PARCEL DELIVERY AND URBAN LOGISTICS- CHANGES IN URBAN COURIER, EXPRESS AND PARCEL SERVICES: THE FRENCH CASE

Raphaëlle Ducret, Loïc Delaître

PARCEL DELIVERY AND URBAN LOGISTICS- CHANGES IN URBAN COURIER, EXPRESS AND PARCEL SERVICES: THE FRENCH CASE

Ducret Raphaëlle, Mines ParisTech, raphaelle.ducret@mines-paristech.fr

Delaître Loïc, Mines ParisTech, loic.delaitre@mines-paristech.fr

ABSTRACT

Urban freight transport takes an increasingly important place in the urban mobility strategy. Experiments to optimize the movement of goods inside the city do not miss. Many relate to traditional goods, without being concerned with an activity in particular, others on the contrary target a precise sector i.e. fresh products, spare parts, etc. Since few years, new actors based on innovative scheme of distribution for the last-miles are merging, in the urban parcel distribution in particular. The whole actors and theirs strategies are changing to be nearer to the customer demand, shaping new logistic organisations. The purpose of this paper is to give an updated overview of the urban parcel delivery sector in France and some elements to discuss about the changes and new opportunities in this particular sector.

Keywords: urban parcel distribution, CEP service providers, urban logistics, logistic organisations and strategies, actors game

INTRODUCTION

The CEP sector (courier, express and parcel service), particularly the final stage of the supply chain in cities, i.e. parcel distribution, has undergone significant changes for the last ten years (Patier-Marque, 2002 ; Savy, 2006 ; Menge, Hebes, 2011). With the spread of new technologies and due to economic and social changes, new shopping patterns have emerged, principally distance selling and electronic commerce, questioning the retail sector (Moati, 2011). These changes have led to growth in parcels volume and in home deliveries in particular (Hesse, 2002 ; Weltevreden, Rotem-Mindali, 2009 ; Rotem-Mindali, Salomon I, 2007 ; Esser, Kurte, 2005 ; OCDE, 2003). Thus, CEP actors are confronted with the “last-mile issue” (Gevaers, Van de Voorde, Vanelslander, 2011). Moreover, firms and stores have modified their supply chains in cities leading to more and more frequent, just-on-time and small, divided delivery (Menge, Hebes, 2011). At the same time, urban good distribution has become an important question for cities (Patier, Routhier, 2009) regarding the economy, the environment, public health, employment and so on. Incentives or regulation in urban logistics have been implemented by public authorities, challenging the way in which parcel distribution providers work.

Confronted with those changes in cities, a new segment of the CEP sector, called urban parcel delivery service, has started to emerge from CEP actors' initiatives a few years ago in France. It brings together different actors from the CEP sector, logistics providers, carriers and couriers proposing specific urban distribution service for small and light parcels.

Relatively little attention has been given to urban logistics providers in the academic literature while urban good distribution has become a relevant question for research since the nineties. This article[1] aims at understanding how urban good distribution issues regarding both shopping and logistic patterns and urban logistics political decisions have shaped a new type of delivery service and a new segment in the CEP sector. The research questions are: what drives the creation of the new segment and what are its characteristics compared to the traditional CEP sector? What are the urban parcel distribution actor families and what are the common strategies, logistic organizations and commercial services which make up a coherent segment?

To provide analysis, first, an overview of the sector has been proposed by referring to the professional press over the last five years. Then, around twenty interviews with French, European and world urban CEP providers and parcel distribution providers have been conducted. The interview grid has been organized around four aspects: (1) description of the volume delivered and effects of changes in logistic and shopping patterns (part of business to consumer B2C/ business to business B2B in terms of volume, kind of parcels delivered, frequency, etc), (2) the nature of urban delivery service and innovations, (3) logistic organization and innovations (hubs, types of vehicles, etc.) and finally (4) the stakeholders' interactions (partnerships, subcontracting, movements of firm consolidation, etc.).

This article is organized as follows. First, the context of the creation of a new segment of urban distribution is described and a precise definition of the urban parcel distribution service is given. Then, an updated and complete picture of its actors in France is provided. To clarify the overview a classification in actor families has been provided. Finally, the shared structures of the segment are highlighted thanks to a transversal analysis. Each strategy for entering the parcel distribution market and logistic organizations has been compared and the level of subcontracting and innovation has been questioned. External issues which can influence and structured the segment have been also identified.

[1] This article is part of a PhD thesis in progress with the French Post Office La Poste about urban parcel distribution in French cities and its prospective from a territorial angle.

NEW DEMAND IN LOGISTICS AND NEEDS IN THE CITY, NEW SERVICES AND NEW ACTORS OF PARCEL DISTRIBUTION

Drivers of the creation of a new segment

Urban distribution is not easy and logistic organization attempt to provide the right product at the right place and time. But urban good distribution is a derived demand, and demand is always changing. In fact, new behaviors are emerging from purchasing patterns. One of the most important elements of the "retail revolution" (Moati P., 2011) has been the explosion of the e-commerce sector in the past ten years. According to the French observatory of distance selling called FEVAD, the turnover of the on-line selling market (including e-commerce) has increased from 5.4 billion euros in 2004 to 37.7 billion euros in 2011. In spite of a slowdown, double-digit annual growth rates could be observed even in the crisis period. As a consequence, B2C companies have to deliver their products to the customer, at home in particular, within a very short time and this delivery must be reliable. Parcel distribution providers are confronted with the "last-mile issue". In fact, "the final leg in a business-to-consumer delivery service whereby the consignment is delivered to the recipient, either at the recipient's home or at a collection point" is more expensive and less efficient for parcel distributors because of delivery failure, congestion and non-optimum loading rates (Gevaers, Van de Voorde, Vanelslander, 2011). To minimize delivery failure not-at-home delivery solutions have been created by CEP. Moreover, stores have modified their supply chains, as well as firms did years ago leading to divided deliveries (Menge, Hebes, 2011). Demographic phenomena and social changes also enhance urban goods distribution issues (OCDE, 2003). The population in developed countries is aging. At the same time, family structures are evolving, i.e. single-parent families, single working mothers, etc. These phenomena could affect consumer patterns and cause an increase in electronic purchasing and home deliveries. The rise in population mobility represents another issue to provide a successful parcel delivery. Finally, the constant urbanization of the population also concentrates a huge proportion of parcel deliveries in cities. Those new consumption and supply habits or patterns have added frequent, just-on-time and small, divided delivery in cities and have increased goods mobility and parcel volume (Weltevreden, Rotem-Mindali, 2009; Rotem-Mindali, Salomon, 2007; Esser, Kurte, 2005). This is the primary driving force in the creation of a new segment.

The second one is the growing complexity and convergence of delivery. In fact, consumer and business logistic requirements regarding speed, service quality, convenience and reliability are becoming more and more similar. On the whole, the level of demand is rising (IFOP, 2012, 2013). Years ago parcel service providers could provide specialized delivery services regarding the recipient (i.e. express and guaranteed delivery for businesses as opposed to ordinary and slow delivery for the individual consumer). But nowadays consumers are as demanding as firms. Moreover, an express provider has to deal with a growing number of individual consumer deliveries (B2C) because its traditional B2B clients/shipper –firms; suppliers and so on– have decided to provide online purchasing in addition to the traditional business. Nevertheless, delivering the final consumer is still much more difficult than a business delivery. That is why delivery providers must adapt their organization to succeed in both kinds of delivery.

Public authorities' requirements regarding delivery and sustainability in the city are the last driving force in the creation of a new segment of the CEP sector. Urban goods distribution is considered to be responsible for congestion, nuisances, local pollution in cities and global warming through greenhouse gas emissions (Dablanc, 2009). For fifteen years European, national and local regulations have been implemented in cities to deal with those issues (Dablanc, 2011). In France several cities are in the way to adopt environmental criteria (regarding the nature of motoring) for urban good distribution vehicles in their city center, such as Montpellier has done since 2006. Others are studying the implementation of an urban logistics space to organize regulated goods consolidation. French cities also refer to low emissions zones and congestion charges. One of the major trends is to forbid or limit access to the city centre for goods distribution vehicles, which is making parcel distribution more complicated, leading distribution actors to implement innovative tours and creating a niche market for new players. Nevertheless, urban logistics initiatives from the national and local authorities are also helping to deliver parcels in favourable conditions, by for example, providing incentive for modal shift and motor transition, improving loading bay design and localization or by providing urban logistics space and incentive to implement it or the establishing global consultation.

New actors for a new segment: the urban parcel distribution service sector

Because of those delivery challenges, new solutions and distribution services have to be implemented not only to face the last-mile issues, problems of congestion, accessibility and parcel distribution cost in urban areas, but also to provide the best delivery service to all types of final users in a sustainable way. Mail and express service providers have been obliged to adapt and renew their logistic organization. This has progressively shaped a new segment of the CEP sector: the urban parcel delivery segment. This new segment originates descended from the traditional CEP sector with both traditional actors and new players, traditional organizations and innovative ones.

If we consider the history of mail and express service, a new segment always appears thanks to new services or techniques (Beyer, 1999). For instance in the eighties in Europe, express services have been created in reaction to US integrators integration into the mail market, such as UPS or Fedex. One example is the creation of France Express in 1970 to provide express services for France. Then, in 1985, the French Post Office created Chronopost. At the same time, the construction of coherent actor families could be seen i.e. integrators, national express providers, and regional offer.

> "Mail history could be read as the successive settlement of actor groups who for a long time have structured their organization and establishment around a technique or a service. If we except the division through firms size, the mail sector is structured in families of firms in which

> establishment choices, strategies and growth perspectives are common"(Beyer, 1999)[2].

Considering our subject, the new segment is appearing while differences between express and ordinary delivery service are decreasing, when CEP actors have to provide new organization and services to successfully deliver goods to each user with the same level of quality and in a sustainable manner.
The urban parcel delivery segment assembles actors of the distribution of small and light parcels or multi parcels (30 kg at most) to final users, in general both B2B and B2C, in city centres and urban areas. In fact, for a couple of years, as the urban distribution service segment has emerged in France, families of actors have begun to appear too. At first sight, these new segment groups have very different actors. First of all, providers whose core business is not parcel distribution yet but starting providing that service as it appears to be a growth area in a time of crisis (logistics providers, carriers, etc.). Then actors whose core business is actually parcel delivery and which are trying to adapt and diversify their services (post office, express providers, couriers, etc.). Those old CEP actors have been forced to find new roles in the urban parcel distribution market and the supply chain. Finally, some young firms and startups chose to specialize in urban parcel delivery. But common services, strategies, organizations and perspectives could be found and these shape coherent types. The second part of the article will describe in detail the different actor families and their structure before describing in the third part the transversal common points of the urban parcel distribution segment.

The parcel market in France: volume and distribution

Parcel volume growth: fantasy or a reality?

According to analysts and professionals the parcel market has been constantly growing since the beginning of the century because of the rise in electronic commerce. In terms of turnover, French e-commerce is the third most important e-commerce market in the European Union after Great Britain and Germany. The European Union market is now almost as important as the North American one. However, the volume and evolution of the French parcel market, the number of parcels delivered in cities and the distribution between B2C and B2B parcels are difficult to deduct from those turnover numbers. Some actors emphasised the fact that the distance selling market growth is first of all due to a recovery after the mail-order market crisis in the nineties, putting into perspective the so called "boom". For example, quiet regular volumes are observed in the supply chain of the French Post Office. Yet, at that stage of our thesis some hypothesis could be made. First, if we consider ARCEP statistics (ARCEP is the French postal regulation authority), total parcel market volume was around 740 million of

[2] « L'histoire de la messagerie peut dès lors se lire comme la mise en place successive de groupes d'acteurs qui vont durablement structurer leurs logiques et leurs implantations autour d'une technique ou d'un produit. Le secteur de la messagerie, outre une division selon la taille des entreprises, se structure donc tout autant en familles d'entreprises, au sein desquelles des parentés existent dans le choix d'implantation, de stratégie et de perspective de développement ».

parcels in 2010 (express and ordinary parcels), divided quite evenly into B2C and B2B (ARCEP, 2011) (see table 1). Between 2004 and 2010 volume would have risen by 23%. In fact, considering the growth of e-commerce turnover (around 20%) this hypothesis could be realistic, even if non material goods are included in FEVAD statistics.

Table I – Small parcel volume evolution between 2004 and 2010 in the French parcel market (ARCEP) (Millions of parcels) [3]

	2004	2005	2006	2007	2008	2009	2010
Ordinary parcel[4]	342	346	355	386	383	372	386
Express parcel[4] *(domestic and international import)*	260	260	300	312	302	328	354
Total	602	606	655	698	685	700	740

Nowadays e-consumers buy around 13.5 parcels a year (Ducret, Durand, 2012). Considering the predicted growth of e-commerce in spite of the economic crisis and the constant widening of on-line non dematerialized goods, even if the numbers of e-consumers is slowing down, a growth in the number of parcels delivered per consumer per year can be expected.
Finally, providing an estimation of the proportion of parcel delivered in the city compared to other urban flow of goods is difficult. According to research from the French Laboratory of Transport Economy (LET), the flow of goods in cities can be divided into three main categories i.e. establishment supply movements (40% of total goods distribution in the city), end-consumer commodity movements (50%) and others and annex flows (10%). The latter contains waste flows, removal activities, the building supply chain, home deliveries and postal activities (Patier-Marque, 2002). Light parcels could be found in establishment supply movements, home deliveries and postal activities (and even end-consumer movements in the case of not at home delivery solutions). Thus, light parcel flows could represent around 30 % of the urban goods distribution activities.

The bipolarization of the parcel distribution market in France

As figure 1 shows, two groups of actors (the National Post Office and express providers) share more than 60% of the parcel market volume. The proportion of the other logistics providers and carriers seems negligible. In the same way, specialized delivery service providers, couriers and pickup point networks represent a very small parcel volume. The French Post office, thanks to its subsidiary Coliposte (whose position is predominant in B2C),

[3] Those statistics have to be considered carefully owing to the difficulties to find long series and to reach one and only definition
[4] According to the ARCEP an ordinary parcel is a consignment transported by a logistics provider, a postal provider or a logistic provider of the mail-order sales sector (as opposed to an express provider). The definition also includes specialized delivery service providers and pickup point networks. By contrast, an express parcel is a consignment transported by an express provider.
The identity of both recipient and sender and the delivery speed are other criteria to distinguish express and ordinary parcels but less relevant than the first one because of the actual convergence of the product proposed by both express and non-express providers.

picks up 1/3 of the total volume. Regarding B2C volumes, the group of small actors delivers around 20% of the volume.

The parcel distribution market appears to be relatively concentrated. It is also divided into few actors at a national, European and even global scale able to control it, and many little firms often local subcontractor for the larger firm. This dynamic phenomenon is called bipolarization (Savy, 2006) : the two poles are linked in cooperative relations because they need each other to provide innovative services and to cover the largest area.

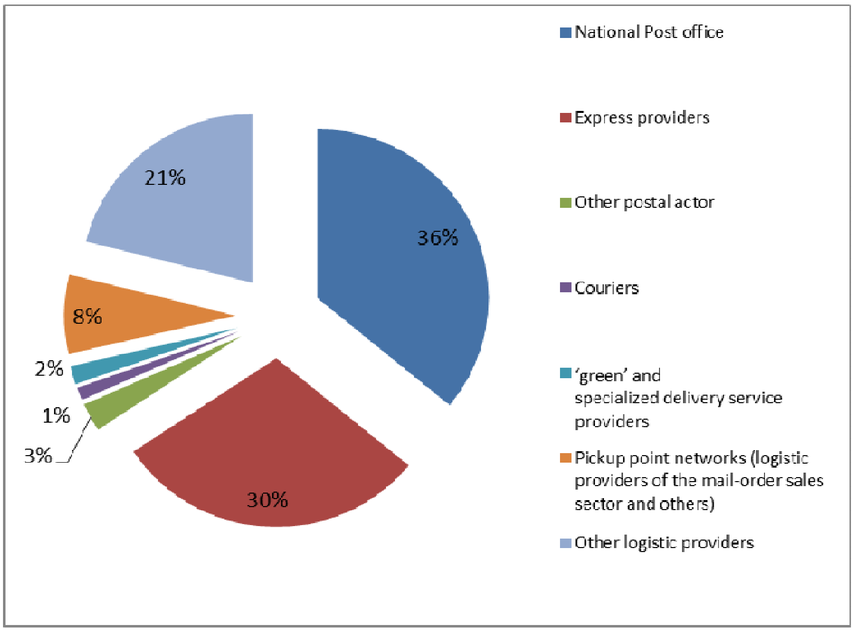

Figure 1 –The distribution of parcel delivery market actors (ARCEP, assessments and personal data from interviews)[5]

CLASSIFICATION OF URBAN PARCEL DISTRIBUTION ACTORS; HEIRS AND NEW PLAYERS

The urban parcel delivery service sector in France is composed of a wide range of actors classified into three families: heirs, new players and other actors, and divided into ten sub-families, as we can see in table 2.

[5] Those statistics have to be considered carefully owing to the difficulties to find reliable numbers and to reach one and only definition

Table 2 – Urban parcel distribution actors classification

The heirs			The other actors			The new players			
French Post Office	Express providers	Logistics providers in the mail-order sales sector	Other logistics providers and carriers	Sub-contractors	Couriers	Pickup point networks	Other postal authorized actors	Specialized delivery service providers	
								Green parcel delivery service providers	Other specialized delivery service providers

The heirs; strengthening their position or playing a new role

The so-called heirs refer to traditional actors in the parcel and express sector who are now obliged to adapt and diversify their urban parcel delivery supply chain. Three types of actors are grouped in this family: the French Post Office, La Poste, the main historic actor of the French parcel distribution sector, the express providers and integrators and the historic actors of the mail-order selling sector and their logistics subsidiaries.

Those actors have been present in the urban parcel B2C or B2B distribution sector since the seventies or eighties (as an example, B2C distribution know-how has emerged thanks to mail-order selling activities and the logistics subsidiaries for home delivery since the seventies and international express providers specialized in B2B express deliveries have arrived in Europe in the seventies and eighties) but ever since they have shown to have different degrees of openness to the B2C market and different strategies. In fact, for about ten years their role in the parcel supply chain has evolved under constraints. At first, they have been confronted with the B2C parcel increase on their supply chains since the beginning of the century. Nowadays the economic crisis has positioned parcel delivery as a growth area and has obliged them to diversify their offer to consumers. For example, in spite of their strong positions in the B2B parcel market express providers have been obliged to open up to B2C. As B2C delivery is quite a different business, subcontracting and partnerships have been preferred over creating of a dedicated offer, as a defensive strategy.

Except mail-order selling actors who adapt to e-commerce with difficulty, they benefit from a strong position in the market thanks to volume, investment capacities and a reliable business model. Most of them have integrated the parcel supply chain from outbound to inbound, with or without subcontractors, depending on the seasonality of the parcel market or geographic constraints in general.

As an old actor in parcel distribution faced with new players, they have also been obliged to strengthen their position. As an example, there has been a renewal of services thanks to innovation in information and communication tools, new organization of the supply chain in cities have been tried out and vehicle research has been conducted. Subcontracting and partnerships have also been used to benefit from new player innovations and to keep an eye on them. It is possible that in a few years, the heirs' role will change again and that they will end up managing a group of small innovative start-ups and pickup point networks, subsidiaries or partners, in a lead contractor role or in a kind of innovative incubator.

1. La Poste is the main and historic actor of parcel delivery in France, both in B2C and B2B. It has always delivered packages and parcels since its creation. La Poste includes the B2C subsidiary Coliposte, created in 1999, and the B2B express subsidiaries Exapaq and Chronopost group in the European holding GeoPost. It is a challenge for this historic actor to renew its position on the French parcel market thanks to its historic position and its innovative spirit. Until 2010 the strategy has remained relatively reticent, as it relied on the know-how and on subsidiary innovations such as Chronopost. Since 2010, a two-step, more aggressive strategy has been adopted: first, innovation through the subsidiaries and targeted purchase, and then the creation of a dedicated offer. For example, following the example of ChronoRelais (pickup service of Chronopost since 2007), Geopost created Pickup, an independent pickup point network in 2010 thanks to the purchase of Pickup Service an information tool start-up. Now, the network is one of the largest in France (3500 points). In the same year, Coliposte created a dedicated offer called So Colissimo that groups together and integrate various delivery services for consumers, i.e. pickup network, home, home scheduled Post Office and even parcel-locker delivery. In fact, home deliveries were not sufficient anymore to counter competitors. Moreover, to face volume growth the firm has made important investments in the sorting process and storage facilities and has reorganized the national supply chain.

The new players; service innovation and sustainability first

The second family refers to young firms or start-ups specialized in urban parcel delivery, B2C in particular (but not exclusively) which are highly innovative and environmental-friendly. Pickup point networks, postal authorized actors and specialized delivery service providers have been classified into that type.

Even if we observed different generations of firms, most of them are recent creations following the rise in e-commerce.

The pickup point networks are pioneers because the first ones were created in 1983 and 1993 by mail-order sale logistics providers to ensure postal independence, i.e. Relais Colis and Point Relais (Mondial Relay). A new generation of networks, built around information and innovative managing tools have emerged since 2001, Kiala being one of the most important firms, as well as PickUp (Augereau, Curien, Dablanc, 2009). The degree of involvement in transport and logistics differentiates the four largest French networks, i.e Kiala and Mondial Relay are freight forwarders whereas Relais Colis provides transport and PickUp positions itself as a managing tool.

A movement of diversification can be noted among the specialized delivery service providers around the use of sustainable vehicles and organization in cities. Thus, two groups have been identified: green providers and other logistics providers specialized in parcel distribution in cities. Even if the latter were created before 2000, i.e. Speed Distribution, Star's Service, etc., most of the new players were created after 2008 in French cities and Paris in particular, for example Label Route, Le Kangourou Vert in 2009, The Green Link in 2010, Vert chez Vous in 2011, and so on. A growing number of small firms have been created since 2005.

Finally, Colis Privé, the French authorized postal provider, was created in 2008 thanks to liberalization and B2C parcel market opportunity. It is specialized in cheaper parcel distribution and they present themselves as the main competitor of La Poste.

Within this family, offensive strategies have been observed, relying on service innovation, innovative organizations or vehicles. Most of those structures share features characteristic of start-ups: few and young employees, long working days and innovative spirit. Various innovations in service delivery are proposed: scheduled delivery, fitting services, return logistics offer, e-grocery delivery, convenience store delivery, and so on. They rely on innovative routing and scheduling tools and after-sales services. The second aspect characterising those firms concerns innovation in vehicles and logistic organization linked with sustainable commitment. Both are linked. Most of the new players are defined by their use of electric or neutral vehicles, i.e. tricycles, bicycles, vans, etc. Sometimes vehicles are also designed for urban streets. The Vert chez Vous project even use river barges for their deliveries in Paris. Despite their ability to deliver in cities silently and limiting GES and polluting emissions, these vehicles have a limited carrying capacity and autonomy so dedicated organization must be implemented. For example, to reduce the transport between the warehouse and the city, small urban logistic space for cross docking have been installed in cities or in the suburbs for contractors to deliver parcels.

Those structures are dedicated to very last-mile delivery. Some of the firms prefer to contract directly with e-retailers but most of those firms are subcontractors in the parcel supply chain so they try to diversify and stabilize their activities contracting directly with the actor of the retail. They offer innovative high value delivery services for the urban well-educated and well-off active population able and willing to pay for those services. Because of this market niche strategy, few parcels are distributed through those chains nowadays. Moreover, because of the seasonality of B2C flows and the difficulties of subcontracting, their activities appear to be risk investments and are built on a fragile business model. Only a slight profit margin can be generated but the progressive industrialization of the process compensates for the weak carrying capacity and volume. Today due to the young age of those structures we do not have the necessary time span to evaluate the size, volume and business model which guaranty the reliability of such initiatives. Nonetheless, the actors interviewed observe a rapid rise in their volume.

2. Colizen, a new player in B2C urban parcel delivery, was created in 2009 in Paris. As a start-up it began with few employees and employs twenty persons today. It is specialized in value added-scheduled delivery for e-retailers (two-hour-time window *rendez-vous*). It also delivers early in the morning and until 10 p.m in the evening and even on Sunday mornings. The service is enabled by sophisticated algorithms and routing and scheduling software. Attention is also given to consumer service thanks to follow-up tools. Despite the difficulties of using electric vehicles the firm tries to maintain sustainable delivery, which has been a strong advertising point from the start. The choice to use electric vehicles explains the original localization in Aubervilliers, in the first Parisian ring, reducing the transport between the warehouse and the final users. All the deliveries are subcontracted. Colizen is becoming a “freight forwarder for complex delivery”. Deployment in other French cities is one of the objectives of the firm (the service is also been offered in Lille so far). The fact that the structure has

found a value-added market niche and contracts directly with e-retailers may explain the relative stability of the system and the growing volumes (from about ten parcels two years ago to two thousand a day in Paris now).

Other actors; parcel delivery as a secondary activity and a growth area

This is the last family group of actors identified in urban logistics and urban parcel delivery. It is a most heterogeneous family. Sub-contractors, couriers and some logistics providers composed it. Even if parcel delivery is not their core business, i.e. some are specialized in logistics or heavy freight and others in courier, an opportunistic and recent strategy regarding parcels has been identified for the last couple of years. Thus, urban parcel delivery is becoming a secondary growth activity.

By “other logistics providers” we mean carriers usually delivering heavy goods and pallets and logistics providers specialized in the upstream activities of the supply chain. Whilst those actors have experienced a growing volume of e-commerce and B2C freight they have provided additional services targeting B2C urban parcel flows. In the same way, as logistic issues have become a commercial opportunity those actors have provided a dedicated offer for urban areas. In some cases partnerships have been signed with last-mile delivery specialists. For example, the French carrier Grimonprez, which is specialized in B2B freight transport, signed a partnership with Colizen to provide urban parcel delivery in Lille. This service complements its e-logistic offer dedicated to e-retailers.

Furthermore, for a few years, couriers have become essential for parcel distribution. Even if courier core business consists of running from a specific point to another one, those actors also subcontract for express providers in delivery tours to guarantee their activity. The strategy of diversification has shaped a mixed pattern of run and delivery tours. Moreover an innovative generation of couriers defined by the use of sustainable vehicles, bicycles or tricycles in particular and green logistic organizations has appeared in the last few years. Those “bicycle messengers” or “bike couriers” are reliable because they avoid congestion but their carrying capacity is weak and they provide slow delivery (Maes, Vanelslander, 2012). Nevertheless they bring green advertising to contractors. Some of them have grown thanks to outsourcing and express provider investments and have been able to buy electric vans and enhanced their organization but the majority is small and has fragile structures with one or two bikers.

3. Becycle is a French courier based in Lyon. The firm was created in 2004. The core activity is B2B run or run on call. A contract with TNT Express signed in 2006 enabled them to diversify the activity to B2C and B2B parcel delivery tours. 98% of the parcel are B2B, 2% are B2C. Becycle can be classified as the new generation of couriers, innovative and green. In fact, tours are made with electric bikes, tricycles and recently electric city vans. The city hub was placed in the centre of Lyon. The firm is trying to enlarge its activity to grocery home delivery. It has also developed a franchise network of bicycle couriers in France in the cities of Grenoble, Lille, Toulouse, Metz and Dijon.

Regarding subcontractors, those actors appear to be essential for the last-mile distribution and parcel delivery in particular. We will describe the specific situation of subcontracting in another part of this article.
Finally, a new generation of new players could appear in the next years. Regarding the example of Amazon in the North American parcel market, actors from e-retail which control the supply chain and are becoming a freight forwarder by direct outsourcing with various parcel distributors and provide last mile delivery solutions could enter the parcel transport sector.

COMMON WAYS TO DELIVER PARCELS AND TO OVERCOME URBAN LOGISTICS AND LAST-MILE ISSUES

Common ways to diversify the delivery service offer

This section shows the common commercial and logistics strategies designed by firms to enter or reinforce their position in the urban parcel delivery sector. These strategies can be either defensive or aggressive.

Partnerships and subcontracting: defensive strategies

The first one consists in enlarging and diversifying the delivery offer thanks to partnerships and subcontracting, without modifying the supply chain to accommodate B2C flows, while slightly distorting it.
This strategy is used by express providers and integrators in particular, because of the low density of their network in France, and by some other logistics providers and carriers whose core business is much heavier B2B freight. They have often chosen those solutions to accompany their clients who take on e-retailing, as a first step to B2C parcel distribution. Secondly, this shift could lead carriers to set up logistic service as storage, management of inventory, order processing, packaging and so on and become an e-logistics provider integrating the e-retailing supply chain both up and downstream. Besides, outsourcing and partnership strategies present various advantages for the contractor such as, limiting investments and outsourcing risks, delivery failure and flow seasonality on subcontractors in a very competitive environment. Even if it adds transhipment in the supply chain, both of those strategies allow the contractor to remove parcel flow from their supply chains before the last mile distribution without transforming it.
First partnerships have been signed with pickup point networks since the beginning of the twentieth century. Pickup points have sold one of the last-mile issues, the delivery failure, reducing parcel reprocessing costs. In fact, to include such a network could be seen as B2B logistics or B2B2C organized logistics (Durand, Gonzalez-Féliu, Henriot, 2010) because parcels are consolidated and delivered to the pickup point where consumers can go to pick it up when they want. In 2003, TNT Express was the first to contract such a partnership, and their colleagues soon followed suit: DHL and Chronopost for example and more recently GLS.

The out-sourcing strategy in this particular paragraph remains to contract with couriers and specialized urban parcel distribution providers (in both cases especially those who turn "green"), that is to say subcontract for innovation and diversification. This particular subcontracting strategy aims at developing green B2B or B2C offer or specific service. Positive advertising is also provided by those initiatives. An increase in such contracts has been observed for a couple of years, since urban logistics and sustainable development have begun relevant issues both for public actors and firms. DHL Express was one of the first to lead the way in 2005 with the delivery tricycles of La Petite Reine in Bordeaux in particular. Today, one express provider can be involved in several contracts with different start-ups in different cities and vice versa. The principal French cities are targeted by those strategies, i.e. those which began to control urban goods distribution with environmental regulation in particular and which present the highest growth in parcel flows and thus the greatest distribution issues.

4. TNT Express is a good example of an heir strategy of services diversification in B2C delivery thanks to partnership and outsourcing. It appears to be a pioneer in the express sector. In 2003, TNT Express was the first to contract a partnership with the French pickup point network Relais Colis for B2B parcel and a couple of years later for B2C. Then, in 2006, the firm created an express home delivery service to consumers. The firm selected innovative subcontractors in different French cities. Home and business deliveries are done by electric tricycles in Lyon thanks to the bike courier Becycle since 2007, The Green Link in Paris since 2010, La Petite Reine in Bordeaux, etc. TNT Express benefits from their green positive image and communicates on it thanks to tricycle in TNT's colors. Finally, in 2010 it achieved diversification contracting with Colis Privé, a B2C delivery service provider, to offer slower and cheaper home deliveries. It reached a position of freight forwarder in the French delivery supply chain. All those initiatives allowed the firm to be the express provider leader in the French market today. Furthermore, the express provider has been inspired by those partnerships and now experiment various innovative logistic organizations in Lyon in particular, beginning to create its proper offer.

Creating a dedicated offer: offensive strategies

The second strategy is much more aggressive and risky. It consists in creating a dedicated offer to parcel distribution and/or reorganizing the parcel distribution supply chain to optimize the delivery. New players are the most offensive actors of the classification. Some express and parcel providers and other logistics providers also follow those strategies. On the one hand, heirs benefit from solid investments and volume which could explain their offensive attitude. One the other hand, such an attitude is understandable for new players whose size could only be compensated for by innovation.
New players offer new last-mile delivery and services providing additional or tailored advantages. The logistics providers of the mail-order sales sector were first, offering a solution to the last-mile issue, the pickup point. Because of a postal strike in the seventies which revealed their dependency on the national operator, they decided to set up a pickup service. To begin this service was offered to their clients only but they opened to e-retailers a

couple of years ago. Independent networks were created in the early twenties and even automatic pickup points called parcel lockers have been set up by La Poste since 2005. Today, pickup points are the preferred not-at-home delivery solutions of the French consumers (48% choose it over the other one, according to the FEVAD).
For a couple of years a new generation of value-added services has emerged targeting home delivery in particular as well as B2B distribution. For example, home scheduled delivery (Colizen and Vert chez Vous offer different slots and a fifteen minutes before SMS to remind customers of the *rendez-vous*), home delivery with fitting (Team Distribution offered such a service with the e-choose retailer Sarenza), week-end delivery, delivery and return logistics, and so on. In most cases, those services are linked to sustainable goals. Some of the services offered are clearly “green”-oriented. In fact, innovative and free CO2 vehicles are used by several actors: bike, tricycle and pedestrian delivery with trolleys, boats, electric vans, etc. One of the French express providers, Chronopost, played a pioneering role in that matter. Since 1999, Chronopost has been conducting research on neutral vehicles and it developed the Chronocity range of neutral vehicles in 2006 (Chronotrolley, Chronobike and Chronovan).
The final stage of the process is to create a commercial offer able to integrate all those B2B and B2C services. Few actors in the French market provide a large and coherent offer to both contractors and consumers. To some extent the French Post Office (So Colissimo offer) and TNT Express do. According to the interviews, the movement is on the way as we can see actors like DHL recently thinking about how to design such a coherent offer.
Reorganization of the supply chain to optimize urban distribution is another line of strategy. The fact that urban logistics has become a questioned issue for professionals could explain this. Most of the time, the reorganization also tries to favour parcel distribution. In most cases, an integrated offer dedicated to urban area and parcels is created along with the traditional offer. In fact, since 2009 and the dedicated urban offer of Deret Logistique in French cities for the world perfumer Sephora, other logistics providers and carriers have followed suit; they used to deliver heavy goods but try to develop light distribution as an economic opportunity (for example in France Astre City and Green way).

5. In 2011, Geodis, a French and European carrier, working both in B2B and B2C distribution (parcels and heavy goods), has reorganized the supply chains of three B2B subsidiaries (Ciblex, Calberson and France Express) to improve good distribution in French cities (for the moment Paris, Strasbourg and Versailles) through a network called Distripolis. It achieved the consolidation of all flows thanks to an organizational shift with a pooling city hub and urban logistic spaces called “blue base”. From those bases final deliveries are made by electric vehicles of various sizes depending on the goods to be delivered. Marketing and strategic arguments of the firm are related to urban logistics issues and especially issues and opportunities created by the evolution of the parcel market in both the B2B and the B2C sectors. Distripolis is an example of the creation of a dedicated urban organization in the urban distribution sector.

Subcontracting: old habit and the first way of delivering cities

Subcontractors have been from the very beginning essential actors of the urban parcel distribution sector and freight transport in general. For example, Team Distribution

completely outsources its activity in Paris, 80 % of the distribution activity of Chronopost is subcontracted and 50% of the UPS activities in Paris. The high cost of urban delivery, the flexibility and seasonality of flows and the delivery and regulatory constraints in cities explain why some actors subcontract to others. For example, while DHL only subcontract 10 % of its activities in small towns, nearly the majority is outsourced in Paris. Moreover it is a convenient way for actors to enlarge their network in non-dense areas and smaller cities.
Several types of outsourcing can be identified in parcel delivery - price subcontracting versus innovative subcontracting. First, some carriers are purely subcontractors. Even if those firms could provide occasionally national or local run, they are highly economically dependent on contractors who push down prices and use them as an adjustment variable. They use thermic vehicle in general and their economic situation prevents them from investing in sustainable fleet. They enter the contractor supply chain picking up goods in the contractor hub and only provide the final delivery. Then, we identified a most innovative and value added subcontracting activity. In that case, subcontractors provide an innovative organization and even proper green vehicles. Even if it adds transhipment at the subcontractor city hub, advertising and innovation benefit the contractor. This type of outsourcing has been developing for a couple of years. It concerns new players and innovative couriers.
Moreover we observed several level of subcontracting within the urban distribution supply chain. In most cases big firms subcontract to smaller ones, i.e. specialized delivery providers in the biggest cities, carriers in others urban areas. But even small firms and new players can subcontract the very last delivery. Two or three levels of subcontracting are the rule.
This activity is difficult to identify because most of the subcontractors are small firms with one carrier and few employees and even at the fringes of legality for some of them (exceeding work hours, non-registered vehicles for example) (Harnay P., 2012). The subject is a thorny one for the actors involved. Unfair and rude competition is prevalent in this sector. Prices are pushed down by contractors and small firms. That’s why some of those subcontractors tried to overpass contractors to deal directly with retailers and suppliers and impose their prices. Unbalanced relations define this activity. Many subcontractors are highly dependent on one or two contractors. But some contractors try to develop qualitative and partnership outsourcing based on the rental of sustainable vehicle fleet and specifications.

Spatial and logistic organizations for urban parcel delivery

Spatial organizations: from duplication to integration

We identified different scales of parcel delivery logistic organization from a national scale to a very local one.
First, rather integrated national networks and city networks can be observed among the older parcel distribution actors. The heirs and some other logistics providers of great size, whose logistic network is dense and historically well-established, offer integrated delivery service at a national or even European and global scale. Two spatial systems could be defined. First, the coming together of two scales of logistics organizations provides a semi-integrated system (1). Even if they add transhipment, partnership and subcontracting makes it possible to offer a rather integrated network through the association of two different spatial organizations and

supply chains, i.e. those of the subcontractor and those of the contractor. The partnership between TNT Express and the specialized green provider The Green Link illustrates this configuration. The world express provider brings parcels to the subcontractor hub in Paris which provides final delivery, associating both the global and the local scale. Then, some actors provide completely integrated supply chains from the pickup of parcels from retailers to the final distribution to the client, including sorting, planning routes and transport by their own means or by very integrated subcontractors (2). The example of Distripolis quoted previously is a case in point. In that specific case, subsidiaries pooling allow the complete integration of the parcel distribution chain. Even if the local logistic scheme is rather independent it remains integrated to a national one. La Poste or the logistic provider Deret could have provided good examples too.
Then, we identified local (city scale) and micro-local (district) urban parcel distribution organizations, particularly the organization of new players. Specialized delivery service providers, pickup point networks and couriers offer a geo-localized delivery service in the largest French cities, that is to say Paris, Lyon, Lille, Toulouse, Bordeaux, and so on. The spatial dynamics of their growth is a deployment in archipelago, duplication, from city to city. Because there is no transport between the cities, the spatial organization cannot be called network but archipelago. The activity is concentrated in urban territories. Firm sizes, market niche positions, volumes, and position on value-added services, targeting a certain population, could explain such a spatial logic, as well as the type of vehicle used and the logistic organization (see below). As we described before, the tricycle courier start-up Becycle developed from Lyon to Grenoble, Lille, Toulouse and so on, thanks to franchises.
Finally, due to the rise in cross border e-commerce (ACSEL, 2012), cross border parcel distribution emerged as the new front for parcel distributors. Several strategies might be implemented to cover the largest scale, i.e. organic growth and integrated deployment, partnerships of different parcel distribution supply chains actors, subsidiaries, subcontracting or targeted buying.

Innovative logistic supply chains

We observed several logistic organizations, from classic and heavy ones to light and innovative ones (see figure 2). Different configurations and shapes and different vehicles could be associated to each logistic organizations.
The classic logistic organization (A) is usually used by the heirs and some other logistics providers. It is a hub and spokes organization. The parcel delivery process is integrated from upstream to downstream, from pickup to the retailer facility to tours from a suburban hub.
Diagram B presents a softer and more innovative parcel distribution supply chain than the first one. Most of the new players have organized their chain with a small city hub in the suburb or in inner city called urban logistic base. Delivery round is done by using small vehicles, which are generally neutral, bicycles or tricycles. This organization is quite developed nowadays in France (Green Link, Colizen, Chronopost in Paris, Label Route in Montpellier, Kangourou vert in Orléans, Deret in Lyon, and so on).
The logistic organization in diagram C is one of the softest and most innovative ones today. It is used by the specialized delivery provider La Tournée in a specific Parisian district. The hub

is replaced by a virtual exchange point on the street where delivery men sort and exchange parcels, and then go on tours. Everything is done by foot and with a trolley. That organization suits micro local delivery. Exchange points can be more or less virtual and immaterial: a van, a garage, and so on. There is no storage facility. To a certain extent Combifret, a TNT experiment in Lyon, was similar: a heavy truck with three boxes entered the city to a parking situated in the city centre where the boxes were loaded onto smaller trucks to make the final tours.
Finally, some actors use mobile city hubs (D). Vans or barges, considered to be storage parcel facilities, are moved in different places around the city. The logistics organization is cyclic: tours in tricycle or other vehicles start from this mobile point and when the delivery round is done delivery men return to this point, load their vehicles and start a new round. The French green delivery service provider Vert chez Vous implemented such a supply chain with barges on the Seine River and tours are done by tricycle.
Those organizations can be combined in a multi-stakeholders supply chain.

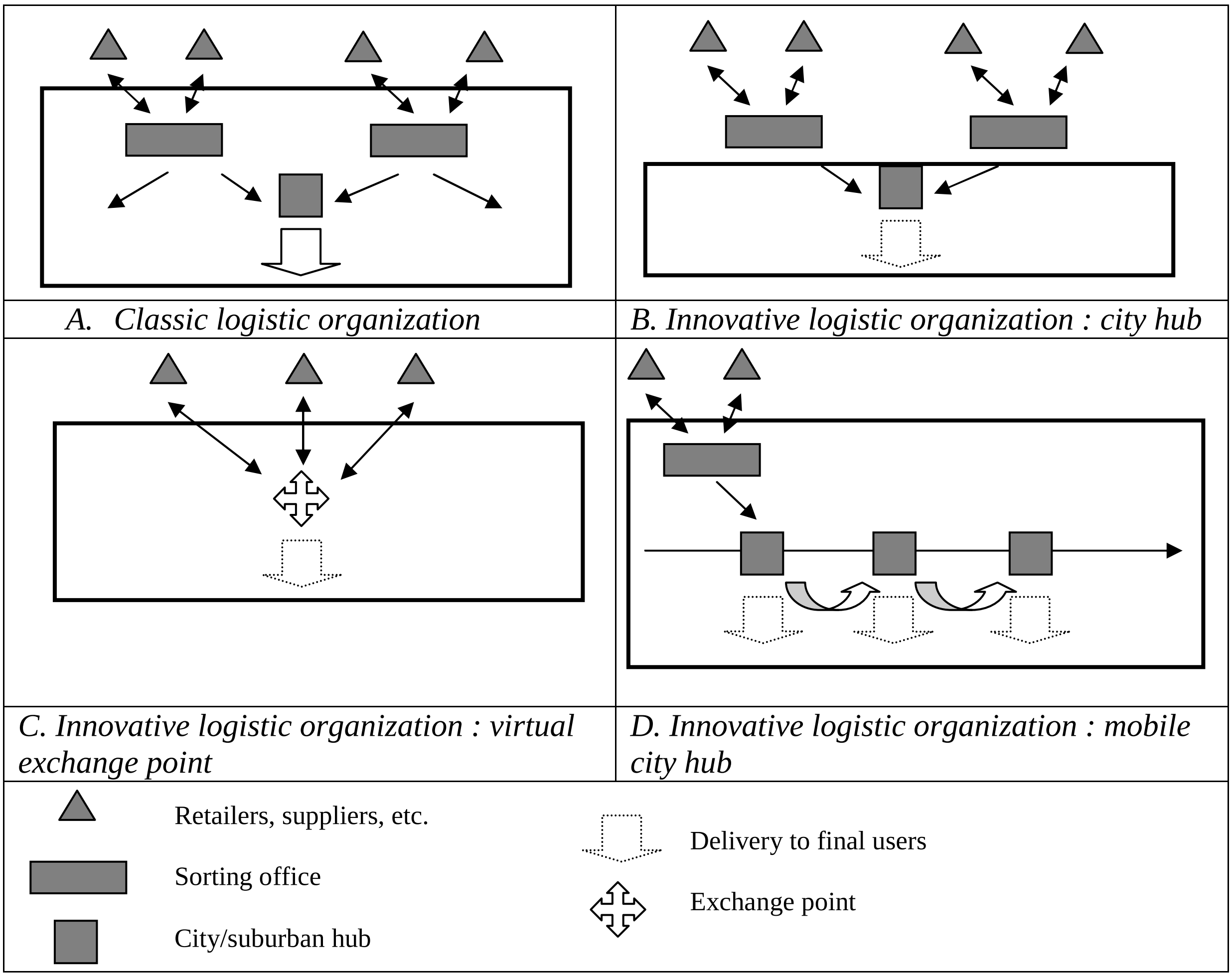

Figure 2 –Innovative logistic organizations (personal datas from interviews)

Several factors make firms decide to adopt such innovative organization. From an economic point of view, some of them use organization B or D to enhance the efficiency of shipping thanks to a reduction of the transport between the logistic platform on the fringes of the city

and the city centre and a decrease in congestion constraints. Economic efficiency of the organization is the main objective of all the actors.
We also observe that such organization could be strategic towards urban areas and town councils regulations. Firms provide innovative and sustainable services and organization in city centres to prevent from urban regulations such as congestion charges, low emissions zones or environmental taxes and city centre closing measure against non-virtuous parcel providers. Being innovative could provide the first move to future benefits in regulatory conditions.
Marketing and communication profits of such innovative organization towards consumers and, above all, decision makers in cities can to a certain extent balance its economic record.
Finally, environmental concerns in firms, or environmental and modal shift policies could explain the implementation of those organizations. For example in the case of organization B, investments in electric vehicles are encouraged by a national incentive but firms can also develop internal sustainable policies.

CONCLUSION AND PERSPECTIVES

Confronted with both changes in urban logistics issues in cities and new consumption and logistic patterns, a new segment of the CEP sector oriented in urban parcel delivery has been emerging for a few years in France. The urban parcel delivery sector is influenced by both urban logistics and last mile delivery issues. It is composed of a wide range of actors descended from express, postal and transport traditions and of a swarm of innovative new players. Common B2C and B2B parcel-oriented strategies and shared experiments in innovative organizations, services and vehicles to face last-mile issues and environmental regulations in cities have shaped a new segment. A new way of delivering parcels in cities is developing. The consolidation of firms and joint-ventures, for example the acquisition of La Petite Reine by the specialized delivery provider Star's Service in 2011 or the recent acquisition of Kiala by UPS in 2012 and Colizen by Chronopost in 2013, testify that a new segment has been underway for a few years and that its concentration is intensifying.
Improvement in urban goods distribution requires a convergence of public and private initiatives and a public space prepared to receive urban logistics and goods distribution activities, as in Japan. A better knowledge of each actor is thus required to improve that "urban productivity", as Michel Savy puts it. This article tried to present the emerging knowledge of transport in urban areas by proposing an updated study of the omnipresent urban parcel delivery sector. Moreover, it provided a complete overview of the urban parcel delivery organization as well as the inherent interests and issues to help understand the different opinions and concerns of an important stakeholder in urban logistics.
In the rest of the thesis, perspectives of the urban parcel market will be questioned in a ten year horizon. Changes in final user's logistics demand and evolutions in urban logistics regulation in urban areas will be analyzed to understand related consequences for the parcel distribution segment and to provide well-adapted solutions regarding the specificities of urban territories.

BIBLIOGRAPHY

ACSEL. (2012). L'e-commerce transfrontière. ACSEL. Paris.

ARCEP. (2011). Observatoire annuel des activités postales en France. Année 2010, ARCEP.

Augereau V., Curien R., Dablanc L. (2009). « Les relais-livraison dans la logistique du e-commerce, l'émergence de deux modèles», Cahiers Scientifiques du Transport, n°55, p. 63-95.

Beyer, A. (1999). Géographie des réseaux de transport. Morphologies et dynamiques territoriales des services de messagerie. Thèse de doctorat. Université Paris XII-Val de Marne

Dablanc L. (2011). « City distribution, a key element of the urban economy: guidelines for practitioners », in Macharis C., Melo S. (ed), *City distribution and urban freight transport: multiples perspectives*, Northampton, Edward Elgar Publishing, p. 13-36.

Dablanc L. (2009). *Freight transport for development toolkit*: Urban Freight, The World Bank Report, 51p.

Ducret R., Durand B. (2012). « e-Commerce et logistique urbaine: la consigne automatique, une alternative d'avenir? », RIRL 2012, The 9th International Conference on Logistics and SCM Research, (Montréal, 2012)

Durand B., Gonzalez-Féliu J., Henriot F. (2010). « La logistique urbaine, facteur clé de développement du B to C », RIRL 2010, The 8th International Conference on Logistics and SCM Research, BEM Bordeaux Management School., (Bordeaux, 2010)

Esser K., Kurte J. (2005). « B2C e-commerce: impact on transport in urban areas », Taniguchi E., Thompson RG., (dir), Recent Advances in City Logistics: Proceedings of the 4th International Conference on City Logistics (Langkawi, Malaysia, 12-14 july, 2005), Elsevier, p. 437-448.

FEVAD. (2012). Les chiffres clés vente à distance e-commerce, Edition 2012.

Gevaers R., Van de Voorde E., Vanelslander T. (2011). « Characteristics and typology of last-mile logistics from an innovation perspective in an urban context », City distribution and urban freight transport: multiples perspectives, Northampton, Edward Elgar Publishing, p. 56-71.

Harnay P. (2012). « Les logiques de la sous-traitance urbaine », Colloque Pour un renouveau de la logistique urbaine, (Paris, 2012)

Hesse M. (2002). « Shipping news: the implications of electronic commerce for logistics and freight transport », Resources, Conservation and Recycling, vol. 36, n°3, p. 211-240.

IFOP, Generix Group. (2013). « Les français et le juste aux prix des frais de livraison », 55p.

IFOP, Generix Group. (2012). « Les français et la livraison des achats sur Internet », 95p.

Maes J., Vanelslander T. (2012). « The Use of Bicycle Messengers in the Logistics Chain, Concepts Further Revised »,. Procedia - Social and Behavioral Sciences, vol. 39, p. 409-423.

Menge J., Hebes P. (2011). « Optimization of urban deliveries: evaluating a courier, express and parcel services pilot project in Berlin », City distribution and urban freight transport: multiples perspectives, Northampton, Edward Elgar Publishing, p. 201-216.

Moati P. (2011). La nouvelle révolution commerciale, Odile Jacob. Paris.

OCDE. (2003) Delivering the goods: 21st century challenges to urban goods transport, Editions de l'OCDE. Paris.

Patier D., Routhier JL. (2009). « La logistique urbaine, acquis et perspectives. Introduction au dossier. »,. Les Cahiers Scientifiques du Transport, vol. 55, p. 5-10.

Patier-Marque D. (2002). La logistique dans la ville, CELSE. Paris.

Rotem-Mindali O., Salomon I. (2007). « The impacts of E-retail on the choice of shopping trips and delivery: Some preliminary findings », Transportation Research Part A: Policy and Practice, vol. 41, n°2, p. 176-189.

Savy M. (2006). Le transport de marchandises, Eyrolles Editions d'Organisation. Paris.

Weltevreden JWJ., Rotem-Mindali O. (2009). « Mobility effects of B2C and C2C e-commerce in the Netherlands: a quantitative assessment », Journal of Transport Geography, vol. 17, n°2, p. 83-92.

« Les réseaux de messagerie face au e-commerce: l'heure des choix », Logistique magazine, 2011, n°264, 60-64p