

Uncovering Data and Process-Related Privacy Risks in Retail

Logistics: The Case of Last Mile Delivery

Abstract

According to estimates of the International Post Corporation (2017), e-commerce sales worldwide will continue to grow by 141% in the period from 2016-2021 from 1.9 Trillion USD in 2016. With 13 to up to 75 percent of total logistics cost being directly attributable to the last mile (Gevaers, Van de Voorde, and Vanelslander 2011), there is significant room for improvement. While first time delivery rates range from impressive 92 to 96 percent in Germany (Parcellab 2016), these figures also include deliveries to neighbors. Other international statistics report first time failure rates between 2 and 30 percent (Edwards, McKinnon, and Cullinane 2010). Repeated delivery attempts and pick-ups by customers in depots further delay the delivery process and lead to additional cost. While customers increasingly expect instant delivery, they take their time with regard to deciding whether to keep or to return an item (Wood 2001), which further increases the logistics costs of retailers. A recent study by CapGemini (2019) shows that consumers in European markets are unhappy with the delivery services, also because they increasingly demand same-day delivery and experience late deliveries on many occasions. Further, the report states that increases in online delivery volume may negatively affect the overall retailer profitability. Moreover, last mile logistics cause additional traffic and contribute to pollution (Dell'Amico and Hadjidimitriou 2012).

Against this background, technology driven innovations may be a way to improve the efficiency of last mile delivery in retailing. The internet of things allows new logistics solutions such as delivery to cars. Car manufacturers like Daimler, and Volkswagen have started pilot studies testing in-car delivery in cooperation with logistics providers such as DHL and online

retailers such as Amazon (Amazon 2018). Volvo has already entered the market with in-car delivery being available for its “Volvo On Call” users (Volvo 2019). Customers can assign their car as drop-off (or pick-up) location prior to delivery. Like in carsharing, logistics providers localize vehicles via GPS, its delivery personal is then authorized to open the trunk of a car via smartphone access. Therefore, this service promises a reduction of first time delivery failures, an increase in the number of successful deliveries in a given time period, and a reduction of the time of product deliveries and returns.

While car manufacturers, logistics providers and retailers see great potential in this technology-mediated service, customers may perceive substantial barriers linked to their privacy, the use of their data, and the access to their car, which may prevent them from adoption.

Prior work on consumer privacy concerns in retailing has studied customer perceptions or feelings of vulnerability related to data access and/or data breach (Martin, Borah and Palmatier 2017; Janakiraman, Lim and Rishika 2018). Few studies have made an attempt to more fully capture the complex nature of privacy concerns (Martin and Murphy 2017). Among these, Smith, Milberg and Burke (1996) suggest that privacy concerns may relate to (1) information collection, (2) unauthorized secondary use (internal and external), (3) improper access, and (4) errors. Thereby, existing approaches focus on the data-related aspects of privacy, largely ignoring process-related privacy aspects that might play a role during service execution.

The study contributes to the literature in two important ways. First, potential facets of data- and process-related privacy concerns relating to in-car delivery are explored by qualitative in-depth interviews. Second, we test the effects of these dimensions on customer acceptance of in-car delivery using a representative sample of 1,004 consumers. The research was conducted in an interdisciplinary cooperation with a service innovation team of a car manufacturer to ensure the realism and plausibility of the communicated scenarios.

Findings of the qualitative study show that – besides seeing aspects of usefulness – consumers perceive a multiplicity of privacy concerns with regard to data collection, access of third parties, damaged or unreliable data, and loss of control of personal data. Further, process related concerns with regard to treatment of possessions (i.e., car, delivered items), and the secured locking of the car after the in-car delivery were raised by the consumers.

The representative field study show negative effects of the seven privacy concerns revealed in the qualitative study on perceived behavioral control. While key benefits of the service such as increased level of comfort, independence, and secure storage positively influence perceived usefulness, the effect of perceived behavioral control on intention to use exceed the effect of usefulness.

Hence, our study points at the importance of the differentiation of different facets of privacy concerns in the context of an innovative last mile delivery service and provides implications for measures devoted to the reduction of these concerns.

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