

Impact of Delivery Options on the Sustainability of Online Shops

Masterarbeit

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1. Introduction

The Corona pandemic is creating a package boom. It is expected that the parcel growth will continue to increase in 2022. People are ordering more and the delivery companies can make high profits. At the same time, more and more people are ordering by express delivery, for example, in order to receive their products as quickly as possible (Tagesschau, 2021). At the same time, the issue of sustainability is coming back into focus. Due to the increased volume of orders, it is urgently necessary to analyze the impact of delivery on the environment (Buldeo Rai et al., 2021). There is a particular focus on the different delivery options. It is largely unclear what impact specifically individual delivery options have on sustainability. Above all, a holistic approach should be sought involving the three key stakeholders. Previous literature has examined the individual sustainability impacts of e-commerce but not across all dimensions of sustainability and without including the various stakeholders. Especially the impact on the customer has been neglected. The motivation of this thesis is to close this research gap by including the three dimensions and the stakeholders involved. Based on this, the following central question will be investigated:

[What is the impact of different delivery options on sustainability aspects and what is the role of different stakeholders?](#)

In order to answer the research question, a theoretical framework was first set up in chapter. For this purpose, the terms sustainability and 'last mile' were classified and defined. Also in this chapter, a practical example on the topic of delivery options is used for general understanding. In chapter 3 the used literature methodology is presented. Using Grounded theory, a qualitative extensive literature review is conducted and analyzed using Webster & Watson. This contributes to the development of the research gap. In the fourth chapter, the research method expert interview is presented methodologically. Using MAXQDA, the interviews are coded and analyzed according to Mayring. This is followed in the fifth chapter by a comparison of the results from the literature and the expert interview. Finally, chapter 6 summarizes the conclusions drawn in the previous chapters, as well as a limitation and an outlook regarding the need for further research.

7. Summary

The aim of this thesis was to answer the central research question:

What is the impact of different delivery options on sustainability aspects and what is the role of different stakeholders?

To answer this question, after the introduction to the topic, the second chapter defined the basic terms sustainability and delivery options. A practical example was used to explain the delivery options in more detail. In the third chapter, the previous literature was identified using Grounded Theory and evaluated using a Webster and Watson concept matrix. Then, the literature was divided into 10 key areas to finally identify the research gap. In the fourth chapter, the research method "Expert Interview Methodology" is first embedded and then coded using MAXQDA according to Mayring. In addition, this part of this thesis presents the results of the seven interviews to then compile opportunities and challenges of each delivery option. These are discussed in chapter 5. Chapter 6 consists of a summary as well as limitation and outlook.

The different delivery options have impacts in all three dimensions of sustainability (social, environmental and economic). In the area of economics, the delivery options primarily affect costs. Online store, delivery service provider and customer all have monetary and cognitive costs. For the customers, the hassle costs are especially important. For the service providers, for example, the costs for delivery vehicles and delivery routes. The online retailer has mainly organizational costs and packaging costs. Furthermore, the retailer deals in this dimension with customer acquisition. In order to satisfy as many customers as possible, this paper recommends implementing a wide range of delivery options. From product to product, customers need different delivery options. Enterprises should offer a broad selection of delivery options, in order to address as many customers as possible and to give the customer thereby the possibility for him to select the suitable delivery option. The more service the customer is offered, the higher the shipping costs may be. Customers are prepared to pay more for more service. The companies should be as transparent as possible with the costs and market the advantages more consciously.

Reliable deliveries are particularly desirable, but sustainable, cost-effective and fast deliveries are also in demand. The split delivery can cause the highest trouble costs for the customers. For companies, this work recommends, although delivery speed was often cited as the most important attribute in previous literature, not to focus exclusively on it. Reliability and low annoyance costs in conjunction with sustainable

solution approaches were at least as important to the customers surveyed in the expert interview.

Based on this, the individual delivery options also have an impact on the ecological dimension of sustainability. Here, the drivers are packaging and the emissions emitted by the delivery vehicles. These are related to the kilometers driven. E-commerce employees, like customers, want sustainable packaging solutions. Especially for split deliveries, the packaging materials used are crucial, as this also requires the most packaging. For time window delivery, the most critical factor is the miles driven. These can be higher than for other delivery options, as the delivery vehicle has to drive more back and forth in the delivery area. On the other hand, the success rate of meeting the customer directly at the first delivery is high. The customer selects the delivery time in advance and is likely to be met then. This reduces the delivery kilometers because the delivery person does not have to come by another time. In the case of split delivery, this figure can be higher because the customer has many deliveries to receive, increasing the probability that he will not be at home. The emissions distributed can be reduced, for example, by using electric cars.

The third and last dimension of sustainability deals thematically with social impacts. In the case of the present work, above all with the working conditions of the parcel delivery drivers. They are under enormous time pressure due to tight delivery schedules. This pressure is particularly high around Christmas, as customers tend to order more at that time. The parcel messenger interviewed delivers around 100 parcels a day. The stress of the suppliers is also noticeable for the customers, who are plagued with a bad conscience when parcel messengers are still standing in front of their door at night or on weekends. Particularly in the case of express delivery, the pressure on suppliers is increasing. The tight schedule of the suppliers can be a reason for late deliveries. Customers tend to react negatively to this. Especially if the delay occurs in a delivery for whose speed the customer has paid, this represents an inconvenience. It is important that suppliers are paid fairly - they are the last link to the customer and there should be clear rules for the working environment.

In conclusion, the different delivery options all have their strengths and weaknesses. In the future, transparency about this could be promoted and, for example, the use of chat robots or similar could be used to inform customers about the effects of the respective delivery options. The customers interviewed found the approach very exciting and would like to see something similar.