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OPTIMAL FINANCING STRATEGIES IN GREEN SUPPLY CHAINS CONSIDERING COST-SHARING CONTRACT

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Abstract

This study models a manufacturer facing capital constraints and a retailer with sufficient funding within the context of a green supply chain, where the retailer alleviates the manufacturer's financial constraints by providing advance payments. Additionally, the retailer shares the manufacturer's green research and development (R&D) costs to promote investment in green improvements and accelerate the transition toward sustainability. To integrate this collaboration effectively, we incorporate a contract that facilitates shared costs into the advance payment financing structure. In the study, we compare the traditional advance payment financing (TF) with the financing approach that involves cost-sharing (CF). Initially, we analyze the optimal equilibrium outcomes for both financing strategies. When comparing the two strategies, we observe that the CF strategy, under certain conditions related to the cost-sharing ratio, proves beneficial by improving overall supply chain profits. Furthermore, this paper analyzes and compares the decision-making indicators of various stakeholders under the retailer-led cost-sharing financing strategy (RCF) and bargaining the cost-sharing financing strategy (BCF). The results reveal that the BCF strategy demonstrates a significant advantage in enhancing product greenness and overall supply chain profitability. This study further explores various scenarios in which the preferences of the manufacturer and retailer either align or diverge within the framework of cost-sharing contracts. These insights provide valuable decision-making support for supply chain managers considering cost-sharing contracts in financing.

Key words: advance payment, capital constraints, cost-sharing contract, green supply chain

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