Urban Freight Logistics: What Do Citizens Perceive?

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Background
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• Urban freight logistics is critical, but it generates externalities

• Collaborative planning is a must (Browne and Gomez, 2011; Oliveira et al., 2018).

• Stakeholders in urban areas have complex interactions and their perceptions are not always aligned (Vieira et al., 2015; Kiba-Janiak, 2016).

• When planning, Citizens are usually left out of the design of freight policies (Amaya et al 2020)
What do Citizens Perceive?
Conceptual Framework
Freight contributes to daily activities
Citizen Characteristics

Infrastructure

Externalities

Urban Freight Logistics

Freight contributes to daily activities
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Urban Freight Logistics

Freight contributes to daily activities
Freight contributes to daily activities

H4

H4a

H4b

H3

H2

H1

Urban Freight Logistics

Externalities

Infrastructure

Citizen Characteristics

Neighborhood Characteristics
Citizen Characteristics

Infrastructure

Externalities

Urban Freight Logistics

Freight contributes to daily activities

Neighborhood Characteristics

H4a

H1

H2

H3
Survey Design and Implementation

Perception Indicators (14)

Socio-economic Information

- 43% Female, 57% Male
- Income Level: 43% Low, 40% Medium 17% High

Data Collection

- Downtown (86)
- Manga (89)
- Bocagrande (94)
SEM Modeling
Modeling Results

As perception of infrastructure conditions increases, perception of negative externalities decreases

H1 → Confirmed
Modeling Results

Higher perception of negative externalities decreases the freight logistics performance perception in the city.

H2 $\rightarrow$ Confirmed
Modeling Results

Awareness of freight in daily activities **reduces** the perception of urban freight logistics.

As awareness increases, there is a higher expectation that freight operations will be conducted efficiently.

\[ H3 \rightarrow \text{Confirmed} \]
There are variations in perceptions according to characteristics such as **age** and income level.

**H4b → Confirmed**
There are variations in perceptions according to the Neighborhood

- Manga
- Bocagrande

Infrastructure

- Age: 31 - 50 y.o.
- High Income Level

Externalities

- Commercial vehicles damage the street
- Environmentally Friendly vehicles should be used
- L/U of goods block the sidewalk

Urban Freight Logistics

- Regulations make the freight system efficient
- Urban freight system performs well

H4a ➔ Confirmed

Standardized Coefficient

** P-value <0.05
* P-value <0.10
Mediation Analysis

Total Effects of Neighborhoods on the Latent Variables

Infrastructure

Externalities

Urban Freight Logistics

Manga

Bocagrande

Manga

Bocagrande

Manga

Bocagrande

** P-value <0.05
* P-value <0.10

Standardized Coefficient

0.48**

0.49**

-0.21**

0.016

0.36**

0.56**
In Manga and Bocagrande citizens perceive better infrastructure compared to Downtown.
Citizens in Manga have a lower/negative perception of externalities compares to those in Downtown.

Mediation Analysis

Citizens in Manga have a lower/negative perception of externalities compares to those in Downtown.

Standardized Coefficient
** P-value <0.05
* P-value <0.10
Perception of freight operations is lower/negative in Downtown Manga and Bocagrande.

Citizens perceive poor infrastructure, high externalities, and low performance of urban freight logistics in Downtown Manga and Bocagrande.

Standardized Coefficient

** P-value <0.05
* P-value <0.10

0.48** 0.49**
-0.21** 0.016
0.36 ** 0.56**
Conclusions
Conclusions

• Citizens perceive the negative externalities produced by freight operations

• The more aware citizens are on the importance of cargo, the stricter they are in evaluating the performance of urban freight logistics

• Policies and initiatives must be developed based on the different land uses and the availability of infrastructure in the areas of interest
Conclusions

• Citizens do have a perception of urban freight logistics. Decision makers should grant citizens participation in the planning process

• Planners should take action to improve freight operations in the area of study
Thanks!

Questions?

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