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## Abstract

The bankruptcy of the major toy retailer Toys R Us in 2017 and 2018 marked a turning point in the diffusion of ecommerce and home deliveries; changing consumption patterns were so significant that they were the main factor in the retailer’s bankruptcy. The project looks further into the causes of the current retail paradigm shift by looking at the emerging distributional strategies and practices of ecommerce firms.

## The Impacts of E-commerce on Freight Distribution

Although several aspects of ecommerce are perceived as retailing, it can better be understood from a freight distribution perspective since the distribution and delivery aspects are fundamental.

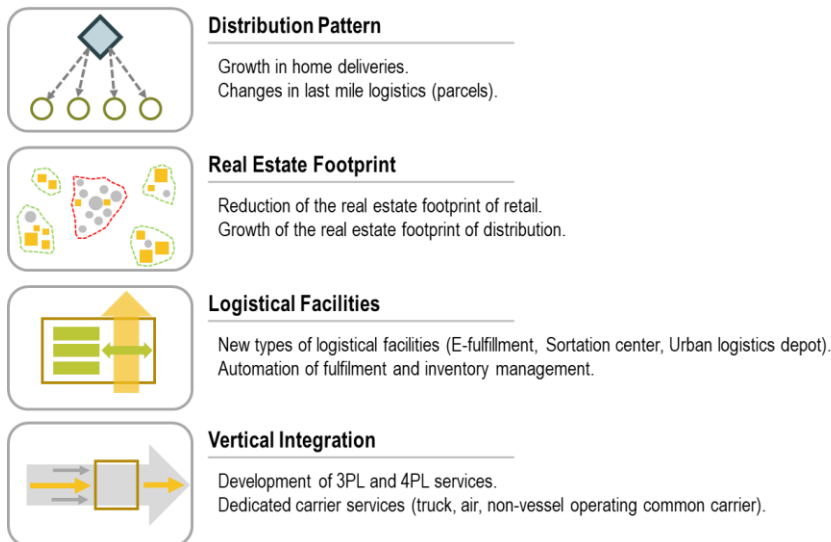


Figure 1

Because of the characteristics of its operations, ecommerce is having four fundamental impacts on freight distribution.

## Distribution Pattern

The growth in home deliveries is one of the most tangible impacts of ecommerce as consumers are switching a growing share of their consumption (particularly discretionary) to purchases made online. Instead of a retail consumption pattern involving consumers going to stores and carrying back home their purchases, with ecommerce most of these purchases are delivered through parcel services. This is changing the scale of last mile logistics with the growing role of parcel deliveries and strategies to ensure that these parcels reach their consignees.

## Real Estate Footprint

The transition towards online purchases is reducing the demand for standard retail activities, implying a downward pressure on the conventional retail footprint. Many large chain retailers have been substantially reducing their footprint in recent years. Paradoxically, since home deliveries are distribution-based activities, the growth of ecommerce involves an increase of the warehousing footprint. This may also change as well as real estate (and rent) values of some commercial areas, since the location dynamics of distribution centers tend to favor suburban or exurban locations. Stores can also be designed to cater more effectively to the characteristics of ecommerce, acting partially as showrooms, warehouses and pickup locations (known as omni stores).

## Logistical Facilities

Ecommerce has required the development of entirely new types of distribution facilities, such as e-fulfillment centers that are designed to service large volumes of heterogeneous orders to be shipped in parcels. More than any other type of distribution centers, the high throughput requirements of logistical facilities have pressured the need for automation.

E-fulfillment centers have developed random storage operations because they match online orders and the large variety of goods carried. Individual goods are stored randomly on racks with each location recorded for later retrieval. The main advantages include a reduction of the average retrieval time for an item since its inventory is stored at several locations in the distribution center. Since online orders usually involve single items that are shipped as single parcels, random storage matches the volume (single) and frequency (somewhat random) of ecommerce orders. This storage strategy reduces the warehousing footprint since inventory is stored in unallocated space, so the storage capacity has a higher utilization level.

## Vertical Integration

Ecommerce is reaching a throughput level giving some of its main actors significant leverage as users of logistical and transportation services. Many are developing capabilities as third party and fourth party logistics service providers, following vertical integration strategies with segments of freight distribution (home deliveries, air freight, maritime shipping). Once they reach a sufficient throughput level, online retailers may take stakes in carrier services, such as parcel deliveries by truck and even develop their own air freight services. The setting of sortation centers, urban logistics depots and freight stations (pickup points) are also part of a vertical integration strategy. The development of non-vessel operating common carrier services is an additional strategy undertaken by major online retailers relying on containerized shipping (international sourcing) and able to generate substantial container volumes.

Significant changes in contemporary logistics and freight distribution are thus being driven by ecommerce, which can be labeled as distribution-based consumption. If the automation and robotization of several manufacturing activities are considered, then even more significant changes can be expected since the means of production, distribution and consumption are concomitantly changing.