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"Gheorghe Asachi" Technical University of Iasi, Romania

RESEARCH ON COLLABORATIVE RECYCLING IN CLOSED-LOOP SUPPLY CHAIN CONSIDERING CONSUMER LOW CARBON PREFERENCE AND GOVERNMENT SUBSIDIES

Maoting Jiang, Jianmin Xie*, Deru Xie, Qin Qin

School of Economics & Management, Southwest University of Science and Technology, Mianyang, 6210100, China

Abstract

How to improve product recycling rate and maximize economic and environmental benefits is a critical issue for closed-loop supply chain members in the global green and low-carbon development process. The factors of government subsidies and consumer low-carbon preference are fully considered in this paper, and a recycling model is constructed using game theory to establish vertical cooperation between manufacturers, retailers, and third-party recyclers, including "task sharing" and "cost sharing" models where manufacturers directly or indirectly participate. The results indicate that: (1) within a certain range, it is necessary for manufacturers to choose to participate in vertical cooperation from the perspective of optimal recovery rate. (2) Government subsidies play a positive role in this process, which is conducive to stimulating the active participation of subject members in recycling and improving economic and environmental benefits. (3) In a cooperative state, the higher the consumer's low-carbon preference, the greater the fluctuation in the closed-loop supply chain recovery rate, which is also better than the "cost sharing" cooperative model. This article aims to explore whether these two collaborative recycling models are beneficial for enhancing product recycling enthusiasm and achieving a win-win situation. Overall, the paper provides decision-making suggestions for recycling and remanufacturing enterprises to implement recycling mode selection, which is conducive to promoting the sustainable development of the closed-loop supply chain.

Key words: closed-loop supply chain, collaborative recycling model, consumer low-carbon preference

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* Author to whom all correspondence should be addressed: e-mail: xiejianmin@swust.edu.cn; Phone: +8613699637762; Fax: 0816-608956