

Consumer willingness to pay for environmentally friendly distribution

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Introduction and research question

In Norway, as in many other European Countries, online shopping is an increasing trend resulting in a growing demand for delivery services. Delivery has a significant impact on cities in terms of negative externalities, such as greenhouse gas emissions, congestion, air pollution, noise, etc. However, existing solutions can help reducing the environmental impact of delivery by using more efficient delivery methods such as consolidated deliveries, pick-up points, parcel lockers or energy-efficient vehicles. The successful implementation of such initiatives depends on consumer acceptance, which can be challenging as consumers tend to prefer quick and free delivery services (Buldeo Rai et al., 2018).

In this context, our research aims to investigate consumer views towards environmentally friendly delivery and their willingness to pay for such delivery. We also address the question of how consumers value the environment compared to other factors such as delivery costs, delivery time, and delivery timing. The presentation will be based on a report from TØI published very recently (Caspersen, 2023). The main intention is to disseminate its results to an international audience, since the report is written in Norwegian.

Method

Our presentation relies on two methods. First, a literature review has been conducted in Science Direct, Google Scholar, and Web of Science on consumer perceptions and willingness to pay for environmentally friendly distribution. The literature review also includes reports from logistics companies and summaries of online shopping trends.

In addition, the results also rely on analyses conducted on data from PostNord's online shopping barometer called "Netthandelsundersøkelsen" and collected in May 2022 by the data collector Norstat. The survey was designed to understand consumer online shopping behaviors, preferences, and willingness to pay for various delivery services.

Results

Environmentally friendly distribution

Recently, research has focused a lot on how freight traffic from e-commerce could be reduced. Several papers investigate whether consumers would be willing to contribute to

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more environmentally friendly distribution by either choosing delivery solutions with longer delivery times or by paying for options with lower environmental impact. Environmentally friendly delivery options are currently colliding with what has been shown in many studies to be consumers' preferred distribution solution: free and fast delivery with flexible pick-up location and pick-up time. Indeed the literature review shows that low price for transport, delivery time, and delivery location are more important to the consumer than environmentally friendly distribution (Buldeo Rai et al., 2018; Nguyen et al., 2019). But on the other hand, consumers still want environmentally friendly deliveries (Buldeo Rai et al., 2018; Caspersen & Navrud, 2021).

Papers investigating the willingness to pay for environmentally friendly distribution show a willingness to pay between 1-4 euros, depending on study area. The preferences vary with socio-demographic and economic conditions such as gender, age, education, income, and attitudes (Caspersen et al., 2022; Hagen & Scheel-Kopeinig, 2021).

Given the literature review, it appears that the willingness to pay for environmentally friendly distribution is equivalent or slightly higher than for other shipping services, such as information services, choice of delivery slot and delivery location, but lower than the willingness to pay for fast delivery. This means that if an environmentally friendly solution meets consumers' expectations around price, time, and flexibility, this could be an attractive measure to nudge consumers towards more environmentally friendly options (Caspersen, 2023).

What about Norwegian consumers?

During the summer 2022, PostNord, in collaboration with Norstat, conducted a survey where consumers were asked which delivery options they prefer and their willingness to pay for selected delivery services. This survey has been closely studied in TØI's report (Caspersen, 2023), with a focus on the questions about which delivery solutions are preferred when shopping online and the willingness to pay for various delivery services.

The results show that over 50 % of the sample chose the cheapest delivery option, whereas only 4 % prefer the environmentally friendly solution. Instant home delivery (within a few hours) has the highest average willingness to pay among both men and women. This can be explained by the fact that instant delivery is a service consumers choose when in need of the product very quickly, so when it provides them a clear value. The average willingness to pay for environmentally friendly delivery with zero-emission vehicles is between 70 and 75 Norwegian kroner (this corresponds to 7-7,5 euros). Results also show a large variation in the amount people are willing to pay for the different delivery services.

To better understand willingness to pay for selected delivery services, Caspersen (2023) conducted econometric analyses to examine how willingness to pay for environmentally friendly transport (with zero-emission vehicles), willingness to pay for instant home delivery (within a few hours), and willingness to pay for home delivery (next day) vary with socio-demographic and economic factors. The presentation will emphasize the main findings of the analysis. Even if the models explain a very small part of the variation in willingness to pay, we can highlight some robust findings. For example, the results indicate that consumer age and household structure (children presence) have an impact on willingness to pay for delivery services. The analysis also shows a positive correlation between willingness to pay for fast home delivery within a few hours, home delivery next day, and environmentally friendly transport, indicating a distinction between consumers who are generally willing to pay for transport services and others who are not.

Policy Implications

Faced with the increasing trend of online shopping, one important question is: how to get consumers to choose sustainable deliveries? The research presented here highlights that

many consumers are interested by and want environmentally friendly deliveries when they shop online. Thus, online retailers and shippers should work to offer environmentally friendly distribution solutions to their clients. Nevertheless, there is a paradox between the fact that consumers say they want environmentally friendly distribution and the fact that they end up choosing non-environmentally friendly options with short delivery times and low prices. We can interpret willingness to pay as a utility and consider that consumers value distribution solutions that are environmentally friendly and have a theoretical willingness to pay for this. With that in mind, our results indicate that customers could choose environmentally friendly delivery if it is an option without or at low extra costs and is not eclipsed by more attractive solutions, such as free home delivery within a few hours. Environmentally friendly delivery options should also be attractive for consumers: they should not cost too much, offer reasonable delivery times, and be delivered in attractive locations

Keywords: E-commerce; Willingness to pay; Last-mile delivery; Environmentally friendly distribution; Consumer preferences

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