

Performance Improvement of Information System of a Banking System Based on Integrated Resilience Engineering Design

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Abstract : Integrated resilience engineering (IRE) is capable of returning banking systems to the normal state in extensive economic circumstances. In this study, information system of a large bank (with several branches) is assessed and optimized under severe economic conditions. Data envelopment analysis (DEA) models are employed to achieve the objective of this study. Nine IRE factors are considered to be the outputs, and a dummy variable is defined as the input of the DEA models. A standard questionnaire is designed and distributed among executive managers to be considered as the decision-making units (DMUs). Reliability and validity of the questionnaire is examined based on Cronbach's alpha and t-test. The most appropriate DEA model is determined based on average efficiency and normality test. It is shown that the proposed integrated design provides higher efficiency than the conventional RE design. Results of sensitivity and perturbation analysis indicate that self-organization, fault tolerance, and reporting culture respectively compose about 50 percent of total weight.

Keywords : banking system, Data Envelopment Analysis (DEA), Integrated Resilience Engineering (IRE), performance evaluation, perturbation analysis

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