

# Collaborative logistics and cooperative game theory

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## Abstract:

Collaboration is an important approach to develop a sustainable logistic sector. Different studies have shown that collaborative transportation can save 10-15% of the overall cost. In addition, negative environmental impact of emissions can be reduced by the same number or even more. With such convincing numbers all companies should be involved in such collaboration. However, this is not the case and the question is why? There are several reasons. One is the need to build the coalition but who should lead, who should take first initiative and who should be invited to participate? A second is the need to establish a sharing mechanism such that all partners are treated fair and with respect to their effort, level of data uncertainty and specific requirements. In logistics, the evaluation of quantitative collaboration benefits is mainly conducted using Operations Research (OR) models. Game theoretic models and procedures to establish collaborative coalitions, mechanisms and sharing principles have recently gained a lot of attention in the scientific community. A third is the need to keep sensitive information classified and to have trust among all participants. This may be a problem unless the coordination is done by a third party. A number of industrial applications will be described and discussed. These arise as various transportation and logistics problems in natural resources.