The challenge of logistic data collection

Master 2 research thesis by Raphaël Collin, September 2021, under the supervision of Hernán Mejía (Urban Radar)

More than half of the world's population lives in cities, and the urbanization rate in France is now 80%. Cities are both the world's economic engines, generating more than 80% of the world's GDP, and also consume 78% of the energy produced and are responsible for more than 60% of CO2 emissions. Urban logistics is recognized as one of the driving forces of the city economy, supporting this development by meeting a large number of needs of economic players and city residents: transport and storage of goods, construction materials and waste.

However, this industry is not well known to the public sector and to land-use planning. The company Urban Radar, in which I did my internship, intends to fill this gap **by offering digital solutions for analyzing logistics data to decision makers**. Linked to this issue, the main problem of the thesis is **to know what are the possible ways to collect logistic data**.

To try to answer this question, several methodologies were used. First, a literature review of the **different survey modes and road sensors, listing the advantages, shortcomings and use cases**. Then, a series of indicators from the scientific literature, from reports or even from my internship are proposed. The goal is **to give meaning to the acquired raw data: what is the share of heavy vehicles in the road traffic, what is the periodicity of the activity or what are the origins and destinations of the transport vehicles.**

To illustrate this research, the **Grand Paris Sud project**, in which I took part, is used. The agglomeration wishes to optimize the urban logistics on its territory, so it is already a question of understanding it and thus of collecting data. For this study, **acoustic sensors linked to cameras have been chosen to be installed at the entrances of two logistics parks**. Once installed, they will provide precise data on the entry and exit of vehicles and allow them to be classified. The aim is to get an overview of the volume of freight flows passing through the agglomeration.

Finally, it turns out that the subject is vast and that there are multiple data collection solutions. The wide range of road sensors allows, depending on budgets and technical means, precise surveys over long periods. However, it seems essential **to couple this counting with surveys of the logistics sector.** Although this method can be expensive, it offers the advantage of obtaining precise and targeted information.

Beyond surveys and counts, it seems essential for the development of urban logistics that planners and private actors have more exchanges. Indeed, during this internship and this research, it appears clearly that logistics is unknown to the public sector and that the planning and the implementation of regulations are also unknown to the logisticians. It would be beneficial for both parties if **exchange forums or negotiation processes were set up**, and if regulations and planning were better adapted to the needs and problems of each.

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