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Master Degree Project in Logistics and Transport Management

Crowd-shipping in Geneva

Exploratory and descriptive study of Crowd-shipping

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Abstract

Last decades have shown that urban mobility is becoming an issue in a context of growing environmental awareness among the general public. The Courier Express and Parcel industry represents a significant part of the urban transportation. With the emergence of the sharing economy, crowd-shipping is perceived as a promising alternative allowing to use the current transport capacity more efficiently.

The sharing or collaborative economy has attracted growing attention in the literature of the recent years, with only a small proportion discussing crowd-shipping. The purpose of this thesis is firstly to study what has been done in the area of crowd-shipping, under the framework of an exploratory study. Then, under the framework of a descriptive study, the authors investigate the concrete situation of Geneva and the relevance of crowd-shipping for the stakeholders of the area.

This paper shows the barriers, challenges and benefits linked to the implementation of crowd-shipping. In addition, the authors discuss the most relevant crowd-shipping services for the area of Geneva, with respect to the expectations of different stakeholders.

Keywords:

Urban logistics, Last-mile delivery, Geneva, Crowd-shipping, Crowdsourced delivery

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Table of Content

List of Tables	V
List of Figures	V
1 - Introduction	1
1.1 Introduction to crowd-shipping	1
1.2 Background	2
1.3 Problem discussion	3
1.4 Motivation and purpose	3
1.5 Research questions	4
1.6 Delimitations	4
1.7 Thesis layout	5
2 - Literature Review	6
2.1 Urban mobility	6
2.1.1 Urban transportation	6
2.1.2 Urban logistics	7
2.1.3 Urban transport regulations	10
2.1.4 Last-mile delivery	11
2.2 Courier, Express and Parcel Sector	12
2.3 Transport and the crowd	15
2.3.1 Sharing economy	15
2.3.2 Crowd-logistics	17
2.3.3 Crowdsourced delivery	17
2.4 Summary of literature review	20
3 - Methodology	21
3.1 Research philosophy	21
3.2 Research classifications	22
3.3 Research strategy	23
3.4 Data collection	24
3.5 Limitations of the research design	25
3.5.1 Reliability	26
3.5.2 Validity	26
3.5.3 Generalizability	26
4 - Crowd-shipping around the globe	27
4.1 Best practice	27
4.1.1 Postmates	27
4.2 "In progress" Practices	29
4.2.1 You2you	29
4.2.2 Voisins Relais	31
4.3 Discontinued practices	34
4.3.1 Bringbee	34
4.3.2 DHL MyWays	36
5. Findings of the exploratory study	39

6 - Current situation in Geneva	41
6.1 The city of Geneva	41
6.2 Mobility and infrastructures	42
6.2.1 Current mobility situation	42
6.2.2 Solutions for a better mobility: what have been done so far?.....	45
6.2.3 Solutions for a better mobility: what is expected?	46
6.3 CEP industry	48
6.3.1 Example of DHL Express.....	48
6.3.2 Innovations in the industry	49
6.4 Regulations	51
6.4.1 Transport	51
6.4.2 Sharing economy.....	52
7 - Crowd-shipping in Geneva: stakeholders analysis	54
7.1 Stakeholders presentation	54
7.2 The “crowd”	55
7.2.1 Results of the survey	55
7.2.2 Lessons learned from the survey	58
7.3 Transport providers	59
7.3.1 TNT	59
7.3.2 DHL	59
7.3.3 Planzer.....	60
7.3.4 Lessons learned from interviews	61
8 - Findings of the descriptive study	62
8.1 Categorization and discussion	62
8.1.1 Last-”meter” crowd-shipping.....	62
8.1.2 Last-”mile” crowd-shipping	63
8.1.3 Crowd-”shopping”	64
8.2 Assessment of relevance	65
8.3 Recommendations	66
9 - Conclusion	68
References	70
Appendices	80
Appendix A - Guidelines	80
Appendix B - Questions for the survey	83
Appendix C - Supporting letter	84

List of Tables

Table 1 : Business models in Crowd-shipping	19
Table 2 : Interviews	25
Table 3 : Trip purpose	43
Table 4 : Categories presentation	62
Table 5 : Assessment of relevance.....	65

List of Figures

Figure 1 : Organization of the paper	22
Figure 2 : How it works for Postmates	28
Figure 3 : How it works for You2you	30
Figure 4 : How it works for Voisins Relais	32
Figure 5 : How it works for Bringbee	35
Figure 6 : How it works for DHL MyWays.....	37
Figure 7 : Location of Geneva	41
Figure 8 : Repartition of transport modes used in Geneva in 2009.....	43
Figure 9 : Commercial speed of urban public transport.....	44
Figure 10 : Trend for the use of vehicles in 2030 in Geneva.....	46
Figure 11 : My Post 24 machine	49
Figure 12 : Electric cargo-bike	50
Figure 13 : Swiss Post Drones	50
Figure 14 : Cargo sous terrain.....	51
Figure 15 : Willingness to use crowd-shipping services	55
Figure 16 : Involving traditional transport providers ?.....	56
Figure 17 : Encouraging factors	57
Figure 18 : Willingness to transport parcels.....	57
Figure 19 : Usefulness for Geneva	58

1 - Introduction

This chapter introduces the reader to the crowd-shipping and its connections with the Courier, Express and Parcel industry (CEP) as well as the sharing economy. A short description of the city of Geneva follows. Furthermore, the chapter provides insight in the research background, problem discussion and the purpose. Finally the chapter shall acquaint the reader with the research questions and the delimitations of this study.

1.1 Introduction to crowd-shipping

According to the World Urbanization Prospects report (UN, 2014), more people live in urban areas than in rural areas. In 2014, more than 54 per cent of the world's population live in a city, and this share is expected to reach 66 per cent by 2050 (UN, 2014). Although the southern hemisphere concentrates the largest cities in the world, the most urbanized areas are located in the northern, with 82 per cent of North Americans and 73 per cent of Europeans living in cities (UN, 2014).

In this context, urban areas had to face an increasing demand for all types of mobility. Urban logistics has been seen as a solution, aiming to reduce the clash between the interests of logistics companies and the interests of other stakeholders involved in urban mobility defined in part 2.1.2 (Muñuzuri et al., 2005). Also, the authorities are becoming increasingly concerned about sustainability, and how urban logistics can meet the policy makers' sustainability objectives has become an issue (Anderson, Allen and Browne, 2005). Urban mobility has an undeniable impact on the environment, it accounts for 40 per cent of all CO₂ emissions of road transport in Europe (European Commission, 2015).

One part of the urban traffic is generated by the courier, express and parcel (CEP) industry. The European's CEP industry has experienced a steady growth during the past years, and this trend is likely to continue (AtKearney, 2015). This growth is supported by e-commerce which continues to fuel both domestic and international business-to-consumer (BtoC) flows. As more e-commerce specialists are present, the competition is fierce and these companies try to provide customers with shorter delivery times and easier returned shipments. According to AtKearney (2012), this situation is leading to alternative solutions, and those innovative solutions should have a significant impact on the competitive CEP market.

The last few years have seen the emergence of the crowd logistics, as a result of the development of the sharing economy. Crowd logistics is defined as: " The outsourcing of logistics services to a mass of actors, whereby the coordination is supported by a technical infrastructure. The aim of crowd logistics is to achieve economic benefits for all stake- and shareholders" (Mehmann, Frehe and Teuteberg, 2015). The

crowdsourced delivery or crowd-shipping is rooted in the crowd logistics. It is an answer to the growing customers' needs in terms of speed, personalization and costs, and can already be considered as a competitive alternative to the traditional CEP providers described in part 2.2 (Rougès and Montreuil, 2014; Mehmman, Frehe and Teuteberg, 2015; Carbone, Rouquet and Roussat, 2015).

1.2 Background

The sharing or collaborative economy has attracted growing attention in the literature of the recent years, with a small proportion discussing the crowd-shipping. Among this literature, academic researches about crowd-logistics have mentioned crowd-shipping as an innovative service, that could be an alternative to the traditional delivery service (Mehmann, Frehe and Teuteberg, 2015; Carbone, Rouquet and Roussat, 2015). Crowd-shipping has also been mentioned recently in research papers focused on the last-mile deliveries, either in the context of grocery retailing, or more largely online retailing. Crowd-sourced delivery is always seen as innovative concept or solution, which can be used as the last “leg” of traditional transport in online retailing, or as a bridge between physical retailer and consumer (Hübner, Kuhn and Wollenburg, 2015; Slabinac, 2015; Chen and Pan, 2015). Also, only one academic paper based on a practical case has been retrieved (Paloheimo, Lettenmeier and Waris, 2015). This paper presents a case study of the application of crowdsourced deliveries to a library in Finland, aiming to know if crowdsourced deliveries can be applied to an existing consumer service, and if there are real sustainability benefits. The result of this study shows that if this trial could be applied to half of the shopping and library trips in Finland, the related footprint reduction would be of 4 per cent. In addition to the potential reduction in environmental impacts, this paper mentions that crowdsourced deliveries are also sustainable in terms of social cohesion since users have to interact and trust each other. Crowd-shipping has also been the main subject of two research papers published during the last three years (Rougès and Montreuil, 2014; Lam and Li, 2015). Both of them describe crowdsourced delivery, including advantages and challenges, and introduce different already existing solutions. In addition, one of them introduced five business models to “reinvent deliveries”, while the second paper brings a special focus on the Chinese delivery market.

Crowd-shipping is a quite recent topic, and despite few researches conducted, a gap has been identified in the literature review of this paper. Therefore, this paper aims firstly to make a contribution regarding the implementation of crowd-shipping, drawing on different practical cases, in order to understand the impacts and challenges resulting from these implementations. Secondly, this paper will help to identify which service of crowd-shipping could be the more relevant for the specific area of Geneva according to the stakeholders expectations.

1.3 Problem discussion

In 2013, 5.4 billion shipments have been handled by the courier, express and parcel actors in Europe (AtKearney, 2015). A substantial part of the shipments have transited through cities, causing unwanted effects for the urban areas' stakeholders. The introduction of crowd-shipping would contribute to regulate the flow of vehicles in urban area, by transporting parcels via individuals on their daily routes for the last-miles of the deliveries. Such services are likely to decrease the amount of transport vehicles into the area, hence saving space and reducing traffic problems.

However, crowd-shipping is a very new and disruptive service, and regulations may be a barrier for the introduction of such a solution. Indeed, some people have argued that the impact will be limited and will also have legal problems and challenges (Hübner, Kuhn and Wollenburg, 2015).

Geneva is the second largest city of Switzerland, with approximately 200,000 inhabitants (Ville de Genève, 2015). The area hosts 22 international organizations (Genève, n.d.), and is a very attractive place for multinational companies mainly for economic reasons (Genevabusinessnews, 2010). Due to its geographical situation and economic attractiveness, the area is also subject to a daily flow of border workers coming from France, contributing to traffic congestion. Moreover, Geneva is a mono-centric urban area, with a high concentration of residents and jobs in a small space making it one of the European urban heart with the highest density (Direction générale de la mobilité, 2013). The high density of the city combined with the intense economic activities necessarily involve substantial urban goods transport, contributing to the city's congestion. The city's authorities are aware of these issues, they described their strategy in a report from 2013 called "Mobilités 2030" (ibid.). As an answer to these problems, some solutions are already trialled by the authorities such as the smart parking solution "smart city" (FAO, 2015). In the light of the mobility issues in Geneva, and the authorities and stakeholders' awareness, the authors believed it could be a suitable place to study the potential impacts of crowd-shipping.

1.4 Motivation and purpose

This thesis topic has been chosen by the authors among propositions made to the students of the Master of Science in Logistics and Transport Management at the School of Business, Economics and Law of the University of Gothenburg (Sweden). Therefore, this thesis is not commissioned by any company or organization and is not under undue influence. The authors have been motivated by their own interest in the sharing economy and logistics that are brought together in crowd-shipping.

The purpose of this thesis is first to study what has been done in the area of crowd-shipping, under the framework of an exploratory study. Considering that this is a quite recent topic, existing crowd-shipping cases will be analysed in order to figure out what are the different practices and what could be learned from them. Also, this paper aims to

bring understandings about the consequences arising with the implementation of crowd-shipping. Then, under the framework of a descriptive study, the authors will investigate the concrete situation of Geneva and the relevance of crowd-shipping for the different stakeholders involved. Globally, this paper should shed light on crowd-shipping and could be used as a support for decision makers in urban mobility.

1.5 Research questions

RQ1: What are the barriers and challenges regarding the implementation of crowd-shipping ?

RQ2: What are the benefits of the implementation of crowd-shipping ?

RQ3: Could crowd-shipping practical cases from other countries or cities possibly be relevant for the area of Geneva, according to stakeholders expectations and the current situation of the city?

1.6 Delimitations

The use of delimitations is necessary to circumscribe the field of investigation, and, as stated by Collis and Hussey (2014), it establishes the scope of the research.

First, since the research is focused on crowd-shipping within the urban area of Geneva, the choice was made to limit this study on the “last-mile” of the delivery. Therefore, only crowd-shipping services focusing on the “last-mile” deliveries will be considered in the study.

Second, the authors decided to focus the study on the courier, express and parcel (CEP) industry. Even if it represents only one part of the urban freight transport, this sector is the most concerned by crowd-shipping. Indeed, most of the goods transported are of reasonable size and weight, which make them transportable by the “crowd” on their journeys (e.g. commuting, shopping trips etc.). Crowd-shipping services focusing on other types of goods are therefore excluded from this study.

Third, the city of Geneva was found suitable for this study due to several reasons: reasonable size, extremely dense urban centre and proven traffic issues. Thus, some outcomes of this thesis are especially related to this city. However, it does not mean that the results could not be interesting and relevant for other cities experiencing similar issues.

Finally, the terms “crowd-shipping” and “crowdsourced deliveries” are cited continually throughout this paper. Even if slightly different definitions can be found in the literature, they are used reciprocally in this paper, and the chosen definition can be found in the literature review (see 2.3.3).

1.7 Thesis layout

This paper is organized in nine chapters. The authors introduced the topic, described the background, purpose and research problem, as well as presented the research questions and the delimitations in this first chapter. Then, a literature review covering pertinent themes with respect to the thesis subject will take place in the second chapter. Urban mobility, the courier express and parcel delivery industry and the sharing economy within transportation will be discussed. The authors will discuss the chosen methodology in the third chapter, and legitimize its use according to the research philosophy and strategy. Afterward, different practical cases of crowdshipping will be under study in chapter four. The chapter five will discuss the findings of the exploratory study drawing on the literature review and the cases study. The current situation in Geneva and the stakeholders analysis will form the chapters six and seven. Finally, the findings of the descriptive study gathering information from chapter six and seven will be presented in chapter eight, followed by the conclusion of the paper in chapter nine.

2 - Literature Review

This chapter reviews existing theories and essential concepts in regards to the paper's topic: crowd-shipping and its implementation. The chapter will provide a deeper understanding of the environment related to crowd-shipping with a description of the urban mobility, the CEP sector and the sharing economy in transport. Furthermore, the chapter will introduce the potential barriers, challenges and benefits concerning the implementation of crowd-shipping found in the literature.

2.1 Urban mobility

2.1.1 Urban transportation

According to the European Commission (2015), more than 60% of European citizens live in an urban area of over 10 000 inhabitants nowadays. As argued by Montgomery (2008), this proportion is projected to reach two-thirds of the world population by 2050, with world's total population expected to grow by 1.76 billion persons between 2000 and 2024 where 86% is projected to take place in cities or towns. The reasons are the globalisation, the attraction of international network and the greater importance of local governments. This increased population in cities involved some challenges regarding transportation for the authorities. Indeed, according to European Commission (2015), urban mobility accounts for 40% of all CO2 emissions from road transport and in the current trends of greener towns and cities, the question of urban mobility open a "broad debate". So mobility optimization while reducing at the same time "congestion, accidents and pollution" is a known challenge for major cities in Europe. In addition, Muñuzuri et al. (2005) discussed the challenges regarding the freight transport in cities, which is a growing sector as well due to the population growth. According to Ogden (1989) urban freight transport is:

"The transportation of, and terminal activities associated with, the movement of things as opposed to people in urban areas. It includes movement of things into and out of the area, through the area, as well as within the area by all modes, including transmission of electricity to the extent that it relates to the transportation of fuels, pipeline movement of petroleum, water and waste, and collection and movement of trash and mail, service truck movements not identified with person movements, and even some person trips which involve substantial goods movements such as shopping trips. Activities involving urban streets, waterways, railroads, terminals, loading docks, and internal distribution systems including elevators and related facilities must all be considered in fostering greater efficiency in the movement of urban goods." (Ogden, 1989, p. 12 as cited in Allen et al., 2000, p. 20).

According to Anderson, Allen and Browne (2005), urban freight transport is important for many reasons. Indeed, it is important regarding our existing life style by servicing and retaining industrial activities which are essential for generating equilibrium in society. Moreover, an efficient freight transport contributes to the competitiveness of

industries in the region concerned and the total costs of freight transport and logistics pay a significant role regarding the efficiency of the economy. However, Cristea et al. (2013) observed that road freight vehicles transporting goods in urban areas generally emit more emissions (Greenhouse Gas) than typical motor vehicles such as cars and motorcycles. This is due to the higher consumptions per kilometres of vehicles such as trucks and to the fact that those vehicles generally use diesel as fuel.

Both existing freight and passenger transport in urban areas create different impacts regarding the society. These negative impacts could be categorised as follows:

"1. Negative environmental impacts

2. Negative social impacts

3. Negative economic impacts

[...]"

(Allen et al., 2000b, p. 72 as cited in Muñuzuri et al., 2005). According to Muñuzuri et al. (2005), only the costs of "environmental nuisance" from the pollution due to the increasing traffic in European cities amounts almost 100 billions Euros per year which is 1% of GDP of European economy.

2.1.2 Urban logistics

The urban flow of freight has been discussed through several terms: "urban goods movement, urban freight transport and city logistics" (Slabinac, 2015). The concept of city logistics or urban logistics has been defined by Taniguchi, Thompson and Yamada (1999 as cited in Ehmke 2012, p. 13) as "(...) the process for totally optimizing the logistics and transport activities by private companies in urban areas while considering the traffic environment, the traffic congestion and energy consumption within the framework of a market economy." This optimization is, according to Russo and Comi (2012), a way to counter the impacts due to the increasing rapid freight transportation which create congestion, air pollution, noise and raise the logistics costs and thus higher the price of products. However, even if the freight movements are relevant in the support of economic life in urban areas, urban logistics often play a secondary role in city planning priorities (Muñuzuri et al., 2005). According to Russo and Comi (2012) this could be explained by the two conflicts of interest in urban areas represented by the public authorities on the one hand, and the private companies on the other hand. Indeed, the public authorities want to reduce the transportation impacts in order to improve the lifestyle of inhabitants and visitors and in contrast private companies want to pick up and deliver the goods at the lowest costs with the highest quality in order to respond to customers' expectations. So analyses and implementations of such measures of optimization have to take into account different points of view of stakeholders involved which is critical for the success of urban logistics (ibid.).

- Transport capacity

Regarding the capacity, according to Hesse (2008), cities were historically shaped in function of cars and rails transportation. The current urban road network has been

built without consideration for logistics activities (Ertrac, 2014). Indeed, nowadays with the development of the motor trucks, the capacity is not anymore suitable and creates congestion. As stated in the European express association report (2015), the growth of e-commerce has accentuated the development of trucks on roads which continue to increase the urban deliveries/pick up and consequently congestion. This "non-fluidity" in urban areas is an obstacle for an effective urban delivery network which is a key support for the development of e-commerce in Europe. So the question of capacity of the roads is crucial for the development of urban logistics. As stated by Hesse (2008), there are two possibilities when a willingness to increase the fluidity of transportation is found, the first one is about building more roads which is quite impossible when regarding the density of cities. The second one is about decreasing the traffic on the roads.

Regarding the second possibility, Arvidsson (2013) described the problematic of efficiency in freight transport. He defined the efficiency in freight transport as "a set of utilization measures of time, space, vehicle, fuel and driver in the movement of goods". Dablanc (2006) argued that freight flows including consumer goods, building materials, waste products, postal mail and others, occupy about one fourth of the street traffic in urban areas. Regarding the efficiency of this flow some improvements can be done. Indeed, according to McKinnon (1996), 30% of road transport distance is running empty. This is, according to Arvidsson, Woxenius and Lamngård (2013), called the "back-haul effect" which is occurring when the demand is asymmetric in volume at a certain time. In addition to the freight transport, the passenger mobility has also some weaknesses regarding the efficiency. As stated by Bubner, Helbig and Jeske (2014), 60% of the available transport capacity is currently not used, it includes the rails, roads and private cars. It shows that private cars are not used efficiently and thus catch some space on roads which create congestion. So according to the Ertrac report (2014), the challenge today is to find how the same capacity of roads can be used more efficiently in order to have a better flow of vehicles.

- Transport optimization

As stated earlier in the literature review, the concept of urban logistics has been defined by Taniguchi, Thompson and Yamada (1999 as cited in Ehmke 2012, p. 13) as the optimization of the logistics transport activities. According to Muñuzuri et al. (2005), solutions related to the optimization of urban logistics are not defined from the transport companies' point of view. The improvements are most of the time defined by the point of view of urban commodities and the relation between the general urban traffic and the freight transport. Adding to this, the use of solutions to deal with urban logistics is often not beneficial for logistics companies. Indeed, they are developed with the aim to regulate and manage freight deliveries in urban areas (Muñuzuri et al., 2005). This could lead, as stated by Taniguchi, Thompson and Yamada (2012), to some conflicts because of the different point of view from different stakeholders. However, these conflicts can be modelled and solved by a "multi-criteria decision-making problem" or "multi-objective optimisation problem". An example of these

decision tools can be the Multi Actor Multi Criteria Analysis (MAMCA) method proposed by Macharis, de Witte and Ampe (2009).

Muñuzuri et al. (2005) described five different groups of solutions regarding the urban freight. These solutions are: " related to public infrastructure, to land use management, to access conditions, to traffic management and related to enforcement and promotion". Regarding the optimization of the urban traffic, new infrastructures can be built or adapted in order to host more capacity. In addition, new or existing buildings as terminals can be reorganised to facilitate the deliveries. Finally, according to them, cooperation can be promoted by the city authorities in order to fluidize the flow of vehicles on roads. But again, as stated by Russo and Comi (2012), an optimal balance between the interests of different stakeholders must be found in order to initiate any solution of optimization for the urban logistics.

- Transport externalities

The environmental impact is described as one of the impacts due to the transportation of freight and passenger in urban areas (Allen et al., 2000b, p. 72 as cited in Muñuzuri et al., 2005). Indeed, according to Russo and Comi (2012), urban areas are responsible for 80% of the Greenhouse Gas (GHG) emissions and consume about 70% of the energy. On its side, urban mobility accounts for 32% of energy consumption and 40% of CO₂ emissions of road transport. The congestion of urban areas is mostly responsible for this increase pollution for the environment and as stated by Silvia and Ribiero (2009), the emissions are dangerous for the health of the population where they are responsible for 70% of the cancerous and other dangerous substances. However, as mentioned by Santen (2013), environmental issues are not prioritized by logistics companies where operational performance remains the most important.

Usually, three types of actions are categorized when a transport company wants to limit its emissions. The first one is regarding the reduction of the environmental impact of each vehicle, the second one is about the use of more environmentally mode of transport and finally the third one is about decreasing the need of transport (Santen, 2013). According to Arvidsson, Woxenius and Lamngård (2013), most of the environmental benefits results from the third action and less kilometres to drive for the road haulier.

Additionally to the environment, logistics activities affect as well the population through economic and social impacts. Indeed, Sathaye et al. (2006) described these impacts by increased traffic congestion, a negative public health impacts of pollution and a growing risks for road accidents. Moreover, noise and visual intrusion are stated as well as a deterioration of buildings and infrastructures due to logistics activities.

Arvidsson, Woxenius and Lamngård (2013) stated that the past decades have shown an increased awareness regarding the environmental problems. This is due to the

local authorities which are focusing on making urban freight transport more sustainable (Quak and de Koster, 2009). Indeed, Anderson, Allen and Browne (2005) distinguish two ways to do so. The first one is to "force companies to become more sustainable by introducing environmental policies" and the second one is "by initiating company driven-change that reduces the unsustainable impact of transport as a result of some internal benefit". In addition from a national perspective, Arvidsson et al. (2013) described some regulatory measures taken by governments regarding fuel economy standards, vehicle emission standards and fuel quality standards.

2.1.3 Urban transport regulations

Urban freight transport is essential to the economic vitality of the cities, but is also the source of several negative impacts (Anderson, Allen and Browne, 2005). In this context, cities and administrations have implemented policies and regulations to mitigate the negative economic and environmental impacts of urban freight transport (Russo and Comi, 2010; Stathopoulos, Valeri and Marcucci, 2012). As mentioned by Muñuzuri et al. (2005), these regulations aim to reduce the "clash" between the different stakeholders involved, and therefore do not favor logistics companies especially. In order to make the introduction of policies and regulations easier, Stathopoulos, Valeri and Marcucci (2012) argue that every stakeholder must be considered.

Among the urban transport regulations, time access regulations and vehicle restrictions are the most common, especially in Western Europe (Quak and de Koster, 2009). Many cities use delivery time windows to regulate the access to the city centres, especially the pedestrian zones (Russo and Comi, 2010). These measures aim to prevent goods vehicles to circulate when it could disturb pedestrians or other road users (Anderson, Allen and Browne, 2005). Different approaches have been identified by Russo and Comi (2010), while some cities encourage deliveries during the day at certain times (e.g. outside of the peak hours), other cities encourage night-time deliveries under certain conditions such as the use of appropriate noiseless vehicles. Other forms of time access regulations charges transport providers during a period of the day, and the access is free of charge during the remaining time (Russo and Comi, 2010).

Vehicle restrictions can be applied according to the weight, space occupancy, size, volume or emissions (Anderson, Allen and Browne, 2005; Muñuzuri, 2005; Dablanc, 2008; Russo and Comi, 2010). The objective of these restrictions is to change the type of vehicles on the city roads, to reduce traffic congestion and air pollution (Russo and Comi, 2010). An example is the low emission zones (LEZ) where high-polluting vehicles are banned. They have been established to reduce air pollution, and to encourage transport providers to buy cleaner vehicles (Anderson, Allen and Browne, 2005). To date, approximately 194 LEZ are identified through nine European countries (ADEME, 2014). Another example is the weight restrictions, allowing only vehicles up to a certain gross weight to operate in the urban areas at any time of the day

(Anderson, Allen and Browne, 2005). Even if this restriction is common, it has been argued by Anderson, Allen and Browne (2005) and Russo and Comi (2010) that it might lead to more trips performed by smaller vehicles, resulting in longer distance travelled and higher level of emissions.

Another type of regulation is called road-pricing or congestion charging (Anderson, Allen and Browne, 2005; Russo and Comi, 2010). This system can either allow all users willing to pay to access a certain area, or allow only a certain user category against a fee. The objective of this type of regulation is to reduce the congestion in dense urban area, and also to reduce emission levels (Anderson, Allen and Browne, 2005). Although urban transport providers can be affected by these measures, Russo and Comi (2010) mentioned that it aims primarily to regulate passenger traffic. Finally, many other forms of regulation have been mentioned in the literature. One example can be the creation of sub-network for freight vehicles, by allowing access to restricted areas such as bus lanes, parking spaces for disabled people, taxi-zone etc. (Muñuzuri et al., 2005; Russo and Comi, 2010). The creation of incentives to increase the efficiency of the transport could also be mentioned. In this case, transport providers operating with a load-factor not high enough would lose the incentives offered by the authorities. (Russo and Comi, 2010).

2.1.4 Last-mile delivery

According to Slabinac (2015), the last-mile delivery represents the last part of the supply chain which is considered to be the most inefficient part due to its specificities. Indeed, specificities such as "spatial distribution of relatively small receiving points, demand for frequent but small shipments and delivery time windows" strengthens the difficulties to deliver goods to customers in time with lower costs. The delivery of the final product to the customer's door is seen as the most challenging part regarding logistics (Boyer, Prud'homme and Chung, 2009). Gevaers, Van de Voorde and Vanelslander, (2009) stated that the direct consumer deliveries started in the 1980's with the mail order companies. The growing importance of online technologies the past decades such as internet have raised the costs related to the last mile deliveries from 13% to 75% of the total costs of the supply chain. Indeed, the development of e-commerce has changed the way consumer are buying items by staying at home with home deliveries (Slabinac, 2015) and according to Boyer, Prud'homme and Chung (2009), a single delivery of grocery can cost between \$10 and \$20 for the transport company nowadays. This can be explained by the urbanisation of cities and thus the difficulties to have efficient transport and on the other hand the expectations of customer which are necessary higher since rapid deliveries are expected (Slabinac, 2015).

According to Boyer, Prud'homme and Chung (2009), a product can be delivered to the final customer by four different last-mile delivery types as follows:

- "1. Semi-extended supply chain (store-based fulfilment and indirect delivery)
2. Fully-extended SC (store-based fulfilment and direct delivery)
3. Decoupled supply chain (fulfilment via DC and indirect delivery)
4. Centralised extended SC (fulfilment via DC and direct delivery)"

When choosing a type of delivery, companies also have to find the balance between four critical factors which are "customer convenience, delivery costs, picking efficiency and capital investment". By choosing the best options, companies will then try to avoid the main issues linked to the last-mile delivery presented by Gevaers, Van de Voorde and Vanellander (2009) which are the attended home deliveries when the customers are not at home, the low consumer density with long runs for the delivery man, the secure reception problem and the returns.

As stated in the Ertrac report (2014), new concepts for the design of distribution centre and infrastructure must be found in order to have a more efficient last-mile delivery. Slabinac (2015) discussed the necessity to introduce innovative types of delivery vehicles to reduce the negative ecological and social impact of transport on cities.

2.2 Courier, Express and Parcel Sector

The Courier, Express and Parcel (CEP) sector has emerged over the last 25 years from the traditional transport of less than truckload (LTL) cargo, and is considered as a very strategic and dynamic sector involved in globalization (DHL, 2008; Ducret, 2014). The CEP services are characterized by high shipping volume with low weights per parcel, and parcels weighing less than 31,5 kilograms in order to be handled by a single person. These services rely on sophisticated networks making possible fast shipments and punctuality for delivery times (DHL, 2008). According to the report from AtKearney (2015), the CEP market in Europe represented a volume of €43,1 billion, for 5,4 billion shipments in 2013.

The CEP industry is the combination of three different services that can be distinguished: courier, express and parcel services. The courier service concerns mostly the shipments of valuable goods, including a permanent personal supervisions and easy customer access to the shipments to re-arrange it at any time (DHL, 2008). The couriers provide seamless transport and take care of the documentation, the average weight of shipment is 1,5 kilogram, with delivery the same or next day for national shipments. The market is fragmented in many small companies, and the services could be national or international (DHL, 2008). The express services consist of rapid and reliable deliveries for all kinds of documents and parcels (Dieke et al., 2013). Express service deliveries are guaranteed on-time, usually the first business day after collection for national and international destination (Dieke et al., 2013). The difference with the couriers lie in the fact that the transport is not operated in an

exclusive personal way, it is however done by one company using its own network (DHL, 2008). To ensure speed in deliveries, the express providers often use their own air transportation service, which could span the entire globe (DHL, 2008; Dieke et al., 2013). The parcel services are characterized by the transport of standardized packages with delivery time of two or three days nationally. The longer delivery time allows higher level of consolidation, and a scheduled road transport, resulting in cheaper deliveries (Dieke et al., 2013). Since the services are focused on quantities, and the packages are standardized, operations and information technology (IT) processes can be highly automatized (DHL, 2008). Ducret (2014) summarized these three services quickly: “couriers provide a point-to-point same-day delivery; express providers supply fast delivery at fixed time windows the next day or the second day relying on their powerful networks; and parcel providers are characterized by the consolidation of standardized light-weight parcels delivered the next or second day”.

While a clear frontier between these three business segments existed a decade ago, researchers agree on the fact that nowadays the frontier is blurred (DHL, 2008; Dieke et al., 2013, Ducret, 2014). Indeed, the main CEP actors provide each of these services (Ducret, 2014). Dieke et al. (2013) identified two main reasons behind this phenomenon. First, the delivery times within the parcel sector has improved during the last years, and additional services such as tracking are available, which has significantly reduced the difference between express and parcel services. Second, business customers tend to switch from express to parcel to save costs, a move triggered by the economical crisis in 2008. However, it has also been argued that this could be due to the customer’s willingness to have all transport services provided by a single source (DHL, 2008).

Regarding the different actors operating in the CEP industry, Ducret (2014) recognizes three families of players. The first one is called “the heirs”, which represents the traditional players of the industry, such as national post office, express providers or couriers (Ducret, 2014). Among them, DHL, TNT and UPS are dominating the European market, leaving only a small market share to the remaining smaller companies (DHL, 2008). These important actors are called integrators, since they provide all the services along the entire transport chain within their own closed system (ibid.). Historically, the heirs have had to evolve under constraints, first with the liberalization of the sector, and then with the growth in B2C parcel delivery due to the e-commerce expansion (Ducret, 2014). Therefore, the heirs have been forced to strengthen their position due to the arrival of new players in the parcel distribution, by innovating with IT or creating partnerships with new players to “keep an eye on them” (Ducret, 2014).

Consequently, the second family is called “the new players” and is made of recent companies, rather small, which are for the most specialized in urban parcel delivery (Ducret, 2014). These companies are characterized by their focus on innovation and sustainability, and aim to provide efficient solutions for the last-mile deliveries. Within

the family, four different kinds of actors can be found: pickup point networks, postal authorized players, specialized delivery service providers and players from the e-commerce sector (Ducret, 2014). Most of them are subcontractors of bigger actors of the supply chain, and manage to deliver only a small amount of parcels. However, actors from the e-commerce can be considered as competitor as they began to enter the transport sector (Ducret, 2014). As an example, according to Berman (2014), Amazon has sent a warning message to the industry, since the company is already exploring alternatives to bypass the traditional transport providers.

The third family is named “other logistics providers” and includes logistics providers specialized in the upstream activities of the supply chain. Due to the evolution of their customers’ strategy because of the growth in e-commerce, they had to face an increase in urban parcel deliveries (Ducret, 2014). Therefore, they developed urban parcel delivery activities in parallel with their regular activities of heavy freight, goods and pallets. To do so, some actors create urban delivery services, or create some partnerships with new players just like the heirs did (Ducret, 2014).

Two main trends are discussed in the literature regarding the current situation in the CEP industry: the growth in B2C volume and the issue of urban goods distribution. Indeed, the e-commerce continues to fuel the B2C flows, now surpassing the B2B volume in every European country, which is due to the flow of products sold, but also to the flow of products returned (AtKearney, 2015). In this regard, it has been argued that the logistics costs in e-commerce are high, and that a market mostly based on free delivery and return would probably not be sustainable in the long-term (KPMG, 2015). Even if a majority of transport providers seems to increase their focus on the B2C deliveries as it is considered as the most promising business segment, some challenges remain such as the last-mile issue and the proposition of adequate return solutions (AtKearney, 2015). Whereas established logistics companies are still facing difficulties to provide adequate last-mile delivery solutions by partnering with their peers and e-retailers, new players are showing the example on how it can be achieved on a micro-level by using crowdsourcing and IT (KPMG, 2015).

The second trend in the industry is that urban goods distribution has become an issue for the cities and authorities, for different reasons such as the economy, the environment or public health (Ducret and Delaître, 2013). Due to the implementation of regulations in urban logistics, a new segment of CEP called “urban parcel delivery service” seems to emerge (ibid.). The demand for shorter transit times and more frequent deliveries, the growth of B2C deliveries, and the development of home deliveries by physical retailers to cope with e-commerce, are among the reasons behind the last-mile issues and the urban distribution issues (Ducret and Delaître, 2013; AtKearney, 2015). Consequently, intra-city couriers and same-day delivery company such as the German Tiramizoo are expected to take on a greater share of last-mile deliveries in the next future (Ducret, 2014; AtKearney, 2015).

To conclude, the CEP industry is experiencing a constant growth supported by online and multi-channel retailing. The frontier between the three sectors is less and less distinct with the main actors operating in each of the three. Although the market is growing, it does not go without any problems. Firms have to cope with the last-mile issues, and urban areas increasingly regulated. Thanks to innovative and sustainable business models, the new players seems to play their cards right. They take advantage of the current situation to create partnerships with the heirs, online and traditional retailers, to capture market share in the last-mile deliveries.

2.3 Transport and the crowd

2.3.1 Sharing economy

Transportation, products and apparel, hospitality, office rental, labour and banking are all some examples of institutions having been disrupted quite recently by a new economic model (Owyang, 2013). Either called collaborative or sharing economy (Owyang, 2013; Malhotra and Van Alstyne, 2014), collaborative consumption (Botsman and Rogers, 2010; Belk, 2014), or peer-to-peer business (Sundararajan, 2014), this disruptive economic model seems to affect every sector of society, business and government (Owyang, 2013). While Belk (2014) defines collaborative consumption as “people coordinating the acquisition and distribution of a resource for a fee or other compensation”, Cohen and Kietzmann (2014) describe it as business models “where people offer and share underutilized resources in creative, new ways”. A report from Ernst & Young (2015) specifies that the sharing economy is built around the sharing of human and physical resources, indeed, it is interesting to highlight that it can concerns goods as well as services.

The sharing economy encompasses many sectors but the most successful are transportation, hospitality and food & beverages (Ernst & Young, 2015). Among the best-known companies are the car sharing Uber and the ride sharing BlaBlaCar for transportation, Airbnb for hospitality, and Just-Eat for online takeaways ordering. While it was worth \$3.5 billion in 2012, the sharing economy was estimated at \$26 billion in 2013 and is expected to reach a tremendous \$115 billion by 2016 (Malhotra and Van Alstyne, 2014; Ernst & Young, 2015). Researchers agree on three main drivers that could explain such a growth (Owyang, 2013; Cohen and Kietzmann, 2014; Sundararajan, 2014). First, the omnipresence of Internet and digital technologies allowing sharing at a scale never reached before. Second, the environmental awareness which leads people to take resources into considerations. And third, the urbanization of our world which makes sharing of assets or resources easier due to geographical vicinity. Also, economic drivers are mentioned with the monetization of idle capacity (Botsman and Rogers, 2010) and the “access over ownership”, people who can’t afford products can now rent them (Owyang, 2013). Although Cohen and Kietzmann (2014) evoke the 2008 global financial crisis as a reason behind the expansion of the sharing economy, Botsman and Rogers (2010) rebut this view.

Despite the fact that the sharing economy has been the nest for the creation of completely different businesses, Sundararajan (2014) explains that they rely on a common structure. He distinguishes three different constituents: platforms, entrepreneurs, and consumers. The platforms are the organization providing and organizing the “marketplaces”, the entrepreneurs are the persons or small businesses creating the offer, and the consumers are the one creating the demand (Sundararajan, 2014). With the example of Airbnb, the platform is Airbnb, the entrepreneurs are the hosts and the consumers are the people paying for the accommodations.

More than sharing a common structure, the sharing economy businesses seem to face the same issues. The platforms are facing regulatory considerations since they are regularly accused to violate existing regulations (Owyang, 2013; Ernst & Young, 2015). Among other examples, France banned “UberPop” the low-cost service from Uber, which used drivers lacking a professional driving license allowing them to pick-up passengers (Scott, 2015). Tax compliance appears to be another problem for the sharing economy, which is often accused of unfair competition (Ernst & Young, 2015). To exemplify, Airbnb faces legal troubles in many countries since they are expected to pay “hotel or tourist tax”, something they do not (Coldwell, 2014). Incumbent players have repeatedly condemned these new businesses which threaten their activities (Owyang, 2013). Another issue for the sharing economy is the lack of trust between consumers and entrepreneurs combined with safety issues (Owyang, 2013; Ernst & Young, 2015). Moreover, as highlighted by Sundararajan (2014), these new services come along with new questions of liability, hence the necessity to bring new kinds of insurance. It is especially the case when goods not supposed to be shared are now proposed to everyone against payment.

Existing or proposed solutions to these problems can be found in the literature. Malhotra and Van Alstyne (2014) call to mind that the city of Amsterdam already support the sharing economy by imposing “wise” tax, hosts have to pay tourist taxes like professionals, but do not have to pay other taxes imposed at industrial level. Regarding the trust and safety issues, community policing and self-regulations could be the solutions (ibid.). Indeed, the platforms’ preoccupations are to provide safe and trusted services because their revenues rely on volume and expansion of their operations (Sundararajan, 2014). They are also the closest to the transactions and therefore can act quickly removing users who violate the regulations. In addition, the platforms have created identity verification processes and credit scoring systems (Sundararajan, 2014), and also reputation systems and social networking features such as integrated Facebook connection (Owyang, 2013). All together these “trust mechanisms” seems to currently make the exchange easier for most of the sharing economy companies without additional external policies from the authorities (Sundararajan, 2014).

2.3.2 Crowd-logistics

The combination of shared economy and logistics is often called crowd-logistics. In the 2014 issue of the DHL Logistics Trend Radar (Bubner, Helbig and Jeske, 2014), crowd-logistics is acknowledged as a promising trend within the next 5 years. Mehmman, Frehe and Teuteberg (2015) after conducting a systematic literature review and a case study about crowd-logistics give this definition: "*Crowd Logistics designates the outsourcing of logistics services to a mass of actors, whereby the coordination is supported by a technical infrastructure. The aim of Crowd Logistics is to achieve economic benefits for all stake- and shareholders*". The "technical infrastructure" aforementioned is similar to the "platform" presented in the previous part.

Crowd-logistics services could allow to make the best use of the 60% of the available transport capacity currently not used, resulting in reduced transportation costs and CO2 emissions (Bubner, Helbig and Jeske, 2014). It enables both the creation of new logistics services and the improvement of traditional services in terms of volume, speed and flexibility (Mehmann, Frehe and Teuteberg, 2015). According to Bubner, Helbig and Jeske (2014), new strategies relying on the crowd to outsource first and last mile activities by combining professional processes with daily crowd routines represent new opportunities and challenges for logistics providers. Indeed, traditional actors have to compete with a proliferative start-up driven market, which leads them to create new business models relying on "professional and non-professional services, sources and capabilities" (Bubner, Helbig and Jeske, 2014). This is consistent with what Carbone, Rouquet and Roussat (2015) argue, that is, crowd-logistics represents both a threat and an opportunity for logistics service providers. An opportunity since it opens up new prospects, and a threat because the crowd could capture some of their business volume.

2.3.3 Crowdsourced delivery

Crowd-shipping or crowdsourced delivery is one part of the crowd-logistics, and is defined by Lam and Li (2015) as: "a web or mobile-based courier service which leverages large groups of geographically dispersed individuals to match demand with supply digitally." Therefore, it relies on the Internet in any case, and often exploits the technological potential of geolocation and mobile applications (Rougès and Montreuil, 2014).

The reasons are many behind the recent emergence of these services. According to Rougès and Montreuil (2014), it is an answer to the customers' changing needs towards faster, personalized and cheaper delivery service. This is in line with Lam and Li (2015) who argues that in the current world of speed, retailers are seeking to reduce their delivery costs while increasing the speed of delivery and the convenience, in order to improve the customer experience. Also, the development of e-commerce which fuels the flow of parcels is another factor (AtKearney, 2012;

Rougès and Montreuil, 2014). On the one hand online retailers are willing to develop more efficient deliveries (e.g. same day deliveries, free returns etc.), which could be handled through crowdsourced delivery. On the other hand, “physical” retailers are looking for a way to equal the comfort of shopping from home because they are suffering from the competition of e-commerce, and crowdsourced delivery could once again be the solution (Rougès and Montreuil, 2014). Lastly, since the transport of parcels is growing, the externalities (emissions, noise, etc.) linked to this are also growing, and crowdsourced delivery could participate to the reduction of the environmental impacts (Rougès and Montreuil, 2014; Paloheimo, Lettenmeier and Waris, 2015).

Rougès and Montreuil (2014) have developed a typology of business models in the crowdsourced delivery industry. They identified five types of business models allowing the categorization of every existing service in this industry. The first one is the “Courier” business model, with a Business-to-Consumer (B2C) orientation and an intra-urban scope. The customer orders from a shop online and apply for a home delivery, which is included in the payment. A courier, either professional or non-professional, delivers the order. The second is the “Intendant” business model, with the same characteristics as the “Courier” business model. The difference lies in the fact that the customer places an order on a platform, and the courier performs both purchase and delivery, from the shop specified by the customer. The third is the “Intra-urban” business model, with a predominantly peer-to-peer orientation, and an intra-urban scope as its name suggests. The entity wishing to have its parcel delivered places an order on a platform, which is then carried out by a courier or a commuter, for a fixed price. The fourth is the “National” business model, with a predominantly peer-to-peer orientation, and an inter-urban or national scope. It works exactly as the “Intra-urban” business model, but the parcels are transported by travellers due to the long distances involved, and the prices can be negotiated between the peers. The last one is the “Social delivery” business model, which is also mostly peer-to-peer oriented, but with a national or international scope. The customer places an order on a platform, which is carried out by a traveller who purchase the specified product, and deliver it on its way for a negotiated price. The five business models are summarized in table 1.

Name	Clients	Offer	Couriers
Courier	B2C	Deliver an order from a shop, restaurant, pharmacy etc. Intra urban	Professional or non-professional Dedicated couriers
Intendant	B2C	An order is placed on the platform. It is the courier who purchases the article from a shop and delivers the article to the customer. Intra urban	Professional or non-professional Dedicated couriers
Intra-urban	P2P or B2B	Deliver a parcel. Intra urban	Professional or non-professional Dedicated couriers Commuters
National	P2P or B2B	Deliver a parcel. Intra urban/National	Travelers
Social delivery	P2P or B2B or network	An order is placed on the platform. The courier proceeds to purchase and then to delivery. National/International	Travelers

Table 1 : Business models in Crowd-shipping
Own illustration based on Rougès and Montreuil (2014)

These new crowdsourced delivery services have numerous benefits for the stakeholders. Businesses can decrease their logistics costs and customers enjoy cheaper deliveries compared to traditional deliveries (Rougès and Montreuil, 2014; Lam and Li, 2015). It also helps to decrease the externalities linked to transport such as congestions, emissions, etc. since services can be provided by people already on their way, and cleaner modes of transport can be used such as bicycle and public transports (ibid.). Flexible job opportunities are also created so that it generates wealth to the society (ibid.). Lam and Li (2015) add that these services can provide flexibility to companies' logistics because the workforce is available on-demand, and it can also contribute to meet the growing demand for the e-commerce logistics. The service's speed is another advantage, couriers can be available at any time of the day while traditional companies offers mostly one tour per day (Rougès and Montreuil, 2014). The personalization is also higher since courier and customer can arrange together the schedule and characteristics of the service. Finally, it gives the possibility to customers to access products otherwise unavailable, such as products sold in foreign places, or restaurants without delivery service etc. (Rougès and Montreuil, 2014).

However, crowdsourced delivery must cope with many issues, some of which are common with the ones generally faced by the sharing economy. Many safety issues arose, such as theft, damage, transport of illegal products etc. and this goes along with liability concerns, since it is unclear concerning the entity which is responsible in case of problems (Lam and Li, 2015). There are also concerns about the privacy, when retailers may need to share customers' information such as home addresses or shopping habits with an unknown courier (ibid.). Rougès and Montreuil (2014) highlight the trust problem, since it is easier to trust an employee from a reputable transport provider than a stranger. Also, the platform rely on the same kind of solution

mentioned previously for the sharing economy: secure payment, “log-in with Facebook”, ratings and feedbacks, etc. Another issue is what Rougès and Montreuil (2014) called “the question of critical mass”. Indeed, a certain amount of couriers is needed to provide flexible and responsive service, but a certain amount of customers is also crucial to attract couriers. Therefore, companies implemented several strategies such as hiring a team of professional courier to start the wheel, or partnering with high-volume retailers in order to ensure a critical volume to attract courier (Rougès and Montreuil, 2014).

2.4 Summary of literature review

The literature review shows that urban goods transport is of crucial importance for the economic development and prosperity of the cities. However, due to the conflicting interests of numerous stakeholders involved, and the negative impacts inherent in the transport, cities have been forced to implement urban transport regulations that impede transport providers. The CEP industry activities represent a significant part of the urban goods transport, and are experiencing a constant growth supported by online and multi-channel retailing. Although the market is growing, it does not go without any problems for the firms, which have to face the last-mile issues within increasingly regulated environments. This situation has led to the emergence of specific urban parcel delivery services in the industry. Thanks to innovative and sustainable business models, the new players seem to play their cards right. They take advantage of the current situation to create partnerships with the heirs, online and traditional retailers, to capture market share in the last-mile deliveries. Among the new players, actors from the sharing economy take advantage of underutilized resources to make a more efficient use of the available transport capacity. The sharing economy is already a significant market, and is growing exponentially. But because of its newness, it is accepted in completely different ways across the world, and is suffering a lack of adapted regulations. However, the crowd-logistics is considered as an environmentally sound solution to the capacity problem in urban distribution, and crowdsourced deliveries are seen as suitable to face the growth in B2C deliveries, and as a way for physical retailers to cope with e-commerce, especially in urban areas. The impacts and challenges resulting from the implementation of crowd-shipping services in urban areas are not yet clearly defined in the literature. Therefore, this deficiency in the literature is identified as a gap that this paper should contribute to fill.

3 - Methodology

This chapter discusses the research philosophy, classifications and research strategy. Furthermore, it describes the data collection and the limitations of the research design chosen to address this study.

3.1 Research philosophy

Identifying a research paradigm is essential since it is a philosophical and thinking framework that guides how the research should be conducted and the behaviour of the researcher (Wahyuni, 2012; Collis and Hussey, 2014). The two main paradigms are positivism and interpretivism, and are each located at one end of the continuum of paradigms (Collis and Hussey, 2014). A research paradigm can be described according to four main philosophical assumptions underpinning it: ontological, epistemological, axiological and methodological (Saunders, Lewis and Thornhill, 2009; Wahyuni, 2012; Collis and Hussey, 2014).

This paper is designed as a qualitative study, and will therefore rely mainly on qualitative data. As argued by Collis and Hussey (2014), an interpretive study can be any type of research where the findings are not derived from the statistical analysis of quantitative data. Interpretivist researchers prefer to work with qualitative methods based on qualitative data (Wahyuni, 2012; Collis and Hussey, 2014). Consequently, this thesis can be considered as rather interpretivist.

Regarding the epistemological assumption, the authors of this paper favour interaction, dialogue, participative inquiry, and tend to minimize the distance with what is researched to collect valid knowledge, which is typical of the interpretivism (Wahyuni, 2012; Collis and Hussey, 2014). Interpretivists believe that understanding the differences between humans as social actors is of importance, and emphasize the difference between conducting research among people rather than objects (Saunders, Lewis and Thornhill, 2009). As this paper will partially rely on stakeholders' thoughts and interests, it brings it closer to interpretivism.

The same observation can be done according to the ontological assumption, which is concerned with the nature of the reality (Collis and Hussey, 2014). Indeed, the results of this paper will not be independent of the social actors involved. Therefore, the social reality is subjective, and there are multiple realities due to the multiple actors involved (Wahyuni, 2012; Collis and Hussey, 2014). Furthermore, the authors of this paper study the social reality from their perspective, and implicitly consider that they have "values", which substantially influence the data gathering and the conduct of the study. Consequently, this paper can be seen as rather interpretivist in accordance with the axiological assumption, which is concerned with the role of values (Collis and Hussey, 2014).

Finally, this thesis will attempt to draw on observation of empirical reality in crowd-shipping, in order to develop understandings and theories. This inductive approach is motivated by the lack of theories about the implementation of crowd-shipping. Hence, according to the methodological assumption, this paper can be considered as interpretivist (Wahyuni, 2012; Collis and Hussey, 2014).

3.2 Research classifications

For the classification of this paper, the classification framework proposed by Collis and Hussey (2014) will be used. That is, purpose, process, logic and outcome of the research will be defined in order to improve understanding around this thesis and its intentions.

The purpose of the research gives the reasons why it was conducted. The authors build this paper as an exploratory research, extended by a descriptive research. An exploratory research is conducted when there are few or no theories around a problem (Collis and Hussey, 2014). In the case of this thesis, the topic is a quite recent one, therefore a lack of literature has been identified. The research will be based on the available literature and interviews of “experts”, which are two principal ways of conducting exploratory research (Saunders, Lewis and Thornhill, 2009). The exploratory research will be used to have a clear picture of the phenomena under study (crowdsourced delivery), prior to the descriptive research (Saunders, Lewis and Thornhill, 2009). Then, the descriptive research will be conducted to go further with the particular situation of Geneva. Descriptive researches are used to identify and obtain information on the characteristics of a particular issue (Collis and Hussey, 2014). The combination of these two types of research will help to answer the research questions, figure 1 below shows the organization of the paper.

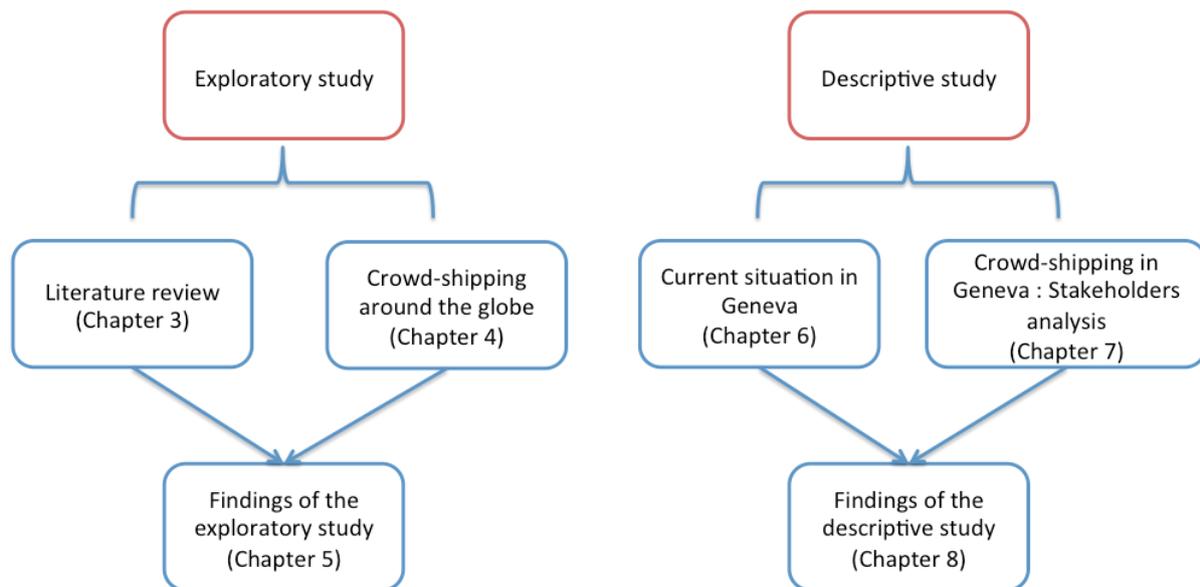


Figure 1 : Organization of the paper
Own illustration

The process of the research presents how the data are collected and analysed, that is quantitative research, qualitative research or a combination of both. (Collis and Hussey, 2014). In order to answer the research questions, this paper will rely mainly on a qualitative approach, to analyse secondary data found in the literature and also primary data gathered during interviews through an interpretive analysis. The qualitative approach is perceived as relevant by the authors since it allows to understand the different case studied and the specific situation in Geneva, from the perspectives of the local population and actors involved (Mack, 2005). However, quantitative data will also be used in this paper to interpret results of a survey.

The logic of the research determines if it is a deductive or an inductive research (Collis and Hussey, 2014). This thesis is an inductive research, theory will be developed from the empirical reality observed during the exploratory study. Individual observations from the exploratory study lead to “general patterns” (Collis and Hussey, 2014), and the theory generated will support the analysis conducted during the descriptive study.

The outcome of the research explains if the research is intended to solve a particular problem (i.e. applied research), or to bring a more general contribution to knowledge (i.e. basic research) (Collis and Hussey, 2014). The authors believe that the outcomes of this paper are twofold. First, it is a basic research since the exploratory study is expected to contribute to general knowledge around crowdsourced delivery. Second, it can be considered as an applied research since the last research question concern the specific area of Geneva and its particular issues. These issues will be addressed in the descriptive part of this paper.

3.3 Research strategy

The research design or research strategy is closely linked to the choice of paradigm, and some of the strategies clearly belong to the deductive or inductive approach (Saunders, Lewis and Thornhill, 2009; Collis and Hussey, 2014). Collis and Hussey (2014) argue that there are number of strategies and ways to collect secondary and primary data, but it is of importance to adopt a cohesive approach to ensure that the research design matches the philosophical assumptions of the paradigm previously considered.

This research can be considered as rather interpretivist, this paradigm is usually associated with an inductive logic, meaning that theories are developed to understand a phenomena (Collis and Hussey, 2014). The chosen methodology for this paper is the case study, which is generally associated with an interpretivist paradigm, and typical of exploratory research (Collis and Hussey, 2014). As stated previously, the paper will start with an exploratory study based on a multiple case study. Exploratory studies are often conducted where there are few theories, and multiple case studies allow a comparison process between the cases (Collis and Hussey, 2014). The phenomenon under study will be the crowdsourced delivery, and different cases

corresponding to different business models will be compared. Then, in the descriptive part of this study, the paper will turn into a constructive case study, focusing on the specific situation of Geneva. Unlike the exploratory case study which aims to create some knowledge, the constructive case study is expected to solve some problems (Garger, 2013). It has therefore been considered as relevant by the authors since it will be used to know if crowd-shipping services could be relevant in the area of Geneva according to stakeholders' expectations.

3.4 Data collection

Primary and secondary data need to be collected in order to give a clear understanding of what crowdsourced delivery really is, in what ways it is applied, and the implications for the stakeholders. Primary and secondary data are also required to describe the area of Geneva, and the impact crowdsourced delivery could have on stakeholders.

A thorough literature review based on secondary data is crucial for this paper. Indeed, since this study involves mainly qualitative data, background information needed to be collected first, in a process called "contextualization" (Collis and Hussey, 2014). It brings a better understanding of the context within which qualitative data are used. Also, Collis and Hussey (2014) argue that a case study needs a preliminary investigation, in order for the authors and readers to become familiar with the context where the research is conducted.

Secondary data can be gathered from existing sources such as publications, databases and internal records (Collis and Hussey, 2014). The articles used throughout this thesis were retrieved using Google Scholar, on which the Gothenburg University Databases accesses were set beforehand. Reports from companies and institutions, books and journal articles were also used within the literature review and analysis. The authors reviewed both literatures in English and French language, which broadens the scope of the available literature. Gathering data from relevant sources was essential, therefore only articles from established newspapers were considered. Also, the priority was given to peer-reviewed articles published in acknowledged journals.

Primary data are data generated from an original source such as surveys or interviews (Collis and Hussey, 2014). In order to understand the situation in Geneva and the stakeholders point of views, the authors of this paper have decided to conduct semi-structured interviews, which are, together with unstructured interviews, typical of the interpretivist paradigm (Collis and Hussey, 2014). Semi-structured interviews were preferred since it provides a guideline to follow for the interviewers, and makes sure to ask every important question. Also, it gives the possibility to go further than the prepared questions throughout the interviews.

Interviewees	Position (Company)	Type (Length)	Date
Jean-François Gaudin and Nilukshan De Silva	Ground operation managers (DHL Express)	Semi-structured / Face to face / 2h	12/02/16
Alain Philippe	Depot operation manager (TNT)	Semi-structured / Phone / 30min	04/04/16
Christophe Canevet	Co-founder (Voisins Relais)	Semi-structured / Skype / 1h	13/04/16
Andreas Berney	Head of the subsidiary (Planzer)	Semi-structured / Face to face / 1h	22/04/16

Table 2 : Interviews
Own illustration

The guidelines used to interview the transport providers may differ since interviews were conducted at different stages of progress of the thesis. Interviews have been conducted in French, but the guidelines are provided in English in appendix A.

Another way to collect primary data is to use surveys or questionnaires. Collis and Hussey (2014) defined it as a method for collecting primary data in which a sample of respondents are asked a list of carefully structured questions chosen after considerable testing, with a view to eliciting reliable responses. This method offers advantage that response rate can be fairly high and comprehensive data can be collected (Collis and Hussey, 2014). The authors used face-to-face approach with 50 adult respondents in the city of Geneva, the questionnaire is available in appendix B. Although 50 respondents can be considered as a rather small sample, it allowed the authors to have a clearer picture of the population point of view. The survey has been conducted on Thursday 7th of April between 10AM and 3PM. Respondents were chosen randomly without any structured approach regarding the age or gender.

When collecting primary data either through interviews or surveys, the authors always carried with them a supporting letter (see appendix C) from the School of Business, Economic and Law, testifying that this thesis was not commissioned by any company or organization.

3.5 Limitations of the research design

In business research, two main parameters are taken into account when judging the credibility and the quality of a research: Validity and Reliability (Saunders, Lewis and Thornhill, 2009; Collis and Hussey, 2014).

3.5.1 Reliability

Reliability refers to the accuracy and precision of the measurement and the absence of differences if the research were repeated (Collis and Hussey, 2104). Reliability is often of higher importance in a positivist study than in an interpretivist study, where it can be interpreted in a different way (ibid.). In this paper the reliability is expected to be higher in the exploratory part mostly based on secondary data, since other researchers could collect the same data and would be likely to reach the same conclusions. The reliability is also enhanced since the authors attach importance to collect relevant data, such as peer-reviewed articles, or documents from established sources. However, in the descriptive part of this study, interviews and survey are used to collect primary data, which are processes more difficult to replicate. Also, under the interpretivist paradigm researchers believe that they influence the research, which necessarily decrease the reliability.

3.5.2 Validity

Validity refers to the extent to which a test measures what the researcher wants it to measure and the results reflect the phenomena under study (Collis and Hussey, 2014), or in other words whether the findings are really about what they appear to be about (Saunders, Lewis and Thornhill, 2009). While reliability of primary data tends to be undermined under an interpretivist paradigm, their validity is considered to be really high since the data are seen as trustworthy and studied in a great level of depth (Dudovskiy, 2015). The semi-structured interviews conducted therefore confer a high validity to this paper because of their depth and the relevance of the interviewees. Moreover, the final version of the paper has been submitted to every interviewees to make sure they agreed with the content. However, the authors are aware of the fact that interviewees or respondents are more likely to provide information showing them or their companies under “the good light”, affecting the validity of the data. The secondary data gathered during the literature review and the exploratory case study are considered to bring a high validity to this paper, for the same reasons previously mentioned for the reliability.

3.5.3 Generalizability

The Generalizability is the extent to which the research findings can be extended to other cases (Collis and Hussey, 2014). In this paper, the last research question is focused on the specific area of Geneva. The findings are therefore expected to be relevant for the issues of this specific area. However, Collis and Hussey (2014) argue that under an interpretivist paradigm, researchers “may be able to generalize their findings from one setting to a similar setting”. Therefore, it is conceivable to generalize the findings of this study to an area with the same characteristics, facing the same issues.

4 - Crowd-shipping around the globe

Some practical cases of crowd-shipping in last-mile deliveries will be addressed in this part of the thesis. Relevant cases have been chosen according to different criteria such as possibility of interviews, last-mile oriented companies, availability of secondary data and reputation, in order to evaluate them properly. The aim is to determine what are the best practices and the failed practices, as well as the lessons learned from every case so that the authors can draw on this to answer the two first research questions (RQ1 and RQ2). According to the typology of crowd-shipping's business models (see 2.2.3) proposed by Rougès and Montreuil (2014), the authors will study some cases belonging to the three first categories: "courier", "intendant" and "intra-urban". The two last categories (i.e. "National" and "social delivery") are excluded from this case study since they represent long-distance deliveries and are therefore out of the scope of this paper.

4.1 Best practice

This part presents a case considered as a best practice in crowd-shipping by the authors, as well as facts underpinning it. Then, under "Lesson learned", the authors will determine the strengths and weaknesses of the case according to them.

4.1.1 Postmates

Founded in 2011 in San-Francisco, Postmates is an American company offering to change the way local goods move around cities by enabling anyone to get any product delivered under one hour (Postmates, 2016). The company started with food deliveries which is still its main activity, and contracted partnerships with companies such as Starbucks or McDonalds. Then the company expanded its activities with all kind of products, as an example it has recently signed a contract with Apple to deliver their products (MacMillan and Bensinger, 2015)

"Think of Postmates as a decentralized Amazon"
Bastian Lehmann, Postmates' CEO (Lynley, 2011)

Postmates' online platform is available from their mobile app or website, and is a link between the three different segments served: customers, merchants and delivery persons (Deep, 2015). Customers accept to be charged slightly more than the normal price in order to be delivered at their place. Partnerships are signed with local merchants, which display their products on the platform, with the opportunity to attract people who want goods delivered at their location. Finally, the delivery persons called the "postmates", are either professional or individual couriers willing to earn some extra money according to their own schedule (Deep, 2015). According to the typology of business models in crowd-shipping proposed by Rougès and Montreuil (2014), Postmates corresponds to a mix between the "courier" and the "intendant" business

model since the orders are done on the platform, but the postmates only have to deliver the parcels and not to purchase it.

How it works:

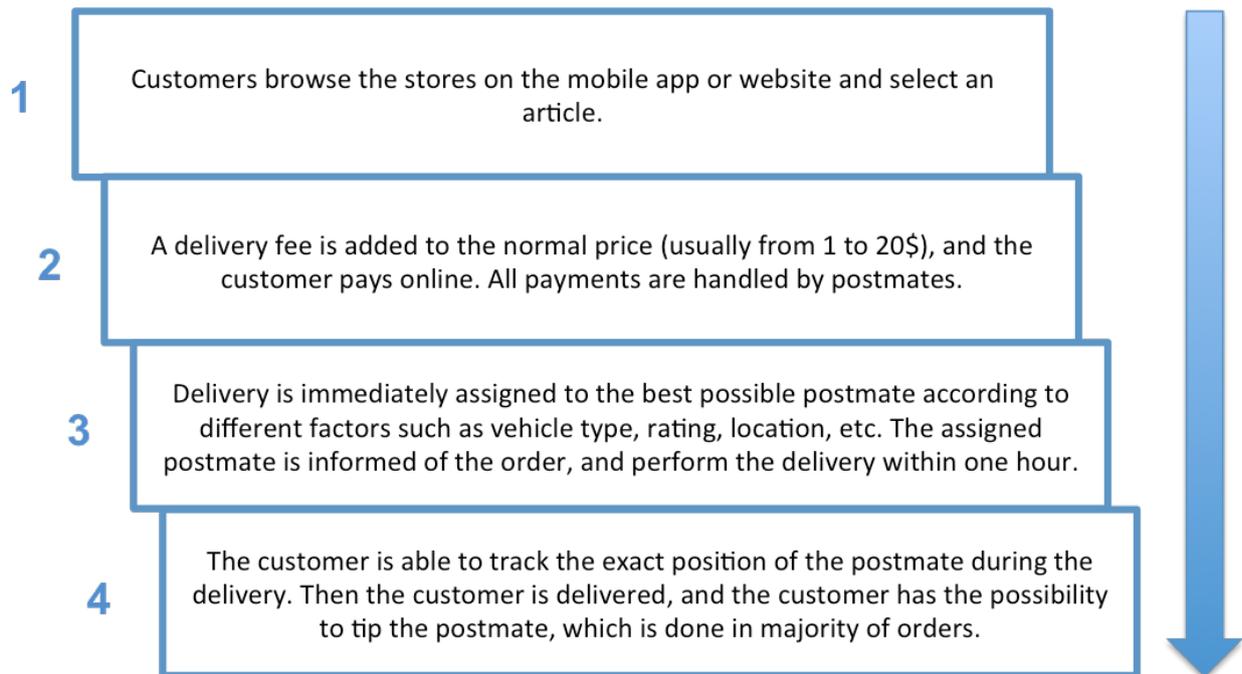


Figure 2 : How it works for Postmates
Own illustration based on Postmates (2016)

The revenue model is organized around three axes: the company takes 20 per cent of the delivery fees, charges a 9 per cent service fee of the ordered product price, and also charges a commission to the merchants partners (MacMillan and Bensinger, 2015). Postmates disclaims all liability regarding failures in the deliveries such as damaged products, but they propose to reimburse the delivery fee in case of delay due to their own error (Postmates, 2016). However, the deliverers are covered with general liability insurance, an auto excess insurance and an accidental occupational liability (Dickey, 2014).

Lessons learned:

Postmates ended up the year 2015 with approximately \$60 million in revenue and is valued at more than \$500 millions, but the company is not profitable yet, because every dollar earned is invested to grow the company (Deep, 2015; Mac, 2015). Only operating in San-Francisco in 2011, the service is now available in more than 100 cities in United-States (Postmates, 2016). So far, Postmates has signed contract with 40.000 partners, and exceeded the number of 1.5 million of deliveries since the beginning (Schulz, 2015). With more than 13.000 postmates, the company takes approximately 70.000 orders a week, with 75 per cent of them being food deliveries

(MacMillan and Bensinger, 2015; Schulz, 2015). Therefore, the authors of this paper consider Postmates as a successful company.

This example shows that managing to implement partnerships with a substantial number of companies, including leading companies such as Apple or Starbucks, allows a crowd-shipping company to ensure a sufficient volume of deliveries. Ajay Deep (2015) noted that Postmates has become a widely known company and reached a stage where users come “automatically”, however, at its beginning, the company has made use of digital marketing, offline advertisements, and an intense use of marketing generally. Indeed, the marketing part is a long and necessary work in order to reach a “critical mass” of customers creating the demand, of partners creating the offer, and of deliverers creating the capacity of delivery. By proposing three insurances for the deliverers, Postmates covers them at a level unmatched by any competitors, and this could partly explain how they managed to attract 13.000 deliverers ensuring a high delivery capacity (Dickey, 2014). However, it is noticeable that Postmates assumes no liability at all in the process of delivery, which can be explain by the “cheap” value of most of the deliveries (i.e. food). But with the expansion of its operation to any kind of products, such as expensive electronic devices, partners and customers will surely expect an insurance to back-up the operations. Finally, according to MacMillan and Bensinger (2015), Postmates is one of several on-demand companies being sued for not treating its “individual” deliverers as employees and not providing them with benefits. Indeed, the boundary is fuzzy between individuals willing to earn some extra money and professional drivers, which endangers this kind of companies as long as the regulations are not adapted.

4.2 “In progress” Practices

This part presents cases of crowd-shipping companies recently launched. Under “Lesson learned”, the authors will determine the strengths and weaknesses of each case at this stage of development. The reflexion is based on the author’s opinion and primary data gathered during interviews.

4.2.1 You2you

You2you is a French crowdsourced home delivery platform launched in 2015. The aim of this service is "to bring closer retailers and customers simplifying delivery procedures" (You2you, 2016). The company offers a platform available on smartphone where it is possible to find a "Youzer" who will deliver your product.

“Boost your business with faster, more flexible and cheaper delivery service, the crowd-shipping You2you !” (You2you, 2016)

How it works:

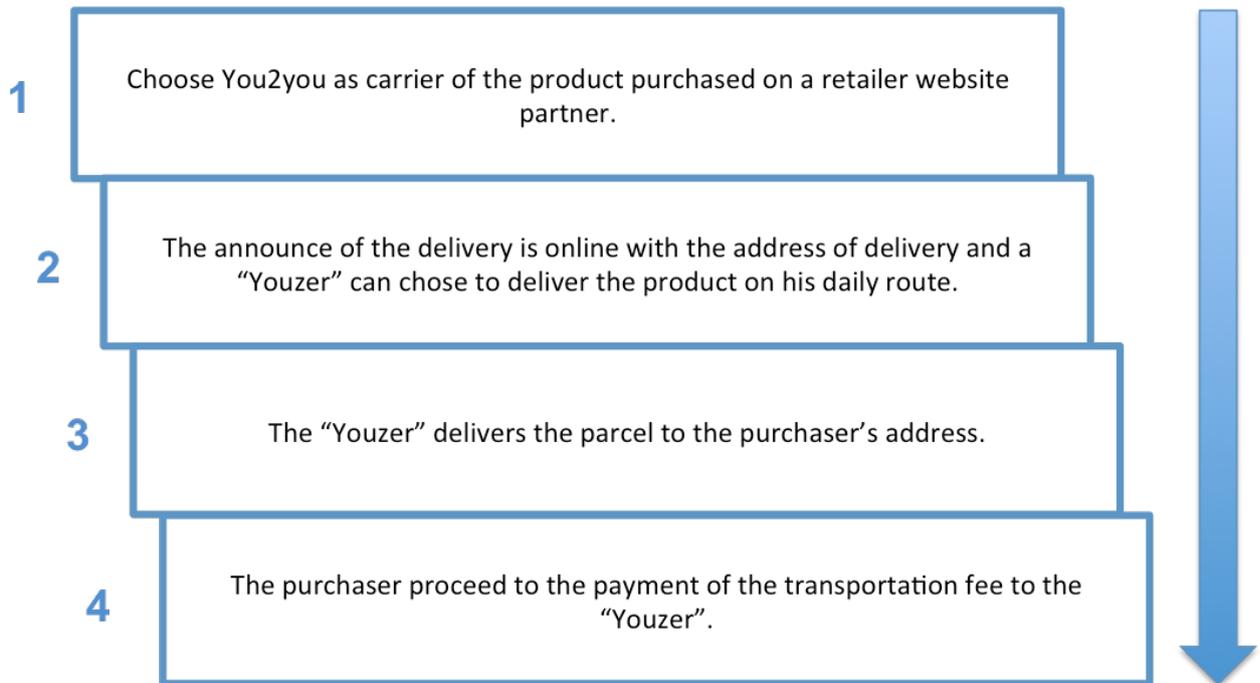


Figure 3 : How it works for You2you
Own illustration based on You2you (2016)

You2you offer also the possibility to dispatch a parcel, the principle is to enter the address where the parcel will start its journey and the address of the receiver and then as for the deliveries, someone (Youzer) pick the parcel to the destination wanted. The company You2you offers the service of crowdsourced delivery in the city of Paris and has as a goal to expand its services at a national scale for big cities.

According to the company You2you (2016), their platform has four majors benefits compared to traditional transport companies. The first concerns the rapidity of the delivery, indeed the platform is used seven days a week with open hours from 9AM to 11PM which allow same day deliveries. Then, the flexibility is also an advantage, You2you state that the timeframe of a delivery is about two hours with the possibility to program the delivery one hour after the preparation of it. The third benefit is about the cost, with the use of the platform the costs of delivery are 40% to 60% lower than traditional transport providers. Finally, since deliveries are done by "everyday people" on their daily routes, the CO2 emissions are much lower than transport providers who are driving with the only purpose of delivering the product.

Regarding the legal situation and insurance, You2you is not involved in the agreement between users, its only task is to enable the communication between them. Also, You2you is not liable for the parcel transported, and can not be held responsible if a deliverer fails to deliver, delivery is delayed, or if the parcel is damaged or lost. The

platform states a limit of revenue per “Youzer” per trimester of 1250 euros, above this limit, You2you consider that a “Youzer” could no longer fit into the logic of non-lucrative packages carpooling. If the limit is exceeded, the company gives itself the right to suspend the account of the “Youzer” until the next trimester.

The company You2you has more than 30 partners as Auchan, Boulanger or Norauto to state a few. These collaborations offer a potential volume of 17 millions of parcels at the exit of the store partner to deliver for You2you (Antoine de Jerphanion, 2016). The benefits for the partners are straightforward, by proposing the service You2you to the clients, the company does not have to deliver the products by itself to the clients which generates large costs of transport.

The revenue model of You2you is to take a fee for every transaction representing 10 per cent of the set price, the transaction is paid by the recipient. According to the typology of business models in crowd-shipping proposed by Rougès and Montreuil (2014), You2you corresponds to the “courier” business model. Finally as stated by the founder of You2you, Hervé Lescure, "with 33,8 millions buyers online in 2014 in France, the delivery sector still has bright future"

Lessons learned :

After being launched in 2015 with three employees, the company You2you employed in 2016 fourteen persons (You2you, 2016). It shows the rapid evolution of the company which is also demonstrated by the crash of their website in March because of the huge amount of visitors. Due to its recent creation, You2you is still at an early-development phase, which makes difficult for the authors of this paper to classify it either in “success” or “failure” practices.

Having more than 30 partners allow You2you to access a potential substantial amount of parcels, and it shows the importance of having partners when launching a platform like this. Moreover, You2you offers the first five deliveries to any company willing to be a partner which is an attractive offer for rather small retailers willing to change its delivery system. In conclusion, when launching a start-up as You2you about crowdsourced delivery it is of importance to find partners and customers and an intense marketing in order to create offer and demand, and in the same time find the deliverers to fuel the operations. However the absence of insurance regarding the goods transported could be a problem for the development of the service, indeed the company does not want to take any responsibility and could face difficulties if the problems regarding responsibilities occur. (You2you, 2016)

4.2.2 Voisins Relais

Voisins Relais is a French crowdsourced home delivery company founded in 2014 by Christophe Canevet and Patrick Foillard (Voisins Relais, 2016). To gather information about this company, an interview was made with Christophe Canevet, CEO of the

start-up. The company offers to connect two types of people from the same neighborhood:

- The “voisins relais” meaning in English “neighbor relay”, who is someone spending most of its time at home such as home-worker, retired people, etc., who can easily take delivery of parcels for someone else in its neighborhood.
- The “users” who is someone unable to take its parcel’s delivery at home during the usual hours of delivery.

How it works:

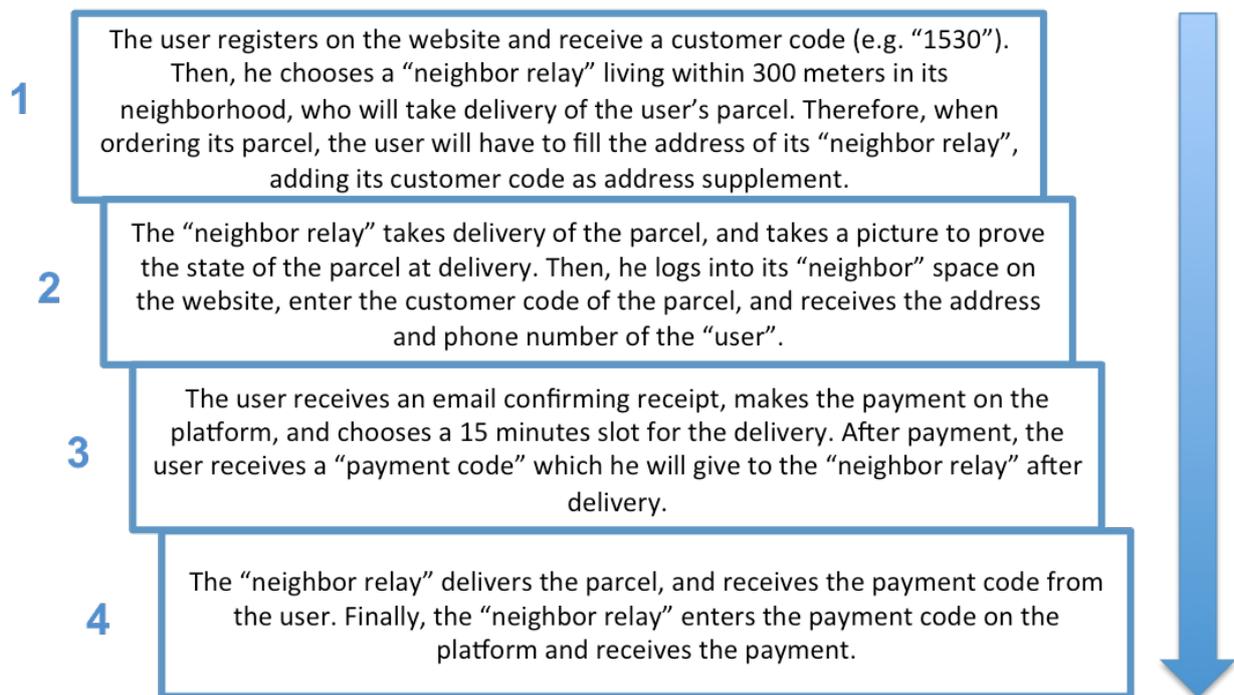


Figure 4 : How it works for Voisins Relais
Own illustration based on Canevet (2016)

The “neighbors relay” are voluntary, they agree to follow the code of good conduct, and must provide proof of identity, address and phone. They also have to live within 300 meters of a user to be considered as its “neighbor relay”, in order that the deliveries can be done in a 15 minutes slot. This service is therefore considered as “last-meter” delivery by the company’s CEO, in comparison with the traditional “last-mile” delivery.

“For the “last-meter” delivery, you don’t have to deliver quickly, but at the right time”
Christophe Canevet, Voisins Relais’ CEO

Voisins relais offers three different services with prices ranging from 2 to 4 euros: reception and delivery (2.99€), parcel’s return and transit advice (3.99€), pick up of registered letter (2.99€). The delivery operations take place between two people in the

same neighborhood, therefore Voisins Relais rely on an “intra-urban” business model according to the typology proposed by Rougès and Montreuil (2014). Their revenue model is to take a transaction fee on every payment made by the users. The company has also subscribed a specific insurance policy covering the risks inherent in the activity of the neighbors, which may be suffered by the users (Voisins Relais, 2016). After an operation, users and “neighbors relay” can rate each other, which enhance user's trust.

The community of “Neighbors relay” is slowly growing with more than 200 neighbors registered essentially divided between Reims (i.e. where the operations started) and Paris (i.e. where the company is now focusing its marketing efforts). They expect to reach the number of 600 neighbors in Paris by 2017, and will start the operations in Toulouse within two or three months. This is a company's commitment to grow slowly in order to master the business model and the processes. The company is also targeting a new segment since the end of 2015, the transport providers. Indeed, they expect to bypass the traditional “parcel service point” where the parcels are usually redelivered the day after, by proposing an app to the delivery guys. For instance, the redelivery process represents 150 millions unnecessary trips per year in France, representing an additional cost of between 1.5€ to 2.5€ per parcels redelivered. Using the app, they would be able to find a “neighbor relay” close by in order to deliver the parcel in case of customer absence. This would create a win-win situation since transport providers would avoid unnecessary trips, customers would pick-up their parcels easily, and the society would enjoy a decrease in road traffic and therefore gas emission. (Canevet, 2016)

Lessons learned:

So far, about one hundred parcels have been received by Voisins Relais' users, which is quite low but an encouraging beginning according to the positive feedbacks of the users. The company only benefited from the financial support of its two co-funders to launch the operations and has been selected as one of the 22 projects supported by the city of Paris to improve the urban logistics. According to its CEO, it was Voisins Relais' commitment to develop the operations slowly but surely. However, there will soon be a fundraiser to value the company, and obtain funds to improve their website, and develop the recruitment of neighbors.

Their website is accessible since June 2015, but is not currently attracting enough people. With their effective business model and well-tested operations, an intense marketing seems to be the cornerstone of their success, and according to the authors of this paper, this is what is missing today. However, Voisins Relais rely on a business model with many strengths. As an example, providing the users with insurance is important to reassure them. Also, the fact that the operations takes place between neighbors reinforce the social connection between them, at a time when technologies tend to keep people isolated rather than bringing them together as Christophe Canevet (2016) said. Moreover, the limited “range of action” of each neighbor

necessarily limit the number of transactions, and the possibility to become a professional “neighbor relay”. This is a good point regarding the strengthening of the regulations around the sharing economy and its unreported incomes. Finally, the business model creates a win-win situation for every stakeholder: users, neighbors, transport providers as well as the cities as previously explained.

4.3 Discontinued practices

This part presents cases considered as discontinued practices in crowd-shipping by the authors, as well as facts underpinning it. Under “Lesson learned”, the authors will determine the strengths and weaknesses of each case, as well as the possible reasons behind the failures. The reflexion is based on the author’s opinion and official publications from the companies under study.

4.3.1 Bringbee

BringBee is a Swiss crowdsourced home delivery service launched in 2013. The company offers to connect people going to a shop anyway (the BringBee), with people in need of products from this shop in their neighborhood (the customers). BringBee founders realized that 70 per cent of all transport capacities remain unused, traffic accounts for approximately 35% of all CO2 emissions, and that everyone move 19.000 kilometres per year (PolyPort, 2014). They thought it was critical to improve the existing transportation systems, and saw an opportunity to create their start-up.

“You move 19.000 km per year, why don’t you take a delivery along, and make some money on your way?” (PolyPort, 2014)

BringBee created partnerships with retailers such as IKEA Switzerland and a number of regional enterprises, so that customers can “write” their shopping lists directly on BringBee website.

How it works:

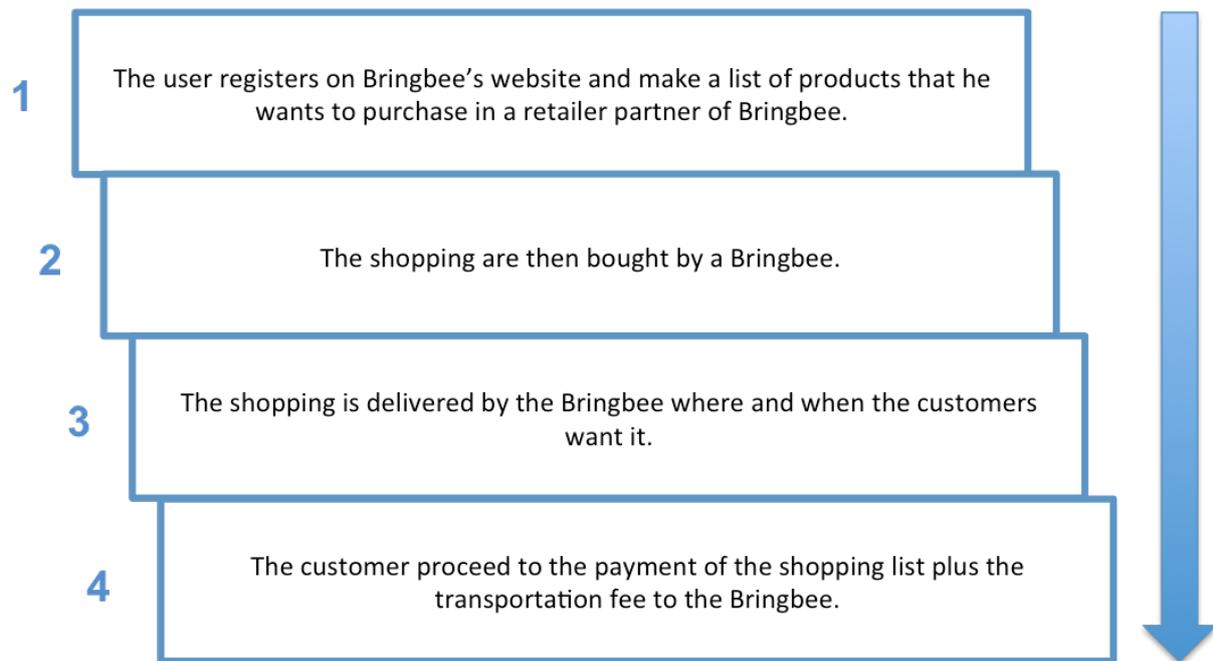


Figure 5 : How it works for BringBee
Own illustration based on Polyport (2014)

Since one person does the shopping for two at the same time, unnecessary shopping trips are avoided and traffic is reduced in the neighborhood (PolyPort, 2014). According to the typology of business models in crowd-shipping proposed by Rougès and Montreuil (2014), BringBee corresponds to the "intendant" business model since the BringBees have to purchase and deliver the "parcels".

Their revenue model is to take transaction fees for every delivery. In return, they take care of the development, quality and security of the marketplace. Every member and shopper are verified, and they ensure a secure payment at the delivery. BringBee also guaranteed that the BringBee was reimbursed and rewarded, enabled easy communication between parties on the platform, and calculated the CO2 savings. Importantly, they provide free transport insurance for every transaction. (Karius, 2012; PolyPort, 2014; Schieffer, 2014)

Lessons learned:

Despite more than 2,000 BringBees across Switzerland, great media coverage and encouraging customer feedbacks, BringBee officially stopped operating in Switzerland in October 2014 (PolyPort, 2014).

According to BringBee's CEO Stella Schieffer (Lelièvre, 2014), the main reasons behind this termination of activity include the lack of strategic and business partners who want to use delivery services BringBee and are willing to pay for this pioneering

work. Indeed, rolling out a mass market service that requires ten thousands of transactions to ever break even was challenging without a strategic investor or larger partner pushing for growth (PolyPort, 2014). Despite a partnership with IKEA Switzerland, without more large retail partners, the company lost the opportunity to leverage their existing marketing channels and customer base as a multiplier (ibid.). Also, BringBee's founders noted that oftentimes, no or already-blocked budgets, combined with the lack of product data and pictures to display on the platform, stopped the acquisition of new partners (PolyPort, 2014). Finally, they highlighted the fact that despite their 2.000 BringBees, they could never truly guarantee a delivery. Therefore, they argued that it would make sense to implement a "professional fall back option" to ensure a proper customer level, and to make possible to indicate the likelihood of delivery during the order process (PolyPort, 2014).

4.3.2 DHL MyWays

MyWays is a concept developed by Deutsche Post DHL Solution and Innovation to facilitate last-mile deliveries in Stockholm by involving the city's residents (DPDHL, 2013). According to the typology of business models in crowd-shipping proposed by Rougès and Montreuil (2014), MyWays can be classified as an "intra-urban" solution. People who are not at home to receive a parcel or who do not have time to pick it up from the DHL service point can download the MyWays App on their smartphone, and add the parcel to the platform by entering the tracking number. Then, they have to select the time and place where they want to receive their parcel, and also specify the price they are willing to pay for the delivery (MyWays, 2013). More than just providing flexible deliveries to the recipients, MyWays is also a service for people who want to deliver parcels along their daily routes to earn some extra money, by selecting the parcel they want to collect and deliver on their smartphone (DPDHL, 2013; MyWays, 2013).

How it works:

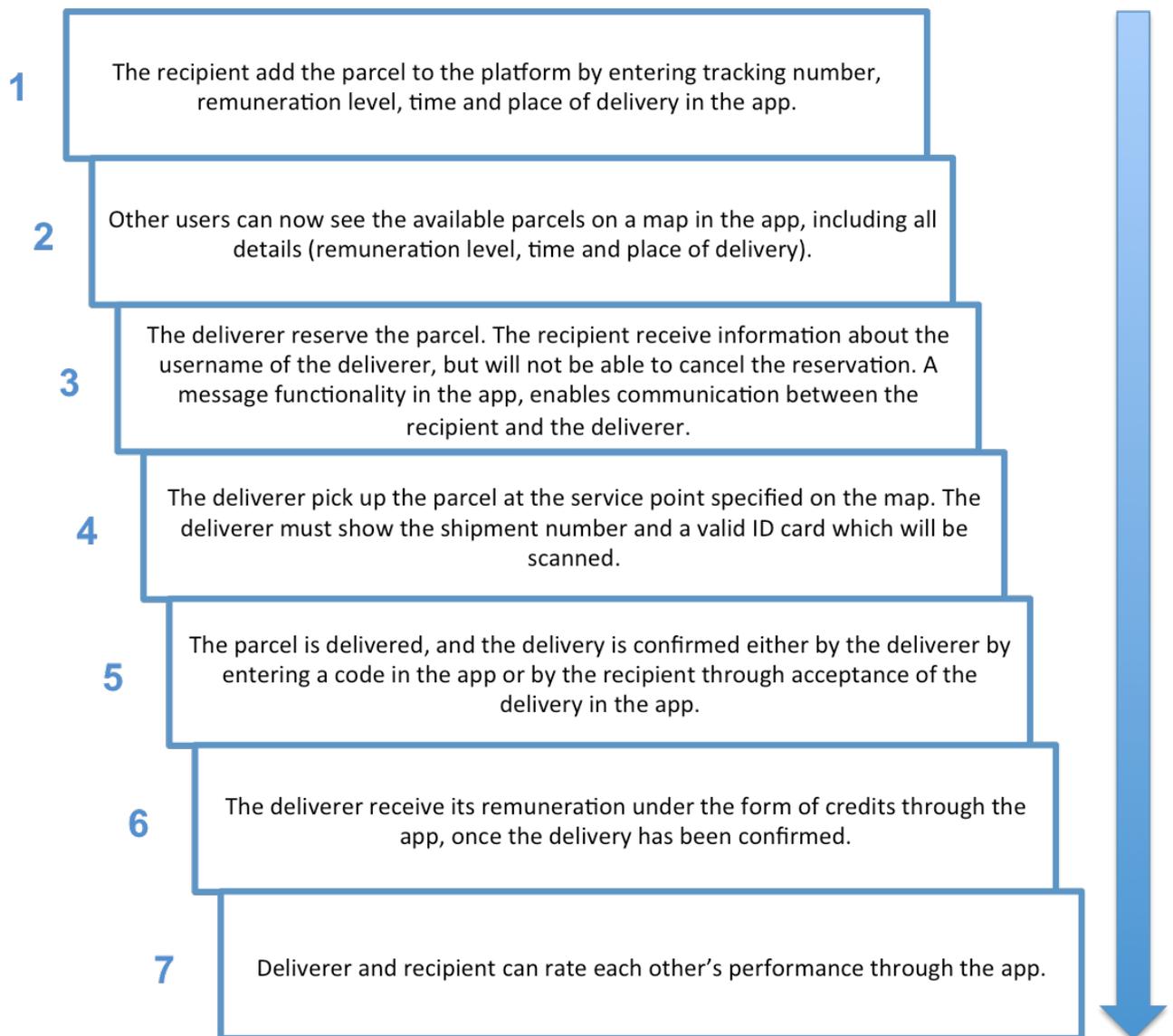


Figure 6 : How it works for DHL MyWays
Own illustration based on MyWays (2013)

The revenue model of MyWays is to take a fee for every transaction representing 10 per cent of the set price, the transaction is paid by the recipient. The remuneration paid to the deliverer for one delivery can be between 3 and 15 euros. MyWays is not involved in the agreement between users, its only task is to enable the communication between them. Also, MyWays is not liable for the parcel transported, and can not be held responsible if a deliverer fails to deliver, delivery is delayed, or if the parcel is damaged or lost. (MyWays, 2013)

Lessons learned:

After having been tested during summer 2013 for the e-commerce deliveries of the Swedish outdoor company Addnature, MyWays informed that the test is successful and that users appreciate the flexibility of the service and make use of their daily travels to deliver individuals (DPDHL, 2013). Consequently, MyWays is launched in September 2013 as a “pilot”, which should run until the end of 2013 (ibid.). However, after having conducted an interview with DHL’s representatives in Geneva to glean information, it appeared that MyWays’ operations were stopped in February 2014. No explanation was published by DHL, but the interviewees managed to gather information internally from the marketing of DHL Sweden.

According to them, MyWays was very attractive in term of image, especially for the young people. Although many people registered in the platform, only a few were actually willing to do the deliveries. Also, the DHL customer service received a lot of additional calls and complaints from consignors and network, which were difficult to handle since the parcels were not anymore in DHL hands. (Gaudin and De Silva, 2016)

The authors of this paper believe that good and bad points can be singled out. MyWays is an app provided by DHL which is an established transport provider and therefore benefited from an existing network of service points and sufficient flow of parcels irrigating Stockholm. The use of a mobile app including a GPS-function makes it easy for the users to see if there are parcels available on their ways, and to decide if they are willing to “earn some extra cash” by reserving a parcel (MyWays, 2013). Also, the message functionality enabling communication between deliverer and recipient seems necessary to set or modify the delivery aspects. However, the authors of this paper voice reservations regarding the liability and ratings issues in the MyWays system. Indeed, even if deliverer and recipients had the possibility to rate each other’s performance, the recipient can not either choose between several deliverers according to their ratings, or cancel a reservation made by a deliverer (e.g. in case of poor rating of the deliverer). Consequently, an effective ratings’ monitoring has to be done by MyWays, in order to block poorly rated users. Finally, MyWays assumes no liability at all in the process of delivery, where users could expect to be reassured by the implementation of insurance.

5. Findings of the exploratory study

This part will conclude the exploratory part of this thesis which rely on two pillars: the literature review and the cases study. Drawing on the results of the literature review and on the lessons learned from the cases study, the authors will bring elements of responses to the two first research questions (RQ1 and RQ2).

The exploratory part of the paper has allowed the authors to shed light on the few existing theories regarding crowd-shipping, but also to learn from the practical cases investigated.

Having a look at the different stakeholders points of view is essential when thinking about implementing crowd-shipping. Indeed, as an example the “crowd” would be inevitably involved in such project, hence the importance to understand its thoughts and expectations about it. In the same way, transport providers would possibly be involved depending on the business model used, so taking their points of view into account is necessary. The regulations regarding sharing economy and transport could also have some impacts on crowd-shipping. While the strengthening of urban transport regulations could play the role of a catalyst for crowd-shipping projects, the strengthening of the sharing economy regulations could play the opposite role. When looking for clients, partners or deliverers, a good marketing seems to be crucial, and it is often synonymous with investments. Indeed, the more customers you have, the more deliverers you are likely to attract, and the same is true with commercial partners. The marketing will also play a role in the community management, once a crowd-base has been built. According to Voisins Relais’ CEO Christophe Canevet (2016), this could be one explanation behind the failure of MyWays. Established companies such as DHL have the capacity to disbursed substantial amount to create and launch operational projects, but fail to run them in the long term by shortfalls in investment in community management. Time, which is also often synonymous with investments, is particularly important when implementing crowd-shipping. Indeed, companies must have enough funds to wait before to see their business eventually growing. For instance, it took Postmates’ business 116 weeks to reach the 500,000 deliveries mark, and this mark was the beginning of their “Hockey stick” growth (Schulz, 2015). Moreover, growth in delivery does not mean profitability, since benefits are often directly invested into the company’s growth. According to some of the interviewees, the trend is not yet in the development of the sharing economy in the parcel transport. Therefore, the crowd-shipping companies must succeed in changing the way people think about it. In the same way as “BlaBlaCar” did for carpooling with the fact that people do not think anymore before getting into the car of an anonymous, people will not worry anymore to entrust their parcels to anonymous. Offering insurances to the users should contribute to enhance their trust in the services, both for the customers and the deliverers.

Despite showing several barriers and challenges hindering the implementation of crowd-shipping, the exploratory study also allowed to highlight some benefits of crowd-shipping. It would allow a better use of the current transport capacity, indeed 60 per cent of the available capacity is not used and 30 per cent of road transport distance is running empty. Crowd-shipping has the potential to improve the efficiency of CEP deliveries which represents a significant part of the urban goods transport, which would decrease the needs of transport and reduce transport externalities. The fact that people could deliver parcels on their daily routes would lead to less congestion and pollution, and bring a solution for the last-mile deliveries, which are the least efficient part of the transport. For the cities, it would contribute to fluidize the transport in the city, which is of crucial importance for their economic development and prosperity. Moreover, there is no need to build new infrastructures which are usually used to improve the congestion level. The customers would also enjoy wider delivery windows than the traditional one, and transport providers will improve their efficiency by avoiding unattended home deliveries. As part of the sharing economy, crowd-shipping also contributes to create social links between people, at a time where people are increasingly closed in on themselves. Finally, it is also a way for people to receive extra money apart from their job or situation, such as students or retired people.

6 - Current situation in Geneva

In this part, the current situation of the city of Geneva will be investigated. After a presentation of the city, the mobility issues faced by the city will be addressed. Then, the current and expected solutions implemented by the city to solve it will be presented. Also, an overview of the CEP industry in the area will be proposed, partly supported by interviews with CEP experts in the area. Finally, the applicable Swiss regulations in transport and sharing economy will be discussed. This chapter will contribute to understand the authorities point of view regarding crowd-shipping, which will be useful for the remaining part of the study.

6.1 The city of Geneva

Geneva is the second largest city of Switzerland after Zurich, with 201,164 inhabitants in 2015. Switzerland is divided in 26 cantons representing different regions and the city is in the "canton of Genève" which is located at the extreme south west of the country next the lake Lemman (Ville de Genève, 2015). The city of Geneva is part of the area called "Le Grand Genève" which regroups the "canton of Genève", the "district of Nyon" on the Swiss side and part of the departments of "Ain" and "Haute-Savoie" on the French side. The capital of Switzerland is Bern but Geneva is known as the economic capital due to its attractiveness for multinational companies and businesses.

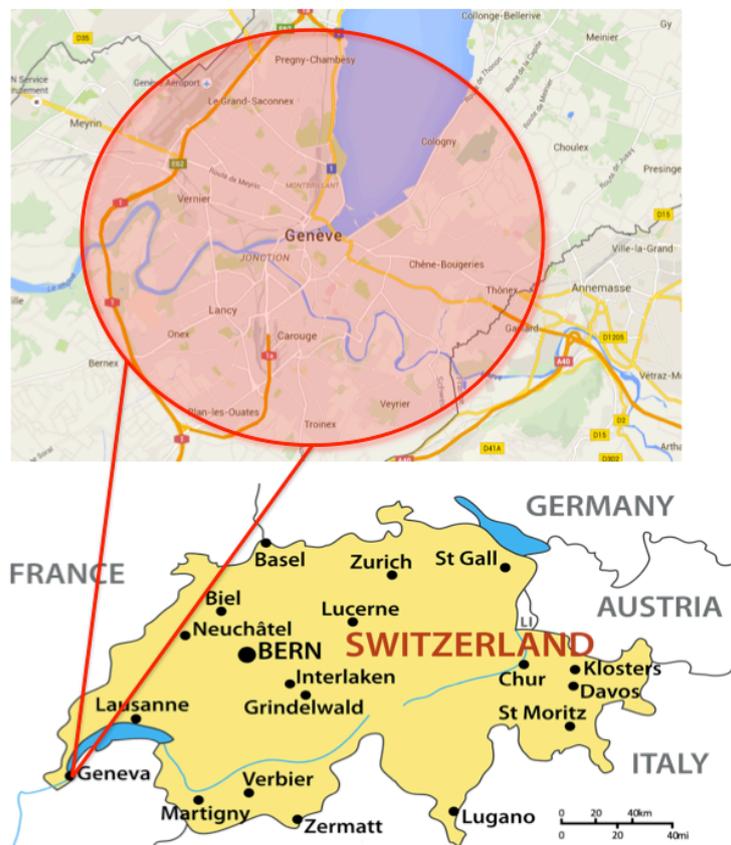


Figure 7 : Location of Geneva
Own illustration based on Google map and image (2015)

The area of Geneva hosts 22 international organizations and more than 250 non-governmental organisations (ONG). It is the city which hosts the more organizations in the world with important ones as United Nations, World Trade Organization or the World Health Organization to name a few. The attractiveness of the city in term of economics and politics is making Geneva as part of the "global cities" which represents cities considered as an important node in the global economic system (Ville de Genève, 2015).

This general attractiveness makes the city a place where many workers are travelling to make business, indeed 2.8 millions nights have been spent in hostels in 2008 (République et Canton de Genève, 2015). In addition, due to its geographical situation, the area is also subject to a daily flow of border workers coming from France, contributing to traffic congestion with about 550,000 people crossing the border every day in 2011 (Annemasse Agglo, 2015). Moreover, Geneva is a mono-centric urban area, with a high concentration of residents and jobs in a small space making it one of the European urban heart with the highest density (Direction générale de la mobilité, 2013). Additional facts are increasing the risks of congestion in the city such as inadequate infrastructures. Indeed, the tram is not working everywhere, and the city centre has been designed in the nineteenth century which is not helping for road infrastructures (Direction générale de la mobilité, 2013). According to the république et canton de Genève report (2014), the population is forecasted to increase by 200,000 within the next fifteen years in the "Grand Genève", so new solutions are highly needed to improve the current and future mobility in the area of Geneva.

6.2 Mobility and infrastructures

6.2.1 Current mobility situation

Nowadays, the urban territory of Geneva is organised around a big centre due to a metropolitan phenomenon which lead to an evolution in the transport practices for inhabitants. Indeed, with the urbanisation, people need to travel longer distances in order to get to the destination wanted. The table 3 below described the trip purpose in 2010 for the people of Geneva.

Trip purpose	
Leisure	38%
Purchase	23%
Job	20%
Education	8%
Accompaniment	7%
Other	3%

Table 3 : Trip purpose
Own illustration based on République et canton de Genève report (2014)

The area of Geneva suffered of a lack of public transport. The urban territory of the city is not well connected to the city centre where the main businesses and leisure infrastructures are, which lead to more transportation by car from the inhabitants (Direction générale de la mobilité, 2013). Consequently in 2009, 60% of the transportation in Geneva was done by single motorised vehicles as cars or motorcycles and only 17% was done by public transports as busses or trams. In addition, 23% of the transportation was done by non-motorised modes like bicycles or walking (République et canton de Genève report, 2014).

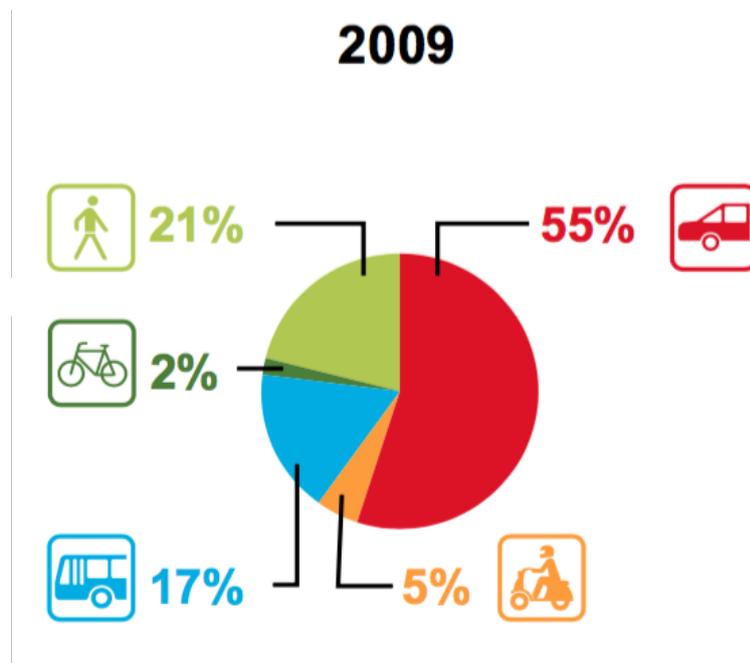


Figure 8 : Repartition of transport modes used in Geneva in 2009
Own illustration based on Direction générale de la mobilité (2013)

There is a strong asymmetry in the design of the city of Geneva which has been increased last decades. Indeed, there is a concentration of infrastructures on the left

side of the lake with the airport, industrial areas, highways and the job sector while on the right side, the campaign has been preserved with the dwellings (Direction générale de la mobilité, 2013). This asymmetry forced the population to go through the city centre in order to reach the other side of the lake which increased the congestion. Additionally, 2,500 trucks and 15,000 delivery vehicles are registered in the "Canton of Genève" which have an impact on the traffic fluidity where 69% of the volume of goods transported is by the road infrastructures (ibid.).

All these factors presented added to the increased demand for travels and the willingness from the authorities to satisfy all modes of transport have led to a saturation of the traffic especially in the city centre. In areas where space is highly constrained, the traffic management can not offer to motorised vehicles the fluidity needed and the priority wanted for the public transport. Moreover, there is a lack of space to offer to people the possibility to travel with non-motorised vehicle (bicycles, walking) in the area of Geneva (Direction générale de la mobilité, 2013). Consequently, the average duration of daily trips in Geneva in 2010 lasted 1h24 minutes for an average of 31 kilometres covered.

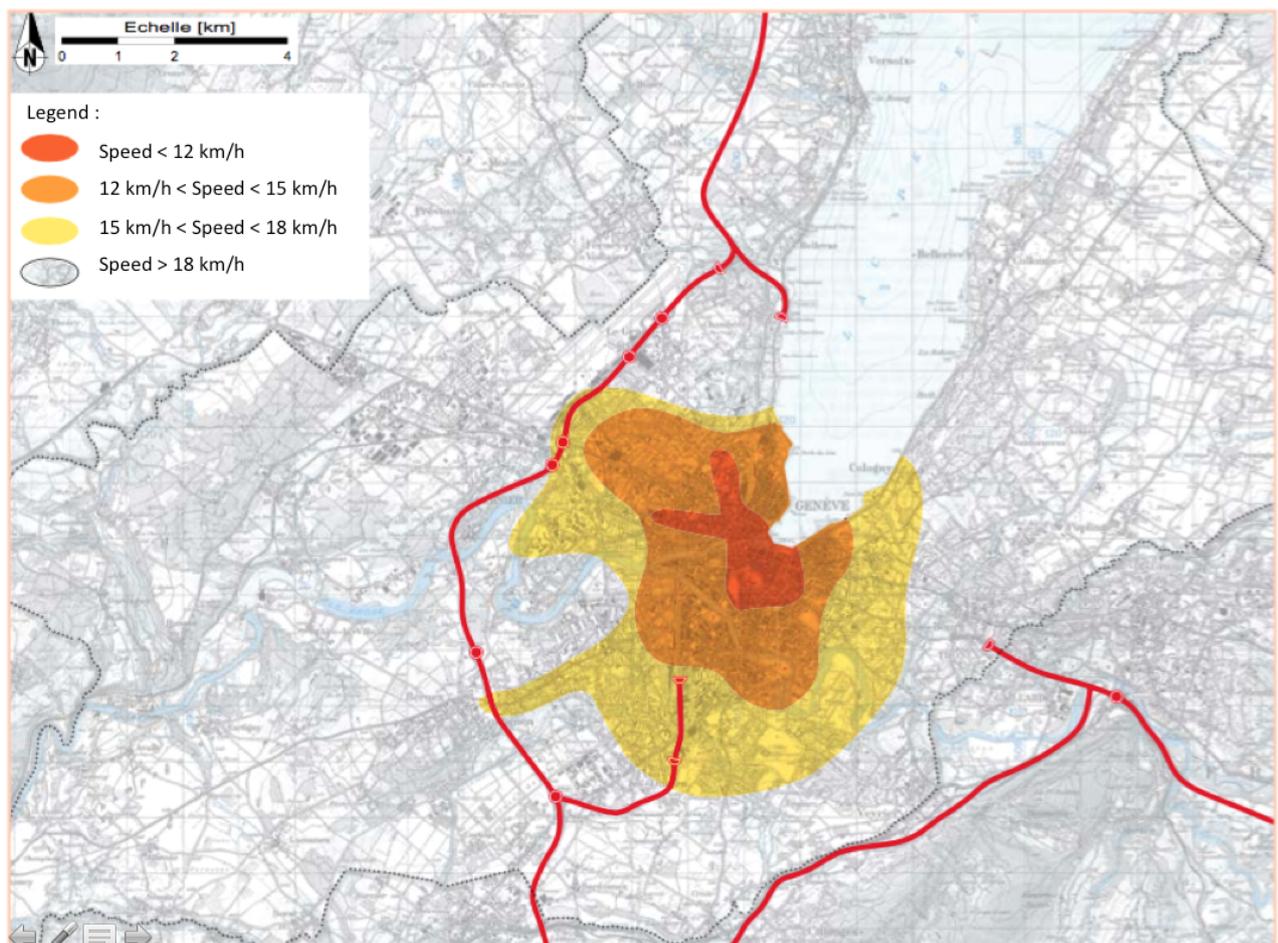


Figure 9 : Commercial speed of urban public transport
Source : Direction générale de la mobilité (2013)

According to the newspaper Tribune de Genève (2015), Geneva is the city where there is the more congestion in Switzerland ahead of Zurich, Basel and Bern. To make a comparison, Geneva is according to them at the 25th place worldwide in front of cities as Paris (28th), Shanghai (30th) or New York (54th). Moreover, the newspaper quote that a person living at 30 minutes from his job in Geneva lost 88 hours per year in congestion.

In conclusion, beside the economical and political attractiveness of Geneva, the competitiveness of the city is also judged on its public infrastructures quality. Until ten years ago, the high level of infrastructures regarding public transports and motorized individual transport has contributed to the attractiveness of Geneva for the implementation of industries and advanced activities. But within the last decades, this fluidity has decreased and the authorities must strengthen this quality in order to stay competitive at a local, national and international level (Direction générale de la mobilité, 2013).

6.2.2 Solutions for a better mobility: what have been done so far?

The newspaper 24Heures (2015) stated that the costs of congestion are about 1.5 billions per year for the authorities of Switzerland with a large amount for the city of Geneva. In order to face these difficulties, some solutions have been implemented. These solutions show willingness from the country to counter the effect of congestion.

The major problem facing the introduction of new solutions and infrastructures is the cost of implementation. To resolve this, the authorities have proposed to raise the cost of driving on the highways. Indeed, in Switzerland, a fee must be paid every year to get the right to drive on highways. A proposition of raising the fee from 40 euros to 100 euros has been voted but the Swiss population has responded by a "no" (24Heures, 2015). However, some "cheapest" solutions have been implemented in the area of Geneva.

In the city centre, car drivers may find difficulties to find a place to park the car. This could lead to an increase amount of kilometres of the journey and thus the pollution related to this (FAO, 2015). To face these difficulties of parking, the "fondation des parkings" in Geneva has created an application which can be used on GPS and smartphone in order to find easily a place for the car. Some sensors are placed on the parking and then the app drives the driver to the free parking (FAO, 2015). The solution is at an early stage but according to them, it could save hours of congestion.

Another solution has been described by the newspaper 20Minutes (2015) and also exists in United States and Germany. The solution consists of adjusting the access to the highway with traffic lights. The mathematical formula created by the urban transport system laboratory of Geneva lead to a diminution of the congestion and a faster come back to the normal fluidity of traffic after a congested one (20Minutes, 2015).

Regarding the traffic congestion due to the border workers coming from France, some solutions exist. Indeed, some parking areas are available out of the city to park the car and then continue the journey with public transports or bikes (Nous frontaliers, 2015). Other initiatives are implemented with the creation of a group for carpooling between France and Geneva to better use the capacity of the cars and thus decrease the traffic on roads (Nous frontaliers, 2015).

6.2.3 Solutions for a better mobility: what is expected?

According to the République et canton de Genève report (2014), the population is forecasted to increase by 200,000 within the next fifteen years in the “Grand Genève”, so new solutions are highly needed to improve the current and future mobility in the area of Geneva. The authorities are aware of the potential issues due to this increased population, they described their strategy for the next fifteen years in a report from 2013 called called "mobilité 2030" (Direction générale de la mobilité, 2013).

2030

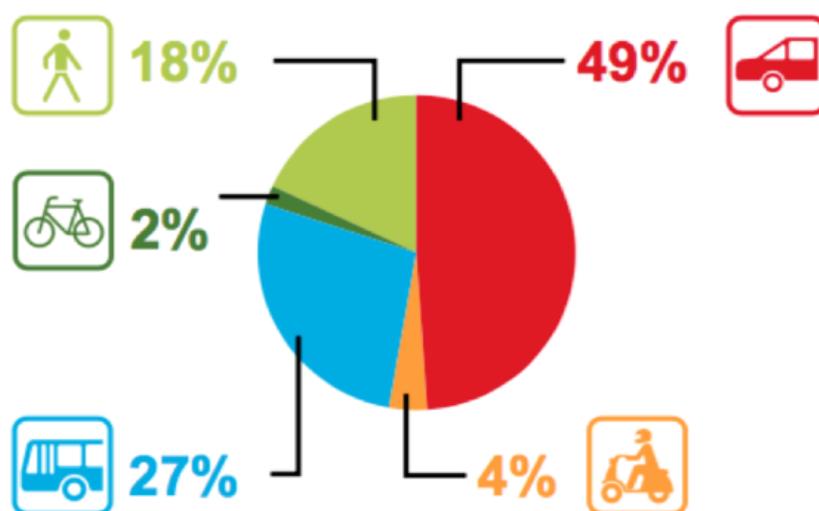


Figure 10 : Trend for the use of vehicles in 2030 in Geneva
Own illustration based on direction générale des mobilités (2013)

The authorities' strategy regarding the development of the infrastructures in Geneva are based on the expansion of the multimodality of the transport. Indeed, they want to improve the efficiency of the transports by encouraging people to take all modes available in Geneva (Direction générale des mobilités, 2013). Consequently, the aim is to improve the efficiency of the public transports in term of speed, develop the non-motorised mobility thanks to a decreased congestion of cars in the city centre by creating new axes around the city instead of in city centre.

The authorities want to rebalance the transport of the city of Geneva by fixing the asymmetry problem. To solve this, a creation of different highways added to connections with the city centre will help to fluidize the traffic (CVCI, 2013). Adding to this, the possible creation of a bridge or tunnel across the lake has been discussed in the report of Direction générale des transports (2013) to link the left and right side of the lake without passing by the city centre. According to them, the potential rate of this bridge/tunnel could be 6000 vehicles per hour during peak hours of traffic.

Regarding the rail transportation, the authorities want to develop step by step a strong bone irrigating in a completely new way the agglomeration territory. This will lead to a better correspondence with the regional rail service with a complete and more efficient transport (Direction générale des mobilités, 2013). The first step is the creation of a railway line between Annemasse in France and Cornavin, the train station of Geneva in order to decrease the traffic of border workers coming from France (Nous frontaliers, 2015).

For the public transports, the authorities want to complement the existing public transport network by developing new extensions in mesh rather than radial for a better irrigation of the whole urban area. Moreover, they want to avoid the concentration of lines and continue developing intensively and facilitate its progression for a better efficiency and attractiveness for the population. (Direction générale des mobilités, 2013)

Finally, the report "mobilités 2030" (Direction générale des mobilités, 2013) described a willingness to improve as a priority the non-motorised mobility. Indeed, the authorities want to encourage the population to decrease their motorised journeys by developing new infrastructures for the bicycles and areas to walk in city. Better accessibility to the public transports should be a result of this development with possible regulations regarding the motorised transportation in the city centre.

Some other solutions have been stated for the future regarding the mobility in Geneva. The newspaper Tribune de travail (2015) described the possibility to enhance the "distant work" when people work from home instead of going to the company infrastructures. According to them, in the most ambitious scenario, until 2025 two hundreds workplaces could be replaced by "distant work" which could avoid 6% of the journeys in the area of Geneva. It is a very low cost solution because it does not need any new infrastructures regarding the transportation. Another solution has been stated in the newspaper 24heures (2015) and is about automated vehicles. The Swiss authorities does not allow this kind of transport for the moment but according to André-Gilles Dumont, director of the laboratory of transportation: "By combining this kind of transport and a better use of the space available on existing highways, we already solve part of the problem. We could keep a certain fluidity to avoid that people are tempted to divert to the secondary network with increased risk of accidents, and at the same time letting the speed limit to 120 km / h."

In conclusion the Swiss authorities are aware of the current difficulties and show the willingness to improve the traffic flow in congested cities as a priority. To do so, several solutions are expected to emerge within the next decade. However, these solutions seem mostly focused on public transports and mobility infrastructures which are expensive. The next part will introduce the Swiss CEP industry with a specific focus around Geneva. A presentation of recent and future innovations will suggest the trends in the industry.

6.3 CEP industry

6.3.1 Example of DHL Express

In order to better understand the current situation of the CEP industry in Geneva, the operations of one actor of the area will be presented: DHL express. Information have been gathered during an interview with two operations manager.

DHL Express is an actor of the parcels transport in the area of Geneva. Their warehouse is located in the airport area, which is in the direct vicinity of the city centre. The company has a daily flow of 10.000 shipments (inbound + outbound) in the area, and a shipment represents one tracking number but not necessarily only one parcel. Their transport workforce comprises 50 drivers, with an average daily mileage of 42 kilometres per van, and a total of 2.770 kilometres per day for the fleet. Their fleet also include an electric vehicle.

Regarding the deliveries, the parcels are usually delivered directly to the customers. In case of absence, there are two different options. Either the parcel can be delivered to a neighbor with a “transit advice” leaved in the customer’s mailbox, or the parcel is delivered in the DHL service station, or in partner service stations. There are three service stations located in train stations around Geneva and one in a Shell gas station. In addition, there is also two 24/7 service stations, where customers can pick-up parcels to a machine during five days after deliveries. DHL Express managers claim that these 24/7 service stations are highly appreciated but the company is facing difficulties (legal issues mainly) to implement it in Switzerland.

Concerning the regulations, the managers said that commercial vehicles are tolerated before 11:00 AM in the city centre. They believe that the regulations regarding urban transportation are becoming more stringent, and they acknowledge paying many parking fines, and even having a dedicated budget. However, they believe that the circulation of the commercial vehicles will always be allowed in the city centre due to its necessity in the economic vitality of the city. Finally, the drivers seem not unduly hindered by the high level of congestion in the city, because of their experience and their “field skills”. (Gaudin and De Silva, 2016)

6.3.2 Innovations in the industry

Following this brief contextualization, this part will present recent and future innovations and will suggest the trends in the industry. The Swiss CEP industry is constantly working to evolve as technology changes. In Geneva, the customers can now use two 24/7 service stations of DHL to pick-up parcels at any time, and four “My Post 24” terminals of the Swiss Post to send and receive parcels and registered letters around the clock (Swiss Post, 2016).



Figure 11 : My Post 24 machine
Source : Swiss Post (2016)

Also, the Swiss Post implemented in 2013 a service called “Pick@home”. The service is especially targeting the return flow of e-commerce, and the customers can choose where and when they want their parcels to be picked-up by the Swiss Post (La Poste, 2016).

In the courier sector, a new company called “Ecomotrice Genève” comes to compete with the rather traditional bike courier of the city. The company is the first Swiss company to propose ecological transport, using exclusively electric vehicles such as electric cargo-bike (Ecomotrice, 2016).



Figure 12 : Electric cargo-bike
Source : Ecomotrice (2016)

To optimize the last-mile deliveries, the Swiss Post have been testing the use of drones since July 2015, this period of test will last five years (La Poste, 2015). The drones should be used to deliver customers in areas difficult to access (e.g. Mountains), or areas temporarily impossible to access following natural disasters. However, the area of Geneva could be concerned since the drones will also be used for transporting sensitive shipments such as samples of laboratory and medicine in congested areas (La Poste, 2015).



Figure 13 : Swiss Post Drones
Source : La Poste (2015)

Lastly, an underground cargo network called “Cargo sous terrain” will be built and is expected to start operating in 2030, firstly in the area of Zurich (Sassoon, 2016). Small vehicles without drivers will circulate at 50 meters underground between hubs, and the parcels transported will move at 60 kilometres per hour (Sassoon, 2016). Although the service will start in Zurich, it is expected to be extended to the main cities of Switzerland including Geneva.



Figure 14 : Cargo sous terrain
Source : Sassoon (2016)

6.4 Regulations

6.4.1 Transport

This part has been build from information gathered during interviews with the transport providers. Indeed, the authors did not managed to contact the authorities governing the regulations, nor to access to the regulations in another way.

According to the transport providers interviewed, a national regulation prohibits semi-trailers to circulate in the whole country from 10 PM to 5 AM. Also, every driver of a vehicle weighing more than 3.5 tonnes must hold a specific licence, and receive training every five years. Regarding the specific regulations governing the area of Geneva, the traffic of delivery vehicles is tolerated before 11 AM globally, and 10 AM in some areas. Also, the traffic is totally forbidden in some restricted areas in the city centre. Although the interviewees agreed on the fact that transport regulations are increasingly tight in the area, they believe that the traffic of delivery vehicles will remain tolerated since deliveries are essential to the economic vitality of the city. (Berney, 2016; Gaudin and De Silva, 2016)

6.4.2 Sharing economy

The sharing economy continues its development in Switzerland, the main actors which are Airbnb and Uber are prosperous and the number of Swiss start-ups is still growing (Deloitte, 2015). However, the sharing economy is perceived as a threat by large companies in some industries, which call for a stronger regulation in order to protect their activities. This increasing pressure for regulation also reflects the concern about some aspects of service provision, such as issues of safety and taxes (Deloitte, 2015). In spite of that, Uber is running its UberX service with professional drivers everywhere in the country, and its UberPop service with non-professional drivers in Lausanne, Basel and Zurich (Antonoff, 2015 ; RTS, 2016). It is the same for Airbnb representing one million overnight stays in 2015. Despite of the accusations of unfair competition by professionals in the hotel industry, users seem to enjoy a legal limbo in Switzerland (Ruiz, 2016).

A survey conducted by the consulting firm Deloitte in 2015 including 1400 respondents, shows that only 21% of the respondents support a strengthening of the regulation regarding the sharing economy in Switzerland. According to Deloitte (2015), this can be explained by the fact that generally, the Swiss are very sceptical regarding the strengthening of regulations, such as regularly show the results of popular votes called referendum (Deloitte, 2015). Indeed, provided that they gather 100.000 signatures, Swiss citizens may oppose the entry into force of a law, or a treaty, and may propose amendments to the Constitution, through a referendum (Kessler, 2015). On average, only 10 per cent of initiatives to change the regulations have had a favourable outcome.

It seems difficult to know to what extent new regulations are necessary to solve the issues linked to the sharing economy, and some Swiss legal experts claim that a large number of uncertainties and legal questions can be answered in the existing legislative framework (Deloitte, 2015). However, the sharing economy legal issues have been discussed at the Swiss national council. A motion was tabled by Hess Lorenz in 2014, in order to “put on an equal footing traditional providers and those offering services online” (Le parlement Suisse, 2016). This motion was rejected by the council, because an analysis of the sharing economy is essential before to know if new regulations are needed. This rejection was followed by the postulate of Fathi Derder called “Promote and frame the sharing economy, to anticipate the future challenges”, which has been accepted in 2016 (Le parlement Suisse, 2016). A report must be written, in order to protect the current actors from the unfair competition, but especially to promote the new models if they are beneficial to consumers. Fathi Derder argued: “ We should not regulate too much. We have to promote the innovation while protecting the consumers. I believed this is the key issue, and a subtle balance to find. This is the desired objective of this report” (Le parlement Suisse, 2016).

To conclude, the growth of the sharing economy in Switzerland is not a coincidence. It can rather be explained by the fact that Switzerland has avoided quick governmental action to regulate this economy. The country offers a supportive environment for the start-ups of the sharing economy, and the government imposes generally few barriers to start-up companies.

7 - Crowd-shipping in Geneva: stakeholders analysis

This part will present the different stakeholders considered in this study, and the ways they have been approached. Then, their different points of view on crowd-shipping are described with a presentation of the results from the survey and the interviews. This part should mainly contribute to bring elements of a response to the last research question (RQ3), as well as bringing additional inputs to answer the two first research questions (RQ1 and RQ2).

7.1 Stakeholders presentation

Crowd-shipping services are likely to concern three main stakeholders in the area of Geneva: the “crowd”, transport providers and the authorities.

The crowd can be divided into two different groups, the customers who will pay to use the services, and the “actors” who will play an active role to earn extra money. The actors can play different roles according to the services’ business model such as purchasing and delivering, taking care of the last-mile transportation of a parcel, or taking deliveries of a parcel for someone else. In order to better understand the “crowd” point of view about crowd-shipping, the authors have conducted a survey with 50 respondents in Geneva.

The transport providers can be involved in crowd-shipping in different ways. Either directly by providing and organising crowd-shipping services, or indirectly by delivering parcels to a third person or terminal in order to avoid unattended home deliveries. Some transport providers such as couriers could also be impacted directly since crowd-shipping can be seen as an alternative to their services, and they would therefore lose market-shares. Interviews have been conducted with four transport providers in the area of Geneva in order to understand their point of view about crowd-shipping.

Lastly, the authorities have a significant role to play and this at different levels. At a national level, the authorities can pass legislations to promote or hamper the sharing economy which would impact crowd-shipping services directly. The city authorities can also influence crowd-shipping activities. As an example, strengthening transport regulations for transport providers and therefore encouraging more sustainable alternatives. Unfortunately, despite many efforts to contact the city authorities in order to have their point of view, the authors of this paper did not succeed to arouse their interest. However, information about the authorities gathered in the previous parts allows the authors to take their point of view in account in the following part of the paper. The interests of the authorities are perceived as twofold: economical and environmental. Indeed, the authorities are likely to support solutions enhancing the economic vitality of the city, or solutions with environmental benefits such as a decrease in congestion.

7.2 The “crowd”

A survey has been conducted with 50 adult respondents living in Geneva. The main objective was to know what the population of Geneva could think about crowd-shipping, by extrapolating the results of the sample.

7.2.1 Results of the survey

After a brief introduction of the thesis topic, the authors have investigated in order to know if the respondents would be willing to entrust parcels to individuals by using crowd-shipping services. The following figure 15 presents the total results, as well as detailed results regarding the age category of the respondents.

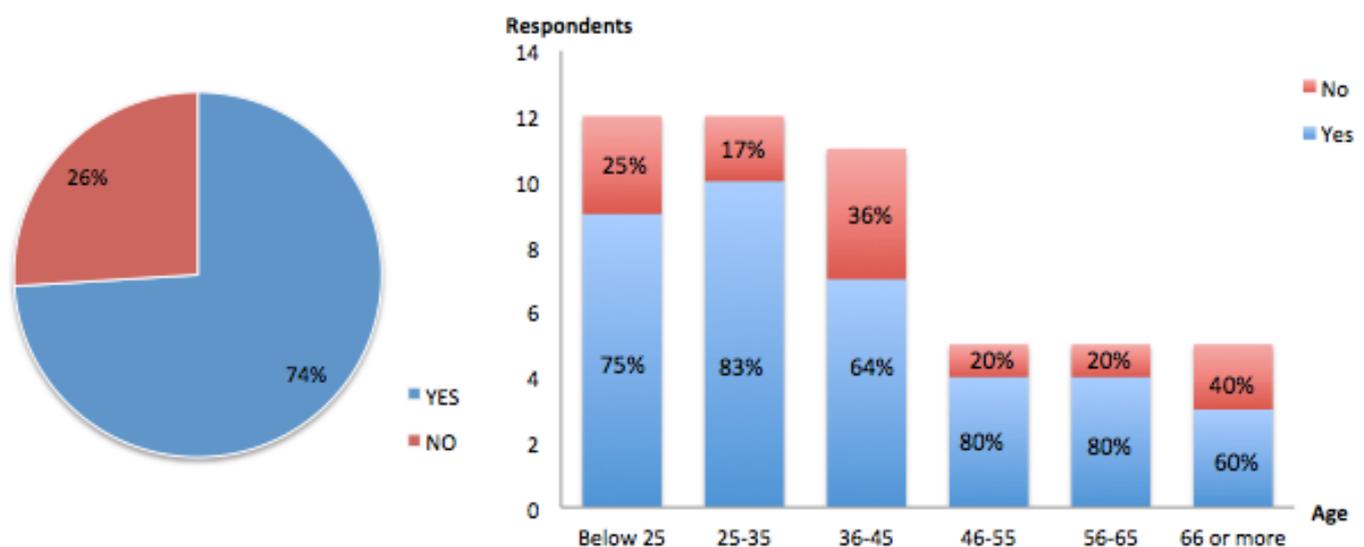


Figure 15 : Willingness to use crowd-shipping services
Own illustration

Almost three-quarters of respondents have stated that they would be ready to entrust their parcels to individuals for the last-miles of deliveries using crowd-shipping services. Despite fewer respondents in the last three age categories, the results appear to be homogeneous with a majority of each age category ready to use crowd-shipping services. Nevertheless, the authors acknowledged the fact that a quarter of the sample seems not ready yet to entrust parcels to individuals. However, it does not seem relevant to establish a causal link between age categories and willingness to entrust parcels, because of the low differences between categories and the small number of respondents in the last age categories.

Crowd-shipping services have been proposed either by traditional transport providers such as DHL with MyWays, or by new companies such as Postmates. The next question have been included in the survey in order to know if potential customers or users would be more trustful if crowd-shipping was proposed by a traditional transport

provider. The following figure 16 shows the total results as well as the detailed results by age categories:

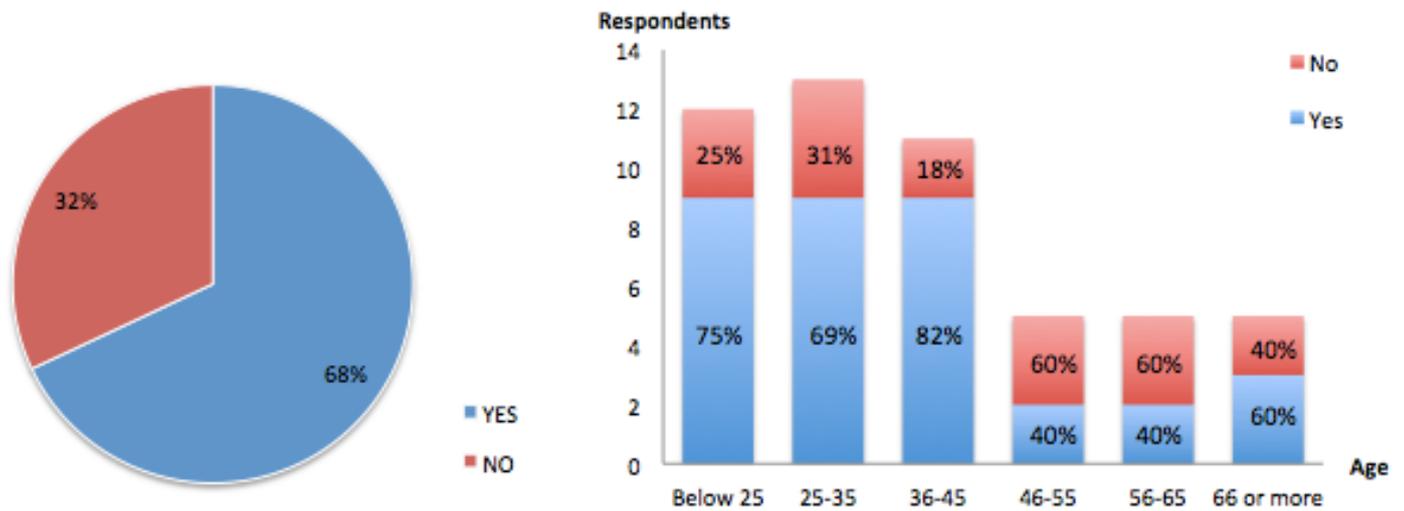


Figure 16 : Involving traditional transport providers ?
Own illustration

This diagram clearly shows that more than two-thirds of the respondents would feel more comfortable to entrust parcels to individuals if the service would be organized by a traditional transport provider. For the three first age categories, there is a large majority of people answering “yes”. However, it seems that the results show the opposite for two of the last three categories. This would mean that older people are paying less attention towards which kind of company organized crowd-shipping. However, due to the few respondents in the last three categories, the authors believe that this difference is not significant in this study. When the respondents who answered “yes” were asked about the reasons behind their choice, the majority said it was about security issues. Other reasons mentioned were traceability, insurance, reliability, confidentiality and experience in transport issues.

The respondents were then asked about the factors that could possibly encourage them to use crowd-shipping services. They had the possibility to choose between one to four of the factors presented in the following figure 17:

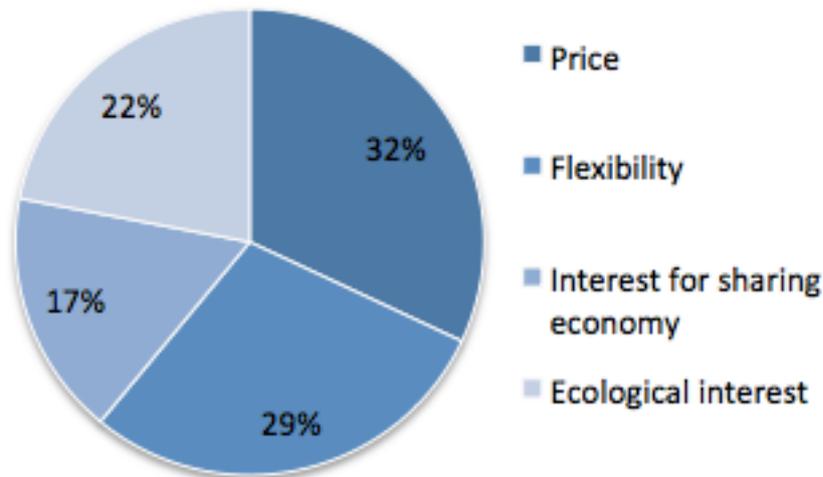


Figure 17 : Encouraging factors
Own illustration

It appears that the two most encouraging factors would be more attractive prices and an enhanced level of flexibility regarding deliveries (e.g. wider delivery time-windows). Although the two other factors have been chosen by some respondents, it seems that they are less influential.

After having investigated the respondents' willingness to use crowd-shipping, the authors wanted to know more about their willingness to be "actors" of the crowd-shipping. Therefore, the respondents were asked about their willingness to transport parcels on their ways, and if so, for what reasons?

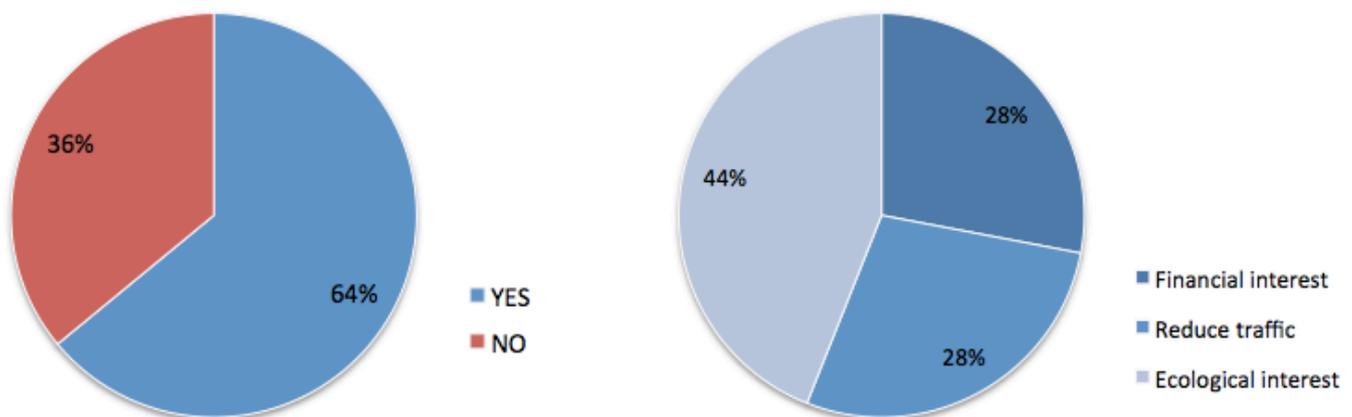


Figure 18 : Willingness to transport parcels
Own illustration

The figure 18 above shows that almost two third of the respondents would be willing to transport parcels on their ways. Also, 44 per cent of the persons willing to transport parcels stated that they would do it for the ecological interest of the solution.

Moreover, 28 per cent of them claim that they would do it for the financial interest to deliver against remuneration, and another 28 per cent claim that they would do it to contribute to reduce the traffic in the city. Some of them also added that they would do it only to render a service to people living in their neighborhood, or others said that they would only transport parcel of a limited size.

Finally, the respondents were asked about the usefulness of crowd-shipping regarding the area of Geneva and its specificities. The figure 19 below shows the results:

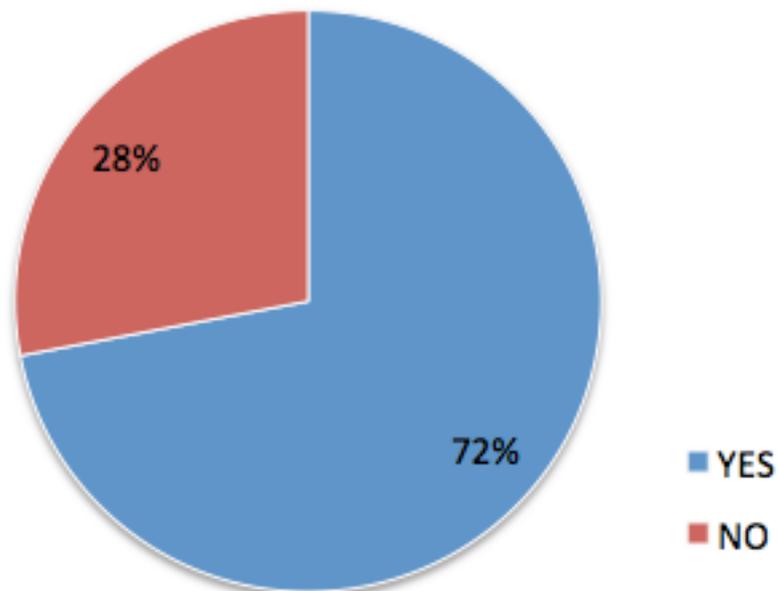


Figure 19 : Usefulness for Geneva
Own illustration

Almost three-quarters considered crowd-shipping as a useful service for the area of Geneva considering the specificities of the city. Among those who answered “no”, the reasons given were that people in Geneva are too suspicious to entrust other individuals, that Geneva is too small with too few inhabitants, or that people will not be willing to change their habits.

7.2.2 Lessons learned from the survey

To conclude, this survey provided rather consistent and encouraging results towards the implementation of crowd-shipping in the area of Geneva. Indeed, it showed that approximately 70 per cent of the respondents were rather in favour of crowd-shipping by saying that they would use it and find it useful for the area of Geneva no matter the age of the respondents. However, it is necessary to put these results in perspective regarding the limited size of the sample (e.g. 50 respondents). Nevertheless, the results show a real gap between people in favour of crowd-shipping and the others (e.g. approximately 70% against 30%). Certainly due to the newness of crowd-shipping, it is interesting to note that people would be less reluctant to use crowd-shipping if it would be organized by traditional and “trustful” transport providers.

Another interesting point is that when people are asked why they would use crowd-shipping, most of them argue that price and flexibility are the important factors. In other words, they seem to favour their own interests. On the other hand, when people willing to be “actors” of crowd-shipping (i.e. by transporting parcels) are asked about the reason motivating their choice, the main reason given is the ecological interest of the service. Therefore, it can be argued that “actors” and “users” have different interests, but these interests are not conflicting and can both be satisfied through the implementation of crowd-shipping.

7.3 Transport providers

Semi-structured interviews have been conducted with three transport providers operating in the CEP industry in the area of Geneva: TNT, DHL Express and Planzer. The objectives of the interviews were to understand their thoughts about the implementation of crowd-shipping in Geneva, as well as learn about their point of view regarding the impacts of the area’s current situation on their activities.

7.3.1 TNT

TNT is operating more internationally than domestically, therefore they argued that they are not facing many issues with the last-mile distribution. However, they acknowledged using scooters for the city centre deliveries, so that they are not hindered by congestions.

Regarding crowd-shipping, the interviewee said that such a service is maybe not well aligned with the Swiss culture, and that it would be more interesting to implement it in the UK where the culture is more open-minded toward the sharing economy. He noted also that the city of Geneva is maybe too small to attract enough customers and deliverers for crowd-shipping, and is not enough congested to use crowd-shipping as an alternative. He highlighted the potential lack of trust of the population regarding entrusting parcels to individuals, as well as the safety issues such as the inability to verify the parcel’s content. According to him, traceability is of major importance for the customers and the transport company, and this would be an issue with crowd-shipping. However, he thinks that traceability could be allowed thanks to scanning application on smartphone for instance. Also, the company image is promoted by their professional deliverers and it is essential to build loyalty. Therefore, he believes that crowd-shipping would not be beneficial for the company notoriety. Finally, the interviewee said that crowd-shipping is a promising idea but maybe not for TNT, rather for smaller transport companies. (Philippe, 2016)

7.3.2 DHL

Although DHL’s interviewees acknowledged that Geneva is a congested city, they said that their activities are not suffering from it since their drivers are experienced and rely on their field skills to avoid congestion. However, they argued that the transport

regulations in the city are increasingly tight and that they have to pay many parking fees.

Regarding the implementation of crowd-shipping, they find the idea interesting, but judge it unfeasible for DHL. Indeed, their customers pay to entrust their parcels to professional deliverers, and they would not be willing to have their parcels in the hands of “unknown” people. They also highlighted the safety issues and the several legal problems to solve before to entrust parcels to individuals. They see it as a barrier for the implementation of crowd-shipping. Moreover, the interviewees noticed that their professional deliverers are the only physical link between the company and its customers, and that they are the “image” of the company for the customers. However, they recognized that they would like to stop final deliveries (i.e. from terminal to customers) in the long term, because it is expensive for the company. Therefore, crowd-shipping could be a solution to take into account. (Gaudin and De Silva, 2016)

7.3.3 Planzer

Planzer is a Swiss transport providers operating on a national level with 11 terminals in Switzerland and a capacity of 1,300 trucks in addition to the rails. The terminal of Geneva is located at a train station which allow them to do intermodal transportation. It enables them to face congestion difficulties by using trucks only for the last mile deliveries. However, the interviewee stated that congestion is still a problem for the company by slowing the deliveries for the last mile delivery. The company is not much impacted by the unattended deliveries, with a relative small amount of parcels delivered every day compared to other transport companies as DHL or TNT, Planzer has the possibility to call the clients before deliveries in order to set delivery windows.

Regarding the implementation of crowd-shipping, the interviewee stated that it is a good idea and in tunes with the time and the development of the sharing economy. For him, it would be possible for Planzer to use such a service since the demand from e-commerce has increased the past years and is now a major percentage of their deliveries. He stated that even if some colleagues think that a service such as crowd-shipping could reduce their workload, the interviewee has suggested that they would have to use this service in order to stay competitive in the long term. The situation of Geneva regarding congestion is critical according to him, however he is reserved regarding the benefits for the environment of the service. Indeed, he is sceptical towards the fact that people will transport parcels on their daily routes, but rather make detours in order to earn money and thus create pollution. In addition, the interviewee is not sure about the choice the users could make between a traditional delivery and crowd-sourced delivery. From his point of view, users will not take the crowd-sourced delivery in order to reduce the costs of transportation compared to the risks of losing parcels which would be higher than with traditional transport companies. From this point, he will rather prefer to use a model such as “VoisinRelais” where the risks of damaged or lost parcels are lower than with other models presented. (Berney, 2016)

7.3.4 Lessons learned from interviews

To conclude, the transport providers interviewed did not express the intention to implement crowd-shipping in the immediate future. They heard about it, but did not show a real interest toward crowd-shipping for their companies. Although, Planzer consider it as an alternative to stay competitive in the long run, since they believe that the sharing economy will continue to gain growing market shares. Also, from the authors' point of view, it would be easier for Planzer to implement it because the parcel delivery represent only a small part of their activities. For its part, DHL Express mentioned that the final transportation is not the most beneficial part of their activities, hence they would like to find solutions to make it less costly for the company, therefore crowd-shipping could be an alternative.

TNT and DHL Express see many safety issues and legal problems (thefts, losses, damages, etc.) which would hinder the implementation of crowd-shipping within these companies. Also, they argued that traceability is of major importance nowadays, both for customers and transport providers, which could be another barrier for crowd-shipping. However, the interviewee from TNT stated that solution such as scanning application on smartphone could solve this problem. For the two international companies interviewed (i.e. DHL Express and TNT), their deliverers are the only physical link between the company and the customers. Therefore, their role is crucial to promote the image of the company and to build customer loyalty. From this point of view, crowd-shipping would not be beneficial for these companies.

Also, the interviewee from Planzer said that customers would not be interested to save a few euros in delivery costs by using crowd-sourced deliveries. However, the authors believe that this is surely true for high-value parcels, but not for parcels of a lower value which represent a large part of the CEP deliveries.

Regarding the impact of the current situation in Geneva on their activities, the opinions differ. Even if they generally agree that the city is highly congested, it does not affect their activities in the same way. While DHL Express activities seem not impacted by congestions due to their drivers' skills and experience, TNT use scooters to deliver in the city-centre. Planzer's activities are impacted by congestions, but the company uses intermodal transport with a rail terminal within the city to reduce the last-miles of the deliveries on congested roads.

Finally, even if Geneva is maybe not a relevant city to launch a crowd-shipping service according to TNT's interviewee, he mentioned that it would be important to highlight the environmental benefits coming from it. Even if he sees many interests in crowd-shipping, Planzer's interviewee relativizes its ecological interest, because he believes that most of the people would not transport parcels only "on their ways". Indeed, according to him, people would rather operate as "semi-professional" deliverers, which would annihilate the ecological interest of crowd-shipping.

8 - Findings of the descriptive study

This part will conclude the descriptive part of the thesis which rely on two pillars: the study of the current situation in Geneva, and the stakeholders analysis. Drawing on this, the authors will first group crowd-shipping companies studied in the cases study into three categories of service, and then assess the relevance of each category according to the stakeholders' point of views. This part should bring elements of a response to the last research question (RQ3).

8.1 Categorization and discussion

During the exploratory study, five crowd-shipping companies have been under study. In order to assess their relevance easily, the authors have decided to create three categories out of the five examples. Indeed, some examples are quite similar and evaluate them separately would have lead to the same conclusions which would not be pertinent. The following table 4 presents the three categories:

Category	Examples	Activities
Last-"meter" crowd-shipping	Voisins Relais	A network of individuals taking deliveries of parcels and operating last-meter delivery in their neighborhood.
Last-"mile" crowd-shipping	MyWays	A network of individuals offering to deliver parcels on their way for the last-mile of the deliveries. The platforms are managed by traditional transport providers.
Crowd-"shopping"	Postmates You2you BringBee	A network of individuals offering purchase and delivery services

Table 4 : Categories presentation
Own illustration

8.1.1 Last-"meter" crowd-shipping

- Transport providers

It allows transport providers to keep the same market shares while reducing the failed deliveries due to customer absence. Therefore, unnecessary trips to return parcels to traditional service points (often the day after first delivery) are avoided and customer service is higher since customers are delivered the same day by a "neighbor". The transport activities of the companies are more efficient economically and environmentally. Also, the traceability which is of major importance for the transport providers is not an issue since parcels are delivered to the "neighbors" with the

customer's agreement. One possible disadvantage for the transport providers would be the loss of the physical link with the final customer which is important to promote their image. However, it would have been the same if the parcel would be delivered to a service point.

- Crowd

Both customers and actors can find benefits in this kind of solution. Deliveries are still operated by professional companies that they trust, and only the "last-meters" are operated by actors from the crowd. Although these actors are often unknown people, they are neighbors of the customers, which enhance customers' trust and create social link. Moreover, customers enjoy greater flexibility in delivery, something that they value, and do not have to go to a service point nor to wait an additional day. In the same time, actors who are people spending most of their time at home for different reasons, can receive extra money by becoming "neighbors relay". However, there are possible disadvantages for the "crowd". It requires greater involvement from the customers compared to traditional deliveries, since they have to contact the "neighbors relay" to have their parcels delivered. Also, the "neighbors relay" who accepted to take deliveries of parcels have to stay at home the entire day. Moreover, in the current business model of "Voisins Relais", customers have to pay a fee for the service, which is additional to the transport costs.

- Authorities

The service would decrease the externalities due to transport activities by eliminating unnecessary trips linked to the process of redelivery. Moreover, it contributes to create social links in the population.

8.1.2 Last-"mile" crowd-shipping

- Transport providers

It allows transport providers to eliminate the last leg of the transportation between terminals and final customers that is not beneficial and efficient for transport companies. This service gives the possibility to deliver customers when they want which is of importance from the customer point of view when rating the service of a transport provider. From the transport provider point of view, it will eliminate the unattended deliveries by delivering to a terminal. Moreover, it allows them to share their environmental benefits by doing a green marketing regarding their deliveries and the reduction of kilometres travelled. One of the possible disadvantages for transport providers would be the traceability which is more difficult to assure compared to traditional delivery with professional deliverers. However solution exists with for instance scanning app on smartphones. In addition, this service begets a complete loss of the physical link with customers, the company "image" is entrusted to individuals who are unknown people for the company. Finally transport providers could face safety and liability issues if problems occur with the individuals delivering the parcels.

- Crowd

Both customers and actors can find benefits in this kind of solution. The first part of deliveries is still operated by professional companies that they trust and organized by them for the last leg of transportation. Moreover, customers enjoy greater flexibility in delivery, something that they value, and do not have to go to a service point nor to wait an additional day. Also, actors which are people delivering parcels receive extra money for the service done. However, some potential disadvantages are linked to this service. Indeed, there is a necessity to entrust parcels to unknown people and this requires greater involvement from the customers who need to contact the actor to have its parcel delivered. Moreover, in the current business model of “MyWays”, customers have to pay a fee for the service, which is additional to the transport costs.

- Authorities

The service would decrease the externalities due to transport activities by eliminating unnecessary trips linked to the process of redelivery. Moreover, the last leg of the transportation would be done by individuals on their daily routes, this would eliminate the last-mile trips of the transport providers.

8.1.3 Crowd-“shopping”

- Transport providers

Crowd-“shopping” would not involve any traditional transport providers of the CEP industry. However, it is likely that courier companies would lose market shares in favour of crowd-“shopping” companies.

- Crowd

Customers would benefit from cheaper courier service compared to traditional ones. Moreover, they could be delivered of almost any type of products, which is not the case with the current offer of home delivery. The available products would depend of the partnerships established between the crowd-“shopping” platforms and physical shops. Also, it gives the possibility to actors which are people delivering the orders to receive extra money. However, crowd-“shopping” requires customers to entrust deliveries to unknown individuals instead of professionals from courier companies. This could potentially beget safety and liability issues in case of problems in the deliveries.

- Authorities

The advantages of this kind service for the authorities are twofold. First, it supports physical stores by providing an alternative to e-commerce, which is important for the economic vitality of the city. Second, there is potentially an ecological interest. Indeed, with a business model as the one of BringBee, one person who needs to shop anyway will purchase and deliver someone else’s shopping on its route.

8.2 Assessment of relevance

Drawing on the stakeholders' analysis, the cases study and the study of the current situation in Geneva, the authors have ranked every service according to its relevance for the different stakeholders. Each service is ranked from one to three. As an example, the most relevant service for the transport providers is ranked 1, and the worst 3. This process has been repeated with every service and every stakeholder. Finally, the three rankings of every service have been added, and the service with the smaller total is considered as the most relevant service for the area of Geneva, according to the stakeholders' points of view. The final ranking is presented in the following table 5.

Services	Stakeholders	Rankings (1=best; 3=worst)	TOTAL
Last "Meter" Crowd-Shipping	Transport Providers	1	5
	Crowd	1	
	Authorities	3	
Last "Mile" Crowd-Shipping	Transport Providers	2	5
	Crowd	1	
	Authorities	2	
Crowd-"Shopping"	Transport Providers	3	7
	Crowd	3	
	Authorities	1	

Table 5 : Assessment of relevance
Own illustration

Regarding the transport providers, the authors have ranked first the last-"meter" crowd-shipping, second the last-"mile" crowd-shipping, and third the crowd-"shopping". Indeed, last-"meter" and last-"mile" crowd-shipping bring similar advantages to the transport providers such as reducing unnecessary trips. The difference is that last-"meter" allow a better traceability and the transport is not done by unknown individuals, which are two important criteria according to the interviewees. Crowd-"shopping" has been ranked third because it would lead to a loss of market shares for transport providers.

When looking at the crowd ranking, last-"meter" crowd-shipping comes equal first with last-"mile" crowd-shipping. Indeed, these two services would bring the same flexibility to the users. Moreover, each of the two services has a strong advantage regarding the population of Geneva: last-"meter" crowd-shipping would entrust parcels to neighbours, which is reassuring to the users, and last-"mile" crowd-shipping would be organised by traditional transport providers, which is of importance for the population. Therefore, the authors have ranked them equal first. Consequently, crowd-"shopping" is ranked third because such as service would be proposed by "unknown" company (e.g. start-ups) and deliveries would be made by "unknown" individuals, which is not

reassuring to the population according to the survey. Additionally, the exploratory study has shown that BringBee has failed to implement such a service in the area of Geneva.

Finally, the ranking for the authorities shows that crowd-”shopping” comes first, last-”mile” crowd-shipping second and last-”meter” crowd-shipping third. Both last-”mile” and last-”meter” services would have positive environmental impacts by reducing the number of vans on the roads and allowing a better use of the existing transport capacity. However, last-”mile” is ranked higher because it would potentially eliminate the last leg of the transport, while last-”meter” would only eliminate the redelivery processes. Crowd-”shopping” is ranked first because more than just providing environmental benefits, this service would have an undeniable economical impact for the city. Indeed, it would support physical stores by providing an alternative to e-commerce, which is important for the economic vitality of the city.

8.3 Recommendations

Table 5 above shows that last-”mile” crowd-shipping and last-”meter” crowd-shipping obtained the same total score, meaning that these services would be the most relevant according to the stakeholders’ expectations and the current situation in Geneva. The authors believe that an hybrid solution combining advantages of both services would be even more relevant for the area. For instance, two options could be considered. The first one would be a last-”meter” crowd-shipping service proposed and organized by a traditional transport provider. It would combine the “trust” advantage of the traditional transport providers, as well as the flexibility and the social interest provided by the network of “neighbours relay”. The “neighbours relay” could be paid by the transport providers and the service would be free for the customers. Indeed, transport providers would reduce their costs by eliminating the redelivery processes, and one part of the savings could be redistributed to pay the “neighbours relay”.

The second option would be a last-”meter” crowd-shipping service proposed and organized by a “third” company, but working in close relationship with transport providers of the CEP industry. The third company would be able to create partnerships with several transport providers, which would increase the potential volume of parcels handled by the “neighbours relay”. Consequently, the third company could attract more “neighbours relay”. With this option, transport providers would pay the third company a fee for each parcel, and the third company would then pay the “neighbours relay”, so that the service is free of charge for the customers.

Both options would enhance flexibility for the customers for the same shipping costs, hence a better service level would be provided to the customers. By eliminating redelivery processes, they would also have an undeniable environmental and economical impact. Transport providers would generate as much or even more benefits than with traditional deliveries, since the money given to the “neighbours

relay” is compensated by the savings due to the elimination of redeliveries (i.e. 1.5 to 2.5€ per parcel). Moreover, transport providers would have the opportunity to promote their better environmental behaviour. Finally, in order to attract “neighbours relay” and to encourage customers to use this kind of service, the authors would recommend the implementation of an insurance covering both customers and “neighbours relay”. An example can be seen with the service Voisins Relais (see 4.2.2).

Finally, even if last-”mile” crowd-shipping is ranked equal first with last-”meter” crowd-shipping, the authors believe that last-”meter” crowd-shipping is more relevant in the short run. Indeed, according to the survey, the population of Geneva is more trustful when the process is organised by a traditional transport provider and potential “actors” acknowledged that they see more interests in crowd-shipping if it serves their neighborhood. On theory, the last-”mile” crowd-shipping is the most environmentally friendly option, however, the interviews have shown that this should be put into perspective since people could transport parcels as “semi-professional” deliverers. Therefore the ecological interest is lost since they will not only deliver on their daily routes, which would result in higher congestion and pollution. Moreover, in the eventuality of a strengthening of the sharing economy regulations, last-”meter” crowd-shipping would be less impacted since the limited “range of action” of each neighbor necessarily limits the number of deliveries taken. Consequently it almost annihilates the possibility to see it as a semi-professional activity.

9 - Conclusion

The purpose of this thesis was first to study what has been done in the area of crowd-shipping, under the framework of an exploratory study. Then, under the framework of a descriptive study, the authors have investigated the concrete situation of Geneva and the relevance of crowd-shipping for the stakeholders of the area. To do so, the following research questions have been answered.

RQ1: What are the barriers and challenges regarding the implementation of crowd-shipping?

This paper has shown that identifying the different stakeholders involved and taking into account their point of views is challenging but essential in order to meet their expectations. The sharing economy is recent and growing, therefore regulations are still unclear with an uncertain evolution, and could be considered as barrier to crowd-shipping. Another challenging part when implementing crowd-shipping is the marketing. Indeed, a critical mass of customers, deliverers and partners must be involved to make it profitable, and this community must be managed in the long run. Consequently, time and investment are inextricably linked and the lack of any of them could hinder the implementation of crowd-shipping. Finally, the trend is not yet in the development of the sharing economy in the parcel transport. Therefore, another challenge is to succeed in changing the way people think about entrusting parcels to individuals and figuring out ways to reassure them.

RQ2: What are the benefits of the implementation of crowd-shipping?

Crowd-shipping is likely to benefit to every stakeholders involved. Indeed, it would allow a better use of the current transport capacity, having a direct impact on congestion and pollution which is important for the city authorities. Moreover, it is a way to improve the mobility without building new infrastructures. Crowd-shipping has the potential to improve the efficiency of CEP deliveries by bringing a solution for the last-mile deliveries which are considered as the least efficient part of the transport both economically and environmentally. Finally, customers would enjoy more flexible delivery services, would have the opportunity to earn extra money and it contributes to create social links between people, at a time where people are increasingly closed in on themselves.

RQ3: Could crowd-shipping practical cases from other countries or cities possibly be relevant for the area of Geneva, according to stakeholders expectations and the current situation of the city?

The descriptive part of the paper has allowed the authors to categorize existing crowd-shipping services in order to assess their relevance according to stakeholders' expectations. The results have shown that two categories of crowd-shipping services can be considered as the most relevant for the area of Geneva: last-"meter" and last-

"mile" crowd-shipping. Both services offer distinct advantages, hence the assessment of relevance had not enabled to determine the most relevant of the two. Therefore, the authors of the paper have recommended a hybrid solution combining advantages of both services.

Initially, the literature review allowed the authors to identify a gap in research regarding the impacts and challenges resulting from the implementation of crowd-shipping services. Identifying the barriers, challenges, and benefits inherent in the implementation of crowd-shipping services have contributed to fill this gap. In addition, the findings of the descriptive study provide a concrete approach considering the stakeholders and the current situation of a specific city. Hence, these findings are especially related to Geneva. However, it does not mean that the results could not be interesting and relevant for other cities in similar context.

In this thesis, the relevance assessment of crowd-shipping services relied on primary and secondary data gathered throughout the study. When the data were collected, stakeholders were asked about crowd-shipping very generally, since the thesis progress at this time did not allow the authors to present the categorization of crowd-shipping services. Therefore, a recommendation for further research would be to give the opportunity to the stakeholders to establish the ranking of the different services themselves. Also, the authorities point of view relied on secondary data since the authors did not manage to arouse their interest. This paper would have been more pertinent if collaboration could have been established. Finally, another recommendation for further research would be to enlarge the scope of the study by including long-distance crowd-shipping services in order to cover the entire scope of crowd-shipping.

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Appendices

Appendix A - Guidelines

DHL Express:

Can you briefly explain what is DHL Express compared to DHL?

Do all the flow of parcels going to Geneva area is transported by DHL Express?

What is the volume of parcels delivered/picked up by DHL Express in the area of Geneva?

Do you have an idea of the total volume of parcels collected in the area ? What is your “ranking” compared to other transport providers in terms of volume?

How is organized the delivery of parcels by DHL Express in Geneva? Do you have numbers? (number of trucks, employees,...?)

What are the service points of DHL Express in the area?

What percentage of the deliveries are successful at the first attempt?

What are the innovations you are trying to implement these days? (Pollution, congestion,...)

What are the legislations regarding deliveries of parcels in the area of Geneva?

Have you heard about DHL MyWays?

Do you think that crowd-shipping services could be relevant for the area of Geneva?

Voisins Relais:

How many parcels have been transported so far?

Amount of “neighbours relay”? What is the critical amount in order to have a working process ?

Who is responsible in case of steal? We saw that you have an insurance, what does it cover ?

Do you think that your platform could be endangered with the evolution of the regulations in the sharing economy?

Are the benefits from “Neighbours relays” declared?

Can you measure the benefits in terms of environmental impact ?

What are your expectations for the future? Do you want to do a partnership with transport providers?

How will you be able to ensure that a “neighbour relay” will be available in the area ?

Does the recipient need to give an agreement in order to have his parcels delivered at the “neighbours relay” home?

Why would it be more interesting for transport providers to deliver neighbours relay instead of traditional service point ?

How is the progression of the company so far ? Success or failures ?

What issues did you faced when implementing your service ?

Planzer

What is your main sector of activity ?

Are you transported some parcels in the area of Geneva ? What is the volume ?

If parcels transported, what is the process of delivery ? What about the traceability ?

To whom do you deliver generally? Private or individuals ?

What is the percentage of home deliveries ?

What kind of innovations are you trying to implement (pollution, congestion...)

What do you think about the mobility in the area of Geneva ? Impacts on your activities ?

Do you face some issues to deliver parcels in the city centre ? (Access, parking, restrictions ...)

What are the regulations of the transport (of parcels) in the area ? Especially in the city centre.

Have you heard about crowd-shipping ?

Do you think that crowd-shipping services could be relevant for the area ?

With respect with the population, do you think that crowd-shipping is feasible ?

With respect with the transport providers, do you think that crowd-shipping is feasible ?

Do you think Planzer could implement such a service ?

Do you think Planzer could offer this service by partnering with a crowd-shipping company ?

If we oppose the service from DHL MyWays (a terminal where individuals take the parcels in order to transport for the last-mile) and the service from Voisin Relais (Deliveries at “neighbours relay” home and then deliveries by individuals for the last-meter), which one is the most relevant according to you ?

Appendix B - Questions for the survey

- To what age group do you belong?
 - Below 25 25 - 35 36 - 45
 - 46 - 55 56 - 65 66 or more
- Following the principle of the sharing economy and the business model as BlaBlaCar, would you be willing to entrust your parcels to individuals rather than traditional carriers (The Post, UPS, DHL ...)?
 - Yes No
- Would you be more comfortable if this crowd-shipping service was organized by a recognized parcel transport company (La Poste, UPS, DHL ...)?
 - Yes No
- If yes, why?
 - Security Traceability
 - Other :
- What factors would encourage you to use this service?
 - Price Flexibility (Delivery where and when you
 - Interest for sharing economy Ecological interest
 - Other :
- Would you be willing to transport packages on your trips?
 - Yes No If no, why ?
- If yes, why?
 - Financial interest Ecological interest Reduce the traffic
 - Other :
- Do you think useful the implementation of such a solution in Geneva?
 - Yes No

Appendix C - Supporting letter

31 March 2016

To whom it may concern

MSc Research Project on crowd-shipping of parcels

This letter is to confirm that Mickael BRIFFAZ and Clément DARVEY are both students currently studying at the University of Gothenburg in Sweden. In order to complete the second year of the Master of Science in Logistics and Transport Management they are required to write a master thesis. Their thesis is focused on crowd-shipping, especially on the implementation of crowd-shipping in the area of Geneva, Switzerland.

Crowd-shipping could allow the transport of parcels by individuals who may take the parcels as part of their everyday trip. The idea has its foundations in the 'sharing economy'. Therefore, one leg of the transport could be achieved by individuals instead of professional transport providers.

In order to understand the point of view of the different stakeholders, some interviews and surveys will be conducted. These surveys will include interviewing some members of the public in the street in Geneva.

This thesis is totally independent from any company, the sole purpose is to explore crowd shipping with the concrete context of Geneva to provide more insights.

Yours sincerely,

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