SCIENCESPRINGDAY

FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA

DEMI - Department of Mechanical & Industrial Engineering

Agent-Based Simulation for Analysing the Impact of Interoperability on Industrial Ecosystems

UNIDEMI – Unidade de Investigação e Desenvolvimento em Engenharia Mecânica e Industrial

Researchers

Izunildo Cabral
Doctoral Student, DEMI, FCT/UNL
Master in Industrial Engineering & Management, DEMI, FCT/UNL

Advisor: António Grilo
Assistant Professor, DEMI

Objectives

- Identification and analysis of state of the art in related research.
- Develop a methodology to enable the detailed design (using axiomatic design) of different scenarios of cooperation, in the context of collaborative lean, agile, resilient, and green (LARG) business practices implementation.
- Development of an agent-based model that captures the interaction among networked organisations and the impact of inadequate or lack of interoperability on the implementation of interoperable business practices, in terms of cost and time (Fig. 1).

Methodology

- Literature review on LARG paradigms (identification of interoperable business practices, tools, attributes, divergences and synergies).
- Literature review of interoperability and identification of the main factors responsible for business interoperability, in the context of dyadic relationship and networked relationship.
- Literature review on business networks/business ecosystems, axiomatic design, agent-based simulation.
- Development of the axiomatic model for different configurations of business interoperability platforms.
- Simulation environment using Agent-Based Modelling.
- Design of case studies, data collection, computation and analysis of results.

Expected Results

- Contribution to theory development in operation management by giving new perspectives of how organizations should operate in collaborative environments (industrial ecosystems)

- Understand how inadequate or lack of interoperability can challenge the seamless implementation of interoperable LARG business practices and its impact on Costs and Time.

- Test and validation of the applicability of the model through a large number of case studies, in different industries.

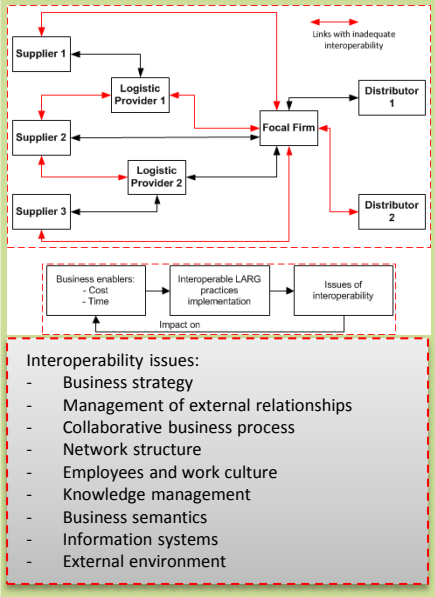

Fig. 1 – Research Framework

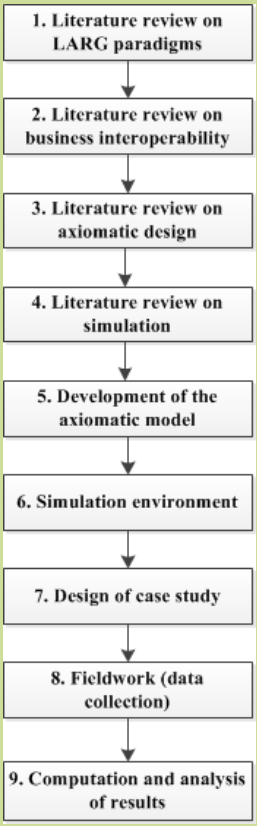

Fig. 2 – Research Methodology

Funding:

FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA