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PAPER

Evaluation of Service Quality: Mathematical Modeling Approach

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Human behavior may lead to change in parameters, which has been used in the various models which describe different phenomena. Modeling human behavioral patterns is complex and hence a challenging task. This research is also based on an area of human behavior modeling.

Here we focus on service quality evaluation. As per business entities, customer satisfaction is the growing fact towards profit maximization and competitiveness. So, it tends to increase researcher's interest in the topic of Service Quality. It always depends on the behavior of the stakeholders of the business. Especially, as it is being used to measure the level of satisfaction of the customers. Evaluating this satisfactory level is basically finding a Mathematical model for the behavior of the customers. Here, we try to quantify the level of service quality via mathematical modeling approach.

When selecting a suitable tool, the vagueness of the customers' opinions has to be considered. The logical tools that people can rely on are generally considered the outcome of a bivalent logic, but the problems posed by real-life situations and human thought processes and approaches to problem-solving are by no means bivalent. So, fuzzy sets have to be used for the representation of human opinion. Neural network can be used to train the human behavioral patterns and it can be used to find the relationship between the respondent's view of the service quality criterion and overall ranking of the service. Therefore, fuzzy model & Hybrid model (i.e. combine fuzzy logic with neural network) are used in this research. A case study is done to find out the validity of the proposed model.

Fuzzy models have some stability with respect to the result, because it has given confidence to calculate overall quality using given criteria. According to the results of the case study the customers' overall idea about the same category and the respective calculated value using the criterion are almost the same. Fuzzy set theory together with neural network can be used to tune the accuracy of the model.According to the results of the case study, neural networks simulate the customers' overall impression with more accuracy. Generated numbers via neural network can be used to analyse the customers' overall impressions. So, this hybrid model would be able to create a more powerful tool for this subject area.