



Final deliveries for online shopping: The deployment of pickup point networks in urban and suburban areas



Eleonora Morganti^{*}, Laetitia Dablanc¹, François Fortin²

French Institute of Sciences and Technology for Transport, Development and Networks IFSTTAR-SPLOTT, Cité Descartes, 14-20 Boulevard Newton, 77447 Marne-la-Vallée cedex 02, France

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ABSTRACT

In France, e-commerce has experienced steady growth over the past decade. A striking aspect is that it is now widespread among different segments of the population, including suburban and rural households. This growth has generated significant demand for dedicated delivery services to end consumers. Pickup points (PP) represent a fast-growing alternative to home delivery, accounting for about 20% of parcel deliveries to households. The article focuses on the strategy of PP network operators. Our results are threefold. We have documented the recent development of alternative parcel delivery services to e-shoppers in Europe, and especially in France. We have described how the operators have decided to organize their PP network, identifying main variables and constraints. We have provided an analysis of the spatial distribution of PPs in France. The paper shows that at the French national level, PPs are now a well established alternative to home deliveries and their presence covers urban, suburban and rural areas. While PP density in remote areas decreases faster than population density, rural e-consumers' accessibility to PP sites has reached a viable level. Furthermore, PP delivery services generate new types of B2B freight trips that are not yet included in current urban freight models.

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1. Introduction

As in many European countries, shopping habits in France are changing fast. E-commerce is becoming increasingly common due to the spread of IT systems such as laptops, tablets and smartphones. In 2012 e-commerce accounted for 7% of the French retail market (excluding food), i.e. €45 billion, with revenue up by 19% compared with 2011 (FEVAD, 2012). Interestingly, a few authors (Moati, 2009) have reported that online shopping has become widespread among the different segments of the population whether they live in central, suburban or even rural areas, although this change has not been documented in a comprehensive manner. Over the past 10 years, the spread of online shopping has generated significant demand for dedicated delivery services to the end consumer. This has resulted in the increasing fragmentation of shipments in the “last mile” as the final segment of the supply chain is known (Esser, 2006; Schewel & Schipper, 2012). Currently, in France, the vast majority of the 300 million parcels generated annually by distance selling result from online shopping (ARCEP, 2013).

Consequently, e-commerce increases the challenges facing product distribution, with direct effects on logistics systems in urban and suburban areas where traffic congestion and accessibility are crucial factors. In the case of the business to consumer market (B2C), home deliveries constitute the most problematic solution in terms of service costs and organization (Song, Cherrett, McLeod, & Wei, 2009). Although home deliveries are usually preferred by online shoppers (CREDOC, 2010), we are seeing the development of alternatives which satisfy both consumer demand for flexibility and firms' need to optimize parcel distribution through consolidated shipments. In Europe, automated parcel stations (APS) equipped with lockers, and pick-up points (PP), which are stores providing parcel drop-off and pick up services, are fast-growing solutions. These two end-delivery options are playing a decisive role in the reorganization of commercial and logistics activities (Augereau & Dablanc, 2008) and are becoming key features of the strategy of e-commerce and transport players. In the US, the online giants Amazon and Google (Google has opened an internet sales platform based on Amazon's market place) recently decided to invest in their own branded locker box solutions and are in the process of deploying pilot pickup/drop off sites. Similarly, in France new players are constantly emerging and new partnerships being set up, such as the takeover of the Kiala PP network by UPS in February 2012, and the takeover of the Pickup Services PP network by the French company La Poste, via its subsidiary GeoPost in 2009.

Currently, in Europe, the largest APS network is the Packstation network operated by DHL/Deutsche Post in Germany (2500 locations

^{*} Corresponding author. Tel.: +33 1 81 66 87 97; fax: +33 1 81 66 80 01.

E-mail addresses: eleonora.morganti@ifsttar.fr (E. Morganti), laetitia.dablanc@ifsttar.fr (L. Dablanc), francois.fortin@ifsttar.fr (F. Fortin).

¹ Tel.: +33 1 81 66 87 78; fax: +33 1 81 66 80 01.

² Tel.: +33 1 81 66 89 31; fax: +33 1 81 66 80 01.

around the country). Locker box networks have a limited presence in France, as witnessed by the very small network of 33 kiosks run by La Poste under the name of Cityssimo. New operators such as ByBox (originally from the UK) are likely to extend these services in Europe in the coming years. The second alternative, which forms the focus of this paper, is PP networks. In France, four competing providers are growing rapidly and managing increasingly large volumes of parcels. These operators – Mondial Relay, Relais Colis, Kiala and Pickup Services – have developed standardized delivery solutions for the whole country and in 2013 each of the networks provides access to a pickup point in under 10 min by car or on foot (depending on the area) to 90% of the French population. Today in France, more than 20% of online shopping shipments are delivered through a PP instead of to home.

According to the [European Commission Green Paper on the parcel delivery market for e-commerce \(2012\)](#), the growth potential of reception point delivery systems in the European Union is strong. It is probable that in the near future, drop-off and collection schemes will account for a significant share of parcel volume and will evolve into a more structured distribution channel, affecting urban logistics practices and enhancing competitiveness. The rapid development of alternative solutions for parcel distribution is confirmed by reports and studies dealing with trends affecting the internet economy and consumer shopping behaviors ([Bourdin, 2012](#); [Nemoto, Visser, & Yoshimoto, 2001](#); [Rallet & Perrin Boulonne, 2010](#)).

Previous research on end-delivery movements for e-commerce has mostly focused on describing and modeling household shopping trips ([Gonzalez-Feliu, Ambrosini, & Routhier, 2012](#)). In particular home delivery, the core business for shippers and couriers, has been thoroughly investigated during the last decade ([Browne, 2001](#); [Punakivi & Saranen, 2001](#); [Taniguchi and Kakimoto, 2003](#); [Visser, Nemoto, & Browne, 2013](#)), as has grocery shopping ([Cairns, 1996](#); [Wygonik & Goodchild, 2012](#)). However, with regard to e-commerce delivery schemes, little is known about proximity reception points and site location criteria, trip chain patterns, and tracking and tracing ICT tools. [Song et al. \(2009\)](#) investigated the effect of failed deliveries, estimating customer traveling costs and the environmental costs of home delivery against potential PP networks based on post offices, supermarkets and railway stations across West Sussex in the United Kingdom. In France, the topic has barely been studied.

The aim of this paper is to provide a better understanding of recent developments in urban freight logistics for alternative parcel delivery services to e-shoppers. Our work is part of a broader research program (2012–2015) that looks at disparities in access to e-commerce and home deliveries among urban, suburban and rural residents in France ([Motte-Baumvol & Belton-Chevallier, 2012](#)). We focused our research on PP service providers. It depicts the structure of French PP networks and the strategy of operators when designing PP networks. It provides an analysis of the locational patterns of PP networks and assesses disparities of access to PPs in urban, suburban and rural areas. We have conducted a case study on the Seine-et-Marne Department, a large area to the East of the city of Paris. Seine-et-Marne is partially integrated within the Paris metropolitan area, with urban and suburban settings, but it also has some rural areas, providing an interesting example of diverse residential environments and enabling comparisons. A final objective of this work is to provide directions for future research looking at the impacts of e-commerce on mobility and city logistics. Identifying some of the variables related to parcel flows within PP networks can help us better understand and plan for the traffic generated by city logistics.

Section two of the article describes recent changes and the main PP networks in the current European and French contexts. Section three presents the conceptual framework and methodology applied to the research. Section four describes the strategy of PP network operators. Section five provides a spatial analysis of PP deployment in Seine-et-Marne. Section six draws conclusions and opens up discussion for further research.

2. The development of PP networks in the end-delivery sector

2.1. Alternatives to home delivery services

Our analysis is structured on the basis of the two categories identified by [Augereau and Dablanc \(2008\)](#): (i) pickup points (PP) and (ii) automated lockers. PP networks operate through local shops where packages generated by the distance selling market are dropped off for collection by their individual recipients. In general, PPs are attended 6 days a week, during the opening hours of their host business (dry cleaners, florists, etc.). The second category refers to networks of APS, where people can withdraw packages 24 h a day from locker boxes usually located in shopping centers, gas stations, train stations or on the street. The strength of both systems is the flexibility of opening times compared with post offices, giving consumers the option to withdraw their packages at the time that suits them, as well as the lower costs for transport providers compared with home delivery. Moreover PP and APS networks make use of powerful IT tools for tracking parcels and managing returns, and international partnerships are set up for cross-border deliveries.

In spite of the major investment costs they entail, locker networks seem to be a promising solution, reducing missed deliveries and allowing for off-hour logistics operations ([Augereau & Dablanc, 2008](#)), the main focus of this analysis is on the PP solution, due to the fact that limited number of parcels is handled by APS schemes in France.

2.2. Main drop off networks in Europe today

Alternative delivery networks have recently developed in all European countries, especially in northern Europe (the Swedish operator PostNord provides about 5000 distribution points to the end consumer in Sweden, Norway, Finland and Denmark), the UK, France and Germany, where e-commerce and delivery services are more mature than in the rest of Europe. The United Kingdom, Germany and France have Europe's largest online markets, which together represent 71% of e-commerce with revenues amounting to €143.2 billion in 2011 ([Kelkoo, 2012](#)). Between 10 and 20% of shipments are delivered through a PP or locker solution. [Table 1](#) gives a glimpse of the recent progress of selected European PP/APS networks in these three countries, with growth rates ranging from 5% to 150% since 2008.

This trend towards an intensification of the networks has been confirmed in France, where the aggregate number of ventures serving as PP rose from 10,900 in 2008 to 18,200 in 2012, i.e. an increase of 67%. The French system of *point relais* (reception points) has atypical features, such as its early development, which began 30 years ago to manage mail-order deliveries, and the large number of players, with different shareholding structures ([Patier, Alligier, Bossin, & Perdrix, 2002](#)). As presented in the introduction, there are four competing PP network operators in France (Mondial Relay, Kiala, Relais Colis and Pickup Services), and the development of their networks is fairly similar (see below). These providers are medium-sized, whereas in most other countries, the market is dominated by one or two large operators (e.g. Hermes in Germany, which is almost the country's only PP network operator, in parallel with DHL Packstations providing APS).

2.3. The French PP model

The initial rise of PP operators in France derives from the development of mail-order selling during the 1980s ([Augereau, Curien, & Dablanc, 2009](#)). Sogep – known as Relais Colis – and Mondial Relay were created by two mail-order companies, respectively La Redoute and 3Suisses, with the aim of improving the efficiency of their shipping services. These operators expanded their networks during the 1990s, driven by a sequence of postal strikes, and are now among the biggest players on the French market. The spread of e-commerce opened the way for two additional PP companies, the Belgian firm Kiala and Pickup Services, a French start-up created in 2004. The rise of these companies

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