

Logistical Performance as a Key Factor of Success for European Food E-tailers— Three Paradoxes and a Research Agenda

Dominique Bonet¹, Gilles Paché²

¹ CRET-LOG, Université de la Méditerranée (Aix-Marseille II), France
dbonet@univ-aix.fr

² ERFI-CEROM, Université Montpellier I, France
gpache@univ-montpl.fr

ABSTRACT

In many Northern European countries, the sale of convenience goods through the Internet is experiencing a slow but undeniable growth. The emergence of this new distribution channel has brought into existence an extremely productive research area on the key factors which food e-tailers need to master for a lasting success in this field. The central nature of a perfect logistical organization is particularly emphasized in the areas of cost and service quality, both in terms of order fulfillment and order delivery. There is no question of minimizing the importance of logistics in the success of online transactions, as e-consumers obviously expect to be delivered at home in good conditions. But can we affirm that logistical performance systematically plays a crucial role for food e-tailers in obtaining a sustainable competitive advantage? By critically examining the relevant literature, this paper attempts to prove that the answer may be negative. The authors refer to three paradoxes relating to e-grocery logistics: one, the pressure of national and local Authorities leads to the sharing of resources to reduce environmental pollution (first paradox); two, the recognition of an e-marketing mix dissolves logistical performance in a set of non-logistical variables whose weight is probably significant in e-consumers' behavior (second and third paradoxes).

Keywords: consumer expectations, e-grocery, e-marketing mix, Internet shopping, logistics, order delivery, order fulfillment, package deal of services

1. INTRODUCTION

The sale of convenience goods by the Internet, known under the generic term of e-grocery, is experiencing an appreciable development in many European countries, even if the online channel still remains marginal compared to the traditional in-store channel. The act of physical shopping is still often “*a socially valuable and personally relaxing experience*” [12, p.231], but a new generation of highly educated and professionally hyper-active young consumers find an increasing interest in online transactions for convenience goods which do not create any “retail therapy” buzz of in-store shopping. Numerous works now focus on e-grocery, systematically emphasizing the importance of logistics—the order fulfillment and order delivery processes—as key factors of success for e-grocers [8]. Of course, delivering the right product at the right time at an acceptable cost is an important stake. However, it should not be assumed that logistical performance alone will always exert a lasting power of attraction on e-consumers leading them to remain loyal to a website. In other words, are we really sure that the logistical performance associated with a website creates a source of competitive advantage?

This paper wishes to underline three paradoxes tending to put in perspective the importance e-grocers should give to logistics in their business plans. As a reminder, the word paradox comes from the ancient Greek *paradoxos*, meaning “contrary to the general opinion.” Following early academic research on e-grocery

logistics, a consensus—a kind of general opinion—seems to arise on several points. We wish to adopt a critical attitude toward this consensus. Each of the paradoxes offers food for thought from elements drawn from literature, and ends with a research question making up one of the components of a research agenda to develop on e-grocery logistics. The objective is not to provide final answers on its future, but rather to state how it is possible to moderate the influence of logistical performance on the food e-tailing industry's efficiency. To do so, the paper is divided into three parts successively summing up the three identified paradoxes, i.e. that the general opinion on logistics as a key factor of success for e-grocers is questioned:

- (1) By the forced sharing of logistical resources, under the pressure of local Authorities wishing to avoid the anarchic development of private “last mile” organizations;
- (2) By the existence of a package deal of services underlining the major importance of other elements in the offer of e-grocers (privacy, sales promotion, security, etc.); and
- (3) By a level of e-consumers' expectations in terms of service quality not necessarily requiring “order fulfillment and order delivery excellence” on the part of e-grocers.

The research program whose basis is suggested here starts with the idea that several research subjects on

e-grocery logistics developed since the end of the 1990s, each leading to independent interesting and operational results. Among other things, it seems undeniable that decision-makers can now rely on computer simulations including a set of parameters to create efficient home delivery systems. Similarly, in matters of urban development, studies were started in France, in Germany and in the UK, among others, to measure the environmental impact that a rapid growth of food e-retailing could have [3] [6], and to consider a better planning of flows through the intervention of local Authorities (coordinated implementation of warehousing and transport infrastructures). If isolated information is therefore available on trends in e-grocery logistics, a comprehensive approach based on the integration of the various elements produced by a pluridisciplinary research program is still to appear. The present paper is a first step in this direction.

2. THE FIRST PARADOX—A FORCED SHARING OF THE LOGISTICAL ADVANTAGE

E-grocery (or food e-tailing) obviously questions traditional logistics, at least the final stage of (physical) contact between customers and the product assortment: it forces firms to solve the thorny problem of conveying products to e-consumers' homes –or places of work– in satisfactory conditions of cost and quality of service. Works on e-grocery logistics in the last five years have made it possible to identify the different available alternatives at order fulfillment and order delivery level [6] [10] [26]. Concerning order fulfillment, e-grocers choose warehouse picking, in-store picking or hybrid

in-store/warehouse picking. As for order delivery, attended delivery, unattended delivery and consumer pickup in third party locations all occur. No model seems to emerge durably for the time being in European countries [8]. Each food e-tailer operates with its own organization. But it is important to note that most firms offer attended deliveries based on warehouse picking, which enables e-consumers to choose a time window to receive their products ordered online (see Table I).

All observers of the e-tailing industry consider the organization of home delivery of groceries complex and expensive, whatever the order fulfillment model chosen: to contact customers, it is necessary to organize delivery rounds to service residential areas that are often uneasy to access, in limited time windows (evening, beginning of week-end). Of course, several alternatives to conveying goods to e-consumers' homes or places of work are conceivable, for example the implementation of collection and delivery points (CDP) or the use of convenience stores where e-consumers would recover the ordered products. Browne [1] gives several concrete illustrations for small packages: service stations, leisure centers (like swimming-pools or tennis clubs), railway or bus stations, etc. But is it likely that e-consumers would systematically accept using CDP or convenience stores when using e-grocery shopping is precisely a way of getting rid of such time-consuming logistical tasks? In fact, the generalization of home delivery remains the most likely scenario for the evolution of e-grocery logistics [9]. Hence the attention given to order fulfillment decisions in the academic literature (for a summary, see [26]).

Table I
Alternative e-grocery logistics models for a few firms
(adapted from Hays et al. [10])

| | Warehouse picking | In-store picking | Attended delivery | Unattended delivery | In-store pickup |
|-----------------------------|-------------------|------------------|-------------------|---------------------|-----------------|
| <i>Alberstons</i> | █ | █ | █ | | █ |
| <i>Cold Storage</i> | █ | | █ | | |
| <i>Fairprice</i> | █ | | █ | | |
| <i>Grocery Gateway</i> | █ | | █ | | |
| <i>Homegrocer</i> | █ | | █ | | |
| <i>NetGrocer</i> | █ | | | █ | |
| <i>Peapod</i> | █ | █ | █ | | |
| <i>Safeway/GroceryWorks</i> | █ | | █ | | |
| <i>Sainsbury's</i> | █ | | █ | | █ |
| <i>Streamline</i> | █ | | █ | █ | |
| <i>Tesco</i> | | █ | █ | | |

The main limitation of works on e-fulfillment decisions is that they stay within a very technical view of the problem, practically in a perspective of operational research. An example would be the work of Wittgreffe & Memmory [29] who review the information

technologies best adapted to optimize the store range in the in-store picking model, or also de Koster's [17] paper on distribution structures for food home shopping. To suggest the best solution to food e-tailers (warehouse picking vs. in-store picking), de Koster [17] introduces

the notion of operational complexity, measured through the number of weekly orders, the product assortment width and the product assortment type (presence or absence of frozen and fresh products, in addition to non-perishable products). Although these studies present an obvious interest at micro-economic level, they ignore –as many others do– the macro-economic implications of decisions made by the different firms. But it is impossible to ignore a global vision of the e-grocery logistics stakes. Without such vision, there is a high risk of development of overcapacities in logistical equipment, each e-grocer investing in its own distribution network. The overcapacities will have a social cost which will quickly become unbearable in the eyes of e-consumers who are also citizens. For example it would lead to congestion of residential areas with an anarchical multiplication of delivery trucks, leading to environmental (CO₂ emissions, recurrent traffic jams) and economic problems (inability to meet time windows).

At the moment, food e-tailing represents only a low percentage of consumer sales in Europe. For example, in France, the turnover of the four major e-grocers equals the average turnover of a single large hypermarket! But national and local Authorities prefer reflecting on the potential impacts of a rapid and uncontrolled development of sales of groceries by Internet. There seems to be a desire to control product flows in towns and cities by obliging firms to use shared logistical infrastructures, at warehousing and transport level: *“Urban land use planning policy can control the number and location of home delivery fulfillment facilities... and the times at which home delivery vehicles can operate at them. Planners can also decide whether there is a role for the urban authority in the development and operation of such facilities, and whether they will be operated by one or many companies”* [2, p.34]. This planning, imposed for environmental and ecological reasons, could therefore unify the level of logistical performance, since all firms would have to use the same integrated freight centers at the same time in the same urban area [11]. If the Authorities’ interventionism in e-fulfillment is confirmed, with food e-tailers unable to co-ordinate and avoid the multiplication of private “last mile” organizations, it will be obviously difficult for a given food e-tailer to use his potential logistical excellence to distance his competitors. This is the first paradox of e-grocery logistics: it is presented as a source of competitive advantage for a firm, but the sharing of resources is going to spread this competitive advantage to all firms.

Research question No. 1: Taking into account the increasing involvement of local Authorities in the organization of urban logistics, what elements in the logistical organization will enable food e-tailers to create a difference and develop a competitive advantage?

3. THE SECOND PARADOX–THE REAL IMPORTANCE OF LOGISTICS IN THE E-MARKETING MIX

As Ricker & Kalakota [27] stated, e-consumers do not buy a product, but a product plus the “service envelope” accompanying it. Logistics is obviously one of those services, but not the only one. Logistics is but one component of a package deal, the quality and the coherence of which are crucial elements that will condition the positive or negative view of a website by e-consumers. Through the package deal of services, e-consumers try to find a turnkey solution to their problems, for example limited opportunities for in-store shopping because of a busy work schedule or occasional or lasting health problems making it difficult to regularly handle heavy or bulky products [21]. Here again we find the bases of a strategic service vision developed more than twenty years ago in academic literature [19], which retains all its relevance in a computer-mediated environment.

To state that logistics is one element of a package deal of services does not seem very original, at least when referring to works conducted on services marketing. They note that consumers acquire not a product or a service, but a more or less complex “goods-service:” any service relies on material elements which make service construction and delivery possible, any product is finally assessed in function of the service rendered. This is why it seems pertinent to reason from the generic concept of services associated with products: *“Services associated with products are services supplied in complement of a product so as to optimize their use and increase their value for customers... Expected by customers, they induce the demand for products and are the source of differentiation in firms’ offers”* [9, p.99]. The approach was applied to the French case by Paché & Bonet [23], among others, to find out whether food e-tailers try to develop the various elements of the package deal of services harmoniously or are on the contrary focusing on some of the elements (if so, why).

The interest of Furrer’s [9] analysis lies in clearly dividing the services associated with products into two categories. The first category is made of *value-added services*, relatively independent from the products they accompany and representing a sort of bonus (for example, the possibility for consumers to use a call center 24 hours a day seven days of the week). The second category is made of *services acting as barriers to entry*, an integral part of the basic offer and which must absolutely be offered under penalty of losing customers (for example, free parking space offered by large retailers). This approach is completely applicable to online purchases on the Internet. In addition to a simple product as tangible goods, e-consumers will surely investigate the overall quality of the complex service offered to them, associating after-sales support and warranties. According to Kotzab & Madlberger [18],

the package deal of services refers to three complementary dimensions –or functions– that firms should attempt to develop equally:

- A product assortment function;
- A logistical function; and
- An advice, communication and financing function.

There is no doubt that logistical performance is one of the services associated with products, but e-grocers must not neglect other at least as critical components, such as payment terms and conditions, the number of product lines offered or online advice. In a way, this echoes the notion of the e-marketing mix proposed by Kalyanam & McIntyre [14], summed up by the acronym $4Ps + P^2C^2S^3$, where 4Ps stands for the traditional marketing mix, P^2 stands for personalization and privacy, C^2 stands for customer service and community, and S^3 stands for site, security and sales promotion. Although Kotzab & Madlberger [18] do not use the notion of e-marketing mix, this is what they analyze. It is evident from this that a strict process of marketing audit, should make it possible to put in perspective the importance of services that the trade press often presents as being value-added (security, customer service, etc.), when they perhaps only serve as barriers to entry. It should be noted that some current academic studies ask a rather similar question: to what extent does an efficient logistical service contribute to the loyalty of e-consumers to e-grocers? For the time being, no clear answer has been given. A qualitative study conducted with the key informants of ten retailers in a major metropolitan area located in the USA shows for instance that they do not really know much about e-consumers'

needs and wants in terms of Internet shopping [5].

In the end, food e-tailers need to imagine a balanced e-marketing mix –whose variables reinforce themselves mutually– rather than attach themselves to the sole best logistical service possible. It is quite clear that e-consumers look for the performance of the online shopping transaction itself [25], a performance that will come from a set of closely interactive elements. The food e-tailers' objective will be to offer the highest delivered value, i.e. the most important differential between the total benefits to consumers, some examples of which are presented in Table II, and the total costs of the e-marketing offer [21]. For example, the promotional promise of a home delivery within a narrow time window to avoid long waiting times at home will require an order fulfillment and an order delivery capable of fulfilling this promise. If this is not possible, it would be better to modify the content of the promotional promise: a well-known rule of logistics management, sometimes forgotten in the computer-mediated environment. This is the second paradox of e-grocery logistics: it is most often considered as the food e-tailers' main key factor of success, whereas it is only one of the sometimes secondary components of their package deal of services.

Research question No. 2: What weight should food e-tailers give to logistical performance in their e-marketing mix, and with what other strategic variables is the place variable in direct interaction vs. indirect interaction?

Table II

*Some potential benefits to consumers offer by the e-tailers
(adapted from Jones et al. [12])*

- Convenience of comparison shopping from, and delivery to, the customer's home
- Creation of a pleasurable e-shopping experience
- Good quality and topical information on products and services
- Availability of products or services that may not be available from local traditional stores
- Potentially range of high quality products and services at competitive prices
- Speedy and reliable home delivery systems
- Online support for after-sales service
- Guarantees about the security of online transactions and the privacy of personal information

4. THE THIRD PARADOX–E-CONSUMERS' LEVEL OF EXPECTATIONS IN LOGISTICAL PERFORMANCE

An attentive reading of recent works on e-grocery shows that in fact the real influence of logistical performance in the process of e-consumers' decision-making, particularly regarding timely delivery, could be revised downward, or at least be considered as one key factor of success among others: the functionality of computer interfaces or the absolute security of payments, for example [7][22]. Cases's [3]

research on the perceived risk associated with purchases on the Internet places delivery risks far behind private risks (potential violation of e-consumers' privacy) of performance risks (products and/or services not corresponding to e-consumers' expectations). Of course, at first, when the market is gradually structuring itself, good logistics appears to be a source of competitive advantage. Will that still be the case with the rapid alignment of each website to the same cost/service standard? The difference between e-grocers will then develop on their capacity to establish, and then to maintain an individual, long-term and customized

relationship with consumers, while the traditional bricks-and-mortar model lies on a rather intermittent, distant and impersonal relationship [18].

The first field investigations conducted on e-consumers' practices underline the central nature of convenience relations that occur between for example a delivery man and an e-consumer when orders are regular. Kessous [14] lists numerous, often amusing cases of complicity building up between both agents, as in the case of a delivery man who knows that Mr. Smith, whose habits he is perfectly aware of, must receive delivery at 9 am just after his morning walk with his dog! We are here faced with the construction of a real joint service and delivery, the efficiency of which directly determines the level of satisfaction perceived by the customer. Beyond simply adhering to delivery times, the ability to customize service becomes a key factor of differentiation for e-grocers. More generally, e-consumers consider that it is normal to be delivered on time without error in order picking. But they will expect increasingly sophisticated and customized services associated with products, such as technical information, as the preliminary results of the Swedish program *Households in Cyberspace* show [26].

The central question is to know what is the level of service quality perceived as necessary and sufficient by e-consumers (in their online shopping transaction), when numerous European food e-tailers essentially try to offer better order fulfillment and order delivery than those of their major competitors. It is highly likely that e-consumers represent a heterogeneous population in their expectations about logistical performance. For some of them, the strict adherence to the time window stated on the website is capital, for others, with more available time at home during the day, the lowest possible delivery charges will make the difference. Systematically proposing high service quality standards may well be unnecessarily expensive for food e-tailers, since some e-consumers will be impervious to them. It would be better to study the expected levels of service quality per market segment beforehand, offer a highly differentiated logistical performance (in terms of delivery charges, in extended time windows, etc.), and above all to comply with what was promised. This approach puts customer concern at the heart of the analysis, focusing on operational issues that are currently largely underestimated [13]. In fact, some of the components of logistical performance may not be deemed essential by some e-consumers, and food e-tailers would make a serious management mistake if they went on considering them as a key factor of success.

This last point seems all the more important for the future of e-grocery logistics since works conducted in the USA by Morganosky & Cude [21] [22], from a longitudinal study on e-consumer behavior, show that e-consumers are above all loyal to a website, to which

they gradually dedicate an increasing part of their online shopping, playing on a phenomenon of experience. As has been said, it is the overall online transaction that provides a value of variable importance, not just the quality of the order fulfillment and order delivery processes. E-consumers gradually "learn," get to know the website's logistical performance and increase or reduce their level of expectations accordingly. Thus, when e-consumers have the possibility to control the shipping function, for example by freely choosing a particular carrier on the website, they link it to a level of logistical performance related to its image, particularly in terms of service customization via the delivery man, and adapt their delivery-related expectations accordingly [7]. In brief, an e-consumer loyal to a website for extra-logistical reasons could very well make do with a very indifferent level of service quality, compared to other websites. This is the third paradox of e-grocery logistics: the total efficiency of the order fulfillment and order delivery processes does not necessarily have a significant impact on the satisfaction felt by e-consumers.

Research question No. 3: How does the level of expectations of market segments develop in terms of logistical performance, and to what extent does a high (low) level of logistical performance influence loyalty (disloyalty) to a website?

5. CONCLUSION

In the last few years, works on e-grocery logistics have multiplied, particularly in Northern European countries, widely involved in online Internet sales. Reflections are already quite advanced on possible alternatives in order fulfillment and order delivery; they have led to extended simulations to define the best solution according to variables such as population density in the residential area to serve, the frequency and size of orders in households, or the last mile management cost [15] [26]. Without minimizing the interest of this approach, it should be admitted that it relies on an implicit but debatable postulate: e-consumers' high awareness of logistical performance and, by extension, the crucial nature of "logistical excellence" for e-grocers wishing to get ahead of their competitors in the long-term. The present paper questions this postulate, referring to the three paradoxes of e-grocery logistics.

The suggested research program still has to be developed in two directions. One belongs to the BtoB type: it studies the impact of the legal environment on logistical strategies. The second direction belongs to the BtoC type studying the place of e-grocers' logistical performance in e-consumer behavior, compared to the place held by other variables in the e-marketing mix. This will become a reality only if it is possible to eliminate a number of disciplinary compartments, as the research agenda involves resorting to marketing tools, logistics management tools, political science and strategic management tools. Hence the importance of

building managerial teams with complementary competencies, the only way to go beyond the technical approach to e-grocery logistics still dominant in today's literature, and far too simplistic for understanding the true challenges being faced.

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