Apply Fuzzy PERT in Decision Analysis of Supply Chain Management

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ABSTRACT

Under the pressure of the globalizational competition, the enterprise must increase the ability for developing high-quality products speedily and diversely to satisfy the requirements of customers. Hence, the ability and speed for responding the market fluctuation are key factors to raise the competition of business. However, the statuses of operational flows of supply chain system are often lack of transparency. Each member of supply chain system can not control the operation time exactly. It will affect the management performance of the supply chain system. Combining the Fuzzy Set Theory (FST) with the Program Evaluation and Review Technique (PERT), we propose a process decision analysis model for supply chain system to evaluate the completion time and the ability for fulfillment the customers ’ orders. Finally, we build a decision support system based on the process decision analysis model of supply chain network. According to the result of system simulation, our proposed analysis model can find the critical operations (or members), critical path and the possibility of fulfillment the customers ’ orders in the supply chain system quickly. Furthermore, we can clearly define each member ’ s crash cost according to the crash time to shorten the operation time and adjust the resource of the critical members. According to the analysis result of the proposed model, the members of a supply chain system will strengthen the cooperation and trust to share the cost and profit.

Keywords : Supply Chain System, Fuzzy Set Theory, Fuzzy PERT, Lead Time

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