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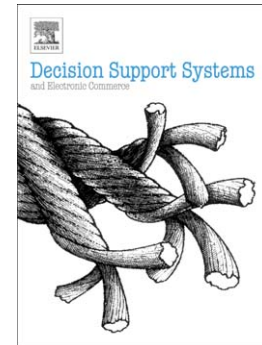
Late Payment Prediction Models for Fair Allocation of Customer Contact Lists to Call Center Agents

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# Late Payment Prediction Models for Fair Allocation of Customer Contact Lists to Call Center Agents

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## Abstract

Debt collection via call centers is an important operation in many business domains since it can significantly improve a firm's financial status by turning bad receivables into normal cash income that contributes to profits. Since the job performance of call center agents who carry out debt collection is primarily evaluated by the amount of debt collected, call center managers are faced with the challenge of allocating customer contact lists in a fair manner to eliminate a non-controllable external factor that could distort the objective evaluation of the agent's job performance. In this paper, we develop five machine learning-based late payment prediction models and ten customer scoring rules to predict the payment likelihood and the amount of the late payment for the customers who currently have an unpaid debt. The proposed scoring rules are verified under ten different contexts by varying the number of agents. Experimental results confirm that the prediction model-based scoring rules lead to fairer customer allocation results among the agents compared to the existing heuristic-based customer scoring rules. Among the prediction models, a hybrid approach can capture the late payers effectively, whereas tree-based models report more impartial customer allocation than the other methods.

*Keywords:* Late payment prediction, machine learning, decision tree, artificial neural network, support vector machine, hybrid approach

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