

The Transport of Freight in Urban Areas (Case of Bejaia)

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Abstract

Like Algerian cities, the city of Bejaia is experiencing rapid economic development, marked by a strong concentration of industrial and economic activities in the city. This has led to urban dysfunctions resulting in a strong growth of freight movements and causes the saturation of the road network that can no longer support the high demand. This article presents the results of a research on freight transport practices in the city of Bejaia, which has experienced very significant economic growth in recent years. The results of the travel survey conducted in 2022 as part of this research show that the economic development of the city of Bejaia has led to a significant change in the use of freight transport. The purpose of this research is to stimulate debate on the management of our cities, their planning and to show the need to coordinate urban planning and urban transport, particularly freight transport, and to raise awareness among urban management and transport sector stakeholders.

Key words: growth, freight transport, city, displacement, Bejaia.

INTRODUCTION

The world population is 7.7 billion in 2019 and growing rapidly. It is expected to cross the threshold of 8 billion in 2022 and reach nearly 10 billion in 2050 according to the medium scenario of the United Nations, now UN, projections (Pison, 2019).

The environmental issue is emerging at the center of this planetary upheaval brought about by the phenomenon of urbanization and imposes a universal awareness. Indeed, the rate of motorization is constantly increasing, and with it pollution and GHG emissions; an inhabitant of a sprawling city (less than 20 people/ha) consumes on average 3 times more energy than that of a medium-density city (60 people/ha) (Azzag, 2011). Plusieurs recherches ont été menées dans de nombreux pays pour d'étudier le développement économique des villes afin de limiter l'augmentation de la longueur du trajet provoqué, étant que ce dernier engendrant les divers problèmes de transport de fret.

The good management of transport in the city plays an important role in the protection of the environment. Since it allows, on the one hand, to limit the harmful effects of transport, especially freight transport, on the environment, and on the other hand, to reduce the emission of greenhouse gases. The fight against global warming and the fight against atmospheric pollution require policies aimed at reducing the use of motorized transport (Thomas, 2014), which must be placed in the context of planning and travel policies that encompass all modes of transport and forms of organization of the city (Mirabel et al., 2013).

Today, through the growing number of experiments in several cities around the world and in view of the major issues that it raises for city governments, the question of mobility and its impact on urban management and planning has become an obvious one (Desjardins, 2020). In order to deal with the problem of transporting people and urban planning, the city will have to address logistical issues. The problem of goods in the city lies in the arrangement between economic dynamism and the needs of the well-being of citizens; the circulation of goods and exchanges are an integral part of the functioning of the city.

Concerning the case of Algeria, such a research comes at the right time, because the transport of goods plays an essential role in the maintenance of industrial activities within the urban space, also several studies have shown it: the

understanding of the link between the activities, the dynamism of a city and the volume of freight which circulates there constitute unquestionably a major stake for the good functioning of the Algerian cities, more especially as the country accuses a delay in the studies in the fields of mobility and transport.

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METHODOLOGICAL APPROACH

The absence of updated statistical sources led us to opt for a field survey to collect the quantitative data necessary for our analysis. This survey does not claim to be exhaustive. It allows to answer our problematic on the practices of freight transport in a local context that is that of Bejaia. It is a question of analyzing: (the nature of the operations, the mode of management, route, destination, duration, the nature of the product and the problems encountered, etc). A detailed knowledge of travel practices seems to be a determining factor in the development or evaluation of local urban policies.

The Sample and Survey Design

Our sample was selected randomly according to the transports present on the day of the survey by interview method with 57 transporters. Our survey is based in the port area of Bejaia. The questionnaire of the survey is structured and includes two parts:

- 1- Part 1: age, gender, socio-professional categories, etc.
- 2- Part 2: relating to the practices of transport of freight movements (the nature of the operations, the mode of management, route, destination, duration, the nature of the product and the problems encountered, etc.)

The Conduct of the Investigation

The surveys were conducted in the city of Bejaia during the month of December 2022. The surveys were conducted at the port, every working day of the week from 7:00 am to 2:00 pm except for the weekend (Friday and Saturday). They focused on trips made by freight transport drivers. The control and the counting were carried out. The results of the survey were entered into a file using SPSS statistical processing software.

Mapping

In addition to the results of the field survey, the mapping allowed for a spatialization of urban travel data, including the surveyed population, flows and travel modes. The table below shows that 19% of the survey sample did not respond to the questionnaires for several reasons (refusal to respond, etc.)).

Table 1. Share of the surveyed population

Population	Number	Part in %
Not surveyed	13	19
Surveyed	57	81
Total	70	100

PRESENTATION OF THE CASE STUDY

The choice of land was made in Bejaia, a medium-sized city that has experienced rapid and uncontrolled urban sprawl, due mainly to population growth. With its population of more than 190,766 inhabitants at the end of 2018, it also concentrates a significant proportion of the region's jobs and is therefore an attractive area for various reasons. This increases the pressure on the road network, which generates a volume of motorized traffic to the city center of about 40,000 vehicles/day, causing saturation of the road network.

RESULTS AND DISCUSSION

The sample interviewed covers practically all age groups, the 18 to 59 age group is the most dominant, representing 49 people, i.e. 86% of the total population surveyed, i.e. more than 2/3. For the last age group over 60, the least dominant, it is represented by 8 people, or 14% of the total population. It concerns mainly retired people.

Nature of the Transport Operations Carried out

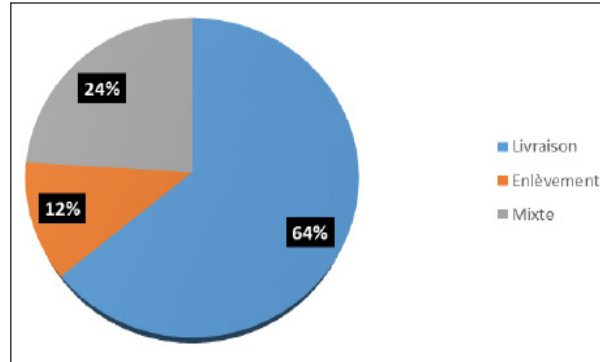


Figure 1. The nature of the transport operations performed.

The above results describe the percentages of deliveries and collections. Through these data, we can see that more than three quarters (64%) of the transport carried out in the city of Bejaia are delivery operations, while pick-ups represent only 12% and mixed operations (delivery and pick-up) represent 24%. Delivery operations are in the majority because of the nature of the products transported.

Management Method

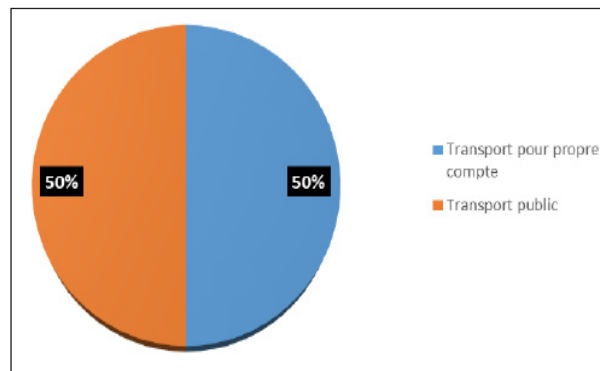


Figure 2. the management mode

The public transporters ensure 50% of the movements (delivery and collection) and the same proportion is recorded for the own account. Thus, the two modes of management constitute a significant part of the movements in the city of Bejaia.

Structure of Operations

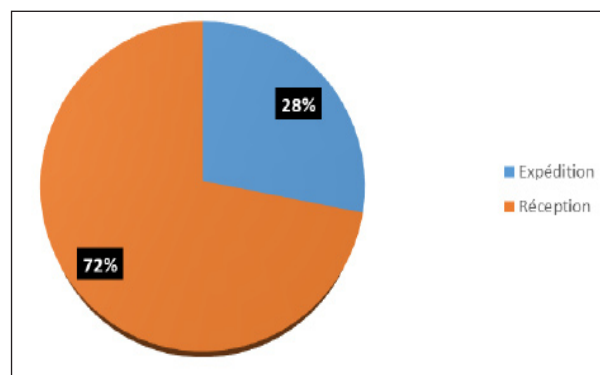


Figure 3. The structure of operations

The rate of receipts is slightly higher than the rate of shipments, as there are more delivery operations than collections. This can be explained by the existence of many businesses in the city of Bejaia.

Type of Vehicle Used

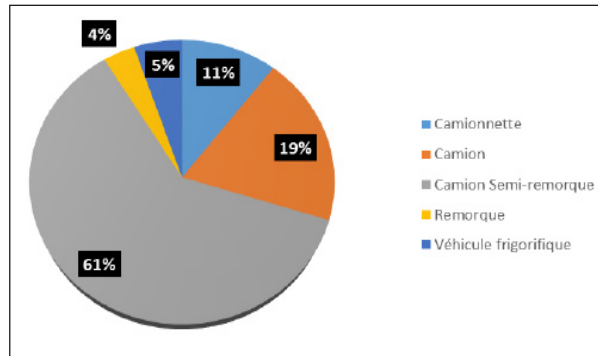


Figure 4. Type of vehicle used

The vehicles used in the urban environment of Bejaia are mostly large vehicles, so the semi-trailer ensure more than 61% of movements (delivery and removal), then comes the trucks to more than 19%, followed by the van which represent more than 11%. The size of the city of Bejaia, as well as the regulations in force probably play a role in the choice of vehicles.

Number of Trips Made Daily

These figures mean that about three quarters of the operations are performed in one round per day, or 72%, and 28% of individuals perform two rounds per day. We observe that most of the movements (deliveries and pick-ups) are done in direct trace.

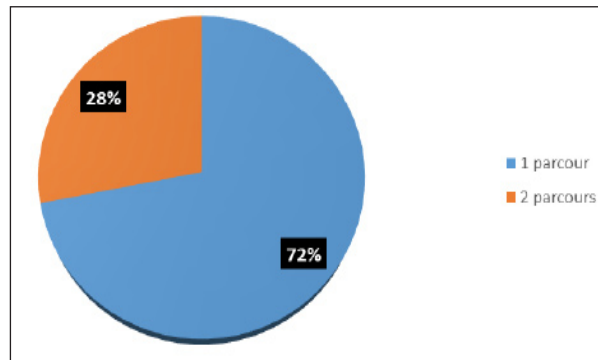


Figure 5. The number of trips made daily

The Distance Travelled

Long distances, i.e. more than 10 km, are covered by 93% of the operations carried out for a majority of goods to destinations outside built-up areas, distances between 5 and 10 km represent 5%, and 2% of the respondents stated that the distance covered was between 1 and 5 km.

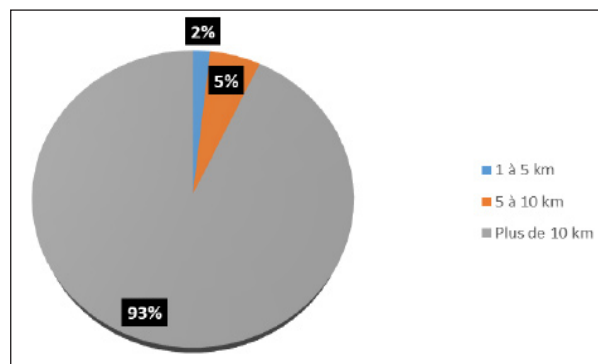


Figure 6. La distance parcourue quotidiennement

Destination of the Course

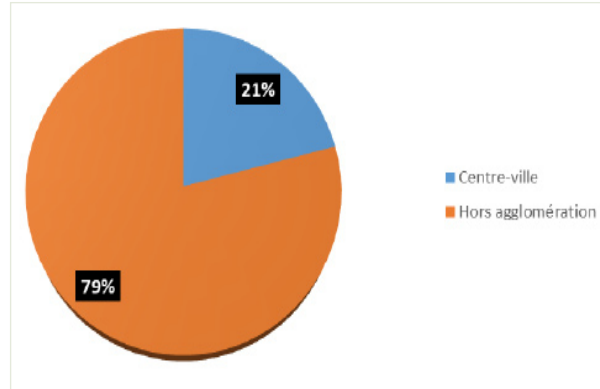


Figure 7. The destination of the course

It is also interesting to note that most of the transport operations carried out recorded, the place of delivery is carried out outside agglomeration with a proportion that slightly exceeds the three quarter 79%, and about a quarter has downtown 21%.

Duration of Shutdown

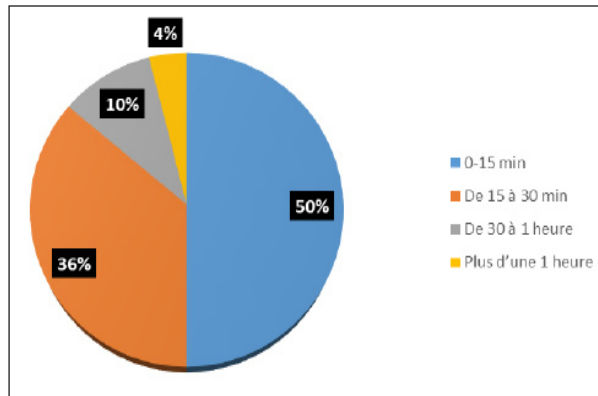


Figure 8. The duration of downtime

La durée d'arrêt la plus élevée d'une livraison ou d'enlèvement est de 15 minutes avec une proportion de 50%. 36% des opérations de transport effectuées ont une durée d'arrêt comprise entre 15 et 30 minutes. La durée d'arrêt comprise entre 30 mn et 1 heure représente une faible proportion 10%.

The Parking Place

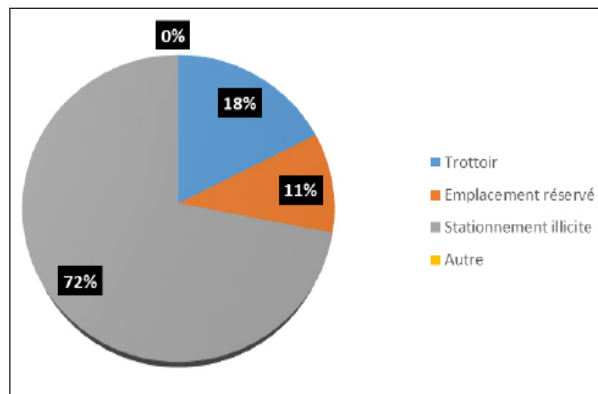


Figure 9. Le lieu de stationnement

Illegal parking accounted for over 72% of the situations, the majority of which were Unauthorized Parking. In the transportation operations conducted, more than 18% used curbside stops, only more than 11% used reserved spaces.

Nature of the Products Transported

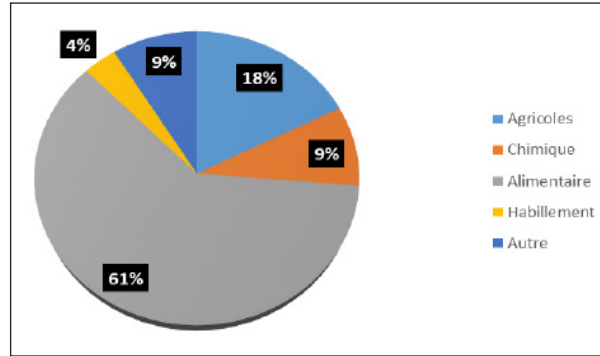


Figure 10. The nature of the products transported

The figure presented above represents the nature of the transported products, it appears that the food products constitute the most consequent frequencies with 61% and (18%, 9%, 9%) respectively, the share of the agricultural and chemical products and the not identified products (other) is extremely weak.

Problems Encountered During Delivery

Among the problems encountered at the time of delivery, more than three quarters of respondents say that the movement creates illegal parking and congestion in the city of Bejaia, these problems are in the majority because of not only the total absence of delivery areas but also the absence of signage related to delivery and removal operations. Noise represents more than 4% of the problems encountered at the time of delivery and removal.

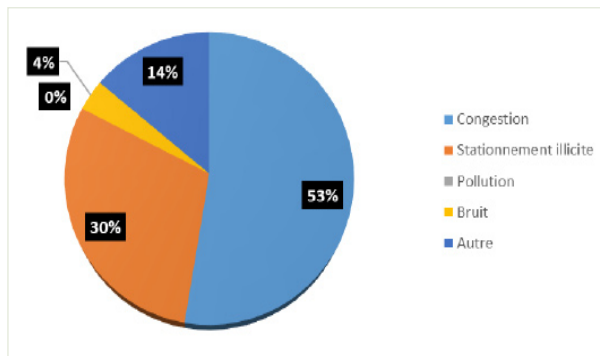


Figure 11. Problems encountered at the time of delivery

CONCLUSION

This article has attempted to reveal the difficulties of moving freight within the city of Bejaia and to explain the causes, in order to develop ways of thinking towards possible solutions. In particular, referring to the results obtained by the field survey conducted in 2028, we could understand that:

- Sulfur of a major problem in terms of accessibility
- An increase in freight demand in the face of an infrastructure that remains very old and unable to meet this growing demand
- The congestion of the goods traffic is focused at the level of the back port in first place and in the industrial zone in second place.
- The conditions of goods handling are marginalized.
- The transport of goods contributes to the global emissions of an environmental side.

In conclusion, we can say that urban freight operations are complex and, therefore, difficult to take into account in public action. Many actors are involved in the logistics chain. The requirements of the users, the structure and size of the transport operators, the evolution of the goods traffic being linked to the trends observed in our case study on the location of the companies (globalization, delocalization, direct distribution), the flows multiply.

Faced with this situation, the implementation of effective mechanisms for better travel management such as the modernization of the TC network, the integration of mobility at the different scales of the urban area, to think of an integrated action plan: integrated implementation of urban planning instruments and mobility plans and finally through the use of a new organizational structure of the institutional building: advocacy for inter-sector coordination.

Certain difficulties have arisen, notably the availability of information and its collection. In this respect, we mention below some data that we considered very necessary for our work, namely

-Absence of a recent survey on travel: the last one dates back to 2006, which prompted us to conduct a field survey.

For future research, other investigations are possible and are thus open to scientific exploration. For example: Modelling and forecasting freight movements in the future...

Finally, a new awareness of the importance of the issue of integrated mobility in urban planning seems to us indispensable.

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