

Product Bundling in the Electronic Commerce Environment: A Hybrid Approach

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Abstract

Product bundling is a widespread practice in the current e-commerce environment. However, there are few investigations about bundled commodities mining. Because no efficient method of product bundling is currently available, an expert selection of appropriate product bundling is a complex process. This is time-consuming and cannot efficiently meet the enterprise's need. It is essential for a company to develop product bundling based on analyzing the related information that fits different requirements and maximizes the benefit. This study proposes a method of incorporating GA and rough set theory. The superiority of the proposed GA is its ability to model problems and explore solutions generically. The proposed method improves GA performance by reducing the domain range of the initial population and constrained crossover using rough set theory. The experimental results in this study confirm that this approach is highly effective and very promising.

Keywords: E-commerce, product bundling, rough set theory, genetic algorithm.

1. Introduction

To increase commodity exposure and sales and repeated customer expenditures, enterprises have developed the bundling strategy of promotion. There are several reasons why retailers bundle products. Reasons for bundling retail products include reducing logistics, packaging, and transaction costs, increasing market share and sales, and improving customer service; all of which can eventually increase profitability [36]. However, appropriately bundling commodities to achieve the expected promotion performance is extremely challenging [39]. Bundling is also a very popular sales-promotion tool, in which the critical issue is deciding what products should be sold together in order to improve sales [52].

Although bundled commodities are common in supermarkets, there are few investigations about bundled commodities mining [54]. Additionally, no studies have proposed significant technologies or inductive rules for product bundling. No efficient method of product bundling research is currently available. An expert must perform a complex process to select the appropriate product bundle. The process is time-consuming and