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An Agent-Based Model for Supplier Selection in Digital Manufacturing Market

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Abstract: The Digital Manufacturing Market (DMM) is a virtual market for trading manufacturing services in which buyers and sellers are represented by intelligent software agents. The DMM enables rapid and autonomous deployment of service-oriented supply chains from a pool of suppliers that are distributed geographically. Due to the decentralized architecture and control model of the DMM, the customer agents can employ different strategies for selecting the qualified suppliers who possess the required capabilities and capacities. The objective of this implementation is to compare different decision-making scenarios that customer agents may follow for selecting appropriate suppliers. The metrics used for evaluating different supplier selection scenarios include overall customer wait time, match ratio and utilization rate of the suppliers in the system. In this work, the agent-based model of DMM is implemented in AnyLogic simulation software.

Keywords: Simulation, Supply Chain Configuration, Agent- Based Model