FACTORS INFLUENCING LOGISTICS SERVICE PROVIDERS' EFFICIENCY IN URBAN DISTRIBUTION SYSTEMS

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Abstract

The increased urbanization and the awareness of freight transportation impacts have stressed the importance of City Logistics (CL) as a comprehensive approach aimed at mitigating the negative effects of distribution activities without penalizing social, cultural, and economic issues.

CL faces a relevant degree of complexity due to the characteristics of modern urban areas, such as traffic congestion, lack of parking spaces, high levels of pollution, and restrictions imposed by local regulations. This environment causes uncertainty about planning and managing delivery activities so that, if not properly organized, urban logistics might not meet its goals. In recent years, many models have been developed to optimize the CL process considering the perspectives of the different stakeholders involved. Studies mainly focus on the location and role of distribution warehouses, freight flows, the routing task, vehicle loading, the size and type of vehicles that can enter urban areas, and possible charges for accessing city centers. However, a successful implementation of such models requires internal efficiency by each actor. In this context, a crucial role is played by logistics service providers (LSPs) because they are expected to offer high quality services in congested urban areas and the effectiveness of their activities depends on the interactions among all the CL stakeholders.

The paper proposes an empirical analysis on the operational factors determining the level of efficiency of a LSP. Based on the analysis of literature, the efficiency is here assessed through productivity, which in turn is measured as the number of stops that a driver daily makes during his service. Data about a LSP involved in urban freight distribution in Italy are analyzed and a regression analysis is completed. Results highlight that two managerial levers affect the level of productivity. The first one is related to the organization of the distribution network: a more efficient location of warehouses, an extension of the area covered by each driver and a more efficient routing structure can significantly increase the productivity of a LSP. At the same time, the vehicle loading strategy appears to be crucial: as a matter of fact, vehicles should not be excessively loaded, especially with big parcels, so that the business can be performed more efficiently.

This study represents an attempt to develop a comprehensive panel of operational variables that support the efficiency of the urban distribution system of LSPs. The potential benefits associated with the enhancement of efficiency are both economic and environmental.