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Evolutionary game analysis of company collaborative strategy in cloud manufacturing platform environment

Xiao, M.[a,*], **Tian, Z.Y.**[a]

[a]Shenyang University of Technology, School of Management, Shenyang, P.R. China

ABSTRACT

The collaboration between manufacturing companies and demand companies is the focus of effective operation of cloud manufacturing platform. The evolutionary game model of manufacturing company, demand company and cloud platform was established, and the strategy stability of the three parties was analyzed in this paper. Based on Lyapunov discrimination method, the equilibrium points of the system were explored, and the simulation was applied to analyze the influence of key factors in the evolution process by MATLAB2021a. The results show that: (1) The evolution of company collaborative cooperation strategies in the cloud platform environment is staged; (2) The collaborative subsidy to the manufacturing company and the demand company by the cloud platform, the collaborative effort degree of the manufacturing company and the demand company, the value-added profits of the manufacturing company, the penalties and profits of the manufacturing company's speculation behavior, the loss of information leakage of demand company, and the government's subsidy for cloud platform supervision are important factors that affect the strategies of each subject; (3) The establishment of the cloud platform supervision mechanism can promote collaboration between the manufacturing company and the demand company. The results of the study can provide a beneficial strategic decision guidance for the development of the cloud manufacturing platform.

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**Corresponding author:*
mengxiao@sut.edu.cn
(Xiao, M.)

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