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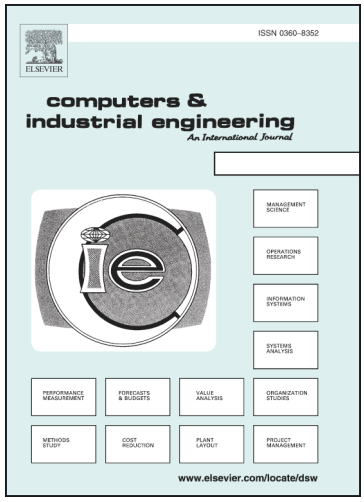

A Multi-Agent System Based Simulation Approach for Planning Procurement Operations and Scheduling with Multiple Cross-Docks

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A Multi-Agent System Based Simulation Approach for Planning Procurement Operations and Scheduling with Multiple Cross-Docks

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Highlights

- Propose an innovative Multi Agent System (MAS) framework to model procurement operations in India
- Exploit Multi Agent System, as a flexible and re-configurable approach to model food supply chains.
- Focus on strategically locating procurement centers for maximum coverage during
- Considers task allocation and optimal routing determination by scheduling agents

Abstract

Reducing food wastage during procurement, collection and storage remain understudied in the context of the developing world that faces unique challenges not seen in the developed world. In order to achieve this objective, a simulation-based framework is needed for evaluation of decision-making policies in procurement context. In this research we propose a Multi-Agent System framework, specifically considering the Indian scenario of paddy procurement operations. We formally define procurement, allocation, milling and scheduling agents under this context and explicitly state the interaction protocols and related algorithms. Procurement agents solve the problem of allocation and maximum coverage to strategically determine their locations. An Improvised Contract Net Protocol is implemented by allocation agents to either reorganize excess procurement quantities among procurement agents or tag to milling agents who implicitly engender