



HAL
open science

Urban Logistics and E-Grocery: Have Proximity Delivery Services a Positive Impact on Shopping Trips?

Bruno Durand, Jesus Gonzalez-Feliu

► **To cite this version:**

Bruno Durand, Jesus Gonzalez-Feliu. Urban Logistics and E-Grocery: Have Proximity Delivery Services a Positive Impact on Shopping Trips?. *Procedia - Social and Behavioral Sciences*, 2012, 39, pp.510 - 520. 10.1016/j.sbspro.2012.03.126 . hal-01770406

HAL Id: hal-01770406

<https://hal.science/hal-01770406>

Submitted on 18 Apr 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

The Seventh International Conference on City Logistics

Urban logistics and e-grocery: Have proximity delivery services a positive impact on shopping trips?

Bruno Durand^{a*}, Jesus Gonzalez-Feliu^b

^aUniversité de Nantes, LEMNA, 44312 Nantes, France

^bUniversité de Lyon, LET, 69000 Lyon, France

Abstract

This paper proposes a discussion of three scenarios related to e-grocery distribution developments, in order to identify and analyze the impacts of new forms of proximity deliveries on households' shopping trip flows. Firstly, we present the two basic logistics models adopted by online retailers (in-warehouse picking and in-store picking), as well as the three main proximity delivery approaches in e-grocery. Secondly, we focus on city logistics, more particularly on the relations between e-grocery development and the related various urban goods movement flows. Thirdly, we propose to study the impact of these systems on consumer's purchasing trips and, to this end, we use an empirical simulation approach in order to make a comparison of these three scenarios.

© 2012 Published by Elsevier Ltd. Selection and/or peer-review under responsibility of 7th International Conference on City Logistics

Keywords: e-Grocery; proximity deliveries services; home delivery; out home delivery; shopping trips; simulation; evaluation

1. Introduction

After a slow start, particularly in France, e-commerce services is now booming, sometimes leading to fractures, especially in the distribution of the purchased products. For this reason, it seems urgent to be concerned with deliveries to Internet, either directly at home or to pick-up points, because city logistics could become a key factor in online selling development success or failure. In the past decades, city logistics has been developed to deal with the main problems of urban freight distribution, studying freight movements in urban areas and proposing solutions to reduce congestion and pollution [1]. Several studies

* Corresponding author. Tel.: +3-324-0141149; fax: +3-347-2726448.
E-mail address: bruno.durand@univ-nantes.fr

deal with e-commerce ([2] & [3]), but few of them study the connections between e-commerce development and the periodic grocery purchases of households in urban areas.

This paper aims to study the impacts of e-grocery development on household shopping trip behavior. More precisely, we want to focus on the interactions between e-grocery end-consumer flows and city logistics systems. Firstly, we describe the two main logistics solutions adopted by online retailers, i.e. that of order-picking on a dedicated site and in-store picking, and the main distribution channels of e-grocery. Secondly, we want to present the main components of urban goods movement in order to introduce the main issues related to e-grocery development. Finally, we propose a simulation method in order to evaluate three scenarios derived from the generalization of current French e-grocery services, and we discuss the results and the main consequences that these developments can lead to.

2. Supply chain management in e-grocery

Logistics is an essential component of web-based retailers' strategies [4], also defined as e-tailers. More precisely, two main components can be identified in strategic logistics management for e-commerce activities: inventory strategies and transport schemes. If we observe the online order-picking (related to inventory), we can define two basic organization models [5]: (1) order-picking at a dedicated site, for example, an upstream national or regional warehouse (warehouse-picking) or closer to the place of consumption in a downstream local depot (depot-picking); (2) store-picking.

When the number of stock keeping units (SKU) for e-commerce is large (several tens of thousands) and when the online activity is not marginal (several hundreds of orders a day), storage on a specific site, dedicated to this purpose, seems a necessity [6]. Three alternative inventory schemas have been considered: (1) upstream storage in producers' warehouses for slow moving items (see Fig 1); (2) more downstream storage, for fast moving products in national (or interregional) warehouses dedicated to e-commerce and managed by distributors and/or LSPs (Logistics Service Providers); (3) far downstream storage, for very fast moving articles in urban (or suburban) depots, directly connected to online sales structures and directly managed by distribution companies.

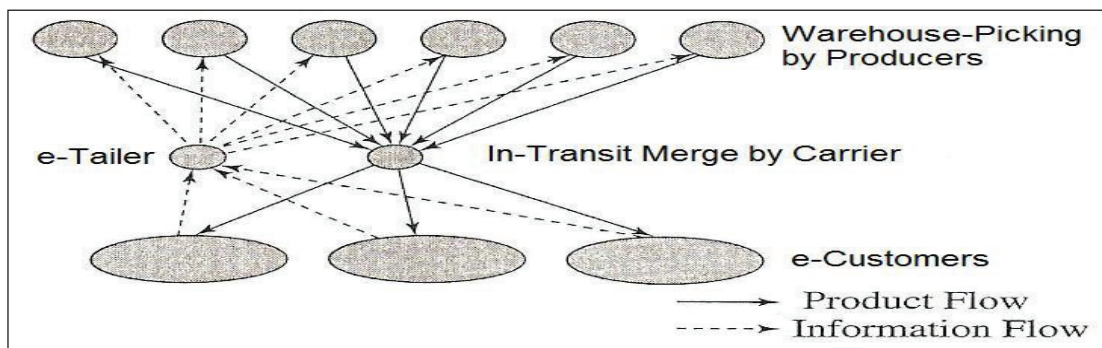


Fig. 1. Upstream warehouse-picking and in-transit merge operations [7]

Online retailers, who choose to lean on a network of existing stores, opt for a very simple and quickly operational process. This model, which was the cornerstone of Tesco's e-grocery success, is based on the fact that on-line orders are transferred to the store nearest to the e-consumer's location. Store-picking is often made by employees of the store concerned (they directly pick articles from shelves) and, once the basket has been filled, HDs (Home Deliveries) are in general made by the storekeeper or by a LSP, with a

multi-temperature vehicle. So, using existing infrastructures, store-picking is characterized by a reduced investment and, therefore, by a very short ROI (Return On Investment). Moreover, on-line consumers can also opt to pick-up goods purchased, directly in store (as shown in Fig. 2), avoiding transportation costs in this way. However, this second model, which proves that e-commerce does not sign any death of stores (their mobilization could be, indeed, an invaluable e-logistics support), contains a risk: that of the disturbance of traditional in-store customers by pickers.

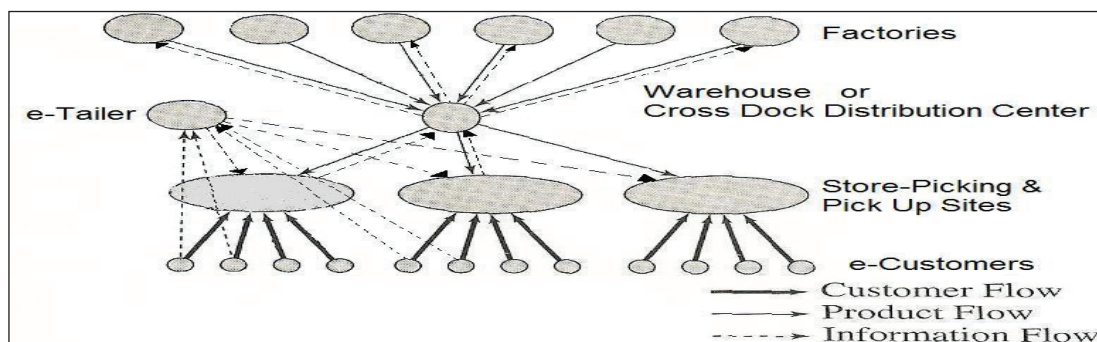


Fig. 2. Downstream store-picking and e-consumers pickup operations [7]

Regarding transport models from a city logistics point of view, three main strategies are commonly seen in practice:

- HDs from a supermarket, where orders are prepared by a picker (store-picking), mainly on the outskirts of the urban area without major changes in the supply strategy. The purchased products are either directly delivered at home or picked up by the consumer, mainly by car, avoiding queues and waiting times at the checkout of the store (car picking services are also known as “shopping drive”). However, for proximity supermarkets or commercial centres with good public transport accessibility, car is not the only transport mode for end consumers. In all cases, these trips can be assimilated to personal trips for shopping purposes.
- HDs from a specific warehouse, where orders can be prepared (warehouse-picking) and where important changes are noted in the supply chain, because the warehouse is not located in a peripheral area. Then, the ordered products are delivered to the place of consumption using light goods vehicles, through an optimized route. These trips are made by small city freighters and can be assimilated to traditional e-commerce HDs with more restrictive constraints.
- OHDs (Out Home Deliveries) through proximity reception points, where the supply changes consist of including new local depots [8]. In this case, the ordered products are directly prepared in a depot (depot-picking), located near the place of consumption in which they are picked up by the final consumer.

3. Interactions between e-grocery and city logistics

As stated by many authors, urban goods movement (UGM) presents several categories and subcategories. In this paper, we are interested on two types of movements: the last mile inter-establishment movements and the end-consumer movements, which are susceptible to evolve with the development of e-grocery. Inter-establishment movements represent about 40-45% of the total UGM in a urban area [9]. The last mile flows of retailing activities are estimated to be 11% of total UGM [10], whereas those related to only grocery are about 9%.

Table 1. Main characteristics of small grocery retailers last mile flows in each category of urban area [11]

	Central urban area	Near periphery	Far periphery	Average
Composition – individual housing	5%	25%	60%	30%
Composition – collective housing	95%	75%	40%	70%
Tour - Number of reception points	16	20	20	18
Tour - Average speed	11 km/h	16 km/h	25 km/h	17.3 km/h
Tour - Average distance d_z^{RP}	60 km	75 km	115 km	90 km

End consumer movements represent about 45%-50% of the total UGM [9]. Nowadays, most of these flows are classical shopping trips, but the new forms of distribution need to start to be taken into account in a global city logistics point of view.

Urban shopping trips are not isolated but often belong to more complex trip chains. 82% of the total shopping trips in the urban area of Lyon (France) are included on complex round journeys starting and ending at home and having as main purpose one or more purchasing activities [12]. Moreover, other 15% belong to work-home trip chains. Focusing on the round shopping-based journeys, we observe that the usage of private car is more important in periphery than in central sections:

Table 2. Car usage in round shopping journeys [12]

Category of urban area	Trips on rounds where purchasing is the main activity			Trips on « only shopping » rounds		
	Total	No car	Car	Total	No car	Car
Central Urban Area	172 923	79,5%	20,5%	134 313	76,6%	23,4%
Near Periphery	206 543	36,3%	63,7%	158 128	45,3%	54,7%
Far Periphery	251 865	29,5%	70,5%	182 621	30,6%	69,4%
Total	631 332	45,4%	54,6%	475 061	48,4%	51,6%

HDs represent nowadays about 5% of total shopping trips and could represent more than 15% in 2020 [13]. In Table 2, the main characteristics for HD trips taken into account in this study are presented. Note that the results correspond to a 2007 survey, and in 3 years some changes have been made. However, these results are enough close to the current situation but with the generalisation of HDs the goods vehicles used for this channel will be better optimised and consequently the total travelled distances should decrease.

Table 3. Main characteristics of home delivery trips for store picking and depot picking routes in each category of urban zone ([14] & [15])

	Central urban area	Near periphery	Far periphery	Average
Composition – individual housing	5%	25%	60%	30%
Composition – collective housing	95%	75%	40%	70%
Number of delivery points n_z^{HD}	15	21	20	18.1
Tour - Average distance d_z^{HD}	17 km	35 km	80 km	45 km

Table 4. Main characteristics of home delivery trips for warehouse picking routes [15]

	All categories of urban space
Composition – individual housing	30%
Composition – collective housing	70%
Number of delivery points n_z^{HD}	40
Tour - Average distance d_z^{HD}	200 km

Proximity reception points have been conceptualised recently in supply chain management [16]. These studies deal with managerial and strategic questions and are not related to quantitative characterisation of routes and traffic flows [17].

Finally, we want put forward a small overview of e-grocery development. If on-line sales concern almost all business sectors, one has to admit that e-grocery still represents a small niche market: its turnover was only about 1.2 billion euros in 2009 in France. Besides this, currently only about three million French on-line shoppers use cyber-markets. This type of sale is attractive firstly for reasons of practicality and of time saving. Consumers want to save time during food purchasing in two ways: (1) on going to the store by reducing (or even by eliminating) their round trip time and, also, the time of spent looking for a parking space; (2) during their time in store by eliminating waiting times at food preparation counters and at the checkout. Internet users underline the practicality of on-line sales, also, in two ways: (1) on-line stores are continuously open, 24 hours a day – therefore this scenario allows transactions at any time of the day; (2) on-line orders can be directly delivered or dropped off at pick-up points. Let us add that the consideration of environmental problems also seems to push households to develop their Internet purchases: the environmental impact seems rather positive because of the reduction of movements and of greenhouse gas emissions (GHG).

The cost of this service seems to constitute the major obstacle to e-grocery development because, in the mind of many French people, on-line shopping is more expensive: (1) either the price of products sold on Internet is higher because it integrates the cost of basket picking and delivery costs; (2) either the price of articles is situated at the same level as that practised in store and it is advisable to add to this the logistic service cost. Less sensitive to this cost than the other SPC (Socio-Professional Category), the SPC+ (upper SCP) is also, at the moment, the category the most attracted by e-grocery: more half of their food expenses would already be made in cyber-markets, while the offer, real element of differentiation between e-grocers, is particularly reduced with only 7,000 references on average, compared to 40,000 for a traditional hypermarket.

4. Simulation as an evaluation tool for e-logistics

In this section, we provide an assessment of three distribution scenarios adopted by French e-grocers: (1) one based on store-picking and that combines HD services with in-store pick-up shopping trips; (2) one that allows only warehouse-picking, which is translated into HD services only; (3) the last one that, conversely, only offers a pick-up service from a nearby depot.

4.1. The proposed scenarios

In order to isolate the effects of e-commerce from other effects, such as population growth or changes in retailing demography, we propose several hypothesis built from the reference presented above by

changing only the end-consumer supply organizational schemas (with the respective inter-establishment changes if applicable). The proposals are:

- S0: A reference situation, corresponding to those of the urban area of Lyon in 2005-2006 [18].
- S1: A "store-picking & HD" scenario based on the assumption that all households asking for e-commerce services are served by a store within their urban area. This scenario supposes two types of retailing activities: small retailers will cover small routes from all locations within the urban area, whereas big stores will use peripheral stores as the starting point of longer routes.
- S2: A "warehouse picking & HD" scenario. This hypothesis supposes that the only distribution channel for e-grocery services is that of HDs using a warehouse-picking strategy. This supposes the use of a regional depot, then the simulation of HD routes from this site. This scenario supposes that only large e-grocery groups are proposing these services.
- S3: A "depot picking & OHD" scenario based on the assumption that only depot-picking can be used by the inhabitants for e-commerce purposes. These depots are located in the areas having already a supermarket, in order to obtain a realistic set of depots.

For each hypothesis, a quota of 10 to 50% of e-commerce users is supposed. Moreover, both warehouse-picking and store-picking strategies will be simulated each time.

4.2. Simulation procedure

The simulation procedure chart is presented in Fig. 3. We assume that all strategies follow a store-picking inventory schema, since this is nowadays the most interesting in terms of environmental and social impacts [19]. For this reason, only B2C flows will be simulated.

The substitution procedure works as follows. Given an urban area Z , divided in n sections. Each section i is characterised by the number of shopping trips that it generates at origin (retailers or other facilities related to e-grocery) and destination (consumption places), respectively noted:

$$T_i^{Shopping-O} \text{ and } T_i^{Shopping-D}.$$

Also the O/D matrix is known for both categories, noting each trip between section i and section j $T_{ij}^{Shopping}$ respectively. Note that the following two expressions have to be verified:

$$T_i^{Shopping-O} = \sum_j T_{ij}^{Shopping} \quad \forall i \text{ and } T_j^{Shopping-D} = \sum_i T_{ij}^{Shopping} \quad \forall j.$$

For each distribution channel ch , an average channel share CS_i^{ch} is defined as the percentage of the population that uses channel ch for shopping purposes in retailing activities located at section i . These constants depend on the category of urban space. Three types of urban area are taken into account, following the definition of Gonzalez-Feliu *et al.* [18], defined as follows: the main urban area, known as *central urban area* in this study, contains the main city of the urban region and sometimes other urban suburbs which can be assimilated to the main city, because of a continuity of the urban landscape. The cities of the *near periphery* are the urban zones close to the central urban area, and are usually identified with the first ring. The rest of towns of the extended urban community belong to the *far periphery*.

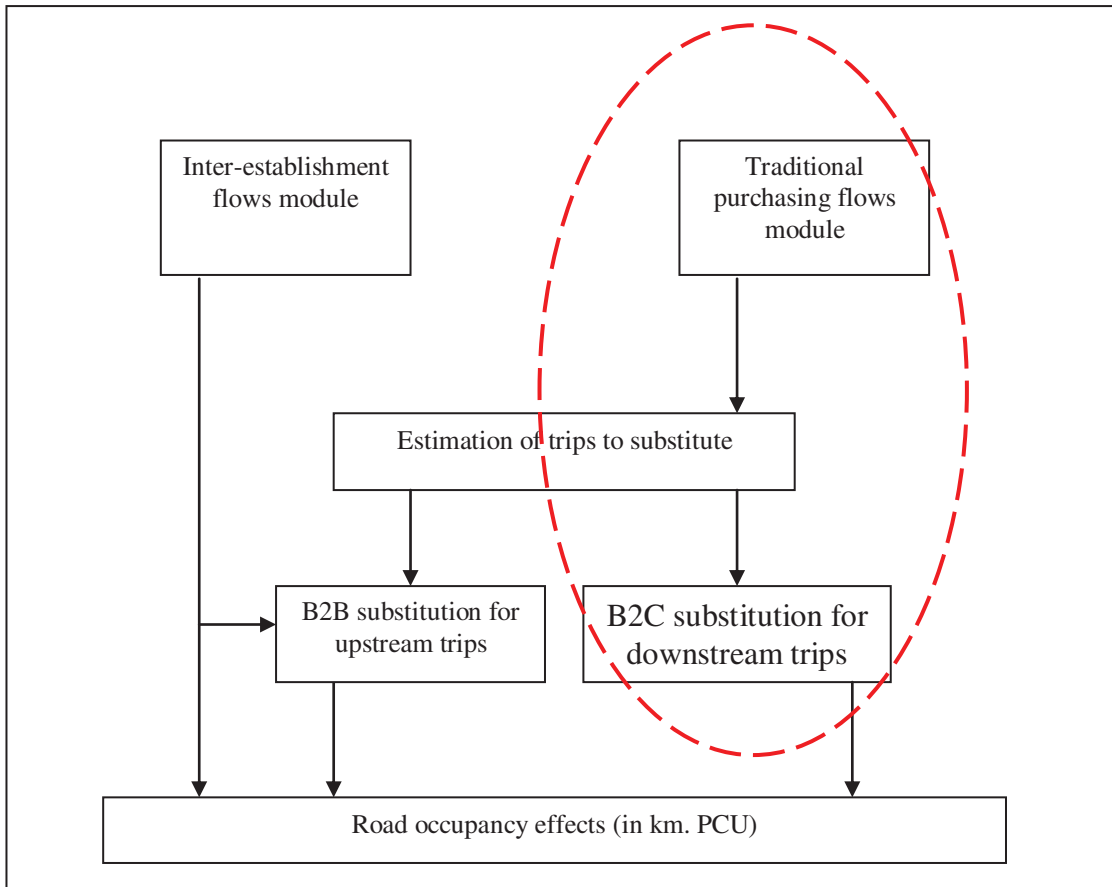


Fig. 3. Integrated simulation procedure chart

After that, we can define for each channel the number of shopping trips that will be substituted by the corresponding e-grocery deliveries, noted:

N_{ij}^{ch} and defined as follows:

$$N_{ij}^{ch} = CS_i^{ch} \cdot T_{ij}$$

Having calculated N_{ij}^{ch} , the corresponding flows associated to each channel are determined. The substitution of the shopping trips from car channel towards other channels has different impacts on downstream supplying strategies in a different way for each channel. For this reason, the parameters used for each channel have been calibrated empirically on specific data collected by people or freight trip surveys ([20] & [10]).

- *Store-picking & HD*

In this hypothesis, we suppose that all the stores are concerned. From current shopping practices [11], we can estimate the travelled distances for shopping by private car, for each type of retailer (small retailers, supermarkets or hypermarkets mainly). These distances are estimated one that allows only warehouse-picking, which is translated into HD services only hypermarket private car flows.

- *Warehouse-picking & HD*

To simulate HD distribution trips, we define the corresponding routes following the characteristics presented in precedent section. The substitution needs to define the number of orders (i.e. the total number of delivery points for HD services). Not all shopping trips made by private car are related to big quantities of goods. For this reason, not all these trips will result in a HD order. The number of orders for HD services can be defined as follows [11]:

$$NO_{ij}^{HD} = \alpha \cdot N_{ij}^{HD}$$

where α is a coefficient that shows that each shopping trip will not be systematically translated into one HD, but some households will use only one HD to substitute several traditional shopping trips (both by private car or on foot). Once the number of orders has been determined, the number of delivery routes are simulated as follows:

$$T_{ij}^{HD} = \left[\frac{NO_{ij}^{HD}}{n_z^{HD}} \right]$$

where n_z^{HD} is the number of points of a HD route in an urban space of category z .

The travelled distances are then estimated as follows:

$$D_{ij}^{HD} = T_{ij}^{HD} \cdot d_z^{HD}.$$

- *Depot-picking & OHD*

Proximity depot-picking is simulated following the assumption that a reception point is similar to the Japanese proximity stores, i.e. a small franchised retailer acting who can store the purchased good for some hours. First, the number of delivery routes is estimated as follows:

$$T_{ij}^{RP} = \left[\frac{N_{ij}^{RP}}{n_z^{RP}} \right]$$

Second, the travelled distance for reception point distribution is calculated by:

$$D_{ij}^{RP} = T_{ij}^{RP} \cdot d_z^{RP}$$

Finally, the private car shopping trips are estimated empirically using the method of Gonzalez-Feliu *et al.* [11].

- *Other shopping trips*

Existing shopping trip estimation models can give us both the number of trips and the total distance travelled by each O/D pair, before the substitution phase takes place. After estimating the total number of trips to be substituted, the rest of trips correspond to traditional shopping trips. In order to estimate the

distances of these trips, we estimate the average distance travelled from section i to section j by private car as d_{ij}^{PC} . The total distance D_{ij}^s corresponding to the trips that are substituted can be estimated as follows:

$$D_{ij}^s = d_{ij}^{PC} \cdot \sum_{ch} N_{ij}^{PCch}$$

5. Simulation as an evaluation tool for e-logistics

Using the simulation framework described above, we were able to establish a number of results, then to carry out a comparative analysis of three scenarios studied. These results are expressed in Km (see Table 5), to estimate the energy generated by e-grocery distribution and also in km.PCU[†], to calculate the road occupancy rates. Note that the reference scenario produces nearly 26 million miles weekly on the Lyon urban area and that, in 2006, the flows downstream delivery were assumed to be negligible [18].

Table 5. Simulation results in km / week on the Lyon urban area

Scenario		Home Deliveries & Pick-Up Oper.	Purchase Movements	Total	%
Reference		0	25 955 939	25 955 939	
1	10%	438 962	25 211 212	25 650 173	-1,2%
	20%	872 518	24 216 337	25 088 855	-3,3%
	30%	1 306 098	23 221 462	24 527 560	-5,5%
	40%	1 739 916	22 226 588	23 966 504	-7,7%
	50%	2 173 377	21 231 713	23 405 090	-9,8%
2	10%	475 829	24 547 962	25 023 791	-3,6%
	20%	956 676	22 889 837	23 846 513	-8,1%
	30%	1 460 859	21 231 713	22 692 572	-12,6%
	40%	1 992 586	19 573 588	21 566 174	-16,9%
	50%	2 548 331	17 915 464	20 463 795	-21,2%
3	10%	249 593	24 646 154	24 895 747	-4,1%
	20%	490 366	22 981 397	23 471 763	-9,6%
	30%	744 676	21 316 640	22 061 316	-15,0%
	40%	1 013 972	19 651 883	20 665 855	-20,4%
	50%	1 295 942	17 987 125	19 283 068	-25,7%

Table 6. Simulation results in km.PCU / week on the Lyon urban area

Scenario		Home Deliveries & Pick-Up Oper.	Purchase Movements	Total	%
Reference		0	25 955 939	25 955 939	
1	10%	658 442	25 211 212	25 869 654	-0,3%
	20%	1 308 777	24 216 337	25 525 114	-1,7%
	30%	1 959 147	23 221 462	25 180 610	-3,0%
	40%	2 609 875	22 226 588	24 836 462	-4,3%
	50%	3 260 066	21 231 713	24 491 779	-5,6%
2	10%	713 744	24 547 962	25 261 706	-2,7%
	20%	1 435 014	22 889 837	24 324 851	-6,3%
	30%	2 191 289	21 231 713	23 423 001	-9,8%
	40%	2 988 879	19 573 588	22 562 467	-13,1%
	50%	3 822 496	17 915 464	21 737 960	-16,3%
3	10%	499 185	24 646 154	25 145 339	-3,1%
	20%	980 733	22 981 397	23 962 130	-7,7%
	30%	1 489 353	21 316 640	22 805 993	-12,1%
	40%	2 027 944	19 651 883	21 679 827	-16,5%
	50%	2 591 885	17 987 125	20 579 010	-20,7%

[†] Private Car Unit equivalences: 1 light goods vehicle = 1.5 PCU, 1 simple truck = 2 PCU and 1 semi-articulated = 2.5 PCU

From them, we can observe that the “store-picking & HD” scenario (n°1), which mixes HDs and pick-up services, appears to be the least favourable in terms of road occupancy impact. While the trips related to household supply decrease, these variation is not enough important to efficiently compensate the increase of commercial vehicles trips for HD services. Note that in this simulation, the current practices of HD services has been generalised without a further optimisation: the first scenario results then on up to 21% when the utilisation rate is 50%. Scenario n°3, the “depot-picking & OHD” strategy seems to be, *a priori*, more favourable: more than 25% gain in Km when the utilisation rate is 50%. However, these results have to be pondered in km.PCU in order to see the impacts on road occupancy. We observe that HDs, made with light goods vehicles (weighted as 1.5 private cars) have an important impact on the total road occupancy (see scenario n°2 [“warehouse-picking & HD” scenario]). Focusing on nearby depots in the scenario n°3, the deliveries, made with heavy simple trucks weighted two private cars, are better optimized. This fact, added to the decrease of private car shopping trips (similar to that of HDs but a little higher because some households will use private cars for small distances), allows to get better gains (more than 15% with 40% usage and more than 20% with 50% usage). Finally, we show, through the external impacts of domestic supplies, it is the consolidation of HDs and the proximity of pick-up points (trips made on foot) that can give significant savings.

6. Conclusion and managerial implications

In this paper, we have given an overview on the latest developments in e-grocery distribution and presented a scenario analysis using an empirical simulation approach. Three scenarios, each of them related to a new form of e-grocery services (store-picking & HD, warehouse-picking & HD and depot-picking & OHD) have been presented and simulated. We can observe that scenario n°1, which mixes HDs and pick-up services, appears to be the least favorable. While the individual purchase movements decrease, the use of commercial vehicles for HDs does not seem to be optimized in this configuration. As for scenario n°2, the “all-HD”, it seems to generate substantial gains in Km.PCU: up to 16% when the utilization rate is 50%. Scenario n°3, the “all-pick-up” would be, *a priori*, more favorable: more than 20% gain Km.PCU when the utilization rate is 50%. This reflects a sharp decline in motorized shopping trips over 30% drop, the assumption was made that the depots are located near the heart of residential neighborhoods and the density of these points is sufficient to lead to changes in user behavior, including the use of their car. Finally, we show, through the external impacts of household supplies, we prove that consolidation of HDs and proximity reception points (where most trips are made on foot) can lead to significant savings.

The remaining question concerns the managerial implications of the three scenarios. Regarding the first, in which 40% of e-shoppers opt for an in-store pick-up service, it raises the key question of the nature of the operator who must support the network of pick-up points. Does the e-tailer to assume this role? Is not that rather a LSP to do it? This second alternative would be to fine-tune the prospect of consolidating and sharing on-line order processing on urban platforms to reduce the number of HDs per household.

Regarding scenario 2, the "all-HD" is getting closer to a rate of use of the groceries that 40-50% of electronic mass becomes possible and that the internalization of HDs appears relevant because it generates transport cost savings. However, LSPs specialized in the field, starting with *Star's Service* in France, also seem able to offer quality services at a very reasonable price. Finally, the local depot option is the most interesting in terms of reducing CO₂ emissions, but also the most costly and longest in implementation. The deployment of local depots requires significant investment [8], which inevitably leads to higher management costs. A pooling of these infrastructures through urban platforms could then

be the best solution to the urban delivery problem [16], although this strategy remains long and arduous [21].

References

- [1] Taniguchi E, Kakimoto T. Effects of e-commerce on urban distribution and the environment. *Journal of Eastern Asia Society for Transportation Studies* 2003; 5.
- [2] Nemoto T, Visser J, Yoshimoto R. Impacts of information and communication technology on urban logistics system. *OCDE/ECMT Joint Seminar*, Paris 2001.
- [3] Patier D. New concepts and organisations for the last mile: French experiments and their results. In: Taniguchi E, Thompson RG, editors. *Recent advances in city logistics*, Amsterdam: Elsevier; 2006, p. 361-374.
- [4] Dornier PP, Fender M. *La logistique globale : Enjeux, principes, exemples*. Paris: Editions d'Organisation; 2001.
- [5] Paché G. Efficient urban e-Logistics: Mutualization of resources and source of competitive advantage. *7th International Meeting for Research in Logistics*, Avignon 2008.
- [6] De Koster MBM. Distribution structures for food home shopping. *International Journal of Physical Distribution & Logistics Management* 2002; 32(5).
- [7] Chopra S, Meindl P. *Supply chain management: Strategy, planning and operations*. New-Jersey: Pearson Prentice Hall; 2004.
- [8] Augereau V, Dablanc L. An evaluation of recent pick-up point experiments in European cities: The Rise of two competing models ? In: Taniguchi E, Thompson RG, editors. *Innovations in city logistics*, Washington: Nova Science; 2008, p. 301-320.
- [9] Routhier JL. *Du transport de marchandises en ville à la logistique urbaine*. Paris: DRAST ; 2002.
- [10] Routhier JL, Traisnel JP, Gonzalez-Feliu J, Henriot F, Raux C. *ETHEL II: Energie, transport, habitat, environnement, localisations*. Paris: GICC-ADEME; 2009.
- [11] Gonzalez-Feliu J, Ambrosini C, Routhier JL. New trends on urban goods movement modelling: Proximity delivery versus shopping trips. *European Transport* 2011.
- [12] Gonzalez-Feliu J, Ambrosini C, Routhier JL. Comprendre les chaînes de déplacement pour l'approvisionnement des ménages. *Premier Colloque FRELON*, Paris 2011.
- [13] Georget P, Damery N, Gallois JB. *Quel avenir pour le commerce en France ? Neuf patrons vous en disent plus*. Paris: Somogy Société; 2008.
- [14] Alligier L. *Mesurer l'impact du commerce électronique sur la logistique urbaine*. PhD. Thesis dissertation Université Lumière Lyon; 2007.
- [15] Durand B, Vlad M. Auchan et Intermarché : Deux styles de glisse sur la vague de la cyber-épicerie. *Revue des cas en gestion* 2011; 5.
- [16] Paché G. Logistique urbaine mutualisée : Quelle stratégie de différenciation pour le commerce alimentaire en ligne ? *Revue Française de Gestion Industrielle* 2010; 29(2).
- [17] Durand B. Mutations logistiques de la cyber-épicerie française : Quand les groupements d'associés défient la distribution intégrée. *Logistique & Management* 2009; 17(2).
- [18] Gonzalez-Feliu J, Toilier F, Routhier JL. End consumer movement generation in French medium urban areas. *Procedia Social and Behavioral Science* 2010; 2(3).
- [19] Durand B. E-commerce et logistique urbaine : Quand le développement durable s'en mêle. *Revue Française de Gestion Industrielle* 2010; 29(2).
- [20] Patier D, Routhier JL. La logistique urbaine, acquis et perspectives. *Les Cahiers Scientifiques du Transport* 2009; 55.
- [21] Gonzalez-Feliu J, Morana J. A la recherche d'une mutualisation des livraisons en milieu urbain : Le cas des NMPP. *Revue Française de Gestion Industrielle* 2010; 29(2).