

Cluster competitiveness modeling: an approach with systems dynamics.

Autores

David Ovallos, Martínez-Marín, Puello-Pereira.

Abstract

This study makes a systemic review to cluster and create a competitiveness relationship considering a systems dynamics approach. A dynamic hypothesis was constructed to validate what factors increase a cluster's level of competitiveness, through causal analysis. Then, the causal diagram that validates the dynamic H0 hypothesis was constructed in Vensim PLE systems®. Literature review shows the evolution of the cluster system according to the current needs of the market, and emphasizes the need for new approaches and models that capture the complexity and dynamics of this system, allowing the understanding of its structure and the evaluation of the contribution of factors and capabilities to cluster competitiveness. It highlights the usefulness of systems dynamics as a simulation methodology for dynamic and complex systems, and establishes itself as a growing line of research applied to various systems of study. Dynamic hypothesis H0 was validated using the causal diagram, reaching the conclusion that innovation, productive management, financial management, organizational management, commercial management, and cluster management factors positively increase the cluster competitiveness level. From structure analysis, the behavior is associated to the archetype "Path Dependence," usual in growing industrial markets.

Palabras clave

Competitiveness, cluster, system dynamics, dynamic hypothesis, causal diagram