5,7,9,7)	(8,7,4,5)	(8,5.5,5,7)
Natural force risk (M5)	(7.5,3.5,4,5)	(7,2,4,5)	(8.5,4.5,6,6)
Climate risk (M6)	(5,3.5,4,5)	(4,2,4,6)	(2.5,5,8,5)
Nationality and religion (M7)	(8.5,3.5,5,6)	(8,2,5,6)	(6.5,4.5,7,7)
Environmental coordination (M8)	(5,2,8,5)	(5,2,4,4)	(5,5.5,3,5)
Technology (M9)	(3.5,2,8,4)	(4,2,5,5)	(8,3.5,2,4)
management (M10)	(6.5,2.5,7,4)	(6,2,4,4)	(6,1.5,2,4)
Cost (M11)	(8.5,3,8,5)	(8,2,6,4)	(8,4,2,5)
Terrorist activity (M12)	(9.5,6.5,9,6)	(8,6,8,5)	(8.5,2,7,4)
National war (M13)	(6.5,7.5,3,4)	(5,6,10,4)	(8.5,2,9,3)
Social Security (M14)	(7,4.5,4,5)	(5,6,7,3)	(6,5,6,4)

questionnaires, Arabic numerals are used instead of language terms. The corresponding language terminology is shown in Table 2.

Due to space limitations, the results of the questionnaires of four authoritative experts were selected for analysis. In the investigation, the risk *Occurrence (O)* and the risk *Detection (D)* adopt the hesitant fuzzy language set recognition method [18]; that is, the expert can fill in multiple language evaluation values according to his own judgment. For the risk *severity (S)*, this paper uses the risk severity of the most likely occurrence of the expert as the evaluation set. That is, the language evaluation set of 14 risk factors by 4 experts is shown in Table 3. Among them, WO and WD language set is obtained by averaging the original evaluation of experts, and WS language set is the most likely risk of serious occurrence by experts. Degree as an evaluation set.

5.2. Weight Coefficient. Use Definition 3 ~ Definition 5 to calculate each expert $\{E_k \mid 1 \leq k \leq 4\}$ WO_i^k, WS_i^k, WD_i^k of risk model M_i, and the weight is satisfied that $WO_i^k \geq 0, WS_i^k \geq 0, WD_i^k \geq 0$, and $\sum_{k=1}^{h} WO_i^k = 1, \sum_{k=1}^{h} WS_i^k = 1, \sum_{k=1}^{h} WD_i^k = 1$. The weight coefficient calculation results are shown in Table 4.

5.3. Analysis of Evaluation Results. Aggregate expert reviews with formula $LOWG_\omega(s_1, s_2, \cdots, s_n) = (s_{l_1})^{\omega_1} \otimes (s_{l_2})^{\omega_2} \otimes \cdots \otimes (s_{l_n})^{\omega_n}$, O_i, S_i, and D_i are the weighted operators of the experts' O, S, and D for the risk model. According to the expert interview and the actual situation of China-Pakistan transport corridor, determine the incidence rate (O), severity (S), and difficulty (D) weight of risk factors as $\omega = [0.3, 0.4, 0.3]$. According to the RPN calculation formula (2), the evaluation result RPN_i of the risk model M_i is finally obtained, and the calculation result is shown in Table 5.

Risk prioritization can be obtained by combining the RPN corresponding to the risk factor M_i in Table 5. The risk priority can be prioritized as $M_4 > M_{12} > M_1 > M_2 > M_3 > M_7 > M_{14} > M_5, M_{13} > M_{11} > M_6 > M_8 > M_9 > M_{10}$.

It can be seen that the risk factor M4 has the largest language risk priority number (RPN) and should be the biggest concern of the relevant risk prevention system. Risk management and early warning should be given the highest priority; followed by risk factors M12, M1, M2, and M3 that should also be given great attention and focus on prevention; risk factors M7, M14, M5, and M13 risk priority level can be used as a general concern risk, with no need to focus on prevention; risk factors M11, M6, M8, and M9 risk priority level is low and may not be the focus on risk; risk factor M10

Table 4: Expert linguistic set weight coefficient.

Risk factor	*WO*	*WS*	*WD*
Policy stability (M1)	(0.25,0.22,0.24,0.28)	(0.26,0.23,0.22,0.29)	(0.31,0.2,0.3,0.2)
Diplomatic environment (M2)	(0.25,0.22,0.31,0.22)	(0.3,0.16,0.29,0.25)	(0.2,0.25,0.29,0.26)
Policy change (M3)	(0.3,0.12,0.27,0.32)	(0.3,0.16,0.29,0.25)	(0.26,0.21,0.21,0.32)
Corruption (M4)	(0.28,0.24,0.23,0.25)	(0.25,0.19,0.25,0.31)	(0.26,0.21,0.31,0.22)
Natural force risk (M5)	(0.31,0.24,0.13,0.32)	(0.28,0.2,0.21,0.3)	(0.2,0.25,0.29,0.26)
Climate risk (M6)	(0.21,0.27,0.2,0.33)	(0.23,0.25,0.25,0.27)	(0.16,0.28,0.23,0.33)
Nationality and religion (M7)	(0.25,0.26,0.24,0.26)	(0.23,0.23,0.29,0.25)	(0.31,0.26,0.22,0.2)
Environmental coordination (M8)	(0.22,0.2,0.25,0.33)	(0.26,0.22,0.23,0.3)	(0.24,0.23,0.21,0.33)
Technology (M9)	(0.19,0.23,0.27,0.3)	(0.19,0.21,0.29,0.31)	(0.27,0.33,0.13,0.27)
Management (M10)	(0.28,0.17,0.29,0.27)	(0.32,0.19,0.2,0.29)	(0.29,0.24,0.18,0.28)
Cost (M11)	(0.24,0.22,0.22,0.32)	(0.2,0.2,0.31,0.29)	(0.26,0.3,0.11,0.32)
Terrorist activity (M12)	(0.24,0.25,0.22,0.29)	(0.24,0.23,0.22,0.31)	(0.24,0.25,0.24,0.27)
National war (M13)	(0.3,0.21,0.19,0.3)	(0.28,0.25,0.16,0.31)	(0.27,0.28,0.2,0.25)
Social Security (M14)	(0.31,0.32,0.05,0.32)	(0.27,0.22,0.26,0.25)	(0.26,0.21,0.29,0.24)

Table 5: Linguistic weighting operator.

Risk factor	O	S	D	RPN
Policy stability (M1)	6.378	5.871	4.843	5.68
Diplomatic environment (M2)	5.725	5.27	5.166	5.37
Policy change (M3)	6.365	5.27	4.629	5.36
Corruption (M4)	7.835	5.655	6.218	6.42
Natural force risk (M5)	5.048	4.343	5.986	5
Climate risk (M6)	4.349	3.755	4.984	4.27
Nationality and religion (M7)	5.446	4.74	6.089	5.33
Environmental coordination (M8)	4.695	3.643	4.595	4.21
Technology (M9)	4.01	3.935	4.205	4.04
Management (M10)	4.983	3.984	3.13	3.96
Cost (M11)	5.64	4.556	4.769	4.92
Terrorist activity (M12)	7.474	6.475	4.631	6.11
National war (M13)	5.019	5.45	4.43	5
Social Security (M14)	5.309	5.008	5.236	5.16

has the smallest risk priority number (RPN) in the evaluation and is negligible risk.

6. Conclusion

By defining the operational risk of the international corridor, this paper uses the brainstorming method and the expert scoring method to identify the operational risk factors of the CPEC, establishes international corridor operational risk factor identification model, and carries out the operational risk factors of the CPEC international corridor. The following conclusions are drawn: (1) the method—using the expert scoring method to evaluate the risk factors affecting the smooth operation of the corridor and using hesitant fuzzy collection for the scoring process—which can effectively collect expert hesitation opinions, reduce the loss of language information to a certain extent, and ensure the integrity and accuracy of expert scoring information; (2) using the DLOWG operator to calculate the expert score weight can effectively reduce the weight ratio of individual extreme scores and ensuring that the credibility and effectiveness of the assessment results are increased while considering the expert opinions; (3) based on the risk factors determined by the expert group, establishing an improved FMEA evaluation model based on DLOWG operator and applying it to evaluate International corridor operational risk of China-Pakistan Economic Corridor. The results show that corruption (M4), terrorist activities (M12), and politics stability (M1) are the top three risk factors for RPN. Risk management and control should focus on these three types of risks and strengthen public security management along the route. Strengthen policy docking and communication, maintain political stability, and strengthen counter-terrorism cooperation.

Data Availability

The data used to support the findings of this study are included within the article, and the experts' questionnaire surveys data on risk assessment can be obtained by contacting the corresponding author.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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