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Valentina Carbone, Aurélien Rouquet, Christine Roussat,

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A typology of logistics at work in collaborative consumption

A typology
of logistics
at work

Valentina Carbone

*Department of Information & Operations Management,
ESCP Europe, Paris, France*

Aurélien Rouquet

*Department of Information Systems,
Supply Chain Management and Decision-Making, NEOMA Business School,
Reims, France, and*

Christine Roussat

*CRET-LOG, Aix en Provence, France and
Université Clermont-Auvergne, Clermont Ferrand, France*

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Abstract

Purpose – The growth of collaborative consumption is beginning to stimulate management research on this phenomenon. However, so far, few scholars have studied the logistics aspects related to these developments. The purpose of this paper is to develop a conceptual approach to the logistics at work in collaborative consumption.

Design/methodology/approach – The authors adopt an inductive, exploratory research method, based on a content analysis involving 32 collaborative consumption initiatives screened through their websites and other secondary sources.

Findings – Based on the way logistics is organized in these initiatives, the authors identify and describe four types of logistics: peer to peer, business, crowd, and open logistics.

Practical implications – The paper makes recommendations for improving the management of collaborative consumption logistics.

Originality/value – Our results enrich the literature about crowd practices and collaborative consumption by conceptualizing alternative roles played by logistics and revealing its specific organizational forms.

Keywords Content analysis, Collaborative consumption, Sharing economy, Consumer logistics, Crowd logistics

Paper type Research paper

Introduction

The term “collaborative consumption” was first introduced into the marketing literature by Felson and Spaeth (1978), inspired by the theory of human ecology (Hawley, 1950), to depict collaborative forms of consumption where “one or more persons consume economic goods or services in the process of engaging in joint activities with one or more others” (p. 614). Since then, the increased role of technology, leading to the rise of a “computer-mediated economy” (Harvey *et al.*, 2017) and to the development of online communities, coupled with an enhanced concern for the environment and a declining world economy have shaped new forms of practices which tend to expand the original perimeter of collaborative consumption into a fast-growing phenomenon (Sundararajan, 2016). Airbnb, Uber, Fab Labs, and the Food Assembly are just a few of the best known platforms exemplifying the boom in such “collaborative” schemes, considered as one of the most remarkable (r)evolutions of contemporary business trends and embracing a great variety of activities including open-source software, file sharing, crowd funding, collaborative education and finally, collaborative consumption. According to Botsman and Rogers (2010), who popularized the term, collaborative consumption includes consumer practices in which people value access to goods via collaboration rather than ownership. Apart from access-based consumption (Bardhi and Eckhardt, 2012), a great variety of exchanges are also part of collaborative



consumption, such as second-hand purchasing, reselling or swapping, considered as collaborative as access (Ertz *et al.*, 2016). All these exchanges are facilitated by the massive spread of information and communication technologies (internet, smartphones, etc.). Using online platforms, collaborative consumption entrepreneurs can identify and activate idle resources (Botsman and Rogers, 2010) through the engagement/involvement of “prosumers” (Toffler, 1980), i.e. consumers with the capacity of acting as both “providers” and “obtainers” of resources in a given “resource circulation system” (Ertz *et al.*, 2016, p. 197).

Accordingly, a large proportion of collaborative consumption practices – whether they take the form of transactions, donations or “true” sharing (Belk, 2014b) – generate physical flows of goods, which have to be managed by consumers who collaborate to produce, access and circulate such resources (Scaraboto, 2015). For example, the sale of a piece of furniture on Craigslist obviously raises the question of the physical transfer of the item from the seller to the buyer. In this case, “the resource circulation system of collaborative consumption equates the metaphor of a supply chain” (Ertz *et al.*, 2016, p. 197), suggesting that a logistics process, defined as the management process overseeing the planning and execution of physical flows (Christopher, 2012), is necessary in most collaborative consumption initiatives. The very aim of this paper is to study and analyze the logistics at work in these collaborative consumption initiatives.

The paper is organized in four sections. The first presents a review of the main research topics investigated so far in the field of collaborative consumption, which highlights a research gap in the area of logistics. In the second section, we describe our methodological approach: a qualitative investigation, via their websites, of 32 collaborative consumption initiatives involving physical flows. In the third section, we present our findings, defining four types of logistics at work in collaborative consumption: peer-to-peer logistics, business logistics, crowd logistics and open logistics. In the fourth section, we discuss the theoretical and managerial implications of these findings. Finally, the conclusion reviews the global contribution of the paper and proposes an agenda for future research.

Logistics, a forgotten dimension of collaborative consumption?

Whilst collaborative practices are thriving, no stable terminology exists. Academics and professionals use a wide range of terms: sharing economy, crowd practices, collaborative consumption, etc. In this section, we first define collaborative consumption, then review the emerging literature on the subject, and finally investigate the scarce research that has developed at the intersection of logistics and collaborative consumption.

Collaborative consumption as part of the sharing economy

Recently, new forms of distributed production and/or consumption (Carbone *et al.*, 2017) have appeared, which bring people together in new ways (Avelino *et al.*, 2015) and are commonly called “collaborative”: collaborative consumption (Botsman and Rogers, 2010), crowd practices (Howe, 2006; Sundararajan, 2016), access-based consumption (Bardhi and Eckhardt, 2012), or the Mesh (Gansky, 2010). The emergence of such collaborative movements has led to a profusion of conceptualizations, whose boundaries are fragile and ill defined (Acquier *et al.*, 2017; Schenk and Guittard, 2011). Each conceptualization emphasizes a specific dimension of the “new” economy and is shaped by the author’s analytical objectives, but basically relates (Smolka and Hienert, 2014) to what is defined as sharing. The umbrella term (Dreyer *et al.*, 2017) “the sharing economy” refers to “an economic system based on sharing underused assets or services, for free or for a fee” (Botsman, 2014). Collaborative consumption and the sharing economy are considered to be associated (Hwang and Griffiths, 2017). More precisely, collaborative consumption is identified as a subset of the sharing economy, emphasizing the commercial aspects of sharing (Dreyer *et al.*, 2017).

As we are interested in the way consumers collaborate to produce, access and circulate resources, our focus in this paper is on the notion of collaborative consumption. This designation highlights the role of people and consumers, and encompasses new forms of distributed production/consumption of goods and/or services among or by a crowd of individuals with the help of technologies (Avelino *et al.*, 2015). Botsman and Rogers (2010) defined collaborative consumption as “sharing, bartering, lending, trading, renting, gifting and swapping, redefined through technology and peer communities, changing both what and how we consume” p. 15). These different forms of exchange concern underused assets (physical assets such as cars, apartments, individual devices, and money or intangible assets such as skills and knowledge) that are pooled or shared through digital platforms (Benkler, 2004). Collaborative consumption relies on peer-to-peer marketplaces through which individuals can share unused resources (Barnes and Mattsson, 2017) with other individuals, taking on the roles of provider/producer. These individuals coordinate the acquisition and distribution of a resource for a fee or other compensation (Belk, 2014a). Collaborative consumption involves an intermediated set of exchanges of goods and services between individuals and organizations (Muñoz and Cohen, 2017), and both product/service systems and redistribution markets engender physical flows, which need to be organized and executed.

Management literature on collaborative consumption practices

Collaborative consumption is widely publicized through an abundant popular literature – books promoting collaborative consumption, press, blogs by associations and experts, open-access publications, etc. Conversely, management research on this topic is not as well developed. Three streams of research have, however, emerged, highlighting the three main ongoing debates in the literature. First, faced with the variety of initiatives in the collaborative consumption sphere, there have been several efforts to categorize the different practices. Some researchers propose typologies based on the different product/services (Owyang, 2014) and sectors where collaborative initiatives have developed (Stokes *et al.*, 2014). These typologies are descriptive and provide an empirical mapping of the field. Other researchers classify the initiatives according to their business models (Schor, 2014; Cohen and Kietzmann, 2014). Closer to our research intent, Botsman and Rogers (2010), taking the consumer behavior perspective developed by the pioneering work of Felson and Spaeth (1978), put people or consumers at the core of their analysis and divide collaborative consumption initiatives into three categories: product/service systems where consumers are no longer the owner of the good, but can use it when they need/wish (e.g. car sharing); redistribution markets, which have developed particularly through the internet and where people exchange, recycle, donate, and share on a very large scale (e.g. eBay); and collaborative lifestyles, which empower people (in the sense of Shaw *et al.*, 2006) by connecting them to share less tangible assets such as time, space, skills, and money (e.g. co-working spaces).

In the marketing literature, consumer behavior and the factors that motivate individuals to participate in collaborative consumption (Barnes and Mattsson, 2017; Böcker and Meelen, 2016, among others) have been thoroughly analyzed. These factors include the aspiration to be part of a group or community (Galbreth *et al.*, 2012); more utilitarian motives, such as the desire to have access to less expensive services or goods (Bardhi and Eckhardt, 2012); hedonistic drivers, such as the pursuit of pleasure and joy (Piscicelli *et al.*, 2015); and various ideological motivations, like contesting the consumeristic and capitalistic drift of our society (Ozanne and Ballantine, 2010). This variety of motivational factors reveals the complexity of the collaborative consumption phenomenon, riddled by different, overlapping, and sometimes conflicting values (Belk, 2014b).

A third ongoing debate revolves around the potential of collaborative consumption: the economic gains of such activities (Fraiberger and Sundararajan, 2015; Fremstad, 2014) and their impact on players and processes in the traditional economy (Sundararajan, 2016).

Echoing the research on individual motivations, scholars question the revolutionary scope of collaborative consumption with regard to capitalism (Martin, 2016). Some researchers take a positive stance on collaborative consumption and argue that the need to develop social ties is at the heart of these practices (Agyeman *et al.*, 2013; Stokes *et al.*, 2014). Others also state that the recirculation of goods and the focus on access instead of ownership (Botsman and Rogers, 2010; Demailly and Novel, 2014) create positive externalities. Collaborative consumption is thought to foster more environmentally sustainable ways of life (Albinsson and Yasanthi Perera, 2012) and to contribute to reducing our carbon footprint (Prothero *et al.*, 2011). But this optimistic perspective is far from undisputed (Gruszka, 2016). Several authors (e.g. Slee, 2016) highlight the unlawful and exploitive dimensions of the highest profile firms (e.g. Airbnb, Uber) or the utilitarian motives of their users (Bardhi and Eckhardt, 2012). If collaborative consumption promotes new forms of intermediation and exchange between consumers and promises positive externalities, then the literature should address the question of logistics, but surprisingly there seems to be no research on the logistics of these activities.

Logistics and collaborative consumption: two separate worlds?

We cannot conclude about the scarcity of literature combining collaborative consumption and logistics without seeking signs in the logistics literature. Within the logistics and SCM field, we have found very few research papers that relate to collaborative consumption. Some authors observe that “in logistics, services may engage the crowd” (Mladenow *et al.*, 2015, p. 134) or point out that logistics operations can mobilize individuals (Mehmann *et al.*, 2015, p. 134), particularly in the realization of last-mile tasks (Chen *et al.*, 2014). Carbone *et al.* (2017) investigate the crowdsourcing of logistics tasks, and some other studies allusively refer to logistics infrastructures or operations deployed in collaborative consumption initiatives: a cross-docking platform for a local food distribution network (Gaziulusoy and Twomey, 2014) or online platforms offering logistics services (Bastita *et al.*, 2013).

This lack of investigation seems surprising, as professionals in the sector take a serious interest in these initiatives. For instance, DHL, the leading firm in the logistics industry, claims that sharing economy logistics will have a major impact on the logistics industry within five years (Bubner *et al.*, 2016). Furthermore, it is all the more regrettable given that consumption, whether collaborative or not, presupposes that individuals undertake multiple logistics activities. According to the consumer logistics stream (Granzin and Bahn, 1989), consumption requires that individuals engage in multiple logistics processes. Those logistics processes underpin regular individual consumer practices, such as shopping (Teller *et al.*, 2012) or managing waste (Monnot *et al.*, 2014). Individuals perform these logistics activities using their own resources such as their home or the means of transport they have access to (Granzin and Bahn, 1989). In such processes, consumers fulfill the same five functions found in a company “logistics system”: locating items, transport, inventory, storage, and information management (Bowersox, 1978). In these logistics processes, consumers are co-creators of value (Lusch *et al.*, 2014), and their participation is necessary for the overall planning and execution of physical flows (Christopher, 2012). On the whole, the logistics literature broadly ignores collaborative consumption movements, thus confirming the paucity of interest in the logistics field for the end consumer (Lusch *et al.*, 2014).

As a general conclusion, we can say that research on logistics in collaborative consumption is limited and/or confidential. Yet, collaborative consumption fosters new forms of intermediation (Gansky, 2010; Nadler, 2014) and causes actors to rethink flow design (in particular by promoting the physical proximity of the goods exchanged) and to claim a positive environmental impact by sharing goods, resources, and unused physical spaces (Botsman and Rogers, 2010). These new developments, combining consumer behavior and internet-based technologies, are driving consumers to new ways of interacting

with consumer goods, inspired by digital industries (software, music, etc.) and now applied to physical goods industries (Corciolani and Dalli, 2014), increasing the need for a deeper understanding of the organizational arrangements that allow the resource circulation system to function. Moreover, as logistics is obviously a major source of pollution, a clearer understanding of how it is organized in collaborative consumption would be extremely useful in making a finer assessment of the sustainability implications of such initiatives. For these reasons, the development of collaborative consumption must be supported by research programs that examine the design, organization, and execution of physical flows resulting from collaborative exchanges. The purpose of this research therefore is to develop a conceptual approach to the logistics at work in collaborative consumption. Specifically, this paper proposes to answer the following research question:

RQ1. What types of logistics are at work in collaborative consumption?

Methodology

As the aim of this research is to develop an initial conceptual approach to logistics in collaborative consumption, we follow Ketokivi and Choi (2014), who argue that when the research context is “novel and unfamiliar” (p. 134) explanations can be derived from mere explorations. In line with their recommendations, we did not rely on a given theoretical framework, which might have introduced unjustified theoretical bias into our analysis of a completely new field. Instead, our general research approach was inductive and relied on the observation of specific instances (here website content) in order to seek generalizations (Spens and Kovács, 2006). We adopted an exploratory qualitative research method, which was all the more appropriate as the collaborative economy is an emerging phenomenon.

Data collection: 32 collaborative consumption initiatives analyzed via their websites

The unit of analysis for this research is the collaborative consumption initiative. To reduce the empirical field to a logical and practicable range of initiatives (in the sense of forming an understandable whole), we chose to concentrate on France, which hosts, along with the UK, the highest number of collaborative consumption initiatives in Europe (PWC, 2016). Because the boundaries of the collaborative economy are blurred and debatable, we built our sample pragmatically, like other researchers (Schor, 2014), based on the mutual recognition shown by actors in the movement. We used a well-known collaborative consumption blog (<http://consocollaborative.com/>), which keeps a regularly updated list of 150 collaborative initiatives, ranging from food sharing to knowledge or physical asset sharing. In line with our research question, which focuses on logistics in collaborative consumption, we decided to select only initiatives involving the circulation of physical goods, whatever their nature. Thus, we excluded any initiatives based solely on financial or human flows, such as those proposing time sharing among neighbors or crowd-funding solutions. On the other hand, we did include exchanges of services (storage space rental, for example) that involve merchandise. Based on this rule, we studied one case for each category identified by the reference blog, several cases for widespread concepts, and two initiatives that have received positive ratings in the press.

The data were collected between September 2014 and January 2015 and we ended up with a total sample of 32 initiatives (AMAP, BlaBlaCar, Buzzcar, cueillettes Chapeau de Paille, Citiz, Co-Recyclage, Costockage, drivy, ebay, Etsy, expediezentrevous, freecycle, jesticke, Kiwizz, iLokYou, la Louve, La Machine du Voisin, lecomptoirdutroc, leboncoin, le Relais, monsieur Parking PiggyBee, Plantez chez nous, recupe.net, SacDeLuxe, Sailsharing, Share Voisins, The Food Assembly, trocvestiaire, Vestiaire Collective, Wiithaa, and Zilok). To grasp the logistics dimensions of the phenomenon, we decided to study these initiatives through their websites and/or mobile applications. Those secondary data “exist prior to the formulation of the

research objectives at hand” (Rabinovich and Cheon, 2011, p. 303) and offer advantages such as greater internal validity and ease of replication when data are publicly available. Using websites as a research source seems to be particularly relevant in so far as collaborative consumption initiatives rely on connections mainly made via internet platforms (Schenk and Guittard, 2011). The exploration of website content involved several tasks including reading all the available material (presentation pages, general conditions, documents to be downloaded, etc.), watching videos, and exploring linked blogs.

Data analysis: content analysis based on inductive coding

As pointed out by Manuj and Pohlen (2012), qualitative methods frequently employ coding techniques. Content analysis is an attempt to identify categories and dimensions to classify the raw data available for the analysis through a combination of interpretation, subjectivity, and objectivity. Applicable in qualitative research for numerous types of data including internet content (Seuring and Gold, 2012), this method appeared entirely appropriate to the exploratory nature of this research. For the content analysis, we decided to do manual inductive coding, which offers a real immersion in these emerging phenomena through the different interpretations that it induces (Thomas, 2006). An iterative process was followed to reveal, test and revise categories by constant comparison of the categories and data (Seuring and Gold, 2012), usually involving two steps: descriptive coding and analytical coding (Miles *et al.*, 2013).

In the first step, to identify descriptive variables, we performed a detailed reading of the raw data available (texts, images, videos, etc.) on a dozen of the websites selected for analysis, first individually and then together (during a meeting). Next, we established a descriptive coding scheme (Maas *et al.*, 2014) based on three descriptive categories in a coding table (Table I): the product/service offered, the business model (role and remuneration of different actors), and the supply chain developed (nature and extent of flows, logistics roles, etc.). For the three categories, we were able to identify numerous variables (see Table I), leading to a detailed description of the 32 initiatives.

In the second step of our analysis, the analytical coding, our objective was to go beyond description and develop a more conceptual approach. This led us to develop a typology of the logistics at work in collaborative consumption. Typologies are a standard way of building theory (Weber, 1978). In order for typologies to be reliable, researchers must provide complete descriptions of each ideal type using the same set of dimensions (Doty and Glick, 1994). In this research, two dimensions were identified as structural for defining and comparing each type: the role of logistics in the collaborative consumption initiative, which may either simply support the exchange or be the actual purpose of the collaboration. This dimension is revealed by the item “nature of the product/service offering,” which identifies whether the initiative offers a way for individuals to share products or exchange services, in particular logistics ones; the type of management of the physical flows, which can be centralized or decentralized. This dimension involves several items in the coding table (“flow monitoring method,” “logistics role of supplier,” “logistics role of receiver,” “logistics role of platform”), which proved to be interlinked. By crossing these two dimensions, we identified four types of logistics (peer to peer, business, crowd and open), described in the fourth section (see Figure 1).

Precautions were taken in order to ensure the validity of the research. Throughout the research process the research team met regularly. In order to limit the interpretative bias, the three authors jointly coded the first three websites. Then, each website was analyzed by two of the authors, who conducted the content analysis separately. During two face-to-face meetings and regular telephone discussions, we compared and aggregated the results of the different coding stages. Where divergences appeared, these were debated to arrive at a consensus. The analyses were thus triangulated between the researchers to ensure the reproducibility and reliability of the research.

| Items analyzed | Type of answers |
|--|---|
| <i>What the initiative offers</i> | |
| Description | To be defined according to the terminology used by the platform |
| Type of exchange | Sale, hire, loan, donation |
| Nature | Product and/or service |
| Nature of actors | Firm, individuals and type of channel: direct/indirect |
| Geographic spread of initiative | 1/Regional (where) 2/National 3/National with cross-border spinoffs 4/International |
| Scale of product/service lines | Limited, Average, Large |
| Breadth: ranges per product line | Limited, Average, Large |
| Depth: products per range | Limited, Average, Large |
| <i>Business Model</i> | |
| Value proposition | To be defined as claimed by the initiative |
| Functions of collaborative platform | 1/Listing 2/Mapping (in the sense of geolocation) 3/Setting exchange rules 4/Security of transactions (assessment of participants, insurance, etc.) 5/To be completed depending on the initiatives studied |
| Role of supplier | Principal roles of supplier (marketing, evaluation, etc.) apart from logistics |
| Role of buyer | Principal roles of buyer (marketing, evaluation, etc.) apart from logistics |
| Remuneration of supplier | Pricing (actor, calculation), payment methods |
| Remuneration of platform | Payment methods |
| Key figures | Turnover, scale and value of exchanges, number of employees, etc. |
| <i>Supply chain</i> | |
| Length of circuit | Average distance traveled by merchandise (short or long) |
| Spatial spread of goods flows | 1/Neighborhood flows 2/National flows 3/Global flows |
| Flow monitoring method | Centralized/decentralized, rapid outline of operations |
| Flow monitor | Collaborative platform, supplier, buyer, third party, shared |
| Logistics role of buyer | 0/None 1/ Negotiate logistics with supplier 2/ Transport products 3/ Receive products 4/ Other |
| Logistics role of supplier | 0/None 1/ Negotiate logistics with buyer 2/ Transport products 3/ Receive products 4/ Other |
| Logistics role of collaborative platform | 0/None 1/Design logistics for exchanges 2/Storage 3/Control (quality, conformity) 4/Packaging 5/Dispatch 6/ Printing transport documents 7/ Customs formalities 8/Evaluation of participants' logistics performance 9/Other |

Table I.
Descriptive
coding table

The four types of logistics in collaborative consumption

As mentioned, our data analysis revealed two central variables on which we base our typology of the logistics solutions involved in collaborative consumption: By combining these two key dimensions, the role of logistics (support vs purpose of the collaborative consumption initiative) and the type of management of physical flows (centralized. i.e. operated by the platform vs decentralized, i.e. operated by the individuals), we distinguish four types of logistics at work in collaborative consumption (Figure 1) that we call peer-to-peer logistics, business logistics, crowd logistics, and open logistics. These four types of logistics must be considered as ideal types (in Weber's sense). They have been shaped by our comparison of the initiatives and are meant to help to understand and theorize phenomena, following the conceptual theory building approach (Meredith, 1993). No claim is made that the characteristics of each ideal type are always and perfectly found in the observed phenomena. The next sections briefly describe each of the types.

Peer-to-peer logistics

We call peer-to-peer logistics the first type of logistics at work in collaborative consumption. In this type, individuals who exchange, give or share goods or services organize and carry out the necessary physical operations themselves. Peer-to-peer logistics is thus used in

| | Decentralized logistics management | Centralized logistics management |
|---|------------------------------------|----------------------------------|
| Logistics=support for the collaboration | Peer-to-peer logistics | Business logistics |
| Logistics=purpose of the collaboration | Crowd logistics | Open logistics |

Figure 1.
The four types of logistics in collaborative consumption

collaborative consumption when individuals buy a product on leboncoin, loan an object on Share Voisins, pick up the keys of a car hired on drivy, donate goods via the website freecycle, etc. Peer-to-peer logistics is used to give operational support to the collaborative consumption initiative, and is entirely organized and managed by peers. The role of the collaborative platform (website and/or app.) here is purely informational: it puts individuals in touch with each other. Facilitating and supporting peer-to-peer logistics is a key challenge. Platforms might give them the information required to carry out the transaction safely (templates for contracts and practical advice, for example), but the collaborative consumption initiative plays no part in the direct (consumer-to-consumer or peer to peer) physical flows. For such a complete delegation of logistics to peers, the management of the physical flows cannot be too complex. Some platforms for example facilitate local exchanges by including a function to geo-locate users (Share Voisins). Others (eBay with Mondial Relay for global exchanges) contract a logistics service provider that users can call on if the logistics required appears more complex.

Business logistics

The second type of logistics at work in collaborative consumption can be described as traditional and so we call it business logistics. Here, the platform promoting a collaborative initiative takes responsibility (like an industrial or commercial firm involved in traditional supply chains) centrally for managing physical flows to operationalize exchanges between peers. Unlike in the previous situation, the collaborative initiative plays the role of both an informational (via its internet platform) and a physical (via a logistics platform) intermediary. In these cases, investment in a logistics platform is necessary to enable and support exchanges between peers. This can be linked, for example, to the need to ensure that the product matches the seller's description (and is not counterfeit, faulty, etc.), as is the case for Vestiaire Collective, a second-hand luxury clothes and accessories exchange website. Use of a centralized logistics infrastructure can also be linked to the need to perform physical operations on the products to add value (sorting, grouping, etc.). Business logistics in collaborative consumption organizes indirect physical flows between peers, of the consumer to business to consumer type.

Crowd logistics

The third type of logistics at work in collaborative consumption is what we call crowd logistics. In the previous examples, logistics – as a tool – merely supported the collaboration. Here, logistics is the actual purpose of the collaborative consumption initiative. Hence, the

platform calls on the crowd of individuals to provide logistics services: the transport of goods, such as that arranged by the websites *expédiezentrevous* and *Piggybee*, or storage services, as found on *Costockage* and *jestocke*. The platform enables users to call on other individuals rather than a specialized logistics firm. Individuals indeed possess logistics resources and capacity (vehicles, space, etc.) that can be used for shared initiatives. The aim of this type of platform is to take advantage of the crowd's logistics capacity – often underused or dormant – to offer logistics services to individuals and/or companies (consumer to business or consumer logistics flows). A key issue for the crowd logistics platform is to ensure trust between actors with regard to the risks generated by sharing logistics resources. This can be done by developing a partnership with an insurance firm. *Costockage* for instance requires users to sign an insurance contract developed by *Hiscox*. Other approaches may include a rating system. In this third type of logistics, we note that the collaborative initiative only acts as an informational intermediary and plays no logistics role, which is entirely dealt with by the consumer.

Open logistics

The final type of logistics found in collaborative consumption is what we call open logistics. As for crowd logistics, logistics is the purpose of the collaborative process. However, the aim here is not for the platform to take advantage of the crowd's logistics resources, but to enable individuals to take back control of logistics choices related to the supply and distribution of goods. The platforms concerned (e.g. *The Food Assembly*) often promote a genuine resistance strategy against traditional supply chains and embody the crowd's desire to circumvent traditional channels to deal directly with producers (business to consumer). Such collaborative initiatives have developed particularly in the area of food, due to consumers' opposition to both agro-food industrial manufacturers (considering the quality of products) and retailers. Such a system requires the platform to really give the crowd control alongside the producers and to help them to take collective logistics decisions. This can operate through non-profit structures such as local farmers support associations (*AMAP* in French), which allow their members, both consumers and farmers, to design and manage the whole supply chain. It can also operate using a cooperative type of structure, like the one set up by the collaborative store project *la Louve*, which reproduces the model of the *Park Slope Food Coop*, a member-owned and operated food store, created in Brooklyn in 1973. In such initiatives, the platform takes on a mediatory role in addition to supplying information. For example, the platform must enable the crowd to contribute physically to everyday logistics activities. The members of an *AMAP*, for example, are invited to take turns delivering the baskets of fruits and vegetables every week. Similarly, the members of the *Louve* cooperative must commit to working at the sales outlet at least three hours per month, filling shelves or managing a department in place of the usual employees.

Table II below summarizes the principal characteristics of the four types of logistics found in collaborative consumption, using the items from the coding table that describe them most effectively.

Discussion and managerial recommendations

Our results can be discussed at three levels. First, they broaden the existing research on collaborative consumption by proposing a logistics-centered analysis to complement the prevailing approaches, mainly focused on consumer behavior, business models and ideological issues, as previously noted. Second, they contribute to the literature on collaborative practices by identifying and characterizing two practices: crowd and open logistics. Finally, they have managerial implications for collaborative consumption entrepreneurs and logistics service providers.

| | Peer-to-peer logistics | Business logistics | Crowd logistics | Open logistics |
|--|---|--|---|---|
| <i>Brief definition</i> | Individuals design/organize/execute the logistics required for the exchange | The platform designs/organizes/executes the logistics for the exchange | The platform sells logistics services provided by individuals | The platforms enables its users to design/organize/execute the logistics |
| <i>Logistics role of platform</i> | Put people in contact with each other and support logistics | Provide the logistics required for the exchange | Enable individuals' logistics resources to be shared and optimized | Provide consumers with a logistics infrastructure to take control of distribution |
| <i>Intermediary role of platform</i> | Information | Physical and information | Information | Physical and information |
| <i>Key role of platform</i> | Geolocation | Logistics | Insurance | Governance |
| <i>Orientation of flows</i> | C to C | C to B to C | B/C to C | B to C |
| <i>Type of product/service offered</i> | Products (second hand, DIY, etc.) and services (use of appliances) directly exchanged between individuals | Products requiring processing (sorting, control, etc.) | Logistics services: freight forwarding, shipping, local delivery, storage | Local distribution networks mainly designed for fresh products |
| <i>Typical examples</i> | Etsy, Vinted, Ebay | Vestiaire collective | Nimber, Instacart, Sharemystorage | The Food Assembly, Park Slope Food Coop |

Table II.
Dominant features
of collaborative
consumption logistics

Peer-to-peer logistics and business logistics in support of collaborative consumption

So far, research on collaborative consumption practices has mainly discussed their potentially “revolutionary” nature with regard to existing capitalist models, tried to categorize the initiatives and analyzed the motivation of individuals to engage in such practices. Our research shows that these practices also raise important questions regarding logistics. In order to share, donate, recycle, sell or exchange among peers, it is essential to design, manage and execute the logistics processes these types of collaboration require. Botsman and Rogers (2010) identify four key factors in the spread of collaborative practices: a critical mass of users; the existence of unused capacity (physical goods, time, space, etc.); a belief in the common good; and trust between strangers, which allows new intermediaries to enter and handle the core coordination. Our research complements the latter point: when the logistics to be implemented is not too complex, it is possible to allow individuals to take charge of physical coordination, while the initiative provides support (peer-to-peer logistics: see Table II). As pointed out in the “consumer logistics” research trend (Granzin and Bahn, 1989), consumers already manage multiple logistics activities everyday and thus have the capability to implement basic logistics solutions and to become supply chain actors (Monnot *et al.*, 2014). However, in some cases, the logistics supporting a collaborative project may be too complex to delegate to individuals. The key issue for these collaborative entrepreneurs is that they have to organize the logistics themselves (business logistics: see Table II). Here, we must point out that the intermediary role of collaborative platforms is not limited to information, as suggested in the literature (Gansky, 2010; Nadler, 2014), but can encompass logistics aspects. The infrastructure thus implemented combines a virtual platform with a physical one.

Crowd and open logistics as part of collaborative systems

The second contribution of our research is that it identifies and characterizes two forms of collaborative practices. First, we show that alongside the wide range of crowdsourcing practices already identified (Schenk and Guittard, 2011), practices are appearing today that we can call – in line with existing terminology (crowd jobbing, crowd care, etc.) – crowd logistics. This confirms Botsman's (2014) prediction that logistics will be the next sector penetrated by collaborative consumption, since logistics dysfunctions and underuse of resources, particularly in the distribution of goods to the consumer, offer opportunities to collaborative players. Crowd logistics consist in firms or individuals using the crowd to design and/or carry out the logistics operations required for goods transportation or warehousing. Crowd logistics is a form of large-scale crowdsourcing of simple tasks (here, the transport or storage of goods), where the platform “integrates the crowd's contributions” (Schenk and Guittard, 2011, p. 95).

Second, we show that alongside open-source software (von Hippel and von Krogh, 2003) or open innovation (Chesbrough *et al.*, 2006), practices are appearing today that we can call open logistics. These practices consist in individuals and producers collectively taking back control of logistics choices related to the supply and distribution of goods. Logistics can thus be one starting point for a collective project developed to resist the logistics of large retailers. This finding contributes to the literature on consumer resistance to marketing, which so far has not concentrated on the logistics dimension (Roux, 2007). On the whole, our results stress the growing importance of logistics issues for consumers, as attested by the renewed interest in logistics in the marketing literature (Lusch, 2011; Lusch *et al.*, 2014).

Collaborative logistics: implications for LSPs and collaborative players

Finally, the managerial implications of this research are twofold. First, the typology developed here, emphasizing logistics aspects previously overlooked in the literature, may alert collaborative platforms to logistics issues, reminding them that the absence of a logistics viewpoint can lead to the failure of development strategies (Fabbe-Costes and Colin, 2007). It might help them to improve the design of the logistics process and to integrate it into their business model. Moreover, our typology underlines the fact that collaborative consumption can actually be focused on logistics. Our results invite players in the collaborative universe to explore opportunities for innovation with regard to physical flows.

Second, our research may be useful for the logistics services industry. Our typology shows that for service providers specialized in the design, management, operation, and control of logistics activities for their clients (Hertz and Alfredsson, 2003), collaborative consumption represents both a threat and an opportunity. A threat, since, by taking over logistics services, the crowd may take business away from service providers. Uber, for example is already providing home-delivery services in Chicago and New York and other major cities around the world. But while these are genuine threats, collaborative consumption also represents an opportunity to develop new activities. DHL for example has conducted a full-scale experiment in Sweden (Myways) calling on the crowd to carry out last-mile delivery. As we have shown, some collaborative consumption initiatives need intermediaries to manage their physical and information flows. Logistics service providers have the skills necessary to act as supply chain intermediaries (Fulconis *et al.*, 2006), providing their clients with global reach and customized services (Fabbe-Costes *et al.*, 2008). So they might very well look to increase their business by using the crowd in local delivery systems or by helping the crowd to circumvent existing supply chains. A recent study has further explored the question of the potential disruptive impact of crowd-based logistics on the traditional logistics industry, developing a finer-grained typology of such emergent services offered by the crowd (Carbone *et al.*, 2017).

Conclusion

The purpose of this paper is to identify the logistics at work in collaborative consumption. While research has until now largely neglected this topic, our results show that four types of logistics coexist in collaborative consumption systems. Two of these types emphasize the central role logistics can play in the development of dedicated collaborative experiments. While this exploratory study offers significant first insights in this area, our work clearly needs to be extended and replicated with initiatives from all over the world.

One interesting avenue for future research would be the conditions required for the emergence and development of crowd logistics. An analysis of what motivates or prevents people from becoming involved in such initiatives would add further insights to our analysis, which focuses on the collaborative initiatives themselves. It would also be useful to analyze collaborative initiatives focused on passenger transport such as Uber or BlaBlaCar, which have been tremendously successful. The boundary between flows of goods and of people is becoming increasingly permeable and somewhat meaningless, since logistics resources are used increasingly for both travelers and merchandise. A holistic approach to study collaborative mobility (of people and merchandise) would be useful, particularly to investigate the environmental impact of the physical flows it engenders.

More broadly, the issue of sustainable collaborative consumption could be explored more deeply, on the basis of the logistics types we have identified. More efficient use of means and resources, and increased lifespan for shared products and goods have often been proposed as the two main criteria for assessing the sustainability of collaborative consumption. Yet, a detailed analysis of sustainability must also include logistical aspects. Thus, our typology could contribute to a broader and more reliable assessment of the impact of collaborative practices.

Finally, in line with previous work on the links between collaborative consumption and traditional economic systems, the impact of collaborative consumption on logistics services and transport industries is undoubtedly an interesting research field. What can logistic operators and service providers learn from these new flow management methods? Will we see the rapid development of a new player whose role is mainly that of intermediary between storage spaces, transport operations and logistics capacities? Will social networks establish themselves as the main technological medium serving fragmented supply chains? In other words, will logistics players be able to draw inspiration from the founding principles of collaborative consumption to reinvent their role and their operating methods: by capitalizing on information systems (which they already do) to activate unused or idle resources and act as market intermediaries co-creating logistics value with the crowd?

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Corresponding author

Valentina Carbone can be contacted at: vcarbonate@escpeurope.eu