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MOTIVATING MULTIPLE STAKEHOLDERS FOR GREEN GOVERNANCE OF EXPRESS PACKAGING WASTE: AN INTEGRATED APPROACH UTILIZING EVOLUTIONARY GAME THEORY AND SYSTEM DYNAMICS

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Abstract

The increase in express packaging waste has led to serious environmental pollution that urgently needs to be green governed. However, to carry out green governance, multiple stakeholders are needed to take full advantage of the joint effect. This paper considered the government, express enterprises and consumers to be the main stakeholders, constructed a tripartite game model to investigate the evolutionary decision-making process based on evolutionary game theory, and then performed simulation analysis using Vensim software to explore the main driving factors. The main conclusions are as follows: enterprise subsidies affect only express enterprises, but all three types of stakeholders are sensitive to changes in consumer subsidies. When the government combines the two kinds of subsidies, consumer subsidies play a major role. The penalty strategies are more effective than the subsidy strategies. The higher the penalty is for enterprises, the sooner express enterprises will adopt green behaviour strategies and consumers will adopt participation strategies. If penalties and subsidies are used simultaneously, the penalties always play a major role. In addition, the effect of low green investment costs and high public-praise benefits is almost the same, meaning that implicit benefits are just as important as explicit ones. Therefore, both environmental publicity and technological innovation can play a positive effect.

Key words: behaviour strategy, evolutionary game theory, express packaging waste, green governance, system dynamics

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