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Abstract
Formerly talked about the association rules in the data mining, it is mainly in the static state and the single level model carries analysis out. This research proposed the algorithms of three multiple-level association rules (MLICI, MLQPD, MLQSD) to discover the multiple-level association rules between the commodities. First, we use the algorithms of Post-Setting type to discover the candidate itemsets in the single level, and then, use mapping sub-itemsets method in the multiple-level association rules to obtains the final multiple-level sub-itemsets quickly.

Besides, the databases that they used in the enterprise are dynamic ones. Therefore let the analyzer be able to grasp the fresh information and take the advantage in the decision-making process. So, in this research we add the characteristic of the incremental data mining in our algorithms. In our algorithms we don’t need to rescan all database when the database changed. We only need to scan the changed part of database and merge the mining result to the previous mining result. Therefore the performance will increase rapidly.

Finally we propose the idea of “Profit Support”, penetrates that are calculated from the user anticipated gaining profit and commodity profit. And we can add the idea to our algorithms to discover the multiple-level association rules efficiently.

The algorithms we proposed have the following advantages: 1. Only need to scan database once. 2. To discover multiple-level association rules that can be applied to commercial practical level. 3. Need not to redo the mining process when the user changes a support hypothesis. 4. Can applied to incremental data mining. 5. The commodity’s amount won’t affect performance of mining process.
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