Applying Association Rule and Sequence Mining Technologies for the Product-to-Shelf Assignment Problem

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ABSTRACT

A well product-to-shelf assignment strategy can help customers easily find product items and dramatically increase the retailing store profit. Previous studies in this area usually applied the space elasticity to optimize product assortment and space allocation models. However, a well product-to-shelf assignment strategy should not only consider spatial elasticity. Thus, this study develops a product-to-shelf assignment approach by considering both product association rules and traveling behavior of consumer. Specifically, the first task of this research is to collect customer's transaction data and travel path data. The second task is to develop a method to discover traveling behavior of consumer, which includes both product association rules and traveling behavior of consumer, in the store. The third task is to construct and solve a product-to-shelf assignment model, based on the information provided in the first task. In this research, products are classified as major item, minor item and the others. Only minor will be reassigned. Experimental result shows our proposed method can reassign minor items to suitable shelves and increase cross-selling opportunity of major and minor items.

Keyword: Shelf Allocation, Association Rule, Purchase Sequence Mining.