

Ranking service system alternatives by applying computer simulation-enabled MCDM

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Abstract

When using computer simulation analysis to help a decision maker choose the alternative for solving operation problem in the past period, the alternative for solving operation problem is usually chosen by single objective criterion. However, it is often ignored that the evaluation of the alternative is with the characteristic of multiple objective criteria itself. In the service industry, decision makers need to deal with queuing problems, service capacity optimization, service efficiency and service quality problems wisely. Whoever can hold the immediate useful information and make the suitable decision, he has the greatest competence. Therefore, to propose a computer simulation-enabled MCDM framework integrating computer simulation analysis, Taguchi method, expert opinion and multiple criteria decision making is our research goal. In this approach, Taguchi method is used to shorten the time for simulation experiment. Computer simulation analysis is used to get some useful information for making decision rapidly and do not interrupt the real production. Expert opinion is used to determine the preference weights of criteria. Multiple criteria decision making is used to choose the optimal alternative extensively. Eventually, using an assumptive operation system problem in service industry to implement the proposed computer simulation-enabled MCDM framework and show the possible effective assistance for decision maker.

Keyword : Computer Simulation, Taguchi Method, Expert Opinion, Multiple Criteria Decision Making, Service Industry