

Interorganizational Systems for Complex and Dynamic Environments

An Agent-Based Simulation for Systems Design Evaluation

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Interorganizational systems (IOS) automate transactions and link business processes between two or more firms. IOS allow for internal assimilation and external diffusion of information and are required for improved cooperation and coordination of supply chain partners. Despite the potential benefits, there are debates on the performance implications of IOS. Researchers argue that IOS adoption requires long term commitment, which prevents flexibility and negatively impacts performance (Lavie and Rosenkopf 2006). The suggested remedy is congruence between IOS archetype and environmental factors such as complexity and dynamism (Chatterjee and Ravichandran 2013). There are various IOS archetypes, including dyadic communication and electronic markets. Each of these archetypes is suitable for a specific environmental condition. For instance, whereas dyadic communication is preferred in stable environments, electronic markets become dominant IOS archetype in high levels of dynamism. Although the fit between IOS and environmental factors is essential, the literature has rarely assessed environmental factors in selection of a suitable IOS archetype. Therefore, and to address the gap, this research aims to suggest IOS archetypes for business environments with various levels of complexity and dynamism.

Study of IOS has two characteristics of high number of involved organizations and autonomous interactions between organizations. These two are characteristics of complex adaptive systems (CAS) (Choi et al. 2001). CAS perspective enables modeling of complex systems and provides a clear understanding of the complexity. Therefore, this research adopts the CAS perspective for its model development. Subsequently, this research uses an agent-based simulation, which is the prevailing approach for analyzing CAS models, to contrast the performance of each IOS archetype in environments with different levels of complexity and dynamism. The findings of this research are informative for practitioners who are involved in IOS implementation projects. Moreover, the findings contribute to the literature by discussing the heterogeneity of supply chains and the importance of IOS selection based on differences in the business environments.

References

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