TRANSPORT ANALYSIS

Does e-commerce lead to increased transport activity – subreport from a government commission

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Summary

The growth of e-commerce has been almost explosive, with turnover nearly quadrupling over the past ten years, and this trend is continuing. Considering this and bearing in mind the Swedish objectives to reduce climate impact, the government has tasked Transport Analysis with analysing the transport activity generated by e-commerce. The focus of this task is on analysing how such transports can be made more efficient to contribute to greater sustainability. The present report, which is a subreport from this project, describes how e-commerce goods are distributed. It also includes an analysis of what factors affect whether e-commerce leads to lower or higher traffic volumes than does commerce in brick-and-mortar shops. The reported results are based mainly on literature studies and interviews. The existing statistics are inventoried as well.

E-commerce entails the fragmentation of retail shipments

The distribution structure for e-commerce goods differs from sales in traditional shops in that e-commerce necessitates distribution to significantly more numerous and dispersed delivery points. More packages of smaller sizes are shipped than is the case for deliveries to shops, in turn making greater demands in terms of coordinating the goods in transit. The small shipments and numerous delivery points mean that e-commerce entails the fragmentation of goods shipments compared with brick-and-mortar commerce, and that the deliveries are more often made using smaller vehicles.

When e-commerce occurs directly from a different continent, the goods are often transported over long distances by air, while those same goods would be transported by sea in connection with Swedish brick-and-mortar commerce (and European e-commerce). The modes of transport used in shipping from manufacturer to retailer do not otherwise differ notably between e-commerce and brick-and-mortar commerce. Rather, it is in the final stage of the transport process that the differences arise, and they have to do with the breakdown between personal and goods transport activity, and with the types of vehicles used.

A third difference between brick-and-mortar commerce and e-commerce is that the share of goods that is returned by customers is significantly greater in e-commerce. This is because, unlike a customer in a brick-and-mortar shop, the e-commerce customer cannot try on or feel the goods before purchasing them.

E-commerce could lead to lower traffic volumes, but the actual result may be the opposite

E-commerce has the potential to lead to lower traffic volumes and reduced energy use for transport if shopping trips by car are replaced with more efficient means of transporting goods. Moreover, e-commerce could be an important piece of the puzzle in enabling a car-free lifestyle in the long term. However, several factors affect whether this potential will be realised in practice.

One important issue is the great emphasis on fast delivery in e-commerce, a factor that can degrade conditions such as route optimisation and high load factors that favour efficient logistics. It is also a fact that e-commerce goods are often inefficiently packaged, and that some e-commerce involves a higher proportion of air freight than does brick-and-mortar commerce. The results are also affected by the share of e-commerce goods that are returned, and by how those returns are handled.

Nor is it always the case that e-commerce deliveries *replace* personal shopping trips, partly because such trips are sometimes made while en route to other destinations (e.g., on the way home from work), and because e-commerce customers often make supplemental trips to brick-and-mortar shops, for example, to try on garments that they will then order online. In those cases in which shopping trips are actually replaced, the question of whether the replaced trip would have been made by car or some other more energy-efficient

mode of transport (e.g., walking, bicycling, or public transport) is very significant in terms of any increase in energy efficiency.

Finally, e-commerce can also give rise to *indirect* transport-related effects. For example, e-commerce can free up household time, which can then be spent on, for example, more leisure-related trips. The scope of such so-called “rebound effects” affects traffic volumes from a larger perspective. There is also reason to believe that e-commerce could lead to increased consumption overall, given the often low prices and greater goods availability via e-commerce. However, digitalisation and e-commerce can, at the same time, lead to less transport-intensive consumption insofar as goods previously available only in physical versions can be copied in digital versions online, or when online sales of, for example, travel and tickets eliminate the need for shopping trips to service vendors.

Depending on the aforementioned factors, e-commerce can lead to decreased, unchanged, or increased traffic volumes and energy use. In other words, the effects of e-commerce are highly context dependent. If the increase in e-commerce occurs in a society that is planning for and headed towards sustainable mobility, then e-commerce can help create accessibility without car travel. However, without such a framework, e-commerce is more likely to lead to higher traffic volumes, with home or pick up point deliveries being added to unchanged (or even increased) personal travel activity. Future developments will also naturally depend on the degree to which e-commerce and transport companies greening their businesses and on whether their customers actively make sustainable choices.

It has not been possible, within the scope of this project, to study whether the potential to improve energy efficiency differs between rural and urban areas. Nor have we analysed whether the potential is equally great for different groups of e-commerce customers (e.g., women vs. men). These aspects would be of interest to study in the near future.

TRANSPORT ANALYSIS

Transport Analysis is a Swedish agency for transport policy analysis. We analyse and evaluate proposed and implemented measures within the sphere of transport policy. We are also responsible for official statistics in the transport and communication sectors. Transport Analysis was established in April 2010 with its head office in Stockholm and a branch office in Östersund.

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