

# Abstract

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## An Approach to support the Strategies Alignment Process in Collaborative Networks

Manufacturing enterprises are more and more aware of establishing collaborative relationships with the network partners, due to the advantages associated. Especially, the participation of small and medium-sized enterprises (SMEs) in collaborative networks (CN) leads to enhance their competitiveness, by increasing their agility, responsiveness and adaptability to deal with the rapid market evolutions, and the business globalization. Nevertheless, the participation in CN has associated challenges, especially for SMEs, which are derived from the lack of resources and capabilities, and the limitations associated to cultural barriers.

CN consist of autonomous partners, each one defining its own objectives and formulating its own strategies. The strategies diversity may result in conflict situations, among the enterprises of the same CN, since contradictions between the strategies formulated might emerge. These contradictions appear when the strategies activated in one enterprise negatively influence the objectives defined by other enterprises of the network. The lack of coherence and concordance among the formulated strategies leads to its misalignment. The connotations derived from the strategies misalignments affect the achievement of enterprises objectives, reducing their performance levels, and influencing on the wellbeing of the collaborative relationships established. If the conflicts that arise, derived from the lack of strategies alignment, remain on time and are not tackled, the strategies misalignment could lead, in the long term, to the breakdown of the CN. The success of obtaining higher levels performance in the CN is directly related with the activation of a proper combination of strategies in each enterprise belonging to the network.

Despite the fact that the concept of alignment has been studied in different research areas, there is a need to address this topic from the strategies selection perspective, in enterprises belonging to a CN. Thus, there is a gap in the literature to formally represent and solve the strategies alignment process from a holistic view, considering the CN context.

In the light of this, this thesis proposes a complete approach, consisting of a model, a method, a guideline and a set of tools, used (i) to identify the degree of alignment of the strategies, from a holistic perspective, and (ii) to propose the activation of the aligned strategies. The proposed contribution allows considering all the strategies formulated by all the partners, and model the influence that these strategies exert on the wide diversity of objectives defined, regardless of their nature and type, taking into account the CN context. The main aim of this thesis is to provide the enterprises appropriate mechanisms to remove the strategies misalignment problem, in order to establish long-term collaborative relationships. The proposed solution is based on a mathematical model, which allows to formally modelling the strategies alignment process, solving it through systems dynamic (SD) method. SD allows representing causal relationships between the strategies and the objectives achievement, within the complex system formed by the enterprises of a CN. A performance measurement scheme is provided to quantitatively measure the influences between the strategies and the objectives. Moreover, a simulation tool is used to automatically solve, in a computer program, the proposed model, assessing and supporting the strategies alignment process.

The contribution of this thesis (complete approach: model, method, guideline and tools) has been validated in two industrial pilots belonging to the food and automotive industry. The validation has shown that it is possible to model, solve, and assess the strategies alignment process from a collaborative perspective. Allowing the network enterprises to collaboratively make the decision of identifying the aligned strategies to be activated, and the time frame in which to activate them; so that, the performance of the network is maximised. The proposed complete approach allows identifying those strategies that exert positive influences in the majority of objectives defined (or the negative influences are minimum) and deals with potential strategies misalignments, reducing collaborative conflicts.

**Key-words:** strategies, objectives, performance indicators, alignment, collaborative processes, collaborative networks, system dynamics, simulation.