

The Evolution of Co-opetition in Platform Ecosystem

—A Study Based on the Iterated Prisoner's Dilemma Game

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Abstract

Platform ecologicalization is the core trend of platform economy, in which massive competitive organizations are relying on resources on the platform to carry out product sales, design, and innovation activities. The inherent characteristic of resource sharing of the platform also drives cooperation between these organizations, which promotes synergy between organizations, and increases competitiveness of the platform. This study addresses the evolution of cooperation among competitive agents based on the Iterated Prisoner's dilemma (IPD) game, providing insights on how to enhance cooperation among competitive participants in the platform ecosystem. A mechanism for agents to adjust their risk attitudes with changes in their payoffs is established, guiding agents to adaptively balance cooperation and competition. Specifically, the selective attention to historical-payoff-based adaptation and social-payoff-based adaptation can induce an effective adjustment in agents' risk attitudes, resulting in the stable evolution of cooperation. This outcome provides an important insight on the management of cooperation in the platform ecosystem.

Keywords: Platform ecosystem, Co-opetition game, Evolution of Cooperation, Income Stream Risk, Behavioral Theory of Firm