

Opportunism by cheating and its effects on industry profitability

The CIOPS model

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CIOPS (Cognitive Inter-organizational Production System) is an agent-based model that integrates industry structural aspects and agents' cognitive characteristics. A demand-driven industry, whose profitability depends on the quality of suppliers' products, is represented by a three-stage vertically integrated industry. Four types of decision-making patterns are analyzed and confronted each other: from the simplest one (random choice) to the most complex one, which includes direct and indirect experience and reputation. They operate as selection devices supporting agents to select the best suppliers. Requiring agents' communication, indirect experience and reputation could be influenced by eventual opportunist behaviors. As the disturbing effect of falsity depends also on the size of decision and information space, the CIOPS model simulates different situations. Even though submitted to some restrictive assumptions, by testing five groups of hypotheses CIOPS model enables to fix many points that could be tested by empirical data and further developed by relaxing the assumptions. Results show that, especially in presence of reputation-based trust, cheating attitude severely damages industry profitability and the enlargement of information space dramatically strengthens the negative effects. Though indirect experience and reputation-based trust are powerful tools to improve industry profitability, when people cheat they dramatically reverses its effects. A sharp performance diversity is also evidenced between industry segments, because firms in the first tiers segment, who are also the suppliers of final producers, perform much better and more efficiently than final producers. Though industry size growth determines the negative effect of reducing performance, it produces the positive effect of shortening the time to reach the highest profitability and to stabilize it. Finally, it is also demonstrated that cheating half times determines almost the same negative impact of cheating always.

Keywords: agent-based models, decision-making processes, industry profitability, reputation, supplier-buyer relationships, trust.