

Proposal of a Model Supporting Decision-Making Based on Multi-Objective Optimization Analysis on Information Security Risk Treatment

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Abstract : Management is required to understand all information security risks within an organization, and to make decisions on which information security risks should be treated in what level by allocating how much amount of cost. However, such decision-making is not usually easy, because various measures for risk treatment must be selected with the suitable application levels. In addition, some measures may have objectives conflicting with each other. It also makes the selection difficult. Moreover, risks generally have trends and it also should be considered in risk treatment. Therefore, this paper provides the extension of the model proposed in the previous study. The original model supports the selection of measures by applying a combination of weighted average method and goal programming method for multi-objective analysis to find an optimal solution. The extended model includes the notion of weights to the risks, and the larger weight means the priority of the risk.

Keywords : information security risk treatment, selection of risk measures, risk acceptance, multi-objective optimization

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