

## INTISARI

### **Pemodelan Dinamika Kolaboratif Multi Organisasi: Pendekatan Teori Permainan Kooperatif dan Simulasi Berbasis Agen**

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Dalam skripsi ini dikembangkan kerangka pemodelan matematis untuk menganalisis kolaborasi antarorganisasi dalam sistem ekonomi berbagi dengan tujuan mencapai pembagian hasil yang adil dan keuntungan sistem yang optimal. Interaksi antarorganisasi dimodelkan menggunakan teori permainan kooperatif, di mana fungsi karakteristik koalisi merepresentasikan kontribusi usaha individual dan kolaboratif serta struktur pendapatan bersama. Skema pembagian hasil diformulasikan melalui parameter koefisien alokasi yang memengaruhi insentif partisipasi dan stabilitas koalisi. Untuk menangkap dinamika adaptif dan ketidaklinieran perilaku aktor, model analitis ini diintegrasikan dengan simulasi berbasis agen (Agent-Based Modelling) yang memungkinkan evolusi strategi berdasarkan perubahan biaya usaha, pendapatan tetap, dan tingkat kolaborasi. Hasil simulasi menunjukkan bahwa profitabilitas kolektif dan efisiensi sistem sangat sensitif terhadap biaya usaha dan parameter pembagian hasil, dengan kondisi optimal dicapai pada biaya usaha rendah dan tingkat kolaborasi tinggi. Namun demikian, peningkatan ukuran koalisi dan intensitas kolaborasi menimbulkan trade-off berupa penurunan efisiensi marjinal akibat biaya koordinasi yang meningkat.

## **ABSTRACT**

### **Modeling Multi Organizational Collaborative Dynamics: A Cooperative Game Theory and Agent-Based Simulation Approach**

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In this thesis, we develop a mathematical modeling framework to analyze interorganizational collaboration in sharing economy systems, with the objective of achieving fair outcome allocation and optimal system-level profitability. Interactions among organizations are modeled using cooperative game theory, in which the coalition characteristic function represents the contributions of individual and collaborative efforts as well as the shared revenue structure. The outcome allocation scheme is formulated through allocation coefficient parameters that influence participation incentives and coalition stability. To capture adaptive dynamics and nonlinear behavioral responses, the analytical model is integrated with agent-based simulation (Agent-Based Modelling), allowing strategies to evolve in response to changes in effort costs, fixed revenues, and collaboration intensity. Simulation results indicate that collective profitability and system efficiency are highly sensitive to effort costs and revenue-sharing parameters, with optimal performance achieved under low effort costs and high levels of collaboration. Nevertheless, increases in coalition size and collaboration intensity introduce a trade-off in the form of diminishing marginal efficiency due to rising coordination costs.