

Intermodal Strategies for Redistribution of Agrifood Products in the EU: The Case of Vegetable Supply Chain from Southeast of Spain

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Abstract : Environmental cost and transport congestion on roads resulting from product distribution in Europe have to lead to the creation of various programs and studies seeking to reduce these negative impacts. In this regard, apart from other institutions, the European Commission (EC) has designed plans in recent years promoting a more sustainable transportation model in an attempt to ultimately shift traffic from the road to the sea by using intermodality to achieve a model rebalancing. This issue proves especially relevant in supply chains from peripheral areas of the continent, where the supply of certain agrifood products is high. In such cases, the most difficult challenge is managing perishable goods. This study focuses on new approaches that strengthen the modal shift, as well as the reduction of externalities. This problem is analyzed by attempting to promote intermodal system (truck and short sea shipping) for transport, taking as point of reference highly perishable products (vegetables) exported from southeast Spain, which is the leading supplier to Europe. Methodologically, this paper seeks to contribute to the literature by proposing a different and complementary approach to establish a comparison between intermodal and the “only road” alternative. For this purpose, the multicriteria decision is utilized in a p-median model (P-M) adapted to the transport of perishables and to a means of shipping selection problem, which must consider different variables: transit cost, including externalities, time, and frequency (including agile response time). This scheme avoids bias in decision-making processes. By observing the results, it can be seen that the influence of the externalities as drivers of the modal shift is reduced when transit time is introduced as a decision variable. These findings confirm that the general strategies, those of the EC, based on environmental benefits lose their capacity for implementation when they are applied to complex circumstances. In general, the different estimations reveal that, in the case of perishables, intermodality would be a secondary and viable option only for very specific destinations (for example, Hamburg and nearby locations, the area of influence of London, Paris, and the Netherlands). Based on this framework, the general outlook on this subject should be modified. Perhaps the government should promote specific business strategies based on new trends in the supply chain, not only on the reduction of externalities, and find new approaches that strengthen the modal shift. A possible option is to redefine ports, conceptualizing them as digitalized redistribution and coordination centers and not only as areas of cargo exchange.

Keywords : environmental externalities, intermodal transport, perishable food, transit time

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