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## Stakeholder's perceptions of city logistics: An exploratory study in Brazil

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### Abstract

The urban distribution of goods is vital for a competitive market. However, problems arising from this activity reduce the level of quality of life in urban areas. In order to reduce such impacts, solutions should be investigated and implemented considering the different perspectives and objectives of major stakeholders (carriers, retailers, residents and administrators). In this paper, we analyse the stakeholders' preferences and perceptions regarding city logistics schemes. For this purpose, we conducted a survey was conducted to identify the best practices that fit the reality analysed. The results show the convergence of solutions and can thus to guide public policies aiming to improve urban freight distribution.

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### 1. Main text

Urban goods delivery is an important factor in the dynamics of economic activity in a city as the cargo is an essential element for the existence of a competitive market. Dablanc (2007) states that urban freight distribution is a key activity in the development of cities, with significant importance in sustaining the lifestyle of the population and maintaining the competitiveness of industrial and commercial activities. However, this activity has a direct impact on the city and urban logistics provides solutions to improve its efficiency, reducing congestion and mitigating environmental externalities.

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The main problems related to urban freight distribution are congestion, poor road networks and inadequate loading/unloading operations due to factors such as the size of freight vehicles, the saturation of traffic levels, project failure and bad pavements (Ogden, 1992). Macharis and Melo (2011) point out conflicts between urban activities and goods distribution, generating social, environmental and economic externalities and requiring solutions to improve the efficiency of cargo transportation which take into account mobility, quality of life and sustainability.

Sinarimbo (2005) summarizes the possible solutions and best practices adopted by carriers, retailers and administrators in cities in Asia and Europe, such as the consolidation of goods in urban distribution centers, overnight delivery, access restrictions (based on day, time, weight, etc.) and truck-only lanes, amongst others. In each of these solutions is mandatory to observe the stakeholders involved and their own goals. For Taniguchi et al. (2001), the main stakeholders are the retailers (receipt of goods), carriers (transport of goods), population (live, work and shop in urban areas) and administrators (promote urban development). The city logistics solutions should promote the integration the different views of these stakeholders.

Due to the high complexity of goods distribution activity, information about preferences and perceptions for each stakeholder become essential, especially because their interests are often divergent and conflicting. Golob and Regan (1999) interviewed around 1,200 transport operators, both autonomous and employees of companies of different sizes, about practices, which aim to reduce congestion, classifying them according to their perceived effectiveness. Quak and Koster (2005) evaluated goods distribution from the tenants' point of view, analysing several case studies in the Netherlands. Differential charging by time for road use from the carriers' perspective was the subject of a survey conducted by Holguín-Veras et al. (2006).

In such a context, this paper presents the results of a survey that identified the stakeholders' perceptions regarding urban freight distribution and city logistics solutions in Belo Horizonte (Brazil). We interviewed the population, carriers, retailers and representatives of the municipal government to understand the different perspectives and underlying paradigms and identify challenges and solutions in urban freight distribution. To present these results, this paper discusses the methodology and the findings, taking into consideration different studies undertaken throughout the world.

## **2. Methodology**

This study employed survey methodology and we designed the questions to obtain the stakeholders' perceptions concerning problems and solutions related to urban freight distribution. The interview is one of the data collection techniques previously established, as a rational way for a researcher to conduct an effective study to derive knowledge systematically and that is as complete as possible, with minimal effort in terms of time (Rosa and Arnoldi, 2006).

We used Likert scale to assess the importance of the elements and indicate the stakeholders' desires in relation to supporting public policies for urban freight transport. Likert (1932) developed the principle of measuring attitudes by asking people to respond to a series of statements about a topic in terms of the extent to which they agreed with them, thus tapping into the cognitive and affective components of attitudes. Likert scales use fixed-choice response formats and are designed to measure attitudes or opinions. These ordinal scales measure levels of agreement/disagreement.

The survey for residents aimed to evaluate their perceptions regarding the presence of freight vehicles in urban centres, the proportion of trucks on urban roads, fleet age, vehicle size and levels of pollution and congestion. In addition, the survey included questions related to perceptions of city logistics practices in Belo Horizonte. We hosted the survey on Google Drive to facilitate online access. In addition, we conducted the interviews in the central region of Belo Horizonte, taking a random approach to inviting people to respond to the questions.

For carriers, we structured the survey to examine perceptions of urban congestion and operating costs and to analyse the acceptability of solutions such as truck-only lanes and overnight delivery. Furthermore, the questionnaire investigated willingness to pay on the part of the carriers, which would be recovered through savings in time and improvements in operations, contributing to the effectiveness of the proposed measure or practice. The carriers were approached in the loading and unloading spaces of the central region of Belo Horizonte and were invited to participate in the research.

To access the retailers' point of view, we designed the survey to include questions regarding goods delivery and the costs associated with the operations. The interviewers visited the stores in the central region of Belo Horizonte and the person responsible for the store was invited to take part in the interview.

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