

Evolutionary game of green manufacturing mode of enterprises under the influence of government reward and punishment

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ABSTRACT

Green production mode is an advanced manufacturing mode. However, due to the environmental externality of green production, it is different for a pure market mechanism to promote the evolution of green operation mode of manufacturing enterprises. Government regulation is very important. This paper establishes an evolutionary game model of whether manufacturing enterprises choose to implement green production mode when the government implements two different mechanisms of reward and punishment. Considering the complexity of strategy selection of enterprises' green production behaviour under market competition, the method constructs the simulation analysis model of enterprises' green product production behaviour with multi-subject participation. We can simulate the influence of these factors on the strategic choice of both parties (enterprises and governments) by changing the different influence factors, and studying the evolutionary law of different government guidance and regulation strategies on the production behaviour of green products. These factors include government incentives, penalties, reputations, costs, differences in the cost of implementing green production on the corporate side, corporate reputation, and false rewards or penalties. By the computer implementation of multi-subject modelling, the results show that enterprises' green product production behaviour needs the government's guidance and regulation. When formulating relevant policies, the government should combine various guidance and regulation strategies and fully consider the influence of market competition.

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ARTICLE INFO

Keywords:

Evolutionary game;
Green manufacturing;
Smart manufacturing;
Reward and punishment;
Multi-objective decision making (MODM);
Evolutionary stabilization strategy

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Article history:

Received 12 October 2020
Revised 6 December 2020
Accepted 9 December 2020

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