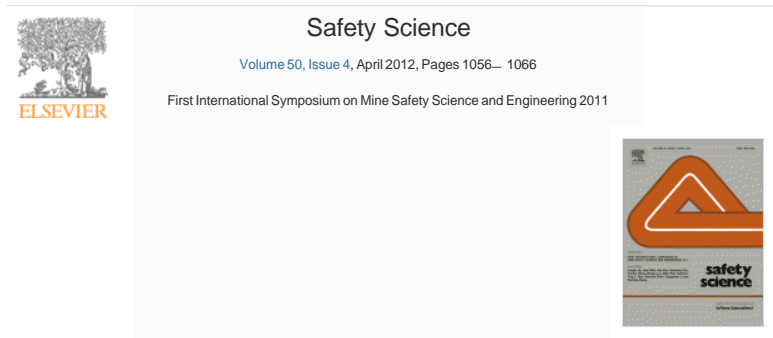


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Assessment model for equipment risk management: Petrochemical industry cases

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Abstract

This study presents an assessment model that examines quantity and quality factors for equipment risk management in the petrochemical industry. The proposed model has five dimensions—financial performance, logistical support, service level, learning and innovation, and risk control. This evaluation model uses 13 strategy subjects and 78 performance-measurement indicators. Performance assessment indicators are initially established and revised based on expert opinions collected via a questionnaire. Further, the analytical network process (ANP) is utilized to calculate the weights of indicators in each layer and to construct assessment models with applicable and valuable references. To determine model practicability, this study assesses four subsidiaries of the case company. Each subsidiary has a capitalization exceeding TWD 50 billion. In addition to evaluating company performance in terms of each dimension and indicator, the proposed model provides a valuable reference for decision-making in equipment risk management.

Keywords

Petrochemical industry; Risk assessment; Equipment risk management; Analytical network process

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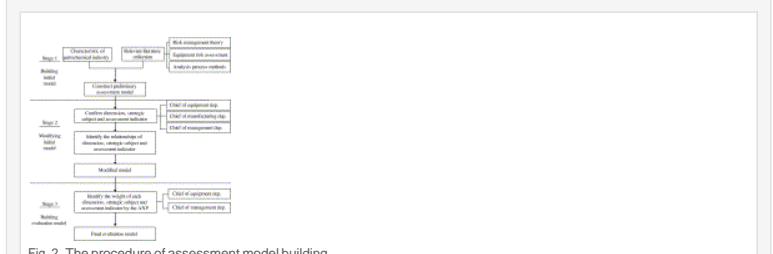
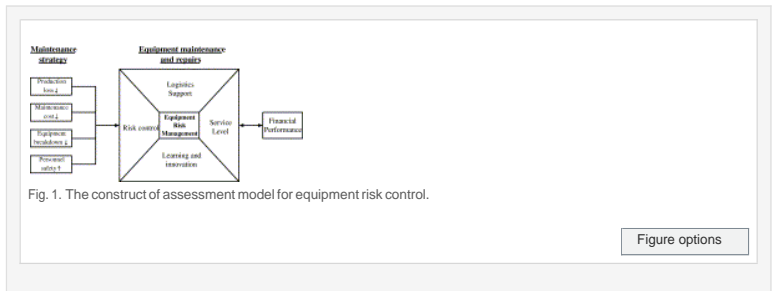


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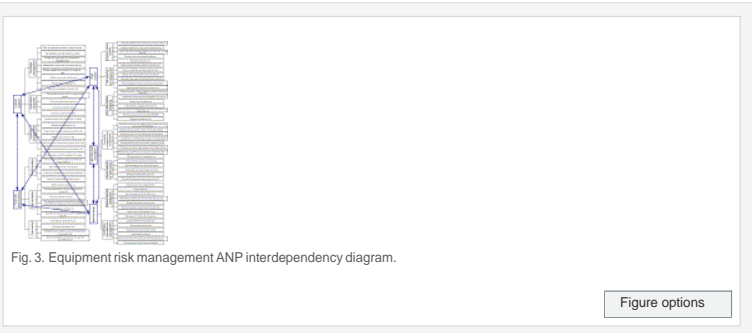


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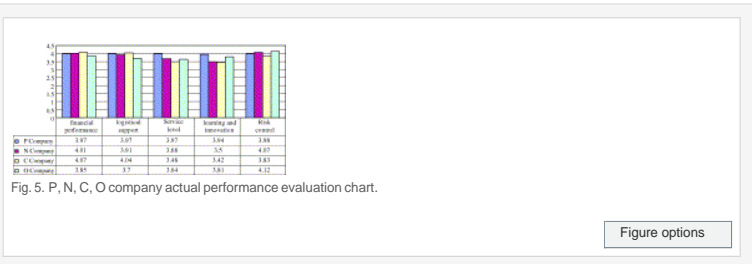


Figure options

Table 1. Random index value (RI).

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Table 2. The weight of major dimensions/subject/assessment indicators.

Note: All sample pass consistent correction ($CR \leq 0.1$).

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Table 3. Background of four subsidiaries of F enterprise.

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Table 4. The evaluation score of four subsidiaries of F enterprise.

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Table 5. Evaluation signals and corresponding implications.

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Table 6. Equipment risk management performance signals of four companies.

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Table 7. Recommended strategy for the four companies.



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