Guest editorial

Logistical challenges for sharing economies

Facilitating peer-to-peer exchanges and promoting access over ownership, the sharing economy is enjoying fast growth and transforming a great variety of sectors. "Sharing economy" is an umbrella term encompassing heterogeneous initiatives that create different types of economic, environmental and/or social value (Acquier *et al.*, 2017). PwC has estimated the sharing economy at $15bn in revenue worldwide in 2015, with the potential to reach $335bn by 2025 (PWC, 2015) and to disrupt several established industries (Belk 2014). In 2019, the sharing economy in China amounted to $464bn (compared to $99bn in 2015), and car-hailing apps accounted for 37.1% of the total taxi passenger traffic (Chan *et al.*, 2020).

More than a decade after it blossomed, the sharing economy field remains difficult to delimit, but its central idea is the optimization of under-used assets (physical assets such as cars, apartments, money or intangible assets such as skills and knowledge) by sharing them through digital platforms (Benkler, 2004). From this initial idea, the sharing economy became a popular term to refer to initiatives that either connect individuals through platforms to carry out sales, rentals, swaps or donations (Frenken and Schor, 2017) or that set up more centralized "product-service systems" to provide access instead of ownership and put idle assets to use (Botsman and Rogers, 2010). Spontaneous sharing practices have existed for ages, mainly at the community level and in the domestic sphere. However, these informal and local practices outside the market logic have recently been "dramatically scaled by the capitalist engine of technology-powered markets" to give rise to "stranger-sharing" practices and habits in global markets (Sundararajan, 2016, p. 6). Logistics scholars have so far shown little interest in the sharing economy (Carbone *et al.*, 2018), which is regrettable as a logistics perspective may help to better grasp this emergent and multifaceted phenomenon and disentangle many of its controversial issues.

The intermediary role of logistics for sharing platforms has mainly been explored from the point of view of optimization and algorithm modeling. In parallel, some work has been done on the development of crowd logistics, i.e. on sharing economy initiatives, whose main object and focus is the provision of logistics services (Mladenow *et al.*, 2016; Carbone *et al.*, 2017, Frehe *et al.*, 2017 and Rai *et al.*, 2017). As we wrote in our 2019 call for papers for this special issue, more work is needed to investigate the logistics challenges and implications faced by sharing economy initiatives involving physical flows and to shed a new light on its societal and environmental promises and impacts. Typologies and models of crowd logistics still need to be refined, contrasted and completed. Going forward, there is also a need to comprehend the interplay between logistics and the sharing economy: how does the sharing economy affect and challenge the logistics industry? How do traditional and crowd logistics influence each other? Do consumers play an autonomous logistics role within these booming peer-to-peer flows? Finally, the financial and operational viability of such new models and firms also need to be examined.

In terms of numbers, we received only 16 proposals for this special issue. This relatively small number confirms that the sharing economy is not yet high on the agenda of the logistics scholar community. However, most of the submissions received were of good quality and complemented each other, generating new knowledge for scholars and practitioners interested in the sharing

Erratum: It has come to the attention of the publisher that the article, Rouquet, A., Carbone, V. and Roussat, C. (2021), "Guest editorial", published in *International Journal of Physical Distribution & Logistics Management*, listed the authors in an incorrect order. These errors were introduced in the production process and have now been corrected in the online version. The publisher sincerely apologises for these errors and for any inconvenience caused.

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economy field. The final selection for this special issue is made up of four papers written by 13 scholars from a wide variety of countries who mobilize a diverse set of methodologies and adopt original and complementary angles of attack. This special issue includes three empirical studies – conducted in Texas, Bangladesh and Paris – and a fourth article based on secondary data from multiple cases. The methodologies used include agent-based modeling, mixed-methods (interviews and surveys), multiple case study and cluster analysis. Taken together, these four articles form a cogent special issue which, in our opinion, contributes to a deeper understanding of several key issues at the crossroads of the sharing economy and logistics.

Configurational approaches to sharing economy and crowd logistics

There is a broad consensus in the literature about the internal diversity, complexity and contradictions of the sharing economy field, reflecting a variety of organizational forms and business models. The sharing economy spans many types of organization, from for-profit to nonmarket initiatives (Schor, 2016), and it includes different supplier-customer dyads, such as CtoC (or peer-to-peer) and BtoC (Acquier and Carbone, 2018). This economy is referred to as a hybrid economy (Scaraboto, 2015) in which exchanges between individuals are at the forefront, while organizations usually play the role of intermediaries. There are semantic and conceptual debates about the definition of the sharing economy and its terminology (Frenken and Schor, 2017). Emerging views of the field range from all-embracing to narrow and focused (Gerwe and Silva, 2020). The criteria used to define the boundaries and sub-segments of the field of practices are often specific to each author, "resulting in an assortment of individually coherent, but inconsistent definitions at the field level" (Acquier *et al.*, 2019, p. 7). In this context, configurational approaches leading to taxonomies and typologies (Muñoz and Cohen, 2017, Acquier *et al.*, 2019 and Gerwe and Silva, 2020) provide boundary clarifications that management scholars, business practitioners and regulators can use to navigate the heterogeneous field of the sharing economy. These categorizations evolve over time. As forerunners of the field, Botsman and Rogers (2010) highlight the alternative macro-forms of the sharing economy, including "redistribution markets", "product-service systems" and "collaborative lifestyles". Digging deeper into its underlying logics, Acquier *et al.* (2017) identify three "worlds" at the heart of the sharing economy (access economy, platform economy and community-based economy) and reveal tensions and controversies due to their coexistence and partial overlapping. Several other studies borrow the language of business models to grasp the value creation, capture and distribution mechanisms, either of the field as a whole (Acquier *et al.*, 2019) or specific sectors and activities (Cohen and Kietzman, 2014). A clear polarization of the field is coalescing around global and capitalistic platforms (Uber and Airbnb) with high scaling capabilities, on one side, and cooperative forms or not-for-profit platforms, which offer ambitious societal and environmental promises, but have difficulty scaling up, on the other (Sundararajan, 2016).

Among the different sectors shaken by the rise of sharing economy initiatives, the logistics and transportation industry has undergone interesting transformations, mainly due to the emergence of crowdsourced delivery or crowdshipping (Rougès and Montreuil, 2014). This type of crowd-logistics arrangement, mainly parcel deliveries executed by the crowd, has also been identified as one of the configurations taken by logistics in response to the diverse relationships, transactions and operational models found in the sharing economy field. Carbone *et al.* (2018) have shown that, depending on the role of logistics (support vs purpose) and the type of management of physical flows (centralized. i.e. operated by the platform vs decentralized, i.e. operated by the individuals), four types of logistics are at work in the sharing economy: peer-to-peer logistics, business logistics, crowd logistics and open logistics. Crowdshipping models, with local and long-distance options, belong to the broader set of crowd-logistics solutions, which also include crowd-storage (Carbone *et al.*, 2017). Other classifications have tended to change their focus from the type of services provided to the

organizational settings and business model configurations adopted by newcomers or traditional actors embracing the crowdshipping trend (Rougès and Montreuil, 2014 and Frehe *et al.*, 2017).

With the aim of contributing to both the clarification of the conceptual boundaries of crowdshipping and the empirical assessment of the numerous crowdshipping initiatives on a global scale, the objective of Georgiana Ciobotaru and Stanislav Chankov's article is to map out the territory of crowd-logistics. Drawing on data collected online on more than one hundred crowd-delivery initiatives, they develop an analytical tool, i.e. a detailed framework to unpack the elementary components of crowd-based business models, which they use to build a taxonomy of crowd-sourced delivery business models. The authors identify and characterize six different clusters of crowd-shipping business models, including local customer-oriented sending, global last-mile, global community delivery, local last-mile, local deliverer-oriented sending and local professional delivery. Drawing on social media metrics, the results of this study also confirm that the local last-mile delivery business model stands out as the most appealing to customers (Carbone *et al.*, 2017).

Identifying the critical success factors for sharing platforms

When successful, sharing platforms trigger a virtuous cycle, typical of two-sided markets, which have been extensively studied in economics (Rochet and Tirole, 2006). More demand from one user group spurs more from the other. This means that to thrive a platform must reach a critical mass of users on each side as quickly as possible (Evans and Schmalensee, 2010). A platform therefore seeks to benefit from the "winner takes all" logic, specific to competitive contexts with network externalities, to establish itself as the dominant player (Eisenmann *et al.*, 2006). Balanced growth of the two sides of the platform is essential because neither can develop without the other (Hagiu and Wright, 2015).

The literature has highlighted two different sets of factors for achieving the critical mass of users essential to a platform's success. The first set of factors includes the quality and performance of digital devices, resources and skills. High-performance algorithms in particular are essential for implementing dynamic pricing systems (Cachon *et al.*, 2017), filtering mechanisms, auctions or affective matching in dating platforms (Benavent, 2016). Within this literature stream, the type of intermediation that is valued is mainly informational and aims to facilitate matchmaking and transaction smoothness while also securing payments (Hawlitschek *et al.*, 2018).

For the second set of success factors, the platform is viewed as an enabler, a "service facilitator" (Kumar *et al.*, 2018). As in most sharing platforms, and in particular in crowd-based ones, peers provide most of the services (labor and sale/leasing of goods). The platform cannot fully control the quality of the service or product provided. Consequently, it has been shown that the platform must make every effort to generate trust between peers and vis-à-vis the platform itself (Chen *et al.*, 2009). The platform must ensure the development of interpersonal and institutional trust (Möhlmann and Geissinger, 2018) as illustrated by the advertising slogan of the worldwide car-sharing leader BlablaCar: "Trusted carpooling".

Surprisingly, the literature does not highlight the critical role that logistics can play in facilitating and smoothing the provision of a valuable service, thus reinforcing the representation of sharing economy platforms as pure digital intermediaries that build their competitive strategies on algorithmic resources and aggressive marketing strategies. However, recent studies show that, in some instances, the control of logistics operations can underpin the success of sharing platforms (Carbone *et al.*, 2021) as is the case for Vestiaire Collective, a thriving platform specialized in peer-to-peer transactions of second-hand luxury goods. A French firm with an international footprint, Vestiaire Collective raised more than 178m euros in funding in February 2021. Its effective logistics system is built around a

network of internal warehouses and on highly specialized skills for quality control and combating brand counterfeiting. Vestiaire Collective centralizes the reception of second-hand luxury products sold through its digital platform to verify their quality and authenticity before shipping them to the final consumer.

In this special issue, Anuj Mittal, Nilufer Oran Gibson, Caroline C. Krejci and Amy Ann Marusak contribute to these debates, investigating a crowd-shipping platform for an urban food rescue programme in Texas. Using an experimental approach, the authors develop an agent-based model to provide recommendations on how to design, launch and manage a successful crowd-shipping platform to cope with a societal challenge, such as food waste. Their model integrates both sides of the platform, which allows them to capture the feedback loop between carrier and sender decisions on whether or not to participate in the program and to study the impact of network effects on a crowd-shipping system's ability to grow and endure over time. Experimental results demonstrate the importance of rapidly acquiring a critical mass of crowd-shippers, thereby avoiding repeated pick-up failures that may cause participating restaurants to withdraw. Additional insights are provided about optimizing the network design and suggesting the number and type of restaurants to target for long-term success.

From the bright side to the dark side of the sharing economy and crowd logistics

The sharing economy has been considered an "essentially contested concept" (Gallie, 1956), riddled with judgmental interpretations, which also translate into divisive streams in the literature (Acquier *et al.*, 2017; Acquier and Carbone, 2018). "Proponents" of the sharing economy describe it as a reformist movement, providing a breeding ground for new solidarities and innovation in political and organizational governance (Bauwens, 2005; Sundararajan, 2016). Others see the sharing economy as a potentially more resource-friendly economy that might reduce the ecological footprint of our consumption (Heinrichs, 2013). Its "detractors" radically depart from such visions, judging them to be idealised. They see the sharing economy as a "low-cost" access economy (Bardhi and Eckhardt, 2012) based on business models that make employment precarious and call into question the very concept of a corporation and salaried employees (Murillo *et al.*, 2017; Slee, 2017). Some authors warn against the rise of "platform capitalism" (Srnicek 2017), which transfers the processes of "strategization" and "financialization" to the individual level (Martin, 2016). Platform capitalism, "should be understood as a digital reincarnation of the 'putting-out' system, a pre-industrial organizational form (. . .) in which merchants outsourced work to individuals producing at home and owning the means of production" (Acquier, 2018, p. 14).

These criticisms apply mainly to transactional platforms (Evans and Gawer, 2016) whose primary function is to intermediate between supply and demand for commercial transactions. Icons of this type of "platform economy" (Uber Eats, Deliveroo, Take it easy, etc.) abound in the field of crowd-delivery, mostly in the urban context. The worldwide press provides copious evidence of the risky working conditions endured by bicycle couriers, which can lead to serious injuries and even death [1]. In a context of increasing protests by workers and preliminary efforts made by platforms in introducing behavioral charts and voluntary commitments to improve remuneration and working conditions, recent court decisions are beginning to shape the future regulatory regime for these workers (Infranca, 2018). Some cities in the US, like Seattle in 2020, have decided to set a minimum wage for ride-hailing drivers [2]. The UK's Supreme Court ruled last February on the Uber drivers' case, qualifying them as workers not "self-employed partners" as Uber had argued in a series of appeals [3]. This decision could mean thousands of Uber drivers are entitled to minimum wage and holiday pay; it could also set new orientations for court decisions on the status of crowd delivery workers.

These controversies concerning court rulings on the status of workers and working conditions are increasingly being tackled by the logistics and transportation literature (Dablanc *et al.*, 2017). A parallel stream in the logistics literature suggests the existence of an environmental dark side of crowd delivery platforms, which challenges one of the fundamental promises of the sharing economy, i.e. the optimization of idle assets and the consequent positive environmental impact (Rai *et al.*, 2018). However, most of the papers focus on technical innovations and optimization methods to overcome negative environmental externalities mainly linked to the last-mile delivery segment (Ranieri *et al.*, 2018), neglecting organizational strategic dimensions which may be the cause of negative externalities and unintended consequences (Carter *et al.*, 2020) of these crowd delivery platforms in an urban context.

The article by Btissam Moncef and Marlène Monnet Dupuy integrates a logistics management perspective into the generalist literature on the sharing economy, highlighting paradoxical tensions and dark sides of crowd-based sharing platforms, mainly linked to logistics. In a multiple case study that looks at anti-waste platforms, food delivery platforms and bicycle delivery companies and interviews both platform managers and couriers, the authors show that logistics strategies and operations can create tensions and paradoxes, threatening the sustainability promises of the initiatives. They identify seven different paradoxes, illustrating Smith and Lewis' (2011) typology. Their results confirm the predominance of performing paradoxes, which reveal the tensions between stakeholders' expectations and the implemented strategies. They also highlight tensions between the promised environmental and social values of these sharing economy initiatives and their impacts.

Hybridization of practices, actors and processes

The sharing economy is considered to differ enormously from established business models. It is also traditionally depicted as a disruptive trend, shaking up established organizations and raising serious threats for incumbent businesses. SNCF, the French national railway company, estimated that the rise of BlaBlaCar, the shared mobility platform created in 2006, had caused a more than 10% decrease in their business in less than ten years (Acquier *et al.*, 2019). Subsequently, SNCF invested €28m (~$42m CAD) in June 2015 to acquire Ouicar, a peer-to-peer car rental platform. Sharing models thus appear to be innovative, breaking with traditional economic systems and yet threatening at the same time. To overcome the disruption narrative, several authors (Cusumano, 2015; Kathan *et al.*, 2016) have highlighted the need for established companies to learn from sharing initiatives and hybridize their business models taking inspiration from the *organizing* approach embodied in these initiatives. Several examples illustrate how established businesses are building on their own reputation to become a trust-worthy third-party in peer-to-peer markets and adopting sharing economy principles. For example, since 2016, Mercedes-Benz (a Daimler brand) has been running Croove, a peer-to-peer rental platform in Germany.

Examining the strategic, organizational and operational levels of crowd logistics, Carbone *et al.* (2017) find that its attributes are quite the opposite of those of traditional logistics. Their findings emphasize the novelty of crowd logistics when compared to traditional practices. However, upon further exploration of their interfaces, numerous hybridization processes seem to emerge from the encounter between these two worlds. For example, the working crowd is evolving from amateurism to professionalism, with workers expected to be self-employed contractors – a variant identified by Dablanc *et al.* as early as 2017 – and is increasingly fighting for its rights. Numerous crowd delivery start-ups are financed or even acquired by traditional service or distribution players as has been the case for Stuart, a crowd delivery firm taken over by La Poste (the French postal service) in 2017.

Crowd logistics initiatives also compete with traditional players in the logistics services industry and are considered particularly threatening (Carbone *et al.*, 2017) in the problematic sector of last-mile delivery (Delfmann *et al.*, 2002; Esper *et al.*, 2003). In parallel, sharing economy initiatives also rely on traditional logistics service providers (LSPs), which may find new business opportunities in this area. In the United States, Roadie, "the on-the-way delivery platform", has an agreement with UPS to provide parcel insurance for its crowd deliveries. LSPs indeed possess the required logistics capabilities and can also coordinate the basic operations performed by the crowd by combining them with their wide variety of services (Wanke *et al.*, 2007) to provide the best service to the consumer (Vivaldini *et al.*, 2008). From a different but complementary perspective, the notion of sharing is at the heart of supply chain management, for instance through sharing warehouse space and pooling resources (Rouquet and Vauché, 2015) to reduce costs and decrease the chain's carbon footprint (Pan *et al.*, 2013). By definition, LSPs seek to create pooling and economies of scale within and among supply chains (Fulconis *et al.*, 2006). Seen in this light, in the logistics sector, the sharing economy can be considered as a digital update to traditional operations (Vétois and Raimbault, 2017), where apps replace freight marketplaces, facilitating exchanges among the different actors involved.

The article by Samsul Islam, Mohammad Jasim Uddin, Peter Shi, Taimur Sharif and Jashim Uddin Ahmed for this special issue reminds us – quite rightly – that sharing practices are not necessarily new! They also point out that sharing initiatives can apply to the upstream part of supply chains. These authors explore the motivations leading to the development of truck sharing practices in pre- or post-port hinterland connections. They identify five motives (operational efficiency goal, quick transport solution, sustainability policy, convenience-seeking behavior and secure transport process) for truck-sharing, four critical transport attributes (lower charges for freight, distance traveled, full capacity utilization and environmental recognition), four psychological consequences (monetary savings, greater safety, instant availability of trips and clarification of environmental values) and six core values (secure transport process, being careful with money, ease of doing business, sustainability, status in the community and recognition by customers of shippers). Their framework deciphers the body of motivations that lead to the use of the sharing economy in a professional context, thus providing a better understanding of its current development in traditional sectors.

Further research on the logistical challenges of the sharing economy

Obviously, this special issue does not exhaust the logistics issues raised by the rise of the sharing economy. For instance, the impact of the sharing economy on the logistics service industry deserves further research. In its latest "Trend Radar" report, DHL considers the sharing economy to be a trend that will significantly impact the industry over the next five years (Bubner *et al.*, 2020). As noted earlier, the relationship between logistics and the sharing economy oscillates between disruption (sharing economy start-ups competing with LSPs) and hybridization (the two types of companies working for each other or in concert within logistics chains). For example, when Walmart ran a two-week promotion for televisions in 2018, it turned to Flexe (on-demand warehousing) to supplement its warehousing and logistics capacities. Flexe then reached out to ITS, a third-party logistics company in Reno, for help in positioning products on the West Coast. Start-ups can use the services of traditional providers, with whom they appear to be in competition, while providers can innovate by creating offers that integrate sharing economy principles, for instance by using crowd-sourced services.

On a more critical note, for the time being, crowd logistics seems to be aggravating the social "dark side" of logistics by reinforcing the pre-eminence of information systems and the extreme flexibility of human resources. It also seems to be worsening the environmental externalities of the last mile. As a consequence, it is hard to predict that hybridizations

between the two models will easily lead to the best of both worlds! Researchers may find here a great opportunity to adopt a critical engaged research approach (Touboulic *et al.*, 2020) and work with practitioners to design hybridized sharing-logistics solutions that aim at incorporating social and environmental values and coping with the dark side observed in the emergent initiatives. Such an approach would also lead to a sound theorization of this phenomenon, which is still very much practice-driven (Touboulic *et al.*, 2020). The future of work in crowd logistics will have to be assessed while keeping an eye on regulations "in the making". Court decisions all over the world are changing the regulatory landscape, which will shape the playing field of future sharing and crowd logistics initiatives. As the national regulatory contexts change at different paces and evolve toward diverse models, it will be interesting to carry out comparative studies between more social-welfare and liberal countries to grasp these future evolutions.

Moving on the chain of analysis, the sharing economy provides an excellent context to explore the role of individuals, which is still largely overlooked in the logistics and supply chain management literature. Peer-to-peer exchanges between consumers, now exploding with the sharing economy, often involve the execution of logistic operations (Carbone *et al.*, 2018). In line with Mentzer *et al.* (2001), who argue that supply chains exist whether they are managed or not, the physical flows connecting consumers can be considered to trace out supply chains linking one individual to another, passing through other intermediary actors. These chains have particular characteristics in terms of flow direction and social embedding (Granovetter, 1985), and their flows serve multiple purposes (beyond the purely economic purpose) including environmental preservation (Böcker and Meelen, 2017) and the generation of social ties (Martin, 2016). Future research could explore the issue of consumer-to-consumer logistics, which is firmly embedded in the social relationships that bind individuals and amplified by the engine of digital technologies (Rouquet *et al.*, 2018). It would be interesting to characterize the features of peer-to-peer logistics and explore how it differs from classic business logistics. Theoretically, such research could be inspired by the consumer logistics stream (Granzin and Bahn, 1989), which is currently undergoing a revival, and service-dominant Logic, which postulates the active co-creator role of consumers (Vargo and Lusch, 2008).

Notes

1. https://www.theguardian.com/business/2020/nov/23/death-of-sydney-uber-eats-rider-the-fourth-food-delivery-fatality-in-two-months
2. https://www.geekwire.com/2020/seattle-adopts-minimum-wage-uber-lyft-drivers/
3. https://www.theguardian.com/technology/2021/feb/19/uber-drivers-workers-uk-supreme-court-rules-rights

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