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Research on an Evolutionary Game Model and Simulation of a Cluster Innovation Network Based on Fairness Preference-new manuscript [↗](#)

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ABSTRACT

The cluster innovation network is an important part of regional economic development. In addition, the fairness preference of internal innovators in the processes of investment and benefit distribution are particularly important for curbing "free riding" and other speculative behaviors and for creating a good cooperation environment. Therefore, taking a cluster innovation network constructed by the weighted evolutionary BBV model as the research subject, this paper constructs an evolutionary game model of a cluster innovation network based on a spatial public goods game and the theory of fairness preferences, which involves the processes of investment and payoff allocation. Using simulation analysis, this paper studies the evolution of innovators' cooperative behaviors and benefits in cluster innovation network under the conditions of a fairness preference and a return intensity. The results show that an increase in the weight coefficient, gain coefficient and degree of differentiation between the previous income and current investment can effectively promote improvements in the level of enterprise cooperation. Indeed, the greater the weight coefficient, the gain coefficient and the degree of differentiation are, the more substantial the improvement in the level of enterprise cooperation will be. Moreover, an improvement in the differentiation of the breadth and depth of enterprise cooperation has an inhibitory effect on enterprise cooperation. Furthermore, whereas increases in regulation and gain coefficients can effectively promote enterprise cooperation. However, the increase in the weight coefficient has a different effect on enterprise benefit in terms of the breadth and depth of cooperation. Finally, we hope to improve the overall cooperation level and cooperation income of the network by deeply understanding the fair preferences of innovators in the processes of investment and benefit distribution, which is helpful for promoting the evolution and development of cluster innovation networks.

EXTERNAL LINK

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THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

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