

ON-LINE SHOPPING

WHAT ARE THE TRANSPORT ENERGY IMPLICATIONS?

Key points

- There is a major shift going on in retail with fewer trips to physical stores and a rapid growth in on-line shopping. This looks set to continue.
- The transport-related energy implications of the rise in on-line shopping depend on how delivery systems are organised and how people reshape their physical shopping.
- The energy benefits of fewer trips being undertaken are being offset by growing expectations for next day or same day delivery and a highly fragmented and competitive delivery environment.
- Whilst planning policy could be used to steer the system to lower energy use from transport, it is not yet doing so.

Introduction

On-line shopping now represents almost 14% of total UK retail sales¹. The rise in on-line shopping has coincided with a 30% decrease in physical shopping trips over the past two decades but a 25% increase in distance travelled by vans.² Our research looked at shopping patterns of UK households³, to understand how shopping has been changing and the connections to travel and related energy use. It began with six focus groups to explore how people shop today: these informed 34 in-depth household interviews focussing on how people order and receive goods and their changing expectations of the retail system. A questionnaire survey of 2000 people then enabled a more systematic comparison of variations in patterns between people, places and products.

Questions

- In what ways is shopping changing and is it becoming more energy intensive in terms of transport?
- How varied is the influence of shifts to on-line shopping for different types of products?



- What expectations do shoppers have about on-line shopping and what shapes these?
- What is the role of planning in steering the transport impacts of on-line shopping to a lower energy future?

Findings

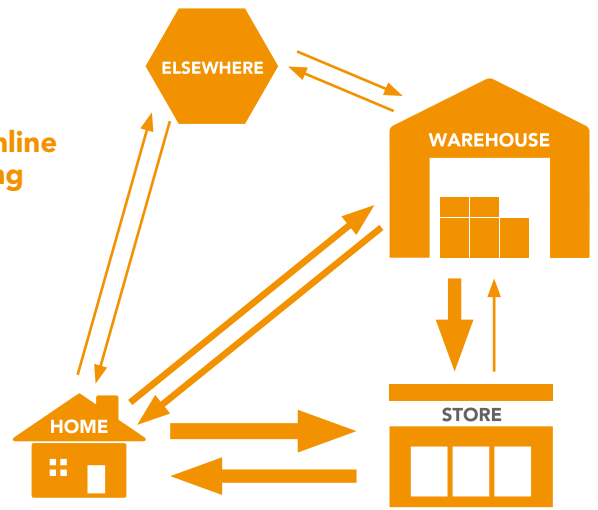
In-store remains the dominant way most people shop – still constituting a significant physical and emotional experience – with shops continually adapting to create different retail environments. Whilst on-line shopping is growing rapidly, it is not a simple question of either 'on-line' or 'in-store'. Shopping is instead blended with browsing, comparing, purchasing and receiving goods, and this happens in a mix of locations. In our survey, for example, 89% of goods ordered on-line were delivered to people's homes with the remainder going to 'click and collect' options in stores (4.5%), work (4%), neighbours (1.5%) or family (1%). The consumer is increasingly part of the logistics system. Figure 1 qualitatively summarises shifts in flows of vehicles associated with shopping.

Figure 1 Shift in how and where people obtain and return goods

Pre-Online Shopping



With Online Shopping



Key → Flow of goods or people
Thin to thick arrows indicate relative size of flow

The extent to which different products are purchased in-store or on-line depends significantly on the type of product and, for example, the importance placed on touching or seeing before buying. Figure 2 shows the relative importance of in-store visits for clothing, toiletries and home decor, whereas goods such as phones and small appliances are more likely to be bought on-line.

The research also explored delivery patterns for goods purchased on-line. Deliveries can be organised more or less efficiently. Items can be consolidated so that delivery vans are making multiple drops in an area with very little additional mileage per vehicle. Consumers appear to be very price sensitive when it comes to deliveries and should therefore be willing to wait for orders to arrive – which would make it easier to consolidate loads. However, retailers are creating new expectations (in particular normalising expedited delivery) by:

- introducing annual subscriptions which then give next day delivery free all year; and

- providing free delivery and returns for orders over a certain value.

Short delivery windows reduce opportunities for consolidation. Annual subscriptions increase order frequency (more than volume) and free delivery and returns lead to deliberate over ordering and returning of goods, which again adds mileage back into the system.

The gap between the signals and prices consumers receive and the costs (and energy implications) of delivery was revealed through our survey questions on Black Friday in 2017. Estimates suggest that UK households spend over £7 billion and generate 3.5 times more on-line orders on Black Friday than a normal November day.³ This requires significant additional temporary delivery capacity and, therefore, energy. However, 35% of people thought the fees and delivery times should be the same on Black Friday, 21% of people do not think about either fees or delivery times, and 5% felt deliveries should be both quicker and cheaper.

(N=2001)

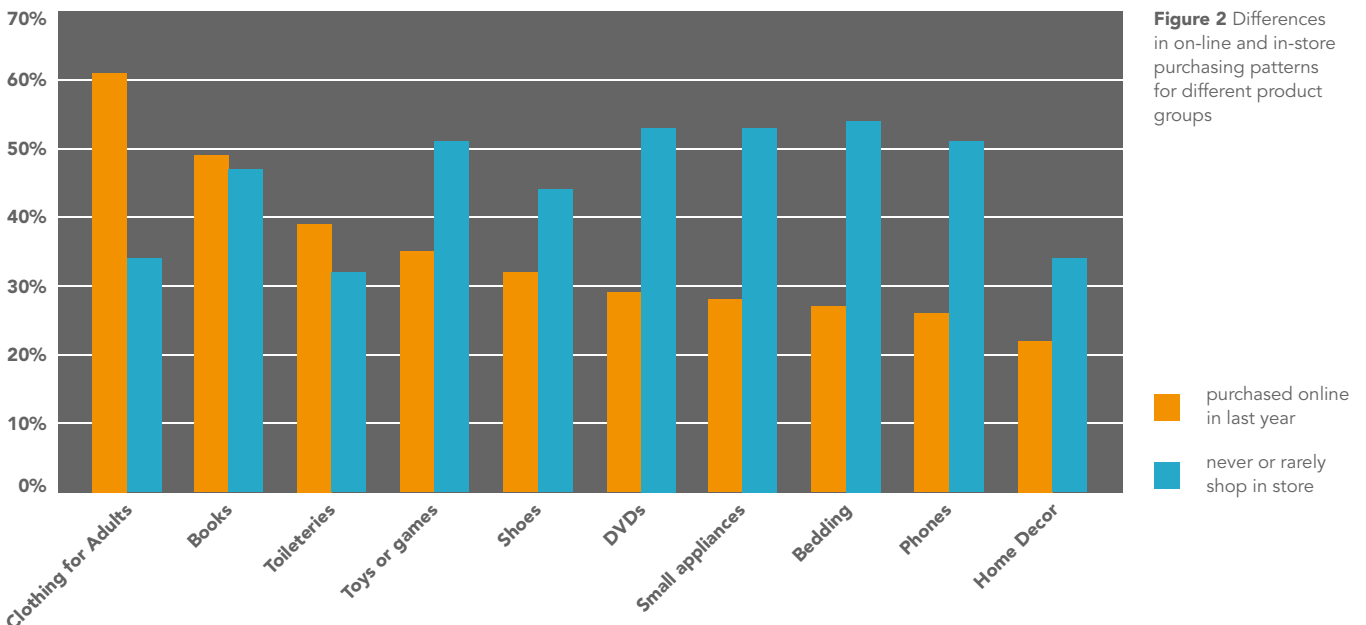


Figure 2 Differences in on-line and in-store purchasing patterns for different product groups

It is also clear that, despite logistics firms being more flexible about where deliveries can be left (with neighbours, in wheelie bins and wendy houses), failed first time deliveries are a problem. First time failed deliveries are estimated to cost business roughly £700 million per year and add between 9%-75% additional emissions, depending on the number of delivery attempts.⁴



Significance

It is currently difficult to say whether there are net energy savings or benefits associated with the reconfiguration of travel around retail. Our work shows that to understand where energy demand for transport is going requires a dynamic understanding of what people shop for, how blended on-line and physical shopping can be, and how delivery patterns are structured. Data collection processes, which count shopping, retail and freight trips separately, provide a fragmented picture that misses their close and evolving interconnections.

A key factor that could reduce energy consumption is the ability of retail firms or their logistics partners to consolidate deliveries to an area. However, fierce competition between retailers is contributing to a set of consumer expectations on delivery schedules and costs, which make consolidation less likely and therefore require additional travel and energy. Solutions which integrate pick up of goods en-route (e.g. at rail stations, convenience stores or petrol stations) offer an effective solution for logistics firms and consumers alike. More could be done to ensure provision for this and to normalise its use.

Implications

Given how diverse household purchasing practices are, the scope for reducing more energy intensive forms of shopping through 'consumer messages' is limited. Instead, our research suggests much more thought needs to be given to where, when and how delivery and returns happen.

- The Department for Transport should change how it collects information about shopping patterns in order to better understand physical trips to the store and the travel associated with delivery and returns.
- A home delivery plan should be made for every neighbourhood in a city and be supported by additional infrastructure (e.g. lockers or collection points) and/or restrictions on delivery that reduce the number of 'last mile' journeys that are made.
- The practices of setting loss-leading low delivery fees, hidden delivery fees and subscriptions with free deliveries bundled together should be examined to ensure that energy intensive delivery patterns are not being subsidised whilst firms compete for market share.
- The amount of energy associated with goods returns should be calculated and presented through Corporate Social Responsibility reports with a goal set to reduce this over time.



¹ ONS 2018 Interest sales as a percentage of total retail sales

² DfT 2015 National Travel Survey: England 2014; DfT 2017 Road Traffic Estimates: Great Britain 2016

³ <https://www.imrg.org/media-and-comment/press-releases/imrg-black-friday-online-retail-forecast-2017>; <https://www.eshopworld.com/news/black-friday-2017-infographic>

⁴ Edwards, McKinnon, Cherrett, Song (2010) Carbon dioxide benefits of using collection-delivery points for failed home deliveries in the United Kingdom, *Transportation Research Record: Journal of the Transportation Research Board*, 2991, pp 136-143

