

XXXIV PhD Cycle - Urban planning, design, and policy

Author: Stefano Saloriani

Title of the thesis: B2C e-commerce and home delivery optimization through PUDOs and lockers: an empirical analysis of Milan

Supervisor

Ilaria Mariotti

co-supervisor

Riccardo Mangiaracina & Angela Tumino

Abstract

E-commerce continues to grow every year, and the analysts have predicted that the penetration rate of its global market will be increased by up to 25% by the year 2026. Further, the Covid-19 pandemic has boosted online shopping.

In recent years, the process of transporting parcels to consumers underwent significant improvements but, the so-called last-mile is often the least efficient.

This work focused on PUDOs and lockers as a solution to increase the efficiency of the home deliveries. PUDOs are places or physical structures in which the customer can collect the goods avoiding being at home all day long.

In the first part of the work, the objective was to outline the general framework of the e-commerce phenomenon and investigate the spatial effects.

The second part of the research aimed at optimizing home delivery with the support of a transport model. Through different simulations and scenarios, the objective was to define the best way to compose a network of PUDOs and lockers.

The scenario with the best performances had a network composed of PUDOs and lockers located in both private and public spaces. This could spur administrations to get interested and directly intervene in urban logistics issues, for example by working directly for the occupation of vacant spaces and introducing more accurate and efficient rules and restrictions.