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Order-Type Decisions in Online Retailing

Dissertation
for obtaining the degree of Doctor of Business and Economics
(Doctor rerum politicarum - Dr. rer. pol.)

at WHU – Otto Beisheim School of Management

June 2020

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Acknowledgments

The dissertation process is comparable to a journey, consisting of ups and downs. It is now time to look back and thank those who have accompanied me during these ups and downs and contributed to the success of this research project.

First, I would like to express my sincere gratitude to my first advisor, Prof. Dr. Carl Marcus Wallenburg. With his enthusiasm for research he inspired me and pushed my dissertation forward. He always had an open door, which made it possible to hold both small consultations and major research discussions as and when they occurred. This was crucial and extremely valuable for this dissertation.

I would also like to thank my second advisor, Prof. Dr. Christian Schlereth. The methodological knowledge he imparted to me, and his valuable suggestions during the defense presentation of my research project, built the foundations of my research design and strengthened my research.

Third, I would like to thank Asst. Prof. Dr. Daniel Taylor, who played an important role in enhancing this research. His advice, as well as my collaboration with him during the last two years, were very helpful to both me and my research. I also thank him for making my research stay at the Rawls College of Business at Texas Tech University possible.

Furthermore, I appreciate the support of my doctoral colleagues at the Chair of Logistics and Services Management. Their feedback, in both regular research seminars of the chair and personal conversations, has helped me to advance and hone my research.

Finally, and with the last words of this acknowledgment, I would like to express my gratitude to my family, who have always supported me and my plans, and to my partner, Nicolas Dittmann, for his unconditional support during the last few years.

Josephine Harder

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1 Introduction

1.1 Motivation and research objective

Online retailing is a topic of growing interest in research (Abdulla et al. 2019; Nguyen et al. 2019; Diggins et al. 2016; Rao et al. 2011), as nowadays many customers are using the online channel to order items instead of buying items in a brick-and-mortar store (Nguyen et al. 2018; Xu et al. 2017b; Peinkofer et al. 2015; Rao et al. 2011). One big difference between these two retail channels is that a customer in a brick-and-mortar store can physically touch and inspect possible items, whereas a customer ordering online can only evaluate the item from a distance (Peck and Childers 2003). This information gap results in higher return rates in online retailing compared to traditional brick-and-mortar retailing (Diggins et al. 2016; Minnema et al. 2016). The customer has no possibility to physically inspect the item prior to ordering (Gu and Tayi 2015; Peck and Childers 2003). To overcome this gap, a considerable portion of customers order several similar items with the intention of trying and inspecting them at home and then deciding which one to keep (United Parcel Service of America 2019; Einmahl 2017; Diggins et al. 2016; Foscht et al. 2013). These are orders where customers know from the beginning that they will at most keep one of the ordered items and return the others (Einmahl 2017). In this dissertation these orders are referred to as *try-before-you-decide* (TBYD) orders, as a customer orders several items that he/she can try at home before deciding which one to keep. The counterpart of these TBYD orders are orders where customers decide on a particular item prior to ordering. In this dissertation these orders are referred to as *buy-with-confidence* (BWC) orders, as a customer, prior to ordering, chooses the one item that he/she is confident will meet his/her expectations best. In order to understand in more detail how and why customers in some situations decide to choose a TBYD order instead of a BWC order, and to obtain knowledge about the advantages and disadvantages of the different order types for customers, a structured analysis of order types is needed. The first part of this dissertation therefore focuses on the development of an order-type framework and the identification of advantages and disadvantages of the different order types for the customer.

The return rate for BYD orders, calculated based on returned parcels, is 100 percent (Einmahl 2017). Although Hjort et al. (2013) mention in their research that returns are not always negative for a retailer, because customers that frequently return items are also among the most profitable customers, returns are often viewed as profit- and business-model-threatening (Einmahl 2017; Minnema et al. 2016). Much research exists investigating strategies designed to avoid (e.g., Minnema et al. 2016; Rao et al. 2014; De et al. 2013) or gatekeep (e.g.,

Seo et al. 2016; Gu and Tayi 2015; Lantz and Hjort 2013; Hsiao and Chen 2012) returns. Yet, very little research exists to better understand the customer's order-type decision, which, among other things, also impacts the return rate. Additionally, it has a substantial impact on the retailer's order fulfillment operations. Orders consisting of more than one item may require different picking strategies, possible shipping from multiple inventory locations, and different handling equipment compared to processing parcels containing only one item (Eriksson et al. 2019; Li et al. 2017). Only Einmahl (2017) has considered the choice between a TBVD order and a BWC order, but only from a consumer financial risk perspective. Other perspectives have not yet been examined and are therefore addressed in the second part of this dissertation. The second part of this research additionally examines whether retailers can influence a customer's order-type decision through their logistics.

As this dissertation reveals, one factor that has a particularly large impact on a customer's subsequent order-type decision is the customer's recent return experience. A customer return can have different motivations. On the one hand, a return can be caused by a TBVD order, which always involves a return (Einmahl 2017); and, on the other hand, it can be caused by an unsatisfying BWC order. If the ordered item, in a BWC order, does not meet the customer's expectation, it needs to be returned, leaving the customer empty-handed. The customer then needs to place a second order or find a suitable item elsewhere to fulfill his/her buying need. According to the Disappointment Theory of Bell (1985), such a return of a BWC order goes hand in hand with disappointment. The customer has, contrary to expectations, not found a suitable item. A return of a TBVD order, however, is independent of the customer's success or failure to find a suitable item (Einmahl 2017). A customer must return all additionally ordered items even if he/she has found a suitable item. Such a return is therefore not necessarily accompanied by disappointment. Such returns could possibly even be accompanied by elation, which is also part of the Disappointment Theory. If the customer has found a suitable item with a TBVD order, he/she might feel elation, even if he/she has to return the unwanted items. Earlier research has already shown that the experience (Zeelenberg et al. 2000; van Dijk and van der Pligt 1997) and anticipation (Zeelenberg et al. 2000; Bell 1985) of disappointment and elation have an impact on decision-making under uncertainty. The influence of these emotions caused by a customer's recent order-type experiences on subsequent order-type decisions has not yet been researched and is addressed in the third part of this dissertation.

In summary, the aim of this dissertation is to gain a better understanding of order types in online retailing and the customer's behavior in an order-type decision. Additionally, this

research provides insights for retailers into how they could adapt their supply chain and operations so as not to suffer from TBVD orders; maybe even using an adapted process as a competitive advantage over rivals.

1.2 Outline of the dissertation

This dissertation comprises five chapters, beginning with this introductory chapter. Chapter 2 to Chapter 4 refer to the investigations of the outlined research contributions. Chapter 2 builds the basis of this research and focuses on defining and classifying different order types. A main element of the results of this chapter is the developed order-type framework. A schematic illustration of the order-type framework is given in Figure 1-1.

Based on the developed order-type framework, this chapter identifies and outlines the differences in perceived risks (Bauer 1960) between the classified order types and examines how these differences influence a customer’s order-type decision. Additionally, it reveals potential levers that can be used by the retailer to influence, to a certain extent, the customer's order-type decision.

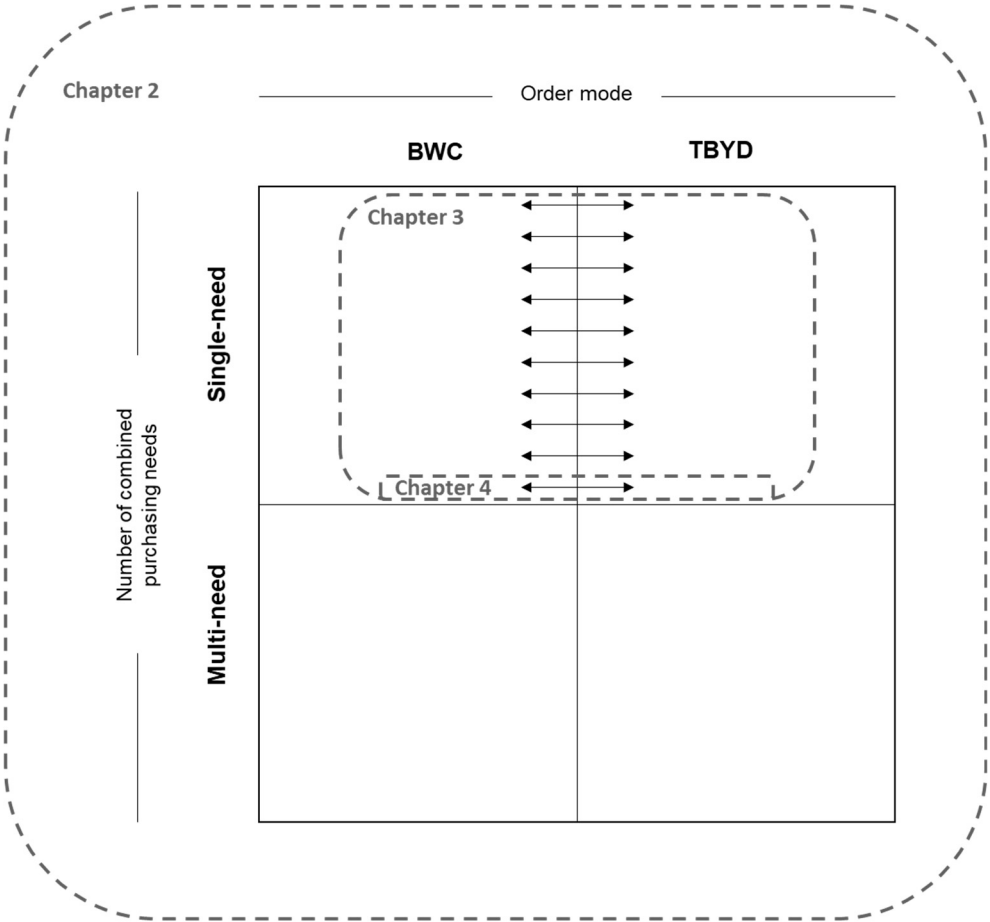


Figure 1-1: Dissertation overview

Chapter 3 focuses on the customer's decision between a TBYD order and a BWC order in the case of a single-need order (see Figure 1-1). Chapter 3 also applies the Perceived Risk Theory by Bauer (1960). Based on the order-type-related influencing factors determined in Chapter 2, Chapter 3 empirically tests the influence of the perceived risks – performance, convenience, time, financial, psychological, and social – on the customer's order-type decision. This empirical analysis focused on three external (product and logistics related) influencing factors – uncertainty regarding an item's properties, type of delivery, and type of return – that relate to the perceived risk facets of performance and convenience, as well as on four internal (customer-related) influencing factors – urgency, income, busyness, and self-confidence – that relate to the perceived risk facets of time, financial, psychological, and social. The empirical analyses in this chapter distinguish between four different item categories and confirm the statement of Dai et al. (2014) that differentiation between item categories is crucial when analyzing customer decisions.

Chapter 4 examines the influence of a customer's recent return experience in more detail; differentiating recent experience with a return of a BWC order and recent experience with a TBYD order. It focuses on recent experiences, as Hertwig (2012), Hertwig et al. (2004), as well as Bagozzi and Warshaw (1990), state in their research that recency is a strong predictor of future behavior. In fact, recency is an even better predictor than frequency (Hertwig 2012; Hertwig et al. 2004; Bagozzi et al. 1992; Bagozzi and Warshaw 1990). This chapter compares the customer's probabilities of choosing a TBYD between customers with a recent experience of a return of a BWC order and customers without this return experience, and between customers with a recent TBYD order experience and customers without this TBYD order experience. According to Disappointment Theory (Bell 1985), both these experiences are hypothesized to increase the customer's probability of choosing a TBYD order.

Chapter 5, which builds the end of this dissertation, contains an all-encompassing conclusion, consisting of a summary of the findings of the individual chapters, as well as overarching findings, limitations, and opportunities for future research.

1.3 Methodology and sampling

The research in Chapter 2 is purely conceptual. In a first step, a classification of order types in B2C online retailing is introduced. The development of the order-type classification framework is based on an extensive literature research encompassing peer-reviewed academic journals. Subsequently, the research in Chapter 2, also based on an extensive literature research

of peer-reviewed academic journals, in combination with several consultations with doctoral students and experienced academics at WHU – Otto Beisheim School of Management, identifies and structures perceived risks (Bauer 1960) for customers that might occur during an ordering process and lead customers to choose certain order types over others. It also outlines which of these factors can be influenced by the retailer's logistics.

For the research in Chapters 3 and 4 a quantitative approach, i.e., a choice-based conjoint experiment (Schlereth et al. 2018; Halme and Kallio 2011) is applied. For the parameter estimation, the R packages *bayesm* and *RSGHB* were used. The analyses in both chapters are based on the same dataset. The data were collected in January 2019 using the online platform Prolific Academia, which is comparable to Amazon's Mechanical Turk; Prolific Academia has higher heterogeneity among potential study participants (Peer et al. 2017). Data were collected from participants residing in the United States. All participants were required to have online shopping experience. In total, 1,104 participants completed the entire study. Failed attention checks and other exclusion criteria, which are explained in more detail in the respective chapters, resulted in a resultant sample for the analyses of 923 participants.

The research process, from framework development and experimental design to analyses and interpretation of the results, was enriched by several discussions and workshops with PhD students and experienced scientists from WHU – Otto Beisheim School of Management and Texas Tech University. The results and findings of this research were presented and discussed at the NOFOMA conference 2018 in Kolding, Denmark, the CSCMP Academic Research Seminar 2019 in Anaheim, the US, the Logistikmanagement conference 2019 in Halle, Germany, and during a research visit at Texas Tech University, the US, in 2019.

2 The impact of logistics on the order-type decision in online retailing¹

¹ This chapter is based on the manuscript by Harder, J. and Wallenburg, C. M. (2020), submitted under the same name to the *International Journal of Physical Distribution & Logistics Management*. It was presented at the conference “NOFOMA 2018” in Kolding, Denmark.

2.1 Introduction

In traditional B2C retailing the logistics operations used to be mostly decoupled from individual customer behavior and led to companies being experienced in moving products to stores in large lots via central storage and shipping locations (Wollenburg et al. 2018; Kuhn and Sternbeck 2013). In contrast, B2C e-commerce, which already makes up more than 10 percent of global retail sales (Statista 2019; U.S. Department of Commerce 2019), entails the last mile challenge of delivering small pack sizes to geographically dispersed customers in a cost-effective manner (Mangiaracina et al. 2019; Sorkun 2019; Boyer et al. 2009; Rabinovich et al. 2007). One central element in this challenge is that customer behavior is directly coupled with the logistics operations in a twofold way: the individual customer impacts the retailer's fulfillment as the customer order initiates pick and pack, as well as shipment activities (Buldeo Rai et al. 2019; Wollenburg et al. 2018; Yu et al. 2016; Agatz et al. 2008). At the same time, various aspects of the fulfillment (e.g., cycle time, customer service) are crucial for the customer's ordering decision (e.g., Nguyen et al. 2019; Gawor and Hoberg 2018; Xing et al. 2010). For example, when home delivery is not possible, the customer is more likely to bundle multiple items (e.g., a backpack, a raincoat, and a rain hat) into one order, with the aim of only having to travel to the pick-up point once instead of placing multiple subsequent orders that need to be picked up one by one.

One recent trend is that customers order a selection of similar items (e.g., multiple raincoats), with the intention of inspecting them at home and keeping at most one of the items, the one that fits best, and returning the others (United Parcel Service of America 2019; Einmahl 2017; Diggins et al. 2016; Foscht et al. 2013). The consequence of this is that every one of these orders necessitates a return, regardless of whether the customer finds a suitable item (Einmahl 2017). This is one driver for the high return rates in online retailing and induces additional costs to the online retailer (Nguyen et al. 2019; Röllecke et al. 2018; Foscht et al. 2013; Ofek et al. 2011). Moreover, the so-called *try-before-you-decide (TBYD)* orders make reordering from upstream suppliers more complex and prone to miscalculations, since it is unclear whether items that were shipped to customers will later re-enter the inventory, and in what condition. Additionally, TBYD orders imply larger parcels and necessitate more complex picking and order-consolidation strategies (Eriksson et al. 2019; Li et al. 2017). This impacts the required storage configuration and creates a need for more post-picking sorting, possibly even necessitating trans-shipments or multiple parcels (Eriksson et al. 2019). This can be so far-

reaching that online retailers delay the decision about the warehouse layout and the material handling equipment until they obtain substantial experience about the ordering behavior of their customers.

Yet, very little is known about how customers decide how to compile their orders and which of the decision-making factors are related to the online retailer's logistics domain. Against this background, we investigate the under-researched aspect of customers' order-type decisions (*Why do customers choose certain order types, and which of those are related to the retailer's logistics operations?*) by providing a classification of order types and influencing factors. These insights may, in the next step, serve as a basis for the companies to (re)evaluate their interaction with customers, and to optimize their fulfillment and returns management.

To uncover why a customer chooses a specific order type, this research applies a contrastive explanation perspective (Tsang and Ellsasser 2011; Garfinkel 1981) that examines the whole ordering, fulfillment, and returns process. The process is assessed from a Perceived Risk Theory perspective (Bauer 1960), based on the established assumption that customers conduct their purchases in a way that minimizes their risk. Building especially upon the work of Crespo et al. (2009), and Forsythe and Shi (2003), we view seven specific risk facets (convenience, financial, time, performance, psychological, social, and privacy) that influence customers' ordering decisions.

The remainder of this chapter begins with an outline of our research approach and methodology (Chapter 2.2), before the theoretical framework (Chapter 2.3) is introduced. Chapter 2.4, the main part of this research, identifies the factors influencing the order-type decision. Here it is also outlined which of them are logistics-related. This chapter closes with a discussion of the implications and limitations of our research and possible future research topics.

2.2 Research approach and methodology

This research follows a concise multi-step approach that combines a literature review with conceptual deliberations to derive a classification framework and identify factors that influence customers' order-type decisions. First, the literature was searched to identify different types of orders in the online shopping context. This first literature search focused on research in the field of online retailing and e-commerce, with particular emphasis on the characteristics and peculiarities of online orders. The literature search was conducted in peer-reviewed

academic journals. Based on the results of this search, the 2x2 order-type framework displayed in Figure 2-1 was developed. It is outlined in more detail in Chapter 2.3.2.

Second, an additional extensive literature search in peer-reviewed academic journals was conducted to obtain a comprehensive overview of the online ordering process. Special attention was paid to research that addressed the ordering process in general, and the logistical aspects of the ordering process in particular. To facilitate the literature search, the online ordering process was decomposed into its five process stages (i.e., order entry and payment, fulfillment, keep-or-return decision, return, and blacklisting) as outlined in Chapter 2.3.1. This allowed us not only to search for factors that influence the overall ordering behavior, but also to search in more detail with respect to the five specific stages and their sub-processes.

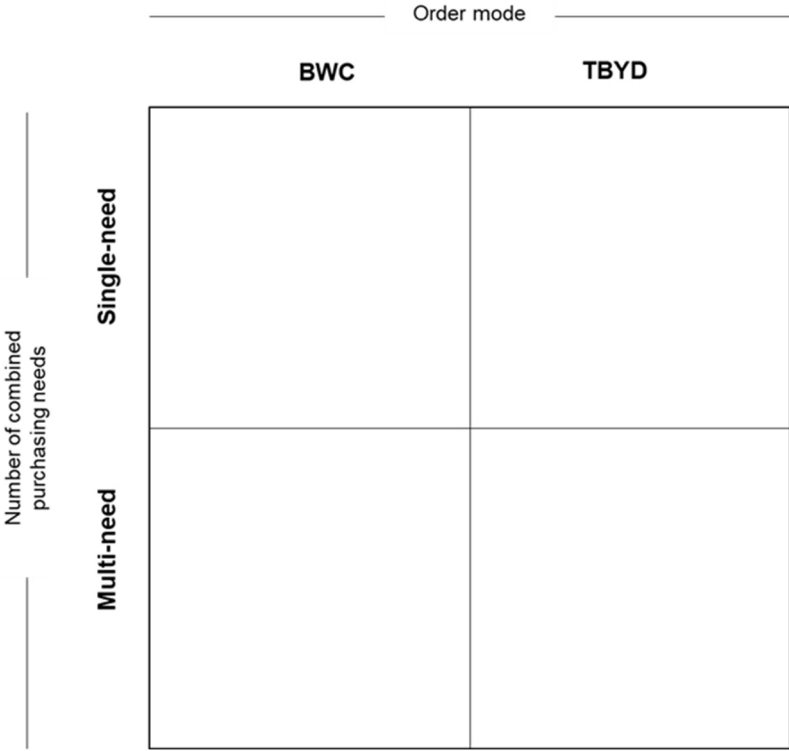


Figure 2-1: Order-type framework

Third, it is beneficial to apply a theoretical framework to identify and structure reasons for the order-type decision (i.e., to answer, for example, the question *Why does a customer choose a TBYD order containing multiple items?*). We deliberately chose the Perceived Risk Theory (Mitchell 1992; Derbaix 1983; Cox and Rich 1964; Bauer 1960) to guide our research. This framework, which is outlined in more detail in Chapter 2.3.3 is: a) explicitly tailored toward customer decision-making; b) comprehensive in its nature (by including convenience, financial, time, performance, psychological, social, and privacy risks); and c) proven to be

applicable to the field of online retailing (Shaizatulaqma et al. 2018; Crespo et al. 2009; Forsythe and Shi 2003). The theory's underlying assumption is that customers conduct their purchases in a way that minimizes their risk.

Fourth, to filter the relevant reasons for the order-type decision from all of the factors that the literature posits influence customer behavior in online retailing, we applied a contrastive explanation perspective (Garfinkel 1981; Tsang and Ellsasser 2011). The contrastive explanation approach relies on the argument that reasons for a customer choosing one option over another needs to be related to the differences between the two options (Tsang and Ellsasser 2011). So, if one wants to identify, for example, *Why does a customer choose a TBVD order containing multiple items?*, this is a contrastive explanandum (Gijsbers 2018), and the question can best be answered by contrasting it with the question *...instead of choosing an order containing only one item?*. To answer contrastive questions, it is necessary, but also sufficient, to identify all differences between the two order types, because the reasons for choosing one order type over the other can only stem from these differences (Tsang and Ellsasser 2011). That implies that we only considered aspects that could be traced to differences in the order process, as identified according to the contrastive explanation. One example of a risk aspect that we found in the literature, but which could not be traced to a difference between the order types, is the risk of losing control over private data (e.g., credit card information) while ordering online (Nepomuceno et al. 2014; Mothersbaugh et al. 2011; Dach 2002). As this risk occurs in the same way for all order types placed at any given online retailer (e.g., independent of whether the customer orders one or multiple items), this risk factor cannot be said to have an influence on the order-type decision itself. Consequently, only factors were included that have different consequences for the customer, depending on the order type.

Fifth, and finally, all factors identified from the literature (31 in total) were analyzed by us regarding the question about whether they can be influenced by the retailer (e.g., shipping fees) – 20 of the 31 factors – and whether they are related to the logistics operations – 15 of the 20 influenceable factors.

2.3 Theoretical framework

2.3.1 Ordering process

As outlined in the literature, the online ordering process differs from the traditional stationary retail process in that the store is no longer the nexus that connects the customer to

the physical product (Moreau 2020). Instead, the process is decoupled into distinct elements that are separated in both time and place (Wood 2001): order entry and payment, fulfillment, keep-or-return decision, return, and blacklisting.

The process begins with *order entry and payment* as the first stage (Xu et al. 2017a). This stage is carried out web-based in the virtual space (Moreau 2020) and can be further broken down into need recognition, information search on items, evaluation of alternative items, and making the decision (Schiffman and Wisenblit 2015; Schiffman et al. 2012; Butler and Peppard 1998). In this stage – in contrast to offline purchases – the customer is limited in terms of evaluating the haptic and physical properties when deciding which item to purchase (Heller et al. 2019; González-Benito et al. 2015). The decision-making is followed by order placement (Abdulla et al. 2019), where the customer enters the shipping address and payment details (Lo et al. 2016; Boyer and Hult 2006).

After receiving the ordering data from the customer, the retailer initiates the *fulfillment* stage, during which the customer waits for the ordered item(s) to arrive (Lee et al. 2018). This stage consists of three sub-steps – picking and packing, shipping, as well as handing over the goods to the customer (Zalando 2018; Lui et al. 2007).

Once customers have received the shipment, the *keep-or-return decision* follows, in which they decide whether or not to keep the ordered item(s) based on comparing the item(s) with their expectations (Einmahl 2017; Gu and Tayi 2015). This assessment may involve trying the item(s) on (Diggins et al. 2016; Foscht et al. 2013), feeling their haptics (Peck and Childers 2003), or testing the ordered item(s) in combination with items the customers already own. The available time for this decision is specified in the retailer's return policy (Rao et al. 2018).

If the item(s) are not kept, the *return* stage starts, where customers repack the items, bring the parcel to a drop-off point (e.g., a post office) or make a pick-up appointment with a delivery company; they may have to pay a return/restocking fee depending on the monetary leniency of the return policy (Janakiraman et al. 2016). A delivery company ships the parcel back to the retailer (or a third-party returns processing center), where the returned items are checked and the return is either accepted or refused (Leeuw et al. 2016; Spee and Bühner 2015).

A last stage, which not all retailers include, is potential *blacklisting*. Customers that misuse a retailer's returns option, or which are unprofitable because of high return rates, may be blacklisted, and with this blocked from future ordering (Lee 2015), so that they, for example, cannot place an order for a certain time period.

2.3.2 Structuring possible order types

Each order that a customer places at an online retailer possesses characteristics that allow it to be assigned to one of four order types, according to two dimensions: the number of purchasing needs that are combined within one order (Acimovic and Graves 2015; Xu et al. 2009), and the order mode (Einmahl 2017). These two dimensions result in a 2x2 matrix of order types (see Figure 2-1).

2.3.2.1 The order mode

The first dimension of our typology refers to the *order mode*. Customers may order exactly one item (out of all possible items) to fulfill their particular purchasing need (Einmahl 2017). We call this a *buy-with-confidence (BWC) order* (as customers are confident that the ordered item will (best) fulfill their purchasing need). With this order mode, they search and reflect the possible items, and then decide which one to order. Upon receipt, the item is further evaluated and the decision made about whether to keep or return the item (Gu and Tayi 2015). For example, when someone needs a new backpack, this implies ordering exactly one backpack.

The alternative is to order multiple items (a personal shortlist of similar items, e.g., different backpacks), with the intention of keeping one item and returning the other items (United Parcel Service of America 2019; Einmahl 2017). As mentioned in the introduction, we term this mode *try-before-you-decide (TBYD)* (as customers order multiple items to try at home and then decide which one to keep). In the first stage (order entry and payment), the item search, evaluation, and selection process might take less time with TBYD orders, as customers do not need to reach a conclusion about which item is best, but instead they will order multiple items. In contrast, with TBYD orders the fulfillment stage is more resource-consuming for the retailer, as multiple items need to be picked, consolidated, and packed, resulting in a larger parcel that is shipped to the customer (Eriksson et al. 2019; Li et al. 2017).

In the third stage (keep-or-return), with a TBYD order, customers have several items in front of them and can examine and compare them. Therefore, the keep-or-return decision involves the decision not only for or against an item but also between the ordered items. After evaluating the items based on characteristics that are considered important, either all items are returned (if none meets expectations), or one item is kept and the others are returned. While the TBYD order makes it more likely that the customer finds a suitable item to keep, it also has the downside regarding the fourth stage (return) of always necessitating a return shipment because more items were ordered than the customer intended to keep (Einmahl 2017).

The blacklisting stage may also differ between TBVD and BWC orders, as a retailer may decide to blacklist customers who return many orders (this rate is 100% with TBVD, even if one item is kept), while others may blacklist customers that frequently return parcels without keeping anything. The latter is more likely with BWC orders.

2.3.2.2 Number of combined purchasing needs

The second dimension of our 2x2 matrix is the *number of combined purchasing needs*: customers can place one separate order for each of their purchasing needs, resulting in *single-need orders*. For example, one order may be for a new backpack, and a second order for a new raincoat. Each of these orders is processed and shipped separately. Alternatively, customers can combine different needs (e.g., buying a backpack and a raincoat) in one order, where the ordered items will be processed and shipped together (Acimovic and Graves 2015; Xu et al. 2009). The latter will be called a *multi-need order*.

Regarding the order processing, the main difference between the two order types is that each single-need order initiates an order cycle, while with a multi-need order the cycles are combined. If the latter order type, for example, combines two needs – a backpack and a raincoat – the customer is only exposed to each process stage once instead of twice. Therefore, the total effort for the customer is lower: the address and payment data only need to be entered once, only one parcel needs to be received, and unwanted items can be returned in one parcel.

2.3.2.3 Nature of the purchasing need

At this point it is useful to introduce a third aspect: the *nature of the purchasing need*. While this aspect does not impact the composition of the order (and therefore is not included in the 2x2 matrix), it influences the ordering behavior over time and what happens in case an order is not successful (i.e., the ordered item(s) did not meet the expectations and were returned). The purchasing needs can be categorized into optional versus necessary (Schiffman and Wisenblit 2015). An *optional need* refers to needs that do not necessarily have to be satisfied (i.e., the consequence of an unsuccessful order is that the customer does not buy an item). An example of this may be a T-shirt that a customer who already owns many T-shirts orders because of an advertisement that he/she sees. Here, when the T-shirt does not meet expectations and is returned, the customer does not need to initiate a new purchasing attempt.

In contrast, a *necessary need* is a need that customers want to satisfy to such a degree that they will initiate a new purchasing attempt (either offline or by placing a new online order) if an order is unsuccessful. Here, customers will continue searching for a suitable item until

they have found one. An example of this would be customers that need a new backpack for an upcoming hiking vacation that is not feasible without the backpack.

While the reason why a customer places an order (optional vs. necessary need) may seem irrelevant for the first order placement, it influences the ordering, since a customer satisfying a necessary need will order again after an unsatisfactory order. The online ordering process in this case is therefore not just a linear process but a loop that starts again and again until the customer finds a suitable item or decides to look for his/her needed item offline. And the customer may already consider this when placing the first order.

2.3.3 Theoretical embedding

Our research is based on the Perceived Risk Theory and its underlying perspective that customers choose the option that involves the lowest perceived risk (Bauer 1960; Derbaix 1983). The Perceived Risk Theory was introduced by Bauer (1960) and is based on the distribution of possible outcomes, their likelihoods, and their subjective values. Customers, unlike accountants or bankers, usually do not rely on extensive data when estimating risk (Mitchell 1999), and rather *perceive* risk when they are uncertain about achieving the individual buying goals (i.e., getting what is wanted) (Cox and Rich 1964).

Perceived risk has two components (Derbaix 1983): first, the probability that an undesirable outcome will occur; and, second, its severity (i.e., the extent of its unpleasantness). Both components are multiplied and equated across all undesired outcomes to the total perceived risk (Peter and Ryan 1976). This perceived risk may also be seen as the subjectively perceived loss expectation (Forsythe and Shi 2003; Taylor 1974). Customers face different perceived risk facets while trying to achieve their buying goals (Cox and Rich 1964) and make a risk “tradeoff”, by which the risks are weighed against one another in such a way that the sum of all risks is minimized (Featherman and Pavlou 2003; Derbaix 1983).

Researchers have identified different perceived risk facets that may have negative consequences for the customer (Mitchell 1992; Forsythe and Shi 2003; Roselius 1971; Mitchell and Greatorex 1993). Mitchell (1992) considered social, financial, physical, performance, time, and psychological risks. Forsythe and Shi (2003) examined the behavior of Internet shoppers and focused on four facets (i.e., financial, product performance, psychological, and time/convenience loss risk) that they consider to be most important for Internet shoppers, while Crespo et al. (2009) extended their view by distinguishing six different perceived risk facets for the online retail context. We build on these and, similar to Forsythe and Shi (2003) and Gawor

and Hoberg (2018), also distinguish between time and convenience loss. The rationale behind this is that the time dimension of Crespo et al. (2009) refers both to the elapsed time associated with an online order (i.e., the time from order placement to actual delivery), and to the convenience of the customer (i.e., the personal time and effort that the customer expends for the online order, which, for example, can include walking or driving to a parcel pick-up location). Accordingly, this research distinguishes seven perceived risk facets of convenience, financial, time, performance, psychological, social, and privacy, which may arise over the five ordering stages.

The *convenience facet (C)* refers to the effort that customers incur during the purchasing process, such as picking up a parcel at a postal office. The *financial facet (F)* refers to the financial costs that arise (Grewal et al. 1994), including potential financial losses (e.g., when a return shipment is not accepted by the retailer). The *time facet (T)* refers to the time that elapses in the course of the purchasing process (Forsythe and Shi 2003). The *performance facet (P)* refers to product performance and the risk that a product may not fully meet the customer's expectations (Forsythe and Shi 2003; Horton 1976). The *psychological facet*, also termed *ego loss (E)*, refers to the possible disappointment experienced by customers when placing an order (Forsythe and Shi 2003), and the possible loss of self-esteem when frustrated by unsatisfactory orders (Featherman and Pavlou 2003). The *social facet (S)* refers to the loss of recognition in one's own social environment caused by items not meeting the expectations of peers, as well as behavior or use of services that are not approved by the social environment (Crespo et al. 2009; Featherman and Pavlou 2003). The *privacy facet*, also termed *data security (D)*, refers to the risk of not having control over the use and transmission of one's own personal data (Crespo et al. 2009).

In addition to factors that are uncertain, the order-type decision is also impacted by factors that are certain (e.g., the payment for two items is certain to be larger than for only one of the two items). Within the perceived risk framework such factors can be treated as risks with 100 percent probability of occurrence. We will denote such risks with the sign ‘ in our descriptions.

2.4 Results

2.4.1 Factors influencing the order-type decision

In the following, the factors that influence the customer's decision between the order types are examined in more detail: first, the impact on order mode, and then on combining purchasing needs, is discussed. The factors are assigned to the perceived risk facets described in Chapter 2.3.3. When a factor impacts multiple risk facets, for example, when customers are disappointed with an item (ego loss (E)), and their peers also view the purchase negatively (social (S)), such a factor would be denoted ES, with the facet implicating the larger expected risk mentioned first. Factors that could also have an opposing effect are marked with an asterisk (*).

2.4.1.1 Decision about the order mode

The detailed description of the influencing factors is done separately for each of the five process steps – order entry and payment, fulfillment, keep-or-return decision, return, and blacklisting. The ten factors that favor a BWC order (see Figure 2-2) are universal and, as such, are independent of the purchasing need being necessary or optional. In contrast, regarding TBVD orders, the *nature of purchasing need* (see Chapter 2.3.2.3) comes into account. Here, 9 out of 15 factors that favor TBVD orders only apply for necessary purchasing needs, and 1 only applies for optional purchasing needs. However, all factors that favor TBVD orders are only valid in cases where some uncertainty exists regarding the ordered items. When customers are fully certain that a specific item is most suited to satisfying the expectations, then choosing a BWC will always be the best option.

Order-entry- and payment-related: The order entry and payment stage encompasses the decision-making and actual order placement. To make a decision, customers have to expend considerable effort to identify and compare potential alternatives against one another (Häubl and Trifts 2000). If the aim is to purchase the best alternative (Massad and Berardelli 2016; Karimi et al. 2015), then a TBVD order offers the advantage to the customer of having to expend less effort in weighing the alternatives against one another and selecting the best item before placing an order (C_1^*). However, customers not looking for the best item, but the first-best item that fulfills their personal needs (Massad and Berardelli 2016; Karimi et al. 2015; Simon 1955), may experience a shorter search time for a BWC order than for a TBVD order, where several potentially fitting items need to be identified before order placement.

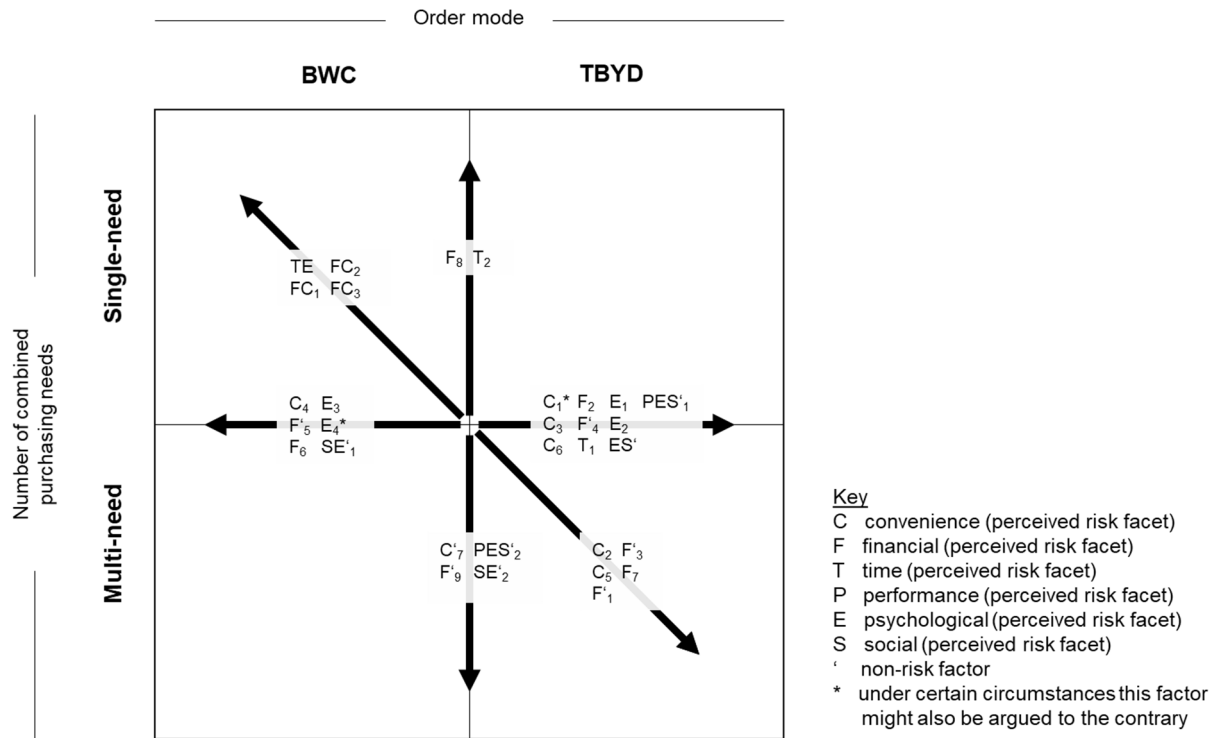


Figure 2-2: Assignment of influencing factors to the order-type framework

The decision-making can be impacted by the minimum order value for free shipping (Ishfaq et al. 2016) and by shipping costs (Nguyen et al. 2018; Lewis et al. 2006). For TBVD orders, the order value is necessarily higher than for BWC orders. This means that, for items where the price is below the minimum order value, TBVD orders have the advantage (F₁) of potentially exceeding this threshold when multiple items are ordered. Furthermore, the question is not only whether to pay the shipping costs, but also how often. Here, no difference exists for optional purchasing needs. However, for necessary purchasing needs, if customers order only one item, and this item does not meet their expectations, they will order again (and potentially again) until they find a suitable item. This means that BWC orders induce the risk of potentially paying shipment fees multiple times, while they only have to be paid once for TBVD orders (F₂).

With respect to ordering effort (Lo et al. 2016), the situation is similar. With necessary purchasing needs, the TBVD order offers the advantage of potentially fewer ordering instances. Therefore, no additional effort for further orders is incurred (C₂).

Another relevant factor in the case of necessary purchasing needs are discount vouchers and price promotions offered by retailers (Zheng et al. 2017; Lo et al. 2016). Both influence the decision. A TBVD order contains more potentially suitable items than BWC

orders. Therefore, with TBVD orders, a one-time discount can be applied to more than one item (F₃). The same holds true for time-limited discounts and price promotions (F₄). When customers choose BWC ordering and do not find a suitable item, the discount may already have expired when placing the next order. With TBVD orders, in contrast, the customer will already have received the discount for all of the ordered items.

Related to order entry and payment, only one factor favors BWC orders. When having to pay before receiving the goods, there are two payment methods – pay-to-order and pay-on-delivery (Xu et al. 2017a). With both options, customers ordering several items at once (i.e., TBVD order) have to pay or stand secure for all, although eventually some or even all items are returned (Dennis 2018; Hjort et al. 2013). With BWC orders, less of customers' capital is tied up (drawn down as part of the drawing limit, if a credit card payment is used) (F₅).

Fulfillment-related: The fulfillment stage consists of commissioning, shipping, and handing over the goods to the customer (Zalando 2018; Lui et al. 2007). During commissioning, the ordered items are prepared for dispatch. With a BWC order, only one item has to be considered, whereas with TBVD orders not all of the items may be available in the same warehouse and may have to be consolidated before shipping (Lim et al. 2018; Lui et al. 2007). This would result in additional waiting time for the customer, causing dissatisfaction that would not arise when ordering only one item (TE). This factor favors BWC orders, especially when a customer needs a suitable item urgently.

Regarding commissioning, the risk also exists of not getting the item(s), or getting the wrong items (Spee and Bühner 2015; Asdecker 2014; Santana and Loureiro 2010), for example, when a picking error occurs. If a shipment contains several items (TBVD), it is more likely that an item will be wrong or missing than if the shipment contains only one item (Hjort et al. 2019; Sorkun 2019). Not getting the ordered item or getting a wrong item may result in customers paying for something they did not receive. Customers then either have to accept this financial loss or expend effort to rectify the situation (FC₁).

Regarding the fulfillment process there are two factors favoring TBVD orders, both applying to necessary needs only. The first refers to the time that elapses until customers receive a suitable item (Lim et al. 2018; Chopra 2003). If the first BWC order does not contain a suitable item, customers have to re-order and wait again for the shipment (T₁). If, instead, various items are ordered at the same time (TBVD), customers avoid this waiting time for the second and possibly further parcels. The second factor refers to the effort of receiving the parcels

(Mangiaracina et al. 2019; Lim et al. 2018). With a non-successful BWC order, customers are also exposed to the potential inconvenience of receiving a second parcel, which may have been dropped off at a neighbor or a pick-up point, whereas with a TBVD order such inconvenience only occurs once (C_3).

Keep-or-return decision: After receiving the shipment, customers decide whether or not the ordered item(s) meet(s) their expectations (Einmahl 2017). In this respect, TBVD orders allow comparison of several items at the same time. As a result, customers tend to find a better item (PES'_1): first, the probability that one of multiple items will exceed expectations is higher. Moreover, if several items exceed expectations, customers can choose the one that meets their expectations best. This reduced performance risk also lowers the probability of an ego loss, as well as a status loss in the social environment.

In addition to the direct comparability of the items, with a TBVD order the customer can also include others (e.g., friends) in the purchasing decision by showing them all items simultaneously (ES'). This may lead customers to perceive shopping as a pleasant experience (Dach 2002) and reduces the probability of the customer choosing a, for example, unfashionable item, therefore leading to a lower psychological and social risk.

In case no ordered item meets the customer's expectations, the customer might be disappointed and frustrated (Schiffman and Wisenblit 2015) that he/she has not found a suitable item in this order (E_1). The probability of this happening is lower with TBVD orders than with BWC orders, because of there being multiple items within the orders. If the ordered item was planned to satisfy a necessary need a customer will place another order (see C_2). If the order, instead, was planned to satisfy an optional need, not finding a suitable item in the first order results in not finding a suitable item at all (E_2).

Contrary to the lower probability of disappointment, the potential magnitude of disappointment (Tzieropoulos et al. 2011; van Dijk et al. 1999; Bell 1985) is larger with TBVD orders. Because finding a suitable item is more likely, the expectations of doing so will also be higher. Thus, the disappointment is larger (E_3) when a TBVD order does not yield a suitable item that the customer wants to keep.

Return: The return process is initiated by customers that decide against one or multiple of the ordered items. They repack the items, organize the return shipment, potentially bring the parcel to a drop-off point, and may have to pay a return/restocking fee. A delivery company

then transports the parcels to the retailer, where the items are checked (Leeuw et al. 2016; Spee and Bühner 2015).

BWC orders potentially do not necessitate a return (in case the ordered item meets expectations), while TBVD orders always lead to a return shipment. Therefore, potentially the return effort (e.g., repacking and bringing it to a drop-off point) (C_4) and return costs (F_6) are saved when choosing a BWC order instead of a TBVD order. Furthermore, sustainability-conscious customers may gain social respect and self-esteem from avoiding return shipments made necessary by TBVD orders and place a BWC order in the hope that no return is necessary (SE'_1), since returns potentially damage the environment (Röllecke et al. 2018).

In contrast, with TBVD orders the risk of a second order and subsequently a second return is considerably lower than with BWC orders. Thus, the associated effort (C_5) and costs (F_7) (Gu and Tayi 2015) of multiple returns are also lower.

Once the parcel arrives with the retailer, customers have to wait until the returned items are checked and accepted by the retailer (Leeuw et al. 2016; Spee and Bühner 2015). In this context two risks are present. First, the retailer can make mistakes when processing the return, and, for example, overlook one or multiple items. This is more likely with TBVD orders, as here the return parcels tend to contain more items than with BWC orders. This may result in financial loss or additional effort by the customer to rectify the situation (FC_2). Second, retailers may not accept the returned items (Hjort et al. 2019) (e.g., because they are deemed used or damaged). Again, this is more likely with TBVD orders, since more items are involved, potentially causing financial loss or hassle (FC_3). In addition, the extent is greater when multiple items are affected, for example, when the return parcel is damaged or lost.

Regarding necessary needs, customers who have returned their order have to fulfill their need by either placing another online order or purchasing a suitable item offline. The latter case entails additional effort for the customer, for example, by traveling to the city (Kollmann et al. 2012; Dach 2002). The corresponding risk (C_6) favors TBVD orders since the probability of such a follow-up purchase being necessary is lower with TBVD orders than with BWC orders.

Blacklisting: The factor concerning blacklisting refers to the psychological facet. Some retailers block customers as a consequence of misuse of the retailer's service (Lee 2015), so that, for example, customers with a strong return history may be blocked by the retailer. If the customer assumes this is decided based on the number of instances the customer returns an

order, this favors the BWC order, as the TBYD order always leads to a return shipment (E4*). However, customers could also assume blacklisting to be conducted based on the quantity kept, which favors the TBYD order, where the customer is more likely to keep one item.

2.4.1.2 Decision about the number of combined purchasing needs

This chapter refers to the customer's decision to either place a separate order for each individual need (i.e., single-need orders) or to merge several purchasing needs into one combined order (i.e., in a multi-need order). The pre-condition for merging orders, for example, when buying a backpack and a raincoat, is that the corresponding articles are available at the same online retailer. When this is not the case, the customer will necessarily have to resort to choosing single-need orders.

In total, 14 factors have been identified as influencing the combination of purchasing needs. They all apply independent of the nature of the purchasing need, so it is not useful to distinguish between necessary and optional needs. Of the 14 factors, 9 are identical to factors that have already been described for the BWC versus TBYD decision-making (i.e., C₂, C₅, FC₁, FC₂, FC₃, F'₁, F'₃, F₇, TE). The other six are specific to the choice between single-need and multi-need orders, which is why we will elaborate on those factors in more depth.

Order-entry- and payment-related: The decision-making process concerning the ordering starts with the need recognition (Schiffman and Wisenblit 2015). When the purchasing needs that a customer wants to merge in one order do not arise simultaneously, the multi-need order has the disadvantage that ordering the first item has to be postponed until the second purchasing need becomes sufficiently concrete at a later point in time. Therefore, a potentially unwanted waiting time occurs regarding the fulfillment of the first purchasing need (T₂).

Another potential downside of multi-need orders arises in relation to discounts. Some online retailers offer discounts to customers who have already ordered at their shop to retain them as customers (Zheng et al. 2017), for example, by placing a time-limited discount voucher with the first shipment to a customer. If this customer order is a multi-need order, the likelihood of being able to use this voucher and save money (F₈) is smaller than if this were a single-need order. This factor is somewhat distinct from price promotions offered in a different form (e.g., on the retailer's webpage), which favor placing multi-need orders, where the promotion is applicable to all items that are purchased (F'₃).

With retailers that charge fixed shipping fees for every order, it is also advantageous to merge orders, as the shipping fee only needs to be paid once (F'₉). The same is true when

retailers specify minimum order values (Ishfaq et al. 2016) to qualify for reduced or free shipment. Such a factor also favors multi-need orders that make it easier to exceed the specified order value and qualify for the saving (F₁).

A final point that favors multi-need ordering is order administration. Customers who merge various purchases only need to administer one order (e.g., enter address and payment details (Lo et al. 2016; Boyer and Hult 2006)), which increases convenience (C₂).

Fulfillment-related: Within the fulfillment process the multi-need order has two disadvantages that TBVD orders also have. First, when more items are ordered, the risk of picking errors is higher, so the customer may receive too few or wrong items (Hjort et al. 2019; Sorkun 2019), resulting in financial loss or necessitating effort to rectify the situation (FC₁). Second, with multi-need orders, items from different warehouses are potentially consolidated by the retailer (Lim et al. 2018; Lui et al. 2007), leading to a longer waiting time for the customer (TE).

After transportation, customers need to receive the parcel(s). With multi-need orders, customers only need to receive one parcel, since all items are shipped together and not in multiple parcels, as would necessarily be the case with single-need orders. This increases the convenience for the customer (C₇).

Keep-or-return decision: After delivery, customers have to decide whether the item(s) meet their expectations (Einmahl 2017). One factor benefiting multi-need orders is that customers who merge several purchasing needs in a multi-need order can see whether the ordered items fit well together (PES₂). This could relate to different items of apparel that are intended to be worn together, but also technical equipment that needs to be compatible to provide the desired functionality. However, it should be noted that this benefit would also apply to customers that place their orders separately but simultaneously.

Return: Regarding the returns process the multi-need order offers advantages that correspond to those of TBVD orders. Customers only need to return one parcel, as all items from a multi-need order can be returned together. This potentially reduces the return effort (C₅) and return costs (F₇). In addition, this reduction of return parcels is also beneficial from a sustainability perspective, potentially providing social and psychological benefits to customers that choose multi-need orders (SE₂) (Melacini and Tappia 2018; Röllecke et al. 2018). Interestingly, here sustainability orientation would lead to more items per shipment in contrast to the BWC versus TBVD order decision, where sustainability orientation would lead to fewer

items per shipment. This means that sustainability-oriented customers tend to combine multiple purchases, but with fewer items per purchase need.

The return-related reasons that favor single-need orders mirror the reasons for BWC orders. With a multi-need order, the number of items in a return parcel is higher than with a single-need order. As a result of this increased number, it is, for example, more likely that an item will be overlooked by the retailer (FC₂) during the return screening process (Leeuw et al. 2016; Spee and Bühner 2015). The probability of a rejection of the returned items is the same for single-need and multi-need orders, since the same number of items will be ordered and returned, but, for example, the effect of external damage on the parcel will be more harmful for the customer choosing a multi-need order, since all items in the parcel would be affected (FC₃).

2.5 Discussion

2.5.1 Implications

While the order-type decision itself has so far not been viewed in logistics research, our research directly relates to the extensive stream of logistics research on returns management (e.g., Hjort et al. 2019; Morgan et al. 2018; Hjort et al. 2013; Rogers et al. 2002) and factors that impact the return probability of online customers (e.g., Einmahl 2017; Diggins et al. 2016; Janakiraman et al. 2016; Rao et al. 2014; Foscht et al. 2013).

This research contributes to the literature in different ways. First, this research structures potential order types in online retailing. It is outlined that online ordering can be classified on the basis of two dimensions: the number of individual needs that are grouped into one order (single-need versus multi-need); and the order mode (BWC order of one item versus TBYD order of multiple items, which always involves a return shipment from customers).

Based on the order typology, this research also identifies and outlines reasons that impact how customers decide along the two dimensions within the 2x2 matrix. While initially this could have been considered classic consumer behavior research within marketing, the analyses revealed that the logistics operations of the online retailer are key in influencing customer decisions. In total, around half of all factors are directly or indirectly related to the physical distribution aspect of the order process.

Moreover, although this research is based on the Perceived Risk Theory, the three physical distribution stages (order entry and payment, fulfillment, and returns) are dominated by factors that are somewhat objective in nature (see Figure 2-3). Effort and convenience,

money, and time all refer to “*objective facts about the physical world*” (Hansson 2010, p. 234). They can, for example, be measured in hours and in USD.

Only the keep-or-return and the blacklisting stage are dominated by the rather subjective factors of performance, psychological, social, and privacy. These factors are assessed “*without reference to facts about the physical world*” (Hansson 2010, p. 235). Performance, for example, is linked to the customer's perception, and “*No two people perceive a product exactly alike because no two people have the same view of their environment*” (Anderson and Hair 1972, p. 69). Interestingly, privacy risk has no influence on the order-type decision, as this risk occurs when ordering at an online retailer (Crespo et al. 2009; Featherman and Pavlou 2003), independent of the form and composition of the order.

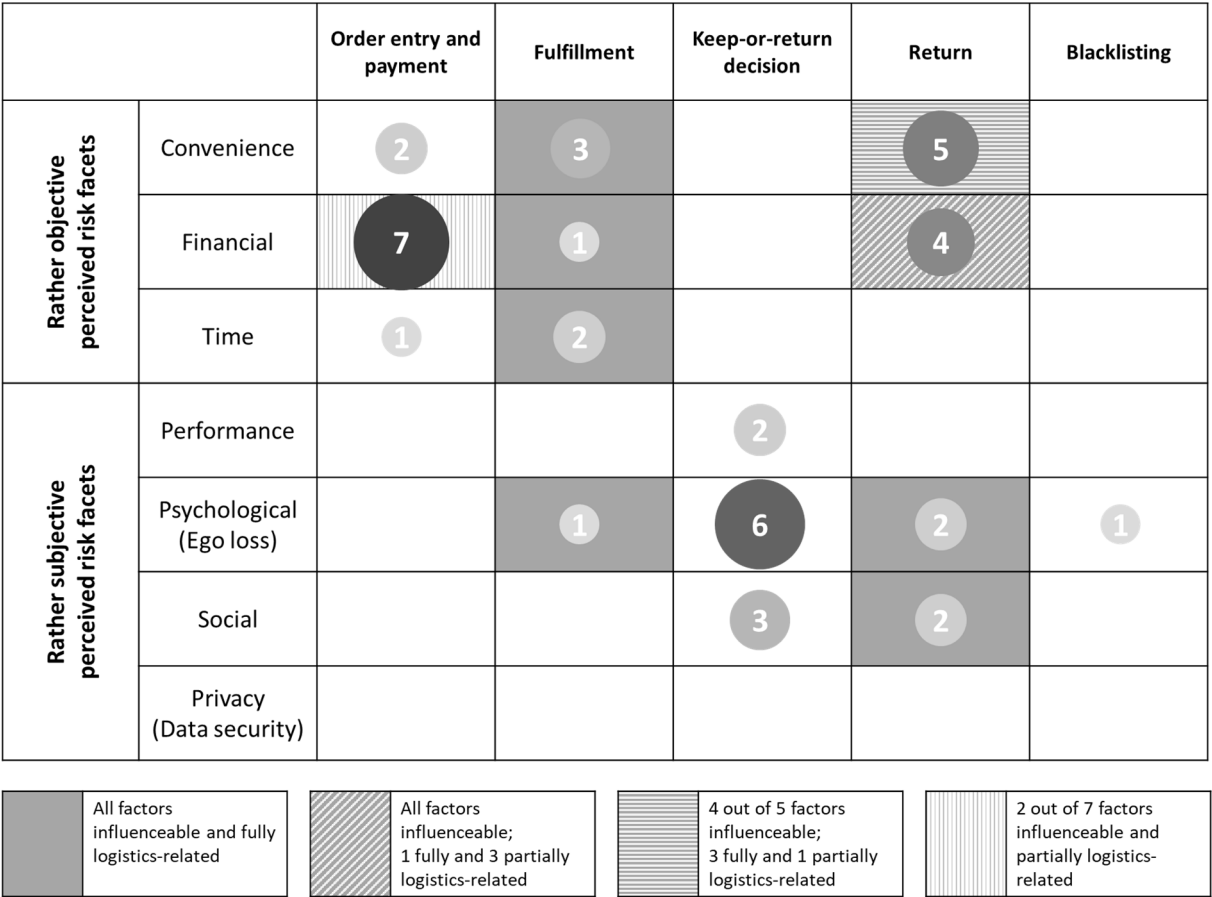


Figure 2-3: Influence of the different perceived risk facets subject to the process stages

In total, 20 of the 31 factors can be influenced by the retailer itself or the companies that the retailer contracts to carry out the activities (e.g., logistics companies that perform the delivery to the customers). Of these factors, 10 are fully related to the logistics domain (C3, C4, C5, C’7, FC1, FC2, T1, TE, SE’1, SE’2) and 5 partially (F2, F6, F7, F’9, FC3). These logistics-

related factors refer to the picking, packing, and shipping process, the parcel acceptance effort, the return effort, and the sustainability of the return process.

While in online retailing customers that return most tend to be the most profitable for the retailer (because they not only return more, they also order more and keep more) (Hjort et al. 2013), these customers would be even more profitable if they ordered fewer items that are later returned. This can be done not only by assisting customers in a smart way in their decision-making process, but also through changes in the order administration, fulfillment, and returns processes. The factors C_3 , C_4 , C_5 , and C_7 mainly refer to the effort of the customer in accepting and returning parcels. Here, TBVD orders can be reduced by making those processes easier for the customer, for example, by collecting the items to be returned directly from the customer (Röllecke et al. 2018; Leeuw et al. 2016). Furthermore, the error rate during order compilation and returns processing can be reduced, for example, by improving control of both outbound and inbound parcels (Hjort et al. 2019). The lower this error rate, the lower the impact of the factors FC_1 and FC_2 on the order-type decision.

In addition, some factors are indirectly connected to the logistics: the shipping and return fees. While the online retailer is free to set these, the fees for shipping (F_2 , F_9) and returns (F_6 , F_7) communicated to the customers will depend on the costs of these processes and can, therefore, be influenced by the efficiency of the logistics processes.

The other five factors that the retailer can influence, but which are not related to logistics, are F_1 , F_3 , F_4 , F_8 , E_4^* . Most of these factors are financial in nature, such as the minimum order value or price discounts. The retailer has the option to adjust these to influence the order-type decision.

From a logistics perspective, it is also important to note that customers' order-type decisions will not only impact profitability and return rates, but they will also impact the optimal design of the warehouse layout, the technology used, and the processes used for picking, packing, and returns handling. During our research, for example, we even encountered one European apparel online retailer that had outsourced its return handling to a lower-cost country (i.e., Poland) because of a very high share of TBVD orders.

2.5.2 Limitations and future research

One limitation of this research is that it does not analyze the behavior of a single customer in a specific ordering situation but rather focuses on general factors influencing

customers' decisions for different order types. This means that a specific customer may only consider a subset of the identified reasons, because of the specific ordering situation or because specific factors are more or less important for this customer. For example, a busy and high-income person will tend to place more emphasis on factors related to time and convenience than on factors related to finance. A basic assumption of this research is, based on Derbaix (1983), that customers strive to reduce their perceived overall risk. Here, the risk assessment will be influenced by the personality of the individual, which is why we encourage future research regarding the influence of the customer personality on the order-type decision.

Further studies might concentrate on the coherence between the mentioned factors influencing the order-type decision and predictive analytics that retailers develop to assess return probabilities, so that online retailers can better manage their inventory. Relevant aspects to consider in the analytics could possibly be the dwell time on the retailer's website (impulsive buying) or the composition of an order, as both are related to the probability that the retailer receives specific items as returns from the customer.

Regarding the composition of an order, the retailer might incentivize customers differently. A customer that is identified by analytics to place a single-need TBVD order could be incentivized to return the unwanted items as fast as possible, since the retailer knows that the customer will not keep more than one of the ordered items. In contrast, the retailer could convey to customers placing a multi-need BWC order that they have as much time as they need to return the unwanted items, hoping that the customer will keep as many items as possible.

3 Try-before-you-decide – the online order-type decision at the operations-customer interface²

² This chapter is based on the manuscript by Harder, J., Taylor, D., and Wallenburg, C. M. (2020b), submitted under the same name to the *Journal of Operations Management*. It was presented at the conferences “CSCMP Academic Research Seminar 2019” in Anaheim, US, and “Logistikmanagement 2019” in Halle, Germany.

3.1 Introduction

Online retailing has garnered strong research interest in recent years, as consumers are trending toward online shopping instead of buying at physical stores (Nguyen et al. 2018; Xu et al. 2017b; Peinkofer et al. 2015; Rao et al. 2011). Here, operations and supply chain management scholars have been interested in the supply chain implications of online retailing (Abdulla et al. 2019; Nguyen et al. 2019; Diggins et al. 2016; Rao et al. 2011). While traditional retailers are experienced in moving large lots via central storage and shipping locations, researchers outlined that in online retailing the focus should be on the opposite – the cost-effective delivery of small parcels to geographically dispersed customers (Boyer et al. 2009; Rabinovich et al. 2007). At the same time, various aspects of online order fulfillment (e.g., cycle time, cost, customer service) are crucial for customer decision-making (Xing et al. 2010). Consequently, operations and supply chain management research has focused on the retailer-consumer link (e.g., Nguyen et al. 2019; Peinkofer et al. 2016; Griffis et al. 2012; Agatz et al. 2011).

A key difference between online and brick-and-mortar retailing is that consumers have limited opportunities to inspect items physically prior to ordering (Heller et al. 2019; Gu and Tayi 2015; Peck and Childers 2003), which often leads to higher return rates (Diggins et al. 2016; Minnema et al. 2016). As managing returns-related activities incurs substantial operations costs (Nguyen et al. 2019; Foscht et al. 2013; Ofek et al. 2011), research has investigated how to reduce return rates (e.g., Gelbrich et al. 2017; Hsiao and Chen 2012; Rogers et al. 2002). To overcome the disadvantage that the product can only be viewed on a webpage, and not touched, tried on, or examined (Heller et al. 2019), a considerable portion of online customers have started ordering several similar items to compare at home, and only then to make the final purchasing decision (United Parcel Service of America 2019; Diggins et al. 2016; Foscht et al. 2013). We call these orders *try-before-you-decide* (TBYD) orders, for which customers know at the time of purchase that, at most, one item will be kept and all others will be returned (Einmahl 2017; Foscht et al. 2013).

TBYD ordering behavior not only further increases the already high return rate in online retailing (Einmahl 2017; Diggins et al. 2016), but it also has a substantial impact on the retailer's order fulfillment operations. Orders consisting of multiple items may require different picking strategies, possible shipping from multiple inventory locations, and different handling equipment compared to processing parcels containing only one item (Eriksson et al. 2019; Li

et al. 2017). In contrast, we refer to single-item purchases as *buy-with-confidence* (BWC) orders. Here, the customer is confident that this single item best fulfills his/her buying goals. BWC parcels are typically smaller than TBVD parcels. Additionally, BWC ordering induces more parcels: when a customer orders only one item and the item does not meet expectations, the customer returns the item and often will place a second order. With a TBVD order, alternative items have already been shipped with the first order, so that later shipments are usually not necessary. During our research, we noted that the impact of TBVD versus BWC ordering on retailers' operations can be extensive. For example, an online retailer delayed deciding on warehouse layout, its material handling equipment, and its automation until it had gained substantial experience about the ordering and returns behavior of its customers.

The TBVD ordering behavior of customers increases operations costs for retailers. However, we do not necessarily advocate that retailers avoid or place barriers to TBVD orders from their customers. Companies that can efficiently manage and fulfill TBVD orders may achieve competitive advantage over their rivals. Amazon's wardrobe service pushes the TBVD concept to the extreme by facilitating TBVD orders and not charging its Prime customers for the order until the unneeded items have been returned (Kapner 2017). For retailers of certain product categories, sales may benefit from making TBVD orders as convenient as possible.

Despite the substantial impact of TBVD orders on both the forward and returns operations, prior research has neglected this field of consumer decision-making. While prior research shows that online operations strategy, for example, inventory availability (Ishfaq et al. 2016) and order delivery options (Gawor and Hoberg 2018; Akturk et al. 2018), impact consumers' ordering and returns decisions, the impact of operations strategy on the decision for or against TBVD orders has not been investigated. The main research objective of this study lies in understanding consumers' TBVD ordering behavior, how this is impacted by different order delivery and returns strategies, and how it differs for different product types. The decision-making is investigated using a discrete choice experiment (Nguyen et al. 2019; Goebel et al. 2018; Wilson-Jeanselme and Reynolds 2006; Talluri and van Ryzin 2004), where customer preferences are calculated using a hierarchical Bayesian approach (Goebel et al. 2018; Halme and Kallio 2011; Karniouchina et al. 2009; Lenk et al. 1996).

The main contribution of our research lies in extending the Perceived Risk Theory to the TBVD order decision context, in showing that it is important to distinguish different item categories differently, and in revealing that retailers can, to a certain extent, influence their customers' order-type decisions by changing the type of parcel delivery (home delivery vs.

delivery to a pick-up point) and the type of parcel return (home pick-up vs. drop-off at a drop-off point).

In the following, the theoretical framework and the development of the hypotheses on customers' order-type decision-making are described. Then, the research design is described and the results from the empirical analyses presented. We conclude with a discussion of the implications, as well as limitations and avenues for future research.

3.2 Literature review

3.2.1 Operations-online customer interface

Consumer ordering behavior entails various facets, many of which have been researched from an operation and supply chain management and a marketing perspective. Focusing on the *downstream* supply chain, Nguyen et al. (2018) identified inventory management, order fulfillment, and returns management as the three key domains. Of these, our research directly addresses order fulfillment and returns processes and their impact on ordering decisions. And this ordering decision, in turn, has implications for the management of both inventory and returns.

Regarding inventory management, most of the literature has focused on inventory information, such as disclosing availability (Peinkofer et al. 2016; Rao et al. 2014; Allon and Bassamboo 2011), potential discounts (Aydinliyim et al. 2017), and display quantity (Yin et al. 2009), and how these affect online customer behavior. Second, multiple researchers have discussed in detail various aspects of reverse supply chains in online retail (Nguyen et al. 2018; Xing et al. 2010). These discussions include actual customer merchandise return experiences and sellers' return policies based on the dichotomy of gatekeeping and avoidance (Rogers et al. 2002). Gatekeeping denotes the process of reducing returns using barriers for customers, such as return fees (Gu and Tayi 2015; Lantz and Hjort 2013; Petersen and Kumar 2009) and other obstacles of return policies (Abdulla et al. 2019; Ishfaq et al. 2016; Seo et al. 2016; Hsiao and Chen 2012; Wood 2001). Avoidance focuses on mitigating potential reasons for returns and reducing the likelihood that a customer orders an item that, after receipt, will not meet the purchasing objectives (Rogers et al. 2002). This includes, for example, improved order delivery reliability (Rao et al. 2014), customer reviews (Minnema et al. 2016), and product displays (De et al. 2013).

In terms of order fulfillment, buyers may willingly pay more for an item when they have more control over the last-mile delivery (Esper et al. 2003) – thereby alluding to the value of online retail order fulfillment. Moreover, online shoppers have been shown to be sensitive to on-time delivery and delivery costs (Blut 2016; Koufteros et al. 2014; Collier and Bienstock 2006). Similarly, Xu et al. (2017b) suggested that, for certain product categories, very short cycle times (e.g., < 24 hours) substantially increase customer satisfaction. Furthermore, it has been investigated how delivery speed and delivery location impact consumer ordering choices in the online and omni-channel retail setting (e.g., Nguyen et al. (2019); Gawor and Hoberg (2018)), how factors such as online-order lead time impact shopping basket composition across product categories (Milkman et al. 2010), and how order fulfillment processes should be configured depending on the product type (Thirumalai and Sinha 2005).

Online customers can choose between a BWC and a TBYD order. This means either ordering only one item or, alternatively, multiple similar items with the intention of postponing the final selection until after product delivery (Einmahl 2017). This consumer order-type choice has so far not been studied significantly. Only Einmahl (2017) has considered the choice between BWC and TBYD orders, and only from a consumer financial risk perspective. Other perspectives have not yet been examined.

The two order types differ substantially with respect to the operational forward and returns processes. Because a TBYD order contains more than one item, the parcels are larger, and the picking and order consolidation strategies are more complex (Eriksson et al. 2019; Li et al. 2017). Consolidating items that are stored in different locations in the fulfillment center or within the fulfillment network increases the fulfillment effort substantially. This impacts the optimal storage configuration and creates a need for more pre-storage, post-picking sorting, and possibly necessitates transshipments or multiple parcels (Eriksson et al. 2019). A BWC order includes only one item; if the purchased item does not fit or does not meet customers' needs, the original purchased item is returned and a second order needs to be placed. This implies that with BWC orders an online retailer may need to process more, but smaller, parcels, which can also be challenging for retailers and their logistics capabilities (Lim and Shiode 2011). Furthermore, the returns operations also differ between order types. A TBYD order always necessitates returns. Customers know from the beginning that they will, at most, keep one of the items and return all of the others (Einmahl 2017). Therefore, the return rate, calculated based on the parcels shipped to customers, will be 100 percent.

3.2.2 Perceived Risk Theory

The Perceived Risk Theory introduced by Bauer (1960) forms the theoretical foundation of our research. Its core notion is that a consumer will choose the option that provides the lowest perceived risk (Derbaix 1983; Bauer 1960). For our research, the options consist of BWC and TBYD order types. Risk is understood as “*reflecting variation in the distribution of possible outcomes, their likelihoods and their subjective values*” (Mitchell 1999, p. 167). When estimating risk, consumers do not typically rely on extensive data (Mitchell 1999), but rather on limited information. This leads to a distinction between perceived and objective risk (Huy Tuu et al. 2011; Mitchell 1999).

Perceived risk evolves from being uncertain about whether the purchase will actually achieve the goals associated with the purchase, that is, getting what is wanted in terms of satisfaction, status, and so on (Cox and Rich 1964). It derives from two sources: the probability of an undesirable outcome occurring, and the extent of its unpleasantness (Derbaix 1983). Both components are multiplied and added across all possible negative outcomes to obtain the overall perceived risk of an option (Peter and Ryan 1976). During decision-making, consumers exhibit trade-off behavior and choose the option with the lowest overall perceived risk (Featherman and Pavlou 2003).

The perceived risk concept applies to different shopping contexts, including brick-and-mortar stores (Mitchell 1992), telephone shopping (Cox and Rich 1964), catalog shopping (McCorkle 1990), and online retailing (Forsythe and Shi 2003; Shaizatulaqma et al. 2018). Research applying this theory has focused, for example, on identifying positive and negative aspects of online versus brick-and-mortar retailing (Crespo et al. 2009; Featherman and Pavlou 2003), on the acceptance of mobile devices in the context of online shopping (Hubert et al. 2017), on how customers behave depending on previous online shopping experiences (Pires et al. 2004), on how a brand influences the customers’ decisions (Nepomuceno et al. 2014), on the decision to use a specific online retailer (Hong 2015), and, more recently, on the decision between BWC and TBYD ordering (Einmahl 2017).

Perceived risks can be categorized using different risk facets (Mitchell 1992; Roselius 1971; Cox and Rich 1964). Mitchell (1992) identified social, financial, physical, performance, time, and psychological risk facets as important in offline retailing. For online shopping, Forsythe and Shi (2003) focused on the financial, product performance, psychological, and time/convenience loss risk facets. Crespo et al. (2009) synthesized the existing literature and

distinguished between six perceived risk facets for online retailing: financial, performance, psychological, social, time, and privacy risks.

For this research we build on the six facets of Crespo et al. (2009), and additionally distinguish between time and convenience loss, similarly to Forsythe and Shi (2003) and Gawor and Hoberg (2018). The rationale behind this is that the time dimension of Crespo et al. (2009) refers both to the elapsed time associated with an online order (i.e., the time from order placement to actual delivery), and to the convenience of the customer (i.e., the personal time and effort that the customer expends for the online order, which, for example, can include walking or driving to a parcel pick-up location). Applying the Perceived Risk Theory to customers' order-type decisions is appropriate, as customers face different risk facets during their decisions.

3.3 Hypotheses development

Applying the Perceived Risk Theory, we delineate how differences in the BWC and TBVD processes of ordering and returning impact the perceived risk of online ordering. The primary focus of our study is on the performance and the convenience risk facets, as these are strongly impacted by the two order types and the order fulfillment operations. In addition, we will control for the other five risk facets that were outlined above (Forsythe and Shi 2003; Crespo et al. 2009): time, financial, psychological, social, and privacy.

Furthermore, the literature indicates that the product category affects the perceived risks (Grohmann et al. 2007; Peck and Childers 2003; McCabe and Nowlis 2003; Sinha and Batra 1999; Grotorex and Mitchell 1994). Therefore, we investigate four types of product: clothing (pairs of jeans), home accessories (sofa blankets), personal-use consumer electronics (noise-canceling headphones), and commodity-type consumer electronics (external hard drives).

3.3.1 Differences in perceived performance risk

Performance risk refers to “*the possibility of the product [...] failing to deliver the desired benefits*” (Crespo et al. 2009, p. 263). Einmahl (2017) suggests that this risk, in general, is lower for TBVD orders than for BWC orders. With TBVD orders, the customer receives several similar items, which are then tried at home and physically compared with one other. The likelihood of finding an item that fulfills the customer's buying goals is substantially higher for TBVD orders. With a BWC order, the customer receives only one item that has the potential

to be satisfactory. The single item can only be benchmarked against personal expectations. Therefore, the customer may keep an item that fulfills his/her personal buying goals, but another item might have been perceived as superior if physical comparison had been possible (Einmahl 2017).

According to Perceived Risk Theory, the difference in perceived performance risk is only present when customers are uncertain about an item's properties. The performance risk difference between a TBVD and a BWC order stems from the inability of the customer to fully judge the items when selecting them online. The customer can view pictures of the item online, read the product descriptions (Peck and Childers 2003), and read potential customer reviews (Minnema et al. 2016), but there are attributes that the customer cannot be certain about prior to delivery. These include haptics, acoustics, size fit, and, to some extent, optics (Heller et al. 2019; Gu and Tayi 2015; Foscht et al. 2013). Gu and Tayi (2015), Grohmann et al. (2007), as well as Peck and Childers (2003), demonstrate that some products require the customer to be able to feel the item or to inspect it closely before making a final buying decision (i.e., the buy-or-return decision).

We argue that the advantage of a TBVD order is lowest when the item can be fully considered based on the online information provided, and greatest when the customer is uncertain about many relevant properties of the item. In the special case where there is no barrier to full consideration of a product's attributes when shopping online, the BWC order has no disadvantage because a physical inspection of the item does not provide added value. A product category with no uncertainty is standardized, commodity-type consumer electronics (Gelbrich et al. 2017), for example, AA batteries.

A common product category that induces higher uncertainty is clothing (Gu and Tayi 2015). When buying clothes, customers must consider whether the size and cut of the product are right, and they also need to consider the feel (the haptics) and the look (the optics) of the item (Gelbrich et al. 2017; Foscht et al. 2013). Only the optics, to some extent, can be assessed online. The other aspects can only be assessed once the item has been received. Thus, we hypothesize:

H1: The perceived benefit of a TBVD order compared to a BWC order increases for customers when perceived uncertainty about the item increases.

3.3.2 Differences in perceived convenience risk

The convenience-related risk facet refers to the perceived potential inconvenience incurred during the complete order process (Forsythe and Shi 2003). This refers to the time and effort the customer may be required to expend to obtain a desired product, and it results from difficulties in receiving the ordered merchandise or in returning unwanted items. Thus, the convenience facet is directly influenced by the design of the operational delivery and returns processes.

The most convenient circumstance for the delivery process is when the package can be received without anyone being present, or it is delivered to the customer's home address at a time when, with certainty, someone will be available to take the delivery. This provides the most convenience for the customer (Gawor and Hoberg 2018); the ordered items are delivered where intended by the customer. In such a situation, the convenience for TBYD and BWC orders is almost identical. Receiving two or three separate deliveries at home is not significantly more inconvenient than receiving one. Thus, there is little difference between TBYD and BWC in perceived convenience risk.

This contrasts with the less convenient circumstance when customers must pick up a package at the post office or another pick-up point (Fernie et al. 2014; Rohm and Swaminathan 2004). This circumstance often occurs when the delivery requires a person to be present to sign for the item, or when safe delivery to a doorstep cannot be accomplished, such as at apartment complexes or delivery in higher-crime neighborhoods. This is also the circumstance when the customer chooses to have an item shipped to a locker or to a retail location. When an order is likely to require being retrieved from a pick-up point, a TBYD order offers a substantial advantage over a BWC order. For the TBYD order, the customer expects to fulfill the purchasing goal with one order. The customer will only need to make one trip to the pick-up point. In contrast, the BWC order involves greater risk of the first order not fulfilling the purchasing goal. The customer may need to place a second, or even third, order to receive a product that is satisfying, and thus two or three trips to the pick-up point may be necessary. Therefore, we hypothesize:

H2: The perceived benefit of a TBYD order compared to a BWC order increases when customers must pick up a parcel instead of receiving it at their home.

The circumstance regarding the return process is quite different. The most advantageous operational situation for TBYD orders is when return shipments are picked up at

the home address of the customer. This provides the highest convenience to the customer. Because the TBVD order always necessitates a return, the customer benefits from this convenience in all ordering instances. The BWC customer will only return the item in some cases: typical return rates for fashion accessories or apparel are around 30 percent (Kaushik et al. 2020; Einmahl 2017). Thus, BWC customers only benefit from this convenience for a fraction of ordering instances.

The opposite extreme is the scenario where the return parcel must be dropped off by customers at a defined drop-off location. Currently, no-cost returns often require customers to deliver the package to a collection point (Tyko 2019). This could be, for example, at a UPS access point or an Amazon Hub locker. Such a drop-off circumstance is more inconvenient than a home pick-up of returns (Röllecke et al. 2018; Leeuw et al. 2016; Fernie et al. 2014). A customer choosing a TBVD order will experience these less convenient returns in 100 percent of ordering instances. In contrast, customers choosing a BWC order will be inconvenienced only in the circumstances where the purchased item does not meet the buying goals and must be returned. As a consequence, the convenience reduction between the two situations is larger for TBVD orders. Thus, we hypothesize:

H3: The perceived benefit of a TBVD order compared to a BWC order decreases when customers must drop off a return instead of having it picked up at their home address.

3.3.3 Controlling for other risk facets

We include further factors as controls in our model to account for the other five perceived risk facets (Figure 3-1).

Perceived time risk. This is the “potential loss of time associated with making a bad purchasing decision by wasting time researching and making the purchase, only to have to replace it if it does not perform to expectations” (Crespo et al. 2009, p. 263). We control for perceived time risk via two factors: urgency of the purchase, and how busy the respondent is.

The urgency factor refers to the time period during which the customer can purchase the item, as it is needed at the end of this period (Zhu et al. 2018). A receipt of the item at a later point in time will yield no, or much lower, value to the customer. Because after ordering online, the items need to be picked, packed, and shipped to the customer (Xu et al. 2009), customers have to wait until the ordered items have been delivered (Mangiaracina et al. 2015; Lim et al. 2018). Only then can they evaluate whether the single item (in the case of BWC) or

one of the multiple items is suitable (Minnema et al. 2016). If this is the case, then neither order type has an advantage over the other with respect to taking possession of the purchase. However, if the single BWC item does not meet expectations, a second order must be placed, resulting in additional waiting time elapsing before the second order arrives. Because the TBYD order contains multiple similar items, the probability of receiving a suitable item with the first order is much larger. Thus, the probability is high that the elapsed time until customers find a suitable item will be shorter for TBYD orders.

The second, time-related control is the busyness of the individual customer. This reflects how much time customers have in their daily lives for the ordering process. The busier a person, the less time the person has to manage orders and returns. Therefore, busy people will tend to choose the ordering option that requires the least of their time.

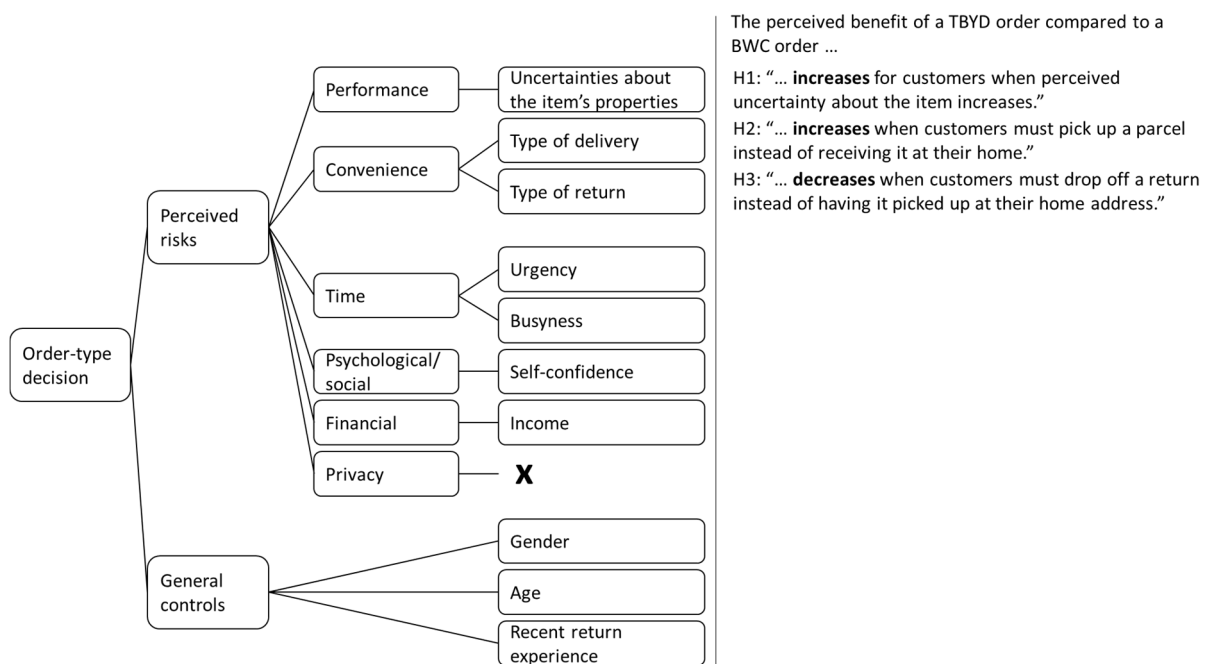


Figure 3-1: Factors that might affect customers' order-type decisions

Perceived psychological and social risk. Psychological risk is defined as the "potential loss of self-esteem (ego loss) from the frustration of not achieving a buying goal" (Crespo et al. 2009, p. 263). Social risk is the "potential loss of status in one's social group as a result of adopting a product or service, looking foolish or untrendy" (Crespo et al. 2009, p. 263). We control for both these risk facets via the customer's self-reported self-confidence, "the confidence in one's ability to meet purchase objectives such that choices are personally satisfying and generate positive outcomes in the form of reactions of others" (Bearden et al.

2001, p. 123). Self-confident customers trust their own judgment; they are more confident that the items they select and order will be right with respect to their own expectations and the reactions of others (Bearden et al. 2001). Therefore, these customers may see less perceived value in ordering multiple items and trying them before making final decisions when compared to customers with low self-confidence. Customers with lower self-confidence may be less certain during online ordering about whether the item they favor is indeed the best item. For these customers, the TBVD order may provide a larger benefit, as it allows them to physically compare a selection of multiple items at home and to show them to friends and family, providing more certainty about the decision and therefore lowering their perceived psychological and social risk.

Perceived financial risk. Customers must pay for the items they order, and when ordering more than one item, customers will need to pay for multiple items. The financial risk that comes with this refers, among others, to potential financial losses due to fraud or other circumstances (Hong 2015; Crespo et al. 2009). In addition to fraud, damage to the items could also result in financial loss if the customer is liable. Therefore, customers with a higher income may perceive a TBVD order to be less risky than customers with a low income.

Perceived privacy risk. This risk facet refers to the possibility that personal data, which is collected by the retailer, may be hacked or passed on to other companies (Featherman and Pavlou 2003; Cases 2002). While this risk becomes more prevalent for customers with increasingly reported data leaks, and with data increasingly being sold to other companies (Hong et al. 2019; Kellaher 2019; Snider 2019), it does not differentiate between placing a BWC order and a TBVD order. Therefore, no variable is necessary to control for this risk facet.

3.3.4 General controls

In addition to the factors regarding the perceived risk facets, we include age, gender, and the recent return experience of customers as general controls in our analyses. Previous research regarding online shopping often revealed behavioral differences based on age, gender, and experience (Foscht et al. 2013; Schlereth et al. 2018). Forsythe and Shi (2003), for example, identified three online shopper groups – heavy shoppers, moderate shoppers, and Internet browsers. On closer examination of these three groups, Forsythe and Shi (2003) observed that heavy shoppers tended to be older, more experienced online users, and they were more likely to be men. Internet browsers tended to be younger and less experienced Internet users, and moderate shoppers tended to fall between these two groups.

3.4 Research method

This research was carried out in two phases: the pretests, and the main study. The latter employs a choice-based conjoint experiment and a questionnaire requesting additional demographic information from the participants. All online pretests and the main study were conducted using the platform Prolific Academia, an online platform comparable to Amazon's Mechanical Turk; Prolific Academia has higher heterogeneity among potential study participants (Peer et al. 2017). Using online platforms to collect data for customer behavior research is common (Goodman and Paolacci 2017). Online platform data are typically at least as reliable as data gained via traditional methods (Buhrmester et al. 2011) and provide comparable results regarding attentiveness to instructions (Hauser and Schwarz 2016). Conducting the study online is particularly appropriate because this research examines customer online behavior.

3.4.1 Pretests

The goal of the pretests was to ensure the comprehensibility of the experimental vignettes and appropriate variable manipulation (Peinkofer et al. 2016; Knemeyer and Naylor 2011; Goodman et al. 2013). The first pretest (see Appendix – Pretest 1) consisted of 150 English-language native participants with at least a high school education and online shopping experience. For this pretest, the participants were presented with four different clothing items. Their task was to specify for each item how they would typically order. The pretest demonstrated that some customers choose different order types for different items (i.e., they mix BWC and TBYD), and other customers remain consistent, with one order type for all items. From this, it can be concluded that the order-type decision will depend both on the item and on personal preferences and attributes.

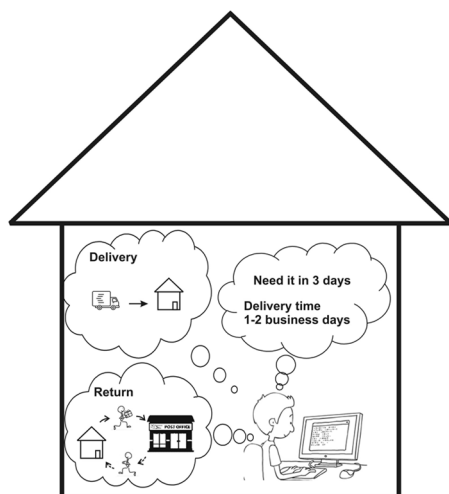
The second pretest (see Appendix – Pretest 2) consisted of 134 undergraduate students surveyed via a paper survey and 120 online participants residing in the United States with a Prolific approval rate of at least 95 percent. All participants had online shopping experience. The purpose of the second pretest was to check the comprehensibility of the vignettes and to collect information from the participants regarding reasonable shipping fees. To determine the parameters for the manipulation of shipping fees, we asked the participants to indicate an appropriate shipping fee for a sofa blanket priced US \$70. Based on their responses, we derived four different shipping fees for our main study: US \$3, \$5, \$7, and \$9.

3.4.2 Main study

3.4.2.1 Study design

The main study utilized a choice-based conjoint analysis (Schlereth et al. 2018; Halme and Kallio 2011). This method combines conjoint analysis and discrete choice analysis and offers several advantages (Goebel et al. 2018; Louviere and Woodworth 1983). The decision in a choice-based conjoint analysis resembles a true customer decision where participants choose from a set of alternatives (Goebel et al. 2018).

Each participant selected, for a given item, which order type would be chosen: BWC, TBVD, or not ordering at all. We included four different types of item: clothing (pair of jeans), home accessories (sofa blanket), personal-use consumer electronics (noise-canceling headphones), and standard consumer electronics (external hard drive). These four types of item vary in their uncertainty – the central consideration of hypothesis H1. The pair of jeans is the item with the highest uncertainty: clothes induce high uncertainty (Gu and Tayi 2015), as customers need to consider whether the size and cut of the product are right for their body, and whether the feel (i.e., the haptics) and the look (i.e., the optics) of the item meet their expectations (Dai et al. 2014; Foscht et al. 2013). Only the optics, and that only to some extent, can be assessed online.



Before you choose between the ordering options, imagine yourself in the following situation:

It is Monday, you are at your computer and suddenly you remember some items you want to order. You have not informed yourself about these items in advance. You need them all by Thursday (in 3 days).

You realize with certainty that someone can accept the parcel at your home address when the delivery person arrives and that you will not have to pick up the parcel anywhere else. In case of a return, you must drop off the parcel at the post office, parcel delivery service office or parcel delivery service access point.

Figure 3-2: Description of the one exemplary ordering situation

We also included two other items that can be classified as intermediate in terms of uncertainty: a sofa blanket, and noise-canceling headphones. With the sofa blanket, customers can obtain information about the color and the size online but lack information about the haptics. Customers cannot touch the item prior to ordering. In the case of the noise-canceling

headphones, acoustics are a subjective sensation that cannot be expressed fully through a verbal description on a webpage. The customer will therefore potentially be uncertain if the acoustics will meet expectations. For the external hard drive, no uncertainty exists, as the customer can obtain all the relevant information online prior to ordering (Gelbrich et al. 2017).

The specific items within the product categories were chosen as they allowed a uniform price to be selected, and in that way to control for the potential influence of the product price and product price differences. We indicated to the participants that the product price for each of the four items was US \$70 (plus a shipping fee specified within the choice sets). To analyze the effect of the focal constructs of our study and control for urgency, we used a full-factorial 4x2x2x2 design. Each participant was assigned to one specific situation in terms of delivery option, return option, and urgency. This situation was presented by an initial description, as shown in Figure 3-2. This resulted in eight different study groups (2x2x2); the assignment of the participants to one of these eight groups was random.

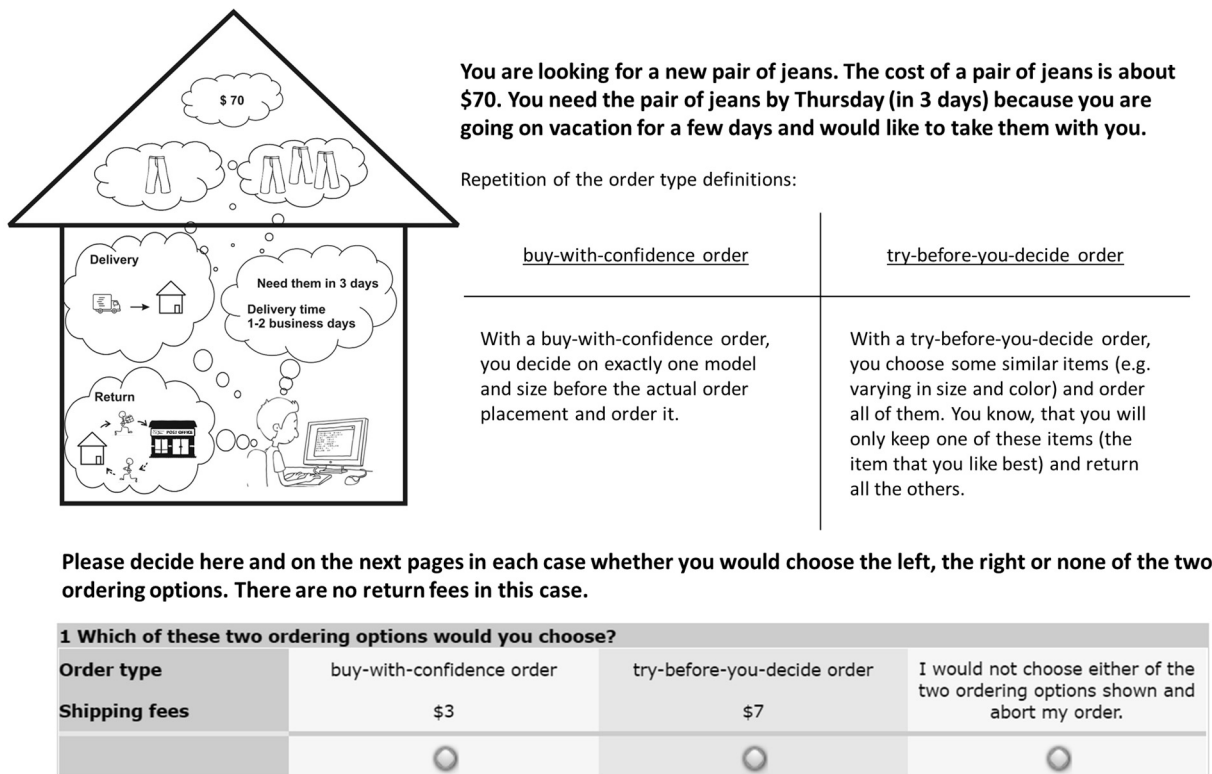


Figure 3-3: Example vignette and choice set (scenario: pair of jeans, home delivery, drop-off return, urgent)

Each participant was subsequently presented with four different vignettes that varied only with respect to items that were ordered (see Appendix – Main experiment). The remainder of the online ordering situation, as displayed in Figure 3-2, remained constant. For each vignette, the participants were presented with eight choice sets. Each consisted of two ordering

options and a none-option. The alternatives in each choice set were specified based on two attributes: order type, and shipping fee (see Figure 3-3).

The design of the experiment shows orthogonality, has no overlap, and all levels appear equally often. Approximate utility balance was produced by keeping the difference between the costs in each choice set as low as possible. These characteristics ensure an efficient design (Huber and Zwerina 1996). The study was executed using the online survey platform DISE (Schlereth and Skiera 2012a).

The second part of the main study consisted of a questionnaire. Demographic questions asked include: age, gender, income, and personal information regarding the participants' busyness, self-confidence, and recent returns experience. The participants' busyness and self-confidence were ascertained in accordance with the measurements of Suelmann et al. (2018) and Robins et al. (2001), respectively. To determine the participants' recent returns experience, we asked participants to state how many of their last five orders had involved a return, regardless of whether they had ordered a BWC order or a TBVD order. An overview of all variables and their operationalization can be found in Table 3-1.

Variable	Description of operationalization / survey question	Coding	Mean	Std. dev.
Type of delivery	Whether the parcel will be delivered to the home address or to a pick-up point.	Binary dummy (1=pick-up point, 0=home)	0.51	0.50
Type of return	Whether a return will be picked up at home or needs to be brought to a drop-off point.	Binary dummy (1=home, 0= drop-off point)	0.51	0.50
Urgency	Whether getting the item is urgent.	Binary dummy (1=urgent, 0=not urgent)	0.51	0.50
Busyness	"I am a busy person."	5-point Likert scale (1=does not fit at all, 5=does fit completely)	3.44	1.06
Income	"What is your gross income per month?"	Ordinal (1-5) 1=US \$0-1,999; 2=US \$2,00-2,999; 3=US \$3,000-3,999; 4=US \$4,000-4,999; 5=US \$5,000+	2.42	1.45
Self-confidence	"I am self-confident."	5-point Likert scale (1=does not fit at all, 5=does fit completely)	3.44	1.14
Gender	"What gender are you?"	Binary dummy (1=female, 0=male)	0.54	0.50
Age	"How old are you?"	Continuous	34.91	11.51
Recent return experience	Whether the customer returned something with his/her last five orders.	Binary dummy (1=yes, 0=no)	0.34	0.47

Table 3-1: Operationalization of main variables and controls (n=923)

3.4.2.2 Attention checks

To ensure the attentiveness of participants, we included four attention checks in the experiment (Oppenheimer et al. 2009). We included a cautionary note at the beginning of the study, mentioning that the study included attention checks (Paas and Morren 2018). Within the first attention check, the participants specified when they needed the items. The answer to that question was given in the text directly above the question. The participants had four options to choose from. For the groups with an urgent situation the right answer was three days; and, for the other groups, the text above the questions said that the participants did not need the item within the next month. The remaining attention checks were also structured as multiple-choice questions. For these attention checks, participants were asked to indicate the correct retail category out of three options for different mainstream US retailers.

3.4.2.3 Sample

Data for the main study were collected from participants residing in the United States. All participants were required to have online shopping experience and an approval rating equal to or above 95 percent. In total, 1,104 participants completed the entire study; 115 responses were removed because they failed at least one of the attention checks. One response was removed because the participant stated an age of two years old. Four more responses were removed based on the comments written at the end of the survey: two participants stated that they did not want to buy any of the items, and two participants had problems loading some of the survey pages. A total of 54 participants were removed because they made contradictory statements regarding their online ordering and their past returns behavior. Because the positioning for people who identify their gender as “other” is not clearly defined (Ho and Mussap 2019), and because the low number of non-binary-gender-identifying participants would lack statistical significance, we excluded responses from the seven participants who identified their gender as “other” from all analyses involving gender. The resultant sample for the analyses therefore consisted of 923 participants, resulting in between 108 and 121 subjects for each of the 8 survey groups.

3.4.2.4 Hierarchical Bayes results estimation

To identify the benefits of different options, while capturing customer heterogeneity, we used a hierarchical Bayes approach for the individual partworth utility estimation (Goebel et al. 2018; Schlereth et al. 2018; Halme and Kallio 2011; Lenk et al. 1996). Hierarchical estimation consists of two layers, an upper and a lower layer. In the upper layer aggregate

measures as average partworth utilities are determined, whereas estimates obtained for the lower layer are individual partworth utilities of each participant (Schlereth et al. 2018; Goebel et al. 2018; Kurz and Binner 2011). The utility of an alternative can be calculated via a linear combination of the partworth utilities of the attribute levels defining the alternative. The utility u of alternative j for participant n can be calculated by:

$$u_{nj} = \beta_n * x_j + \varepsilon_{nj} \quad (3-1)$$

where β_n is the vector of partworth utilities, x the design matrix of the experiment, and ε_{nj} the stochastic component of the utility function (Schlereth et al. 2018; Baumgartner and Steiner 2007; Train 2009). Within the design matrix x , the attribute order type is effect-coded, the attribute cost is vector-coded (with the cost as negative value), and the intercept is coded as 1 if the alternative is an order and 0 if the alternative is the none-option. We assume that individual-level partworth utilities depend on covariates and can be calculated via the following regression model (Schlereth et al. 2018; Baumgartner and Steiner 2007; Lenk et al. 1996; Allenby and Ginter 1995):

$$\beta_n = \Gamma * z_n + \zeta_n \quad (3-2)$$

where the matrix Γ includes the regression parameters to relate β_n to z_n , which includes the covariates of participant n and a constant. ζ_n is the component of the unobserved heterogeneity, assumed to be multivariate normal (0,D) (Allenby and Ginter 1995). Covariates can, for example, be demographic or behavioral variables (Allenby and Ginter 1995). Including covariates yields more accurate individual estimates (Crabbe and Vandebroek 2012) and facilitates an understanding of the heterogeneity of a population (Dumont et al. 2015). In particular, we used a hierarchical Bayes covariate extended logit estimation model (Schlereth et al. 2018).

The likelihood of choosing an alternative is calculated using a multinomial logit model (McFadden 1974). For participant n , choosing alternative $j = y_n$ is calculated as:

$$\Pr(y_n) = \frac{e^{\beta_n * x_{y_n}}}{\sum_j e^{\beta_n * x_j}} \quad (3-3)$$

In our model, the focal variables and the controls are included as covariates. To be able to compare the impact of the covariates on the partworth utilities, we standardized the covariate variables by first mean-centering them and then dividing these values by their

standard deviations (Schlereth et al. 2018). We implemented our model in R using the R packages *bayesm* and *RSGHB*. The estimations are based on 20,000 iterations, including 10,000 burn-in iterations.

3.5 Results

Hypotheses testing was conducted via a multi-step approach. In the first step (Chapter 3.5.1) the validity of the model was assessed. Subsequently, in Chapter 3.5.2, the influence of the item type on the order-type decision was examined in order to test hypothesis H1. In the third stage (Chapter 3.5.3) the impact of the delivery type and the return type, as well as the impact of the control variables, were examined by including them as covariates. Based on the results of the second step, the analyses in the third stage were carried out for each of the four items separately.

3.5.1 Model testing

To verify an increase in the model fit by including covariates, a Bayes factor can be used, which compares the log marginal densities (LMD) of two models (Schlereth et al. 2018; Netzer et al. 2017). Including the four item categories as covariates in the estimation model (to test hypothesis H1) increases the model fit: the Bayes factor is 26, calculated as $2 * |LMD_1 - LMD_2|$, with LMD being -4551 for the model with covariates, and -4564 for the model without covariates. A Bayes factor of greater than 10 is considered strong evidence (Kass and Raftery 1995). The Bayes factors that were calculated based on including the delivery type, the return type, and the control variables also showed strong evidence for an increase in model fit. For the pair of jeans, the LMD of the model without covariates is -1723, and the LMD of the model with covariates is -1715, resulting in a Bayes factor of 16. The Bayes factor for the blanket model is the highest, with 68 (i.e., $2 * |(-1114) - (-1080)|$). The Bayes factor is 38 for the headphones: $2 * |(-948) - (-929)|$, and 50 for the hard drive: $2 * |(-738) - (-713)|$.

We also tested our covariate extended models regarding internal and predictive validity. To calculate the predictive validities, we followed the suggestions of Schlereth et al. (2018) and omitted two of the eight choice sets from the dataset for the analyses of the partworth utilities, and we then calculated the first-choice hit rates within the omitted choice sets. Internal validity was determined calculating the first-choice hit rate within the six choice sets used for the analyses. The internal validity of the covariate extended models is 89.6 percent for the pair of jeans, 92.7 percent for the blanket, 92.8 percent for the headphones, and 94.9 percent for the

hard drive. The predictive validity of the covariate extended model for the pair of jeans is 86.0 percent, for the blanket is 86.1 percent, for the headphones is 85.4 percent, and for the hard drive is 88.8 percent. All these values, for the internal and the predictive validity, indicate high validity for all four models, as all first-choice hit rates substantially outperform the random choice threshold (Rao 2014; Gensler et al. 2012), which in our case is 33 percent. The omission of the two choice sets was made for the validity testing only. The results presented below include the full dataset of all eight choice sets.

3.5.2 Influence of the item category on the order-type decision

The first estimation is based on the data of all participants without considering the variable manipulations and participant information. Therefore, no covariates are included in the utility function. The average partworth utilities for the order types (BWC and TBYD), as well as for the cost (shipping fee), are provided in Table 3-2. The partworth utility of cost (with cost being coded negatively) is 2.02. As expected, the utility is positive, which indicates that customers prefer lower shipping fees to higher ones. The BWC order partworth utility is positive at 1.78. The TBYD order partworth utility -1.78; the negative value indicates that participants, in general across the four products, prefer BWC orders to TBYD orders. The importance weight of the cost is higher than that of order type, which supports the finding of Nguyen et al. (2019) that the delivery fee has a substantial impact on online customer decision-making.

Attribute	Level	Partworth utility (standard deviation)
Order type	Intercept	16.87 (6.45)
	BWC order	1.78 (4.18)
	TBYD order	-1.78 (4.18)
Cost	-	2.02 (0.70)

Table 3-2: Results of base estimation

The results for the order-type partworth utilities display relatively high standard deviations across the participant-specific partworth utilities. This is an indicator of heterogeneity in the data, which is why we follow Peck and Childers (2003) and test the influence of the item category on the partworth utility of the different order types. To do so, we include dummy-coded item covariates in the utility function. Table 3-3 shows the partworth utilities for the headphones as a reference group and the changes in the partworth utilities depending on the item category compared to the headphones. A positive partworth utility of a TBYD order indicates that customers prefer TBYD ordering over BWC ordering, while a

negative partworth utility of a TBYD order means that customers prefer a BWC order. The average constant partworth utility of a TBYD order for the pair of jeans is positive at 1.27 ($-1.95 + 3.22$), indicating that customers, on average, prefer a TBYD order. For the other three item categories the average constant partworth utility of a TBYD order is negative: -1.95 for the headphones, -1.96 ($-1.95 + -0.01$) for the sofa blanket, and -4.47 ($-1.95 + -2.52$) for the hard drive, meaning that, for the hard drive, customers are least likely to choose a TBYD order when ordering online. The value for the pair of jeans (high uncertainty) is substantially different from the values for the headphones and the sofa blanket (medium uncertainty), and their values are, in turn, substantially higher than the value for the hard drive (low uncertainty). The substantial differences present among the four products provide support for hypothesis H1, that the higher the uncertainty about the product, the more favorable the TBYD becomes.

That the differences are substantial can be concluded based on comparing the partworth utility changes with the standard deviation of those partworth utility changes. Such a comparison is standard with hierarchical Bayesian methods to derive a measure comparable to significance testing performed within regression analysis or other multivariate methods (Pancras et al. 2013; Rhee and Bell 2002; Rossi et al. 1996). Typical levels for “significance” are values that differ at least one standard deviation from zero (Lenk et al. 1996), and values that differ at least two standard deviations from zero (Schlereth et al. 2018).

	Intercept	BWC	TBYD	Cost
Constant (headphones)	16.77	1.95	-1.95	2.15
Jeans	-2.32 (0.42)**	-3.22 (0.56)**	3.22 (0.56)**	-0.69 (0.79)
Blanket	2.14 (0.39)**	0.01 (0.00)	-0.01 (0.00)	-0.06 (0.07)
Hard drive	1.07 (0.19)**	2.52 (0.44)**	-2.52 (0.44)**	0.12 (0.14)

Notes: standard deviations in parentheses, **: differs at least two standard deviations from zero

Table 3-3: Partworth utility changes depending on the product type

3.5.3 Influence of type of delivery and type of return on the order-type decision

The influences of the type of delivery, the type of return, as well as the controls on the partworth utilities, are shown in the attribute-covariate interaction tables (see Table 3-4 to Table 3-7). Table 3-4 displays the attribute-covariate interactions for the pair of jeans, Table 3-5 for the blanket, Table 3-6 for the headphones, and Table 3-7 for the hard drive. In the attribute-covariate interaction tables, the values indicate how much the partworth utility changes if the value of a covariate (see Table 3-1 for the underlying variables) is one standardized unit above the population average (Schlereth et al. 2018).

	Intercept	BWC	TBYD	Cost
Constant	9.87	-0.82	0.82	1.12
Type of delivery (H2)	-0.15 (0.30)	0.13 (0.13) *	-0.13 (0.13) *	0.05 (0.04) *
Type of return (H3)	-0.37 (0.30) *	0.06 (0.13)	-0.06 (0.13)	-0.02 (0.04)
Urgency	0.84 (0.31)**	0.35 (0.13)**	-0.35 (0.13)**	-0.01 (0.04)
Busyness	0.01 (0.32)	-0.39 (0.14)**	0.39 (0.14)**	-0.05 (0.04) *
Self-confidence	-0.03 (0.34)	0.30 (0.14)**	-0.30 (0.14)**	-0.02 (0.04)
Income	-0.14 (0.32)	0.09 (0.14)	-0.09 (0.14)	0.03 (0.04)
Gender	-0.60 (0.31) *	-0.01 (0.14)	0.01 (0.14)	0.01 (0.04)
Age	-1.16 (0.31)**	0.22 (0.14) *	-0.22 (0.14) *	0.06 (0.04) *
Recent return experience	-0.10 (0.31)	-0.52 (0.14)**	0.52 (0.14)**	0.02 (0.04)

Notes: standard deviations in parentheses, **: at least two standard deviations from zero, *: at least one standard deviation from zero

Table 3-4: Effect of attribute-covariate interactions on the partworth utility (pair of jeans)

	Intercept	BWC	TBYD	Cost
Constant	20.30	2.03	-2.03	2.43
Type of delivery (H2)	-0.80 (0.52) *	-0.36 (0.15) **	0.36 (0.15) **	-0.03 (0.07)
Type of return (H3)	-0.77 (0.51) *	0.10 (0.15)	-0.10 (0.15)	0.00 (0.07)
Urgency	1.38 (0.52)**	0.24 (0.15) *	-0.24 (0.15) *	-0.04 (0.07)
Busyness	0.50 (0.54)	-0.19 (0.16) *	0.19 (0.16) *	-0.11 (0.07) *
Self-confidence	-0.72 (0.57) *	0.20 (0.17) *	-0.20 (0.17) *	-0.09 (0.07) *
Income	-0.62 (0.52) *	-0.09 (0.16)	0.09 (0.16)	0.00 (0.07)
Gender	-1.85 (0.54)**	0.62 (0.16)**	-0.62 (0.16)**	-0.06 (0.07)
Age	-1.31 (0.52)**	0.05 (0.16)	-0.05 (0.16)	0.14 (0.07) *
Recent return experience	0.25 (0.52)	-0.68 (0.15)**	0.68 (0.15)**	0.12 (0.07) *

Notes: standard deviations in parentheses, **: at least two standard deviations from zero, *: at least one standard deviation from zero

Table 3-5: Effect of attribute-covariate interactions on the partworth utility (sofa blanket)

	Intercept	BWC	TBYD	Cost
Constant	21.37	2.26	-2.26	2.53
Type of delivery (H2)	0.19 (0.56)	-0.29 (0.19) *	0.29 (0.19) *	0.09 (0.08) *
Type of return (H3)	-0.34 (0.52)	0.29 (0.19) *	-0.29 (0.19) *	0.11 (0.07) *
Urgency	0.38 (0.52)	0.70 (0.19)**	-0.70 (0.19)**	-0.22 (0.07)**
Busyness	1.20 (0.56)**	-0.12 (0.20)	0.12 (0.20)	0.02 (0.08)
Self-confidence	-0.91 (0.60) *	-0.07 (0.21)	0.07 (0.21)	-0.18 (0.08)**
Income	0.00 (0.56)	0.32 (0.20) *	-0.32 (0.20) *	0.12 (0.07) *
Gender	-1.95 (0.55)**	0.67 (0.20)**	-0.67 (0.20)**	-0.07 (0.08)
Age	-2.20 (0.54)**	-0.11 (0.20)	0.11 (0.20)	0.07 (0.07)
Recent return experience	-0.20 (0.54)	-0.75 (0.19)**	0.75 (0.19)**	0.04 (0.07)

Notes: standard deviations in parentheses, **: at least two standard deviations from zero, *: at least one standard deviation from zero

Table 3-6: Effect of attribute-covariate interactions on the partworth utility (noise-canceling headphones)

	Intercept	BWC	TBYD	Cost
Constant	21.24	5.34	-5.34	2.62
Type of delivery (H2)	0.73 (0.70) *	-0.53 (0.23) **	0.53 (0.23) **	0.07 (0.09)
Type of return (H3)	0.59 (0.71)	0.42 (0.22) *	-0.42 (0.22) *	0.26 (0.09) **
Urgency	1.52 (0.74)**	-0.16 (0.21)	0.16 (0.21)	-0.21 (0.09)**
Busyness	1.02 (0.73) *	0.20 (0.24)	-0.20 (0.24)	0.05 (0.09)
Self-confidence	-1.32 (0.73) *	0.13 (0.24)	-0.13 (0.24)	-0.22 (0.10)**
Income	-0.37 (0.73)	0.01 (0.24)	-0.01 (0.24)	-0.09 (0.10)
Gender	-2.24 (0.72)**	0.66 (0.23)**	-0.66 (0.23)**	-0.17 (0.09) *
Age	-1.23 (0.77) *	0.30 (0.24) *	-0.30 (0.24) *	0.26 (0.10)**
Recent return experience	0.87 (0.72) *	-0.74 (0.22)**	0.74 (0.22)**	0.15 (0.10) *

Notes: standard deviations in parentheses, **: at least two standard deviations from zero, *: at least one standard deviation from zero

Table 3-7: Effect of attribute-covariate interactions on the partworth utility (external hard drive)

The results support hypothesis H2 for all items except the pair of jeans. For the blanket, the headphones, and the hard drive, a pick-up delivery has a substantial positive effect on the

value of a TBYD order compared to a BWC order. For the sofa blanket and the hard drive, the values of 0.36 and 0.53, respectively, are more than two standard deviations from zero. For the headphones, the value (0.29) differs more than one standard deviation from zero. For the pair of jeans, the change in partworth utility for a TBYD order is, other than expected, negative (-0.13) and slightly more than one standard deviation different from zero.

Hypothesis H3 is supported for the headphones and the hard drive. For these items the need to drop off a return at a drop-off station has a substantial negative effect on the partworth utility of the TBYD order (-0.29 resp. -0.42). This means that if customers must drop off a return at, for example, a post office instead of having the return picked up at their home address, the perceived utility of a TBYD order compared to a BWC order drops. For the pair of jeans, as well as for the sofa blanket, the results show no effect that is substantial.

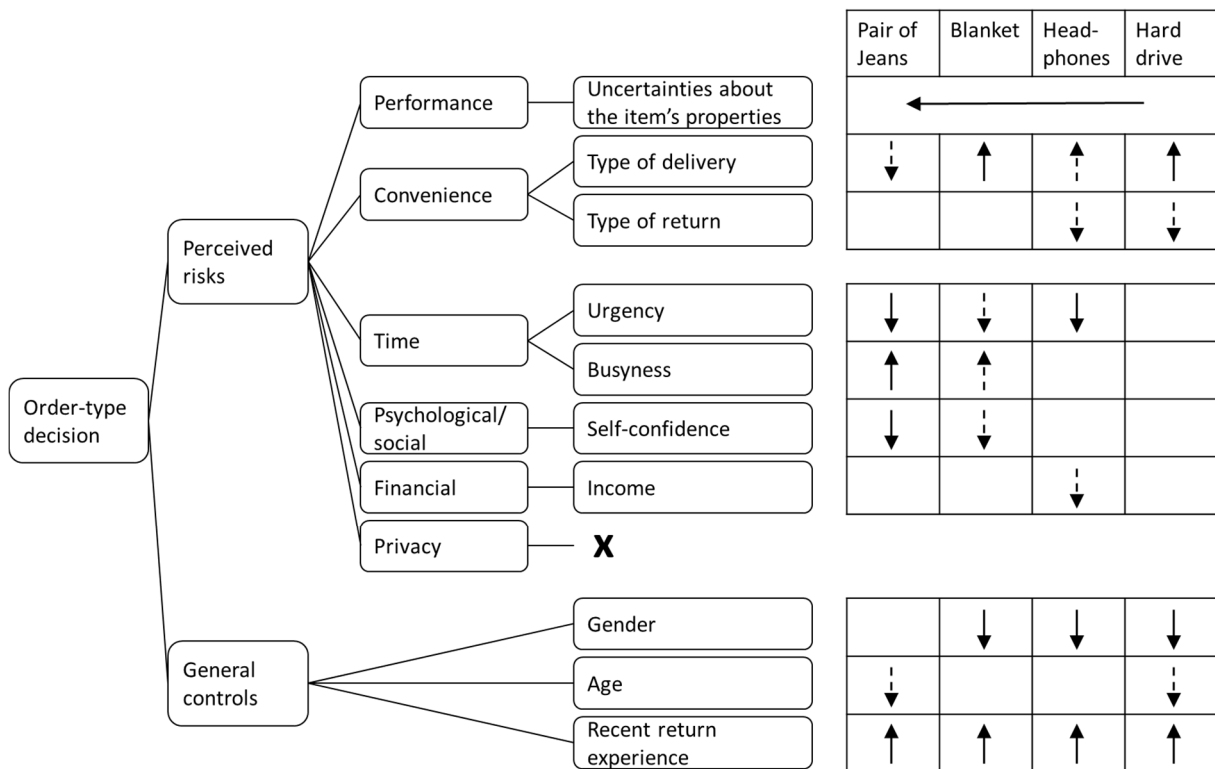


Figure 3-4: Overview of the analyzed impacts on TBYD ordering (solid arrows: value differs at least two std. dev. from zero; dashed arrows: value differs at least one std. dev. from zero)

Regarding the controls, several factors stand out. First, the recent return experience of a customer has the highest impact on the order-type decision. For participants who, within their last five orders, had to return one or multiple items, TBYD ordering exhibits a substantially higher partworth utility than for customers who did not return anything within their last five orders. Second, gender has a very substantial impact on the order-type decision for the blanket,

the headphones, and the hard drive (items with low or medium uncertainty), where women are less likely to place a TBVD order than men. Third, the time-related factor urgency reduces the utility of TBVD orders for the high and medium uncertainty products. It is only stable for the hard drive, which has low uncertainty. And, finally, self-confidence has a substantial impact in that it reduces the inclination to choose a TBVD order for high and medium uncertainty products where haptics play a role (pair of jeans and sofa blanket). For an overview of the influence of the perceived risk factors, as well as control variables, see Figure 3-4. In the figure, the arrows show the direction where the partworth utility of the TBVD order increases: an upward pointing arrow indicates that an increase of the factor leads to a higher partworth utility; if the arrow points down, a decrease of the factor leads to a higher partworth utility of TBVD ordering. Hypothesis H1 compared the items against one another, and the horizontal arrow marks that the partworth utility of a TBVD order increases with increasing uncertainty about the item's properties.

3.6 Discussion

3.6.1 Theoretical contribution

This research extends the knowledge on the strong connection between operations and consumer decision-making in online retailing. It adds a new facet in linking the online retailer's order fulfillment and returns processes to consumers' decisions to order composition (TBVD vs. BWC). And, in turn, this order composition has far-reaching implications for both the inventory and the returns management of the retailer. With this, our study makes various theoretical contributions.

First, this research extends the findings of Godsell et al. (2006) to the item category level. They suggest that when different customer segments exist, different supply chain and operations strategies are reasonable. Therefore, in order to optimize the supply chain and a retailer's operations, it is important to understand customers' buying behavior (Hjort et al. 2013; Gattorna 2010). Our study shows that, besides customer segmentation, an item category segmentation is also important for predicting customer buying behavior. And, as a consequence, different supply chain and operations strategies will be beneficial for different item categories.

For item categories, such as apparel, where TBVD orders are likely to become more common as they have a positive utility for the customer, perceived barriers to TBVD orders could become a competitive disadvantage. Customers that prefer a TBVD order may decide to

order at a different retailer if that retailer offers more convenient TBVD ordering. Retailers, however, that are well prepared for TBVD orders, in both their forward and return processes, could make those orders as convenient as possible for customers in order to benefit from potential additional customers. This is because convenience plays a significant role in a customer's purchasing decisions (Hult et al. 2019).

Second, we provide the theoretical foundations for the link between the retailer's logistics operations, such as type of parcel delivery and type of parcel return, and the customer's order-type decision, where the item selection is either performed before delivery (BWC) or postponed until after delivery (TBVD). These aspects were investigated via hypotheses H2 and H3.

Contrary to expectations, parcel delivery to a pick-up point increases the probability of TBVD orders only for low to medium uncertainty products. For the pair of jeans, customers were actually less likely to choose a TBVD when having to pick up the parcel at a pick-up point. To find a possible explanation for this unexpected behavior, we utilized a post hoc focus group with 11 consumers familiar with online shopping.

The outcome of the focus group discussions were two potential explanations for this phenomenon. First, a customer that faces additional effort receiving a parcel may become more cost-sensitive and want to avoid the combination of high effort and high shipping fees. As a result of higher cost sensitivity, customers would pay more attention to the shipping fees than the order type. This explanation would be consistent with observations in our experiment, where the calculation of the partworth utilities shows that the relative importance of the cost attribute (shipping fee) increases by between 5.5 and 6.4 percentage points for pick-up delivery compared to home delivery. The resulting lower importance weight of the order-type attribute is then reflected in the lower difference between the partworth utility of a TBVD order and the partworth utility of a BWC order. This means that cost concerns partially overshadow the order-type decision.

A second possible explanation that we derived from the focus group discussions is that online customers facing additional effort (in receiving the parcel) may opt for a safer option to make sure that this additional effort is rewarded. A pair of jeans is not just an item with high uncertainty but also an item that most customers already own. Therefore, a safe option for the customer is to order an already known type of jeans or one from the same brand and in the same size as the one the customer already owns. Ordering such a pair of jeans would be an even safer

option than placing a TBVD order of a, thus far, unknown pairs of jeans. For items with medium to low uncertainty, such as the sofa blanket, the noise-canceling headphones, and the external hard drive, which are all items that are not necessarily already owned by the customer, a TBVD order is already a very safe option. This order type contains more than one potential item, which increases the already high probability of finding a suitable item even further. These differences in the safe ordering options would explain why, for a customer ordering a pair of jeans, the partworth utility of a TBVD order decreases, while it increases for the other item categories.

Moreover, the set-up of the returns process (hypothesis H3) impacts the customer ordering behavior; when customers have to drop off their returns at a drop-off point, they are less likely to choose TBVD ordering compared to situations where return shipments are picked up at home by the retailer. This effect is notable for the noise-canceling headphones (1.5 std. dev.) and the external hard drive (1.9 std. dev.), while the difference cannot be considered substantial for the pair of jeans (0.5 std. dev.) and the sofa blanket (0.6 std. dev.). This can be explained by the difference in the probability of returns of a TBVD order compared to a BWC order. While a TBVD order involves a return with every order, a BWC order only involves a return if the one item does not meet the customer's expectations. This means that the TBVD order will always induce the additional effort of bringing the return parcel to the drop-off point, while the additional effort is only required for a certain percentage of BWC orders. For products with very low BWC return rates (because of low uncertainty), the difference in additional effort is very large, while it is relatively small when BWC return rates are high (because of high uncertainty). Let us consider a product where, on average, in 70 percent of cases customers are satisfied with the items they have ordered, and in 30 percent of cases they are not satisfied and return the item. For such a product, BWC ordering, on average, actually generates as many returns as TBVD ordering, because with a BWC order customers may even return a second or third parcel until they finally order one item that they keep. Therefore, the higher the uncertainty that comes with a product, the smaller the difference in additional burden when comparing TBVD to BWC ordering. Overall, this means that using pick-up points in the forward delivery process has a fundamentally different impact on the order-type decision than using the same locations as drop-off points in the backward returns process. The former tends to increase TBVD orders, while the latter tends to reduce TBVD ordering.

Third, the results of this study extend the existing research at the operations – customer decision-making interface. Much of the research in customer decision-making is based on the Perceived Risk Theory (e.g., Einmahl 2017; Hubert et al. 2017; Pires et al. 2004; Nepomuceno

et al. 2014; Forsythe and Shi 2003; Featherman and Pavlou 2003; Cox and Rich 1964). In this study we demonstrate that the Perceived Risk Theory is also applicable to the customer's order-type decision. Out of the seven perceived risk facets – performance, convenience, time, psychological, social, financial, and privacy – only privacy has no influence on the customer's order-type decision, as this risk refers to the possibility that personal data that is collected by the retailer may be hacked or passed on to other companies (Featherman and Pavlou 2003; Cases 2002). This risk is identical for TBYD and BWC orders. The other six perceived risk facets show an influence on the order-type decision for at least one item category.

Fourth, our research underscores Dai et al. (2014) in that a differentiation between item categories is crucial when analyzing customer decisions based on Perceived Risk Theory. We extend prior research by showing that, for items such as apparel (e.g., a pair of jeans), almost every perceived risk facet influences the decision, whereas for standardized, commodity-type consumer electronics (e.g., an external hard drive), only the performance and convenience risks influence the order-type decision. While it is intuitive to assume that the perceived risk is higher for products with higher uncertainty, it was, so far, not clear that differences in the uncertainty level would manifest differently for the different risk facets.

3.6.2 Managerial contribution

This research provides valuable insights for the management of online retailers selling to consumers. The insights predominantly refer to the two domains of order fulfillment and returns management.

First, the research underscores that there is no single logistics strategy that is appropriate for every type of retailer, as the interdependences between the retailer's operations and consumer behavior will differ depending on the uncertainty that the sold products induce in customers. In particular, retailers with a broad assortment may therefore benefit from applying different strategies for different types of product.

For products with relatively low uncertainty (e.g., standard consumer electronics), TBYD ordering offers little value to consumers, which is why TBYD ordering here is likely to be relatively rare. Therefore, it is not necessary for retailers to pay much attention to managing order types for these products.

This is different with products that induce considerable uncertainty, such as apparel (where we viewed pairs of jeans). Here the value of TBYD ordering has been shown to be

positive, which means that consumers are more likely to place a TBVD than a BWC order. Therefore, it is vital for online retailers to design their operations and adapt their business model in such a way that they are able to handle large quantities of returns and recuperate their value through restocking, reselling, remanufacturing, refurbishing, or cannibalizing for parts (Morgan et al. 2018; Röllecke et al. 2018). In this respect, it is also important to note that recent return experience increases the likelihood of TBVD ordering, as customers with this experience see increasing utility in a TBVD order compared to a BWC order. And because a TBVD order involves another return incident, TBVD ordering again increases the likelihood of subsequent TBVD ordering and another return. Thus, for high uncertainty products, it can be concluded that *returns breed returns*, which over time is likely to result in even higher shares of TBVD ordering. An alternative approach to catering to high shares of TBVD ordering and high return rates is for online retailers to try to reduce the uncertainty of the customer. This could, for example, be approached by using advanced technologies such as digital product fitting (Gustafsson et al. 2019) to bring the uncertainty level closer to items such as the sofa blanket, where BWC is the predominant ordering option.

Second, we viewed the delivery and return options that the retailer offers its customers. Here, the combination of delivering the items to the customer's home and requiring the customer to drop off return shipments at a drop-off point yields the lowest likelihood of TBVD ordering for low to medium uncertainty products (in our case, the blanket, the headphones, and the hard drive). This configuration can be considered standard for most online retailers, in both North America and Europe. Deviations from this configuration will increase the probability that BWC ordering is no longer the dominant customer behavior. Thus, increasing the convenience in the returns process by offering free pick-up of returns at the customer's home will lead to more TBVD ordering. Companies that want to offer this in the hope of increasing sales are advised to also consider this negative impact on operations in their decision-making. In contrast, for products with relatively high uncertainty (e.g., the blanket and the pair of jeans), free pick-up of returns at the customer's home is unlikely to (further) increase the likelihood of TBVD ordering.

Third, this research shows that, besides reducing uncertainty, charging fees is the other strong lever to avoid TBVD ordering behavior. As a TBVD order always involves a return, and as "*returns are often viewed as a negative aspect of doing business*" (Hjort et al. 2013, p. 852), some companies may want to apply this approach. Customers showed themselves to be very cost-sensitive, and the likelihood of TBVD dropped substantially when additional costs were

imposed on TBVD ordering. While charging additional shipping fees may run counter to the strategy of some retailers to offer free shipping when the customer's shopping basket exceeds a specific minimum order value (Koukova et al. 2012; Lewis 2006; Lewis et al. 2006), a viable alternative could be restocking fees that only apply to items that are actually returned to the retailer (Janakiraman et al. 2016; Heiman et al. 2002). However, retailers should be aware that this may lead to a competitive disadvantage in the long run. As customers value convenience (Hult et al. 2019), they might drift to other retailers if they perceive barriers to choosing the preferred order type with one retailer.

Finally, the findings of this research will help retailers to better understand their customers' order-type decision and to utilize this knowledge in improving predictive capabilities. The results show that the order-type decision depends on the item category, individual characteristics of the customer, situational factors such as delivery and return options, or recent return experience, and contextual factors such as fees. The findings reveal that the individual customer characteristics have a stronger impact when product uncertainty increases. This underscores that utilizing customer-specific data is especially valuable in improving predictions of customer order-type decision-making.

3.6.3 Limitations and future research

As with all research, this research has limitations. First, the empirical data in this study relates only to consumers in the United States. While the perceived risk concept is a universal concept and applies globally, the magnitude and likelihood of specific risks may be perceived differently across cultures. Therefore, replicating this study in other countries is suggested to verify the generalizability of our results. In addition, we encourage complementing our results with data from field experiments.

Second, this research focused on the delivery and return location. We suggest that future research should also view other aspects of the order, delivery, and returns process (e.g., order lead time), as well as additional customer-related factors. This might include the attitude toward sustainability, as consumer awareness about the sustainability of last-mile delivery and the returns process is growing (Morgan et al. 2018). The order-type decision may also be influenced by the shopping motivation of the customer: hedonic vs. utilitarian. In the context of hedonic shopping, customers more often focus on the enjoyment of the shopping process; whereas customers doing utilitarian shopping simply focus on the task of getting a suitable item (Vieira et al. 2018; Arnold and Reynolds 2003).

Third, this research examined the influence of a customer's recent experience with return shipments on subsequent order-type decisions. Further research could build on our findings and investigate whether this effect is universal or dependent on the reason for recent returns (e.g., the item did not match descriptions vs. the item was broken).

Fourth, this research is limited to the examination of how customers decide on an order type when purchasing one product. As customers may order larger shopping baskets (for example, with a pair of jeans, a belt, and a T-shirt), we suggest that future research should investigate order composition in bundled orders: Does a customer choose the same order type for all products within one online shopping basket, or do they vary? Are there product categories that dominate the order-type decision? Are customers, for example, more or less likely to choose a TBVD order for item category A when ordered together with items from category B?

Overall, this research opens up a new perspective on order fulfillment and returns management by addressing the, thus far, under-researched domain of BWC versus TBVD ordering. We encourage operations scholars to further investigate this increasingly prevalent domain of online retailing.

4 Better Safe than Sorry?! The influence of customers' recent online shopping experiences on future order-type decisions³

³ This chapter is based on the manuscript by Harder, J., Wallenburg, C. M. and Taylor, D. (2020a), submitted under the same name to the *Journal of Retailing*.

4.1 Introduction

The retail landscape has changed rapidly in the last decade, with consumers trending away from physical stores (Moreau 2020; Nguyen et al. 2018; Xu et al. 2017b; Peinkofer et al. 2015). In 2019, for example, e-commerce in the United States increased by 16.7 percent, while total retail sales only rose by 3.8 percent (U.S. Department of Commerce 2019; Statista 2019). These changes have triggered both a stream of publications on the changing retail environment (e.g., Grewal et al. 2017), as well as focused research on specific elements of online retailing and consumer decision-making (e.g., Moreau 2020; Heller et al. 2019; He and Oppewal 2018; Grewal et al. 2017; Kim et al. 2018; Melis et al. 2015)

Online shopping is characterized by two decision-making stages. First, consumers decide what, and how much, to order from the website of the retailer. Second, once the products have been physically delivered to them, they decide whether to keep the items or return them to the retailer (Wood 2001). The two decision-making stages emanate from the sensory deficiencies of online retailing (Heller et al. 2019) and customers not being able to physically inspect the items prior to ordering (Gu and Tayi 2015; Peck and Childers 2003). This results in personal fit uncertainties for the customer. Uncertainties may include haptics, acoustics, or body fit (Abdulla et al. 2019; Peck and Childers 2003), and this raises issues as to whether the ordered item really will meet customers' expectations (Hong and Pavlou 2014). This often results in product returns and disappointment with the purchasing experience (Heller et al. 2019).

To overcome these uncertainties, customers may order a selection of similar items to try at home with the intention of keeping at most one – the one that fits best – and returning the others (United Parcel Service of America 2019; Einmahl 2017; Diggins et al. 2016; Foscht et al. 2013). While these orders, which we call *try-before-you-decide* (TBYD) orders, substantially reduce the likelihood of disappointment, they have negative side effects for both the customer and the retailer. For customers, every TBYD order necessitates a return along with its hassle and effort. This is required regardless of whether the customer finds a suitable item or not (Einmahl 2017; Foscht et al. 2013). For the retailer, TBYD orders create additional operational costs, tie up capital, and block merchandise from being sold; it is unclear which items will actually be returned, when, and if they will be in a sellable state (Minnema et al. 2016; Foscht et al. 2013; Ofek et al. 2011; Petersen and Kumar 2009).

The counterpart to TBYD orders are orders where customers decide on one particular item, the one they are most confident will fit (Einmahl 2017). We call this order type *buy-with-*

confidence (BWC). While these BWC orders come without the abovementioned side effects, it is more likely that the customer will be left disappointed because the ordered item may not meet the customer's expectations (Einmahl 2017).

Despite the increasing prevalence of TBVD orders and their relevance to managing online retailers, the question of how customers decide between TBVD and BWC orders has received little attention by marketing scholars. To the best of our knowledge, only Einmahl (2017) has examined the customer's order-type decision, and solely from the consumer's financial risk perspective.

In this research we include the emotional perspective of the order-type decision by applying the Disappointment Theory (Bell 1985). Bell's Disappointment Theory states that the negative emotion *disappointment*, as well as the positive emotion *elation*, influence customers' decision-making. For decision-making, customers not only compare the potential economic pay-offs of different outcomes but they also anticipate emotions associated with the outcomes (Homburg et al. 2005; Loomes and Sugden 1986; Bell 1985). Because these anticipated emotions are influenced by prior experiences (Zeelenberg et al. 2000), and because recent experience has an especially strong impact on future behavior (Hertwig 2012; Bagozzi and Warshaw 1990), we focus our research on the influence of recent online ordering experiences and their impact on subsequent order-type decisions.

This study helps retailers to understand and predict a customer's future ordering behavior. It builds on the Disappointment Theory to derive hypotheses and employs an experimental discrete choice setting (Nguyen et al. 2019; Goebel et al. 2018; Schlereth et al. 2018; Wilson-Jeanselme and Reynolds 2006; Talluri and van Ryzin 2004) to test the hypotheses. The individual customer preferences are calculated using a hierarchical Bayesian approach (Goebel et al. 2018; Halme and Kallio 2011; Karniouchina et al. 2009; Lenk et al. 1996); specifically, a hierarchical Bayes covariate extended logit estimation model is utilized (Schlereth et al. 2018).

The results show that the probability of choosing a TBVD order (compared to a BWC order) depends on the customer's recent online shopping experience, as well as on the uncertainty of the product category. Our research supports the finding of Dai et al. (2014), that distinguishing between product categories is important when examining online retailing. A key take-away is that retailers need to deal with the influence of emotions on the order-type decision differently for products, depending on the uncertainty they induce in customers.

4.2 Theoretical background and hypotheses development

4.2.1 Order types in online retailing

In this research we focus on a new research aspect regarding online retailing – a consumer decision that has so far been largely neglected: the order-type decision. When customers order online, they can choose between two order types (Einmahl 2017) that differ regarding information availability and the evaluation of alternatives. Customers can either, prior to ordering, decide on one particular item, where they are confident it will best fulfill their buying goal – namely, a BWC order. Or, alternatively, they can order several similar items that they think may fulfill their buying goal with the intention of trying them physically at home and then deciding on a particular item and returning the others (Einmahl 2017; Diggins et al. 2016; Foscht et al. 2013) – this is a TBYD order.

With BWC orders, the visit to the website mirrors the visit to the brick-and-mortar store. Much like with traditional retailing, during the shopping experience the customer decides on which item will best meet his/her expectations, and then purchases this item. Different from traditional retailing, however, the customer cannot fully assess the item's properties over a distance, and is instead forced to base the decision about an item on attributes provided by online product descriptions (Gelbrich et al. 2017), online product displays (De et al. 2013), and customer reviews (Minnema et al. 2016). Only when the item later disappoints (i.e., after it has been delivered to the customer) will it be returned to the retailer.

With TBYD, a substantial part of the product evaluation is postponed until after delivery of the shortlisted alternative items and takes place at the customer. In this respect, part of the retailer's showroom and fitting room is essentially extended into the customer's home. This allows the customer to physically inspect and compare the items before deciding on one specific item. Because the customer has a portfolio of items to choose from at home, the probability of finding at least one item that meets expectations is substantially higher than with BWC orders – which is positive for customers, as well as for retailers.

A downside of TBYD orders is that 100 percent of cases necessitate a product return (Einmahl 2017; Diggins et al. 2016; Foscht et al. 2013), and this leads to hassle and effort on the part of customers. For the retailer, TBYD orders induce higher operational costs; parcel shipments are larger, and the picking and order-consolidation process is more elaborate and complex (Eriksson et al. 2019; Li et al. 2017). Furthermore, the retailer will need to handle a much larger number of returns. For TBYD, 100 percent of orders require a return. Therefore,

the subsequent returns process needs to be designed to handle and process numerous returns to enable reselling, refurbishing, remanufacturing, or cannibalizing for parts as many items as possible (Morgan et al. 2018; Röllecke et al. 2018). Another downside of TBVD orders is that they tie up more merchandise that is in circulation away from the retailer. The merchandise is in transit to the customer and again back to the retailer. This blocks the merchandise from being sold during this time, because it is unclear to the retailer which items will be returned, when, and if the item will be in a sellable state. This can lead to more merchandise that cannot be sold at full price, because of the quality in which it was returned or how late it was returned (Foscht et al. 2013). Depending on the specific payment terms on the supplier side and the customer side, TBVD orders also tend to tie up more capital that cannot be used for alternative corporate activities.

4.2.2 Influence of recent experience on subsequent behavior

People's past behavior is a good predictor for their future behavior (Albarracín and Wyer 2000). There are several reasons for this, one of them being learning. Everyone, including online customers, acts upon the outcome they experience from prior decisions they have made. People tend to repeat decisions when the outcome is rewarding and refrain from decisions that yielded a negative outcome (Skinner 1965). For this, Hoch and Deighton (1989, p. 2) use the expression "*experience is the best teacher*".

Regarding online shopping, consumer-perceived risk has been conceptualized as an additional reason why past experience impacts subsequent behavior (e.g., Einmahl 2017; Dai et al. 2014; Foscht et al. 2013; Park and Stoel 2005). Online shopping, because of the sensory deficiencies of the customer-webstore interface (Heller et al. 2019), entails more personal fit uncertainty and is inherently riskier than shopping in traditional brick-and-mortar stores.

Against this context, research has shown that familiarity and positive experience with specific services reduce perceived risks and impact subsequent behavior. Specifically, Park and Stoel (2005) examined the previous online apparel shopping experiences and showed that it reduces customers' risk perception and increases their purchasing intention. Foscht et al. (2013) examined the influence of online shopping experiences in the context of customers' product return behavior. They showed that customers with more experience in buying apparel online return more than customers with less experience. Dai et al. (2014) extend this by showing that the effect of prior experience differs between product categories, in that experience is a stronger

predictor of perceived risk and customer behavior for physical products (e.g., apparel) compared to digital products (e.g., music files).

In addition to the experience, its timing plays a role in influencing customer behavior (Hertwig 2012). Bagozzi and Warshaw (1990) researched both frequency and recency of experiences and showed that recency has a stronger impact on future behavior compared to frequency. Additionally, Hertwig (2012) and Hertwig et al. (2004) examined the influence of recency on subsequent decision-making and confirmed the results of Bagozzi and Warshaw (1990). One reason for this high impact of recency is what is termed availability bias (Tversky and Kahnemann 1973) and the effect that recent experiences are more salient in the memory of decision-makers. Recent experience will, therefore, have an irrationally high influence on future behavior (Curt and Zechmeister 1984).

4.2.3 Disappointment Theory

The Disappointment Theory is anchored in the field of Behavioral Decision Theory (Homburg et al. 2005) and refers to decision-making under uncertainty (Loomes and Sugden 1986; Bell 1985). It accounts for not only economic risks in decision-making but also emotions. The underlying notion is that decision-makers aim for positive emotional outcomes (i.e., elation) and want to avoid making decisions that lead to disappointing outcomes. In this context, disappointment needs to be distinguished from regret: “*regret and disappointment are different emotions, with distinguishable consequences for decision making*” (Zeelenberg et al. 2000, p. 522). Regret occurs when the outcome does not correspond to the best possible outcome, while disappointment occurs when the actual outcome is worse than expected (Zeelenberg et al. 2000; Loomes and Sugden 1982).

Disappointment Theory is an extension of the Expected Utility Theory first mentioned by Neumann and Morgenstern (1947). Expected Utility Theory assumes fully rational decision-makers, and always tries to maximize the expected utility of their actions (Shih and Schau 2011). Disappointment Theory was developed by Bell (1985) to provide an explanation for behavioral violations of expected utility maximization. Disappointment Theory extends this by including both negative emotions (i.e., disappointment) and positive emotions (i.e., elation) in the utility formula of decision-making (Homburg et al. 2005): *Total utility = economic payoff + psychological satisfaction*. If an outcome falls below the decision-maker’s expectations, the decision-maker will experience negative emotions (i.e., disappointment), while positive

emotions occur for positive outcomes that exceed expectations (Eisenbeiss et al. 2014; Zeelenberg et al. 2000; Loomes and Sugden 1986; Bell 1985).

Decision-making under uncertainty is often associated with risk, as decision-makers cannot predict the exact outcomes of their decisions, but rather develop their own expectations about the outcomes and anticipate potential negative emotions prior to the decision (Liu and Shum 2013). Here, riskier options involve a higher potential of disappointment (Zeelenberg et al. 2000), which the decision-maker wants to avoid via his/her decision.

The anticipated emotions are influenced by prior experienced emotions (Clore 2011; Baumeister et al. 2007), as, for example, prior experienced disappointment results in increased risk aversion (Zeelenberg et al. 2000). This follows the adage that “a burnt child dreads the fire”. Decision-makers that have experienced disappointment are more sensitive to subsequent disappointments, prefer safe alternatives, and expend more effort to avoid future disappointment (Zeelenberg et al. 2000; Bell 1985). Experiencing negative emotions signals to the decision-maker that action must be taken to change the outcome of subsequent decisions (Zeelenberg et al. 2000; van Dijk and van der Pligt 1997). The experience of positive emotions signals that further action is not needed (van Dijk and van der Pligt 1997) and that the decision-maker can stick with the previous decision in subsequent situations without the need to expend effort further improving the outcome (van Dijk and van der Pligt 1997).

4.2.4 The implications of Disappointment Theory for customers' order-type decisions

For customers, the primary objective of online shopping is to receive and keep an item that fulfills their needs (Schiffman and Wisenblit 2015). A customer cannot achieve this objective without placing an order in the first place. In this context, we view how the ordering decision, and, in particular, the specific order-type decision, is affected by the recent experience that customers have had with online shopping.

One typical attribute of online shopping is that the ordering decision is made under uncertainty – the key element of the Disappointment Theory (Bell 1985). According to Disappointment Theory, consumers will deal with the uncertainty inherent in online shopping by trying to avoid potential disappointment (Zeelenberg et al. 2000; Bell 1985). As the shopping objective is to *keep* an item, the primary source of disappointment is to order something and potentially remain empty-handed because none of the ordered items meet expectations and are, therefore, returned. The underlying source of this disappointment is the uncertainty attached to

online shopping (Foscht et al. 2013; Zeelenberg et al. 2000; Bell 1985). Without such uncertainty, the customer would not be exposed to a situation where ordered items potentially do not meet expectations.

In the context of online shopping, substantial decision-making uncertainty results from not being able to physically inspect the items prior to ordering (Gu and Tayi 2015; Foscht et al. 2013). From a distance, customers cannot fully evaluate the item's properties and are forced instead to base their decision on other attributes, such as the online product descriptions (Gelbrich et al. 2017), online product displays (De et al. 2013), and customer reviews (Minnema et al. 2016). Only after the item has been delivered are customers in a position to fully evaluate it (Li et al. 2019; Gu and Tayi 2015). Uncertainty exists for items with salient material properties; for example, touching the item is necessary for customers to assess whether the item meets their expectations (Heller et al. 2019; Peck and Childers 2003); and for products such as noise-canceling headphones or a bed mattress, trying them out after product delivery is necessary for full evaluation. Higher uncertainty exists for items such as apparel: besides touching the item, trying the item for fit is essential; additional uncertainty exists regarding body fit (Gelbrich et al. 2017; Foscht et al. 2013).

Customers anticipate potential disappointment with products for which uncertainty regarding the item's properties exists at the time of ordering; this is because not all corresponding information can be obtained online (Gu and Tayi 2015; Foscht et al. 2013). There is always the risk that the ordered item will not meet the customer's expectations, and correspondingly "*customers often worry about the quality and performance*" (Hult et al. 2019, p. 12).

For the purchasing situation, the first option for customers is to decide if a BWC order will satisfy the purchasing need by simply choosing the item they think will fit best. If the delivered item falls below expectations, the customer will be disappointed (Loomes and Sugden 1986; Bell 1985); either a non-satisfactory item is retained or the item is returned, leaving the customer empty-handed and needing to place a second order or to find a suitable item elsewhere. The alternative option is to place a TBYD order, which contains a selection of similar items to choose from after delivery. TBYD is less likely to lead to disappointment. For a product category where the usual return rate is 30 percent, the disappointment rate of 30 percent with the BWC order drops to $(0.30)^4$ or 0.8 percent for a TBYD order with four items, assuming independence of the item fit. This means that a TBYD order has the potential to turn a risky decision into a relatively safe one.

In this decision-making situation, we consider and compare two different groups of customers: the first has had a recent experience of disappointment in the context of BWC ordering and had to return such an order – a recent BWC return; while the second has not had this recent negative experience – no recent BWC return. When a customer experiences disappointment from online shopping, this will, according to the Disappointment Theory, increase customers' disappointment aversion and make them more sensitive to subsequent disappointment (Zeelenberg et al. 2000). As a result, customers that have recently experienced a disappointing BWC order, by having to return an item they ordered, will exhibit a stronger inclination to choose a behavior that subsequently avoids such disappointment (van Dijk 1999; van Dijk and van der Pligt 1997), compared to customers that have not had the recent experience of a disappointing BWC order and, instead, were able to keep the items they had ordered. The literature outlines that customers that have experienced negative emotions such as disappointment see the need to change the outcome of subsequent decisions and, therefore, opt for safer alternatives when making decisions (Zeelenberg et al. 2000). The safer alternative that aims at avoiding future disappointment is to choose the TBVD order and order multiple items from which to make the final choice at home after delivery. This substantially reduces the probability of disappointment. Consequently, for an online shopping situation, with items that exhibit uncertain properties, customers with a recent disappointing experience with BWC orders are more likely to choose a TBVD order than customers without such a negative experience:

H1: Recent experience of returning a BWC order increases the probability of using a TBVD order for items with uncertainty regarding the item's properties.

Besides disappointment, the Disappointment Theory also entails the concept of elation, which can be seen as the counterpart of disappointment (Tzieropoulos et al. 2011; Zeelenberg et al. 2000; van Dijk 1999; Loomes and Sugden 1986). It refers to the pleasant feeling that occurs as a result of a positive outcome from decision-making under uncertainty (van Dijk 1999; van Dijk and van der Pligt 1997). When ordering items with uncertain properties, choosing a TBVD order is a way not only to prevent disappointment but also to achieve elation. The TBVD order embraces situations of high uncertainty and will, with very high probability, turn an uncertain decision-making situation into a successful experience with a pleasant outcome. For a product category where the usual return rate is 30 percent, the success rate for a TBVD order with four items is $(1 - (0.30)^4)$, or 99.2 percent, assuming independence of the item fit.

In this respect, we also consider and compare a second set of customer splits: the first group of customers has a recent experience of TBVD ordering, while the second group does not have a recent experience. When customers experience elation from online shopping, this will, according to the Disappointment Theory, signal to customers that it is not necessary to exert more effort to find a better decision-making option for the uncertain situation (van Dijk 1999; van Dijk and van der Pligt 1997). Customers will therefore maintain such behavior in similar future situations. This means that customers that have recently chosen a TBVD order, and felt elation as a consequence of successful decision-making under uncertainty, will also view TBVD ordering as an effective choice in future online ordering situations. They have experienced its effectiveness in the past and will maintain their behavior.

In comparison, customers without recent TBVD order experience are less likely to opt for a TBVD order. For them, such a choice would be based not on an actual positive experience with an effective TBVD order, but on anticipation alone. We therefore conclude that the inclination of these customers to choose a TBVD order is smaller than the inclination of customers with recent experience of using a TBVD order:

H2: Recent experience of using a TBVD order increases the probability of using a TBVD order for items with uncertainty regarding the item's properties.

The above hypotheses H1 and H2 refer to situations where customers purchase an item that induces uncertainty regarding its properties. This is in contrast to items for which customers can gain the necessary information to make the decision online; for example, certainty can be assured from product displays and descriptions (Gelbrich et al. 2017; Dai et al. 2014; Lal and Sarvary 1999). Typical representatives of this category are electronic products (Dai et al. 2014; Biswas and Biswas 2004; Lal and Sarvary 1999) such as music CDs, standard batteries (e.g., AAA), or data storage devices. For these items, customers are able to access the relevant information on the retailer's webstore before making the ordering decision (Dai et al. 2014; Biswas and Biswas 2004; Lal and Sarvary 1999); they can review the weight and physical dimensions, as well as the capacity (e.g., 16 gigabyte for a USB flash drive). Thus, the customer is not exposed to uncertainty and does not need to face the risk of disappointment, either with a BWC order or with a TBVD order. As a consequence, the decision-making will not be impacted by anticipation of disappointment; disappointment is only relevant in uncertain situations (Loomes and Sugden 1986; Bell 1985).

In the situation of ordering an item that does not exhibit uncertain properties, customers have already had the chance to evaluate the possible items completely online prior

to ordering (Dai et al. 2014) and to form matching expectations about the outcome. According to Disappointment Theory, it is irrelevant whether or not the customer has recent experience of disappointment from having to return a BWC order. As outlined in developing hypothesis H1, customers with the recent negative experience will be more sensitive to subsequent disappointment (Zeelenberg et al. 2000) and exhibit a stronger inclination to choose a behavior that avoids subsequent disappointment (van Dijk 1999; van Dijk and van der Pligt 1997). Yet, this increase in disappointment aversion does not affect the order-type decision, as both order types involve no risk of disappointment for the customer. A change in the order-type decision-making, depending on recently experienced disappointment, can therefore not be concluded:

H3: Recent experience of returning a BWC order does not increase the probability of using a TBYD order for items with no uncertainty regarding the item's properties.

We also argue that, in the absence of item property uncertainty, customers with recent experience of TYBD ordering will not differ in their order-type behavior from customers without such recent experience. Customers that have recently chosen a TBYD order, and felt elation as a consequence of successful decision-making under uncertainty, will view TBYD ordering as an effective choice for future uncertain online ordering situations (van Dijk 1999; van Dijk and van der Pligt 1997).

However, this does not mean that it is also an effective choice for ordering situations that are certain. Here, customers are able to fully evaluate the items in question prior to ordering online (Dai et al. 2014). According to Disappointment Theory, it is therefore irrelevant whether the customer has recent experience of elation or not. The decision does not entail uncertainty; it does not involve the risk of disappointment for the customer or provide the opportunity for elation (Bell 1985; Loomes and Sugden 1986). Therefore, it can be concluded that the ordering type choice should not differ based on recent TBYD ordering experience:

H4: Recent experience of using a TBYD order does not increase the probability of using a TBYD order for items with no uncertainty regarding the item's properties.

4.3 Research method

To test the developed hypotheses regarding the influence of customers' prior order-type experience on their future order-type decisions, information about customers' preferences for the different order types was needed. We determined these preferences using a choice-based conjoint experiment (Schulz et al. 2015; Baumgartner and Steiner 2007; Louviere and Woodworth 1983), which is widely used for research in the area of marketing (Schlereth and

Skiera 2012a; Desarbo et al. 1995). All online pretests and the main study were conducted using the platform Prolific Academia, an online platform that is comparable to Amazon's Mechanical Turk; Prolific Academia has higher heterogeneity among potential study participants (Peer et al. 2017). Using online platforms to collect data for customer behavior research is common (Goodman and Paolacci 2017). Participant data are typically at least as reliable as data gained via other methods (Buhrmester et al. 2011) and provide comparable results regarding attentiveness to instructions (Hauser and Schwarz 2016). As we examine the behavior of online retailing customers in this research, an online study is particularly appropriate.

4.3.1 Pretests

We executed two pretests to develop and test the appropriate variable manipulation (Ku and Huang 2016; Peinkofer et al. 2016; Peinkofer et al. 2015; Hutter and Hoffmann 2014; Knemeyer and Naylor 2011) of the attribute levels of the choice-based conjoint experiment and the vignettes. Within the first pretest (see Appendix – Pretest 1), 150 participants were presented with different clothing items and asked about their typical ordering behavior and the potential reasons for their decision. The pretest demonstrated that some customers chose different order types, BWC vs. TBYD, for different items; other customers remained consistent by choosing a single order type for all items. It can be concluded that the order-type decision will depend both on the item and on personal attributes and preferences. Based on this first pretest, the finding of Peck and Childers (2003) that item categories differ regarding the need to touch an item prior to ordering, and on the finding of Dai et al. (2014) that previous studies often failed to consider different item categories, we based our main study on four different products with varying degrees of uncertainty.

The product with the highest uncertainty that we chose was a pair of jeans. Clothes induce high uncertainty (Gu and Tayi 2015), as customers need to consider whether the size and cut of the product fit their body and whether the feel (i.e., the haptics), and the look (i.e., the optics) of the item meet their expectations (Dai et al. 2014; Foscht et al. 2013). Only the optics, and that only to some extent, can be assessed online. Other aspects of uncertainty prevail until the product can be inspected and tried at home. The item with the lowest uncertainty in our research was an external hard drive; electronic products such as external data storage can be fully assessed online (Dai et al. 2014; Biswas and Biswas 2004; Lal and Sarvary 1999). No uncertainty for the customer should exist regarding the item's properties. We also included two other items that can be classified as intermediate in terms of uncertainty: a sofa blanket, and

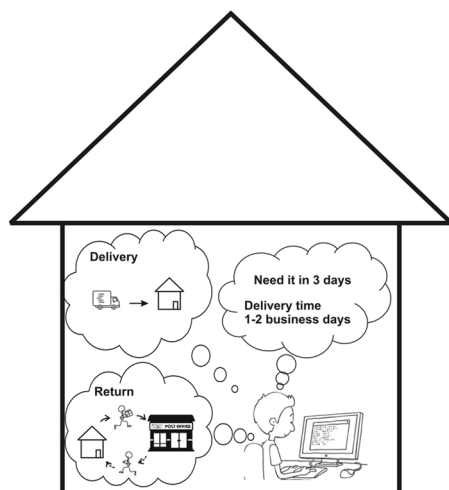
noise-canceling headphones. With the sofa blanket, customers can gain information about the color and size online, but they lack information about the haptics. Customers cannot touch the item prior to ordering. In the case of the noise-canceling headphones, acoustics are a subjective sensation that cannot be expressed fully by a verbal description on a webpage. Customers will therefore potentially be uncertain if the acoustics will meet expectations. Regarding the choice of the specific products within their product categories, a primary consideration was designing an experiment where the product price was identical for all four products.

The second pretest (see Appendix – Pretest 2) involved 134 undergraduate students surveyed via a paper survey, as well as 120 online participants residing in the United States. The purpose of the second pretest was to check the comprehensibility of the vignettes and to collect information from the participants regarding reasonable shipping fees. Participants were asked to indicate the maximum shipping fee they would spend for ordering a sofa blanket priced at US \$70. Based on the results, we derived four different shipping fees for our main study: US \$3, \$5, \$7, and \$9.

4.3.2 Main study design and sample

The main study of this research consisted of a choice-based conjoint experiment followed by a survey, questioning participants' demographics and other personal information. Via the choice-based conjoint analysis, the participants' preferences for the two order types were estimated.

Based on the results of our first pretest, in combination with the findings of Peck and Childers (2003), as well as Dai et al. (2014), we controlled for the type of item (pair of jeans, sofa blanket, noise-canceling headphones, external hard drive) in our experiment. Following Gawor and Hoberg (2018), showing that delivery speed and delivery options influence a customer's retailer selection, we additionally controlled in our experiment for type of parcel delivery (home vs. pick-up point), type of parcel return (pick-up at home vs. drop-off at a drop-off point), and urgency (urgent vs. not urgent). Including these factors in the vignettes results in 32 (4x2x2x2) different vignettes. Each participant was presented with four different vignettes that varied only with respect to the four different items (see Appendix – Main experiment); the remainder of the online ordering situation remained constant (see Figure 4-1). This resulted in eight different study groups (2x2x2), varying in: urgency, type of parcel delivery, and type of parcel return. Assignment of the participants to one of these eight groups was random.



Before you choose between the ordering options, imagine yourself in the following situation:

It is Monday, you are at your computer and suddenly you remember some items you want to order. You have not informed yourself about these items in advance. You need them all by Thursday (in 3 days).

You realize with certainty that someone can accept the parcel at your home address when the delivery person arrives and that you will not have to pick up the parcel anywhere else. In case of a return, you must drop off the parcel at the post office, parcel delivery service office or parcel delivery service access point.

Figure 4-1: Description of the one exemplary ordering situation

The vignettes included information about the mentioned factors, as well as about the buying price of the item. To control for the potential influence of the product price and product price differences, we indicated for each of the four items a product price of US \$70, plus a shipping fee specified within the choice sets. Each of the participants answered eight choice sets for each of the four items. The attributes included in the choice sets were order type (BWC vs. TBYD) and shipping fee (costs of US \$3, \$5, \$7, or \$9). Each choice set consisted of two alternatives and a none-option (Vermeulen et al. 2008) (see Figure 4-2).

Regarding the characteristics of an efficient design (Huber and Zwerina 1996), the study shows orthogonality, all levels appeared equally often, it has no overlap, and approximate utility balance was generated by keeping the difference between the costs in each choice set as low as possible. For the design and execution of the study, we used the online survey platform DISE (Schlereth and Skiera 2012a).

Data for the main study were collected from participants residing in the United States; all had an approval rating of at least 95 percent and online shopping experience. In total, 1,104 participants completed the entire study. The attentiveness of the participants was secured by including four attention checks (Oppenheimer et al. 2009) and a cautionary note at the beginning of the study, mentioning that the study included attention checks (Paas and Morren 2018). For the first attention check, the participants needed to specify when they needed the item (urgency). The participants had four options to choose from – tomorrow, in 3 days, next week, and not within the next month – and the answer to that question was given directly in reference to the description from the vignette on the top of the same survey page. The vignette values were 3 days for the urgent scenarios and not within the next month for the not-urgent

scenarios. With the other three attention checks the participants selected the correct retail category from three options for different mainstream retailers of the United States.

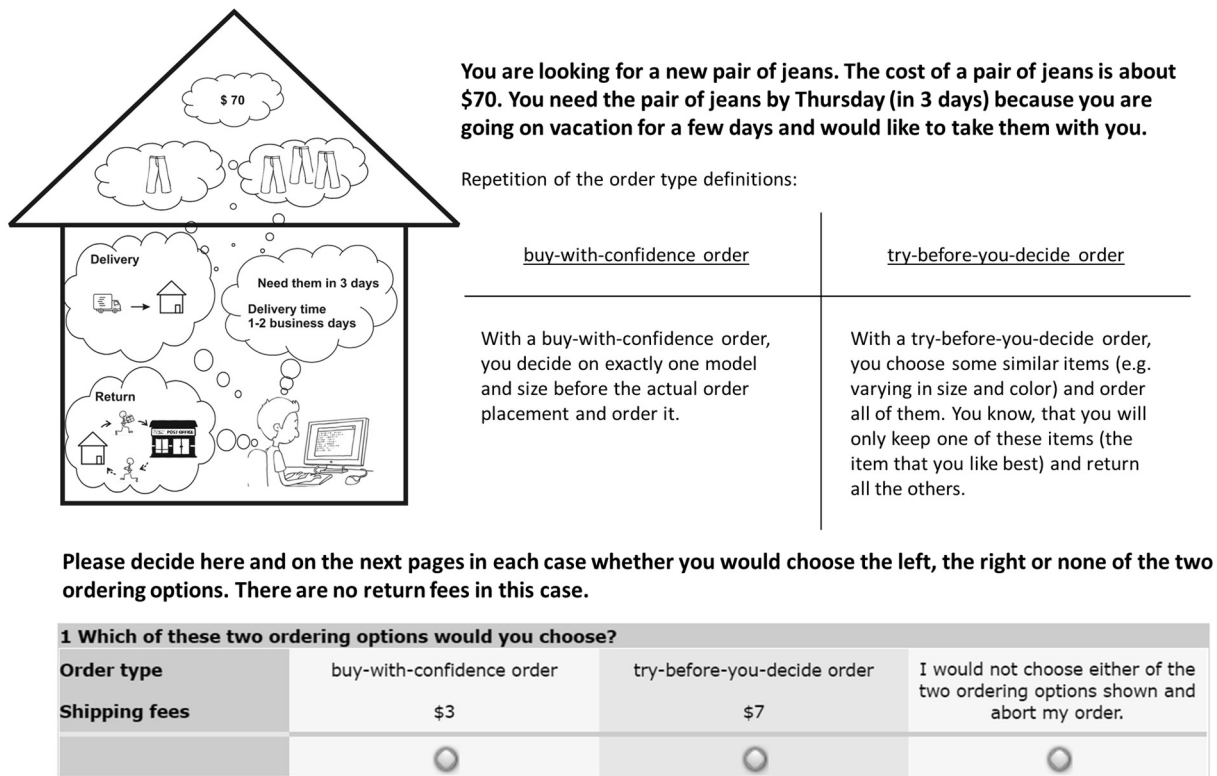


Figure 4-2: Example vignette and choice set (scenario: pair of jeans, home delivery, drop-off return, urgent)

From 1,104 participants in total, 115 participants failed at least one of the attention checks and were removed. One participant was removed because of stating an age of two years in the demographics part of the survey. Two participants were removed, as they stated at the end of the survey that they did not want to buy any of the items, and two were removed as they had problems loading some of the survey pages. A total of 54 participants were removed from the sample as they made contradictory statements regarding their online ordering and returns experiences. Of the 1,104 participants, 7 identified their gender as “other”. They were removed, as the positioning of the “other” gender is not clearly defined (Ho and Mussap 2019) and statistical significance was not found with the small group by itself. The resultant sample size for the choice-based conjoint analysis is therefore 923 participants; there were between 108 and 121 participants for each of the 8 situations.

The second part of the main study, the survey, questioned the participants’ age, gender, income, busyness, self-confidence, recent experiences with a TBVD order, and recent experiences regarding returns of a BWC order. The questions regarding busyness and self-confidence were based on the work of Suelmann et al. (2018) and Robins et al. (2001),

respectively. To capture the recent online experience of participants, we asked them how many of their last five orders were TBVD orders and in how many cases of their last online orders they returned a product. This allowed us to determine whether the participant had recent experience with TBVD and whether he/she had recently returned a BWC order (i.e., within the last five online orders). The two recent experience variables are the main variables for this study. The other eight variables, including type of delivery, type of return, urgency, busyness, self-confidence, income, gender, and age, are included as control variables. An overview of the operationalization of all variables, the main and the control variables, can be found in Table 4-1. These variables were included as covariates in the choice-based conjoint analysis to improve the estimates of the individual utility values (Baumgartner and Steiner 2007; Lenk et al. 1996).

Variable	Description of operationalization / survey question	Coding	Mean	Std. dev.
Recent experience return BWC order	Whether the customer returned something with his/her last five BWC orders.	Binary dummy (1=yes, 0=no)	0.34	0.47
Recent experience TBVD order	Whether the customer placed a TBVD order with his/her last five orders.	Binary dummy (1=yes, 0=no)	0.06	0.24
Type of delivery	Whether the parcel will be delivered to the home address or to a pick-up point.	Binary dummy (1=pick-up point, 0=home)	0.51	0.50
Type of return	Whether a return will be picked up at home or needs to be brought to a drop-off point.	Binary dummy (1=home, 0= drop-off point)	0.49	0.50
Urgency	Whether getting the item is urgent.	Binary dummy (1=urgent, 0=not urgent)	0.51	0.50
Busyness	"I am a busy person."	5-point Likert scale (1=does not fit at all, 5=does fit completely)	3.44	1.06
Self-confidence	"I am self-confident."	5-point Likert scale (1=does not fit at all, 5=does fit completely)	3.44	1.14
Income	"What is your gross income per month?"	Ordinal (1–5) 1=US \$0–1,999; 2=US \$2,000–2,999; 3=US \$3,000–3,999; 4=US \$4,000–4,999; 5=US \$5,000+	2.42	1.45
Gender	"What gender are you?"	Binary dummy (1=female, 0=male)	0.54	0.50
Age	"How old are you?"	Continuous	34.91	11.51

Table 4-1: Operationalization of main variables and controls (n=923)

4.3.3 Hierarchical Bayes estimation model for choice-based conjoint analysis

Bayesian methods are increasingly gaining attention in the field of marketing research (Baumgartner and Steiner 2007; Rossi and Allenby 2003). Using a hierarchical Bayes approach, customers' heterogeneity regarding the partworth utility can be modeled (Lenk et al. 1996). To estimate and stabilize the individual-level partworth utilities, information from other participants is borrowed (Orme 2000; Allenby and Ginter 1995), and the individual partworth utilities are shrunk toward the mean of the population (Crabbe and Vandebroek 2012). The hierarchical Bayes approach is called hierarchical, as the function to estimate the participants' partworth utilities consists of an upper-level and a lower-level function. The upper-level function mirrors the aggregated partworth utilities, whereas the lower-level model mirrors the partworth utilities of the individual participants (Schlereth et al. 2018; Kurz and Binner 2011). The partworth utilities are estimated in an iterative manner (Train 2009; Lenk et al. 1996).

The utility function of an alternative is a linear combination of the partworth utilities of the attribute levels, which define this alternative. The utility u of alternative j for the participant n can be calculated by (Schlereth et al. 2018; Baumgartner and Steiner 2007; Train 2009):

$$u_{nj} = \beta_n * x_j + \varepsilon_{nj} \quad (4-1)$$

where β_n is the vector of partworth utilities of participant n , as we estimate individual-level partworths, x the design matrix of the experiment, and ε_{nj} the stochastic component of the utility function (Train 2009). Within the design matrix x , the intercept that mirrors if the alternative is an order or the none-option is coded as 1 if the alternative is an order and 0 if the alternative is the none-option. The attribute order type is effect-coded and the cost attribute is vector-coded, including the costs as negative values. In particular, we used a hierarchical Bayes covariate extended logit estimation model (Schlereth et al. 2018), assuming that individual-level partworth depends on covariates, which represent, for example, the demographic or behavioral information of the individuals (Allenby and Ginter 1995) and are calculated via the following regression model (Schlereth et al. 2018; Baumgartner and Steiner 2007; Lenk et al. 1996; Allenby and Ginter 1995):

$$\beta_n = \Gamma * z_n + \zeta_n \quad (4-2)$$

where the matrix Γ includes the regression parameters to relate β_n to the value of z_n , z_n includes the covariates of the participant n and a constant, and ζ_n is the component of the unobserved heterogeneity, assumed to be multivariate normal (0,D).

Adding covariates results in more accurate estimates at the individual level (Crabbe and Vandebroek 2012). It helps with understanding the distribution of preferences across the population (Dumont et al. 2015). Before including the covariates in our model, we standardized the covariate variables by first mean-centering them and then dividing these values by their standard deviation (Schlereth et al. 2018).

We used a multinomial logit model to calculate the participants' probability of choosing an alternative (McFadden 1974), so that the probability of a participant n choosing alternative $j = y_n$ is calculated as:

$$\Pr(y_n) = \frac{e^{\beta_n^* x_{y_n}}}{\sum_j e^{\beta_n^* x_j}} \quad (4-3)$$

We implemented our model in R using the R package *bayesm*. The estimations are based on 20,000 iterations, of which 10,000 are burn-in iterations. All variables listed in Table 4-1 were included as covariates in our model.

4.3.4 Method for the hypothesis testing

To test whether a customer's order-type experience has an influence on the probability of choosing a TBVD order, we first evaluated if such an experience has an impact that is different from zero on the customer's partworth utility of a TBVD order at all, and whether the direction is as hypothesized. The impact of a covariate can be considered different from zero based on the percentage of draws that have the same sign as the mean (Orme and Howell 2009), and based on the distance of the mean from zero (Schlereth et al. 2018; Lenk et al. 1996). Some authors, for example, George et al. (2013), Pancras et al. (2013), or Rhee and Bell (2002) use the word "significant" in the Bayesian context to describe the influence of a covariate that meets one of the above criteria.

After checking whether the experience covariates have an impact on the partworth utility of a TBVD order, and if this impact shows the hypothesized direction, the second step entailed calculating the probability of placing a TBVD order (compared to a BWC order or neither order type) using Equation 3. For the calculation of the probabilities displayed in the results chapter the influences of the BWC return experience and TBVD experience covariates were considered, while using the mean of the constant part of the individual partworth utilities. Using the mean of the constant part of the individual partworth utilities instead of the individual values of each participant is equivalent to considering an average participant with regard to the

control variables. In addition, the calculations were based on a shipping fee of US \$3 for both order types, the lowest shipping fees used in the experiment. When using the low shipping fee of US \$3, for all items at least 99.94 percent of customers decided to place an order instead of abandoning the order. Robustness tests showed that using any alternative shipping fee (US \$5, \$7, or \$9) yielded the same results in terms of the ratio between BWC and TBVD orders, and only the proportion of non-orders increased.

4.4 Results

4.4.1 Estimation of customers' preferences and model testing

We calculated different models for the pair of jeans, the blanket, the headphones, and the hard drive. We used hierarchical Bayes covariate extended logit estimation models (Schlereth et al. 2018) for the estimation of the individual partworth utilities of the participants. The usefulness of including covariates in the model can be shown via the Bayes factor, which is a typical model selection criteria when using a Bayesian estimation approach (Netzer et al. 2017). The Bayes factor is calculated based on the log marginal densities (LMD) of the estimation models (Schlereth et al. 2018; Kass and Raftery 1995):

$$\text{Bayes factor} = 2 * |LMD_1 - LMD_2| \quad (4-4)$$

For the pair of jeans model, the Bayes factor between the model without covariates and the model with covariates is 36 ($= 2 * |(-1723) - (-1705)|$). This shows a strong difference between the two models and confirms the usefulness of the covariates, as the Bayes factor is greater than the critical value of 10 for strong evidence (Schlereth et al. 2018; Kass and Raftery 1995). Strong evidence is also preset for the sofa blanket (Bayes factor = 74), the noise-canceling headphones (Bayes factor = 80), and the hard drive (Bayes factor = 78), indicating that including the covariates improves the estimation. As the Bayes factor only compares two models against each other, but does not evaluate the overall model fit, we also tested the covariate extended models for internal and predictive validity. For this, two of the eight choice sets were omitted for the estimation following the procedure of Schlereth et al. (2018)). To assess the internal validity, the estimations were performed based on the remaining six choice sets, and the first choice hit rate was calculated within these choice sets (Schlereth et al. 2018; George et al. 2013; Gensler et al. 2012; Schlereth and Skiera 2012b). This yielded values of 88.9 percent for the pair of jeans model, 92.3 percent for the blanket model, 92.4 percent for the headphones model, and 94.6 percent for the hard drive model. For the predictive validity,

the first choice hit rate was calculated within the two omitted choice sets based on the estimates of the six-choice-set estimation (Schlereth et al. 2018; Rao 2014; Gensler et al. 2012; Schlereth and Skiera 2012b). This yielded values of 85.5 percent for the pair of jeans model, 85.6 percent for the blanket model, 85.3 percent for the headphones model, and 88.6 percent for the hard drive model. All these values, for the internal and the predictive validity, indicate high validity for all four models, as all first-choice hit rates substantially outperform the random choice threshold (Rao 2014; Gensler et al. 2012), which in our case is 33 percent. The omission of the two choice sets was made for the validity testing only. The following results are based on all eight choice sets.

	Pair of jeans	Sofa blanket	Noise-canceling headphones	External hard drive
Constant	0.85	-2.05	-2.38	-5.70
Recent experience return BWC order (H1 / H3)	0.41 (0.14)	0.64 (0.16)	0.73 (0.20)	0.63 (0.24)
Recent experience TBVD order (H2 / H4)	0.53 (0.14)	0.36 (0.15)	0.33 (0.20)	0.51 (0.23)
Type of delivery	-0.14 (0.13)	0.37 (0.15)	0.31 (0.20)	0.57 (0.24)
Type of return	0.06 (0.13)	0.09 (0.15)	0.31 (0.21)	0.42 (0.25)
Urgency	-0.38 (0.13)	-0.25 (0.15)	-0.75 (0.21)	0.17 (0.24)
Busyness	0.40 (0.14)	0.18 (0.16)	0.15 (0.21)	-0.22 (0.24)
Self-confidence	-0.32 (0.14)	-0.20 (0.17)	0.06 (0.22)	-0.17 (0.26)
Income	-0.12 (0.14)	0.07 (0.16)	-0.33 (0.22)	-0.06 (0.26)
Gender	-0.01 (0.14)	-0.65 (0.16)	-0.71 (0.21)	-0.74 (0.25)
Age	-0.22 (0.14)	-0.04 (0.16)	0.11 (0.21)	-0.29 (0.26)

Notes: Changes in partworth utilities based on the attribute-covariate interactions; standard deviation in parentheses

Table 4-2: Partworth utility of a TBVD order for the different item categories

An overview of the means of the constant part of the partworth utilities of a TBVD order for the different items, as well as the changes in the partworth utilities of a TBVD order based on the attribute-covariate interactions, are displayed in Table 4-2. A positive partworth utility indicates that participants prefer a TBVD order over a BWC order, while a negative partworth utility means that participants prefer a BWC order. The average constant partworth utility of a TBVD order for the pair of jeans is positive (0.85), indicating that customers, on average, prefer a TBVD order. For the other three item categories the average constant partworth utility is negative – -2.05 for the blanket, -2.38 for the headphones, and -5.70 for the hard drive – meaning that, for the hard drive, customers are least likely to choose a TBVD order when ordering online. The changes in the partworth utilities based on the attribute-covariate interactions in Table 4-2 reflect the participants' heterogeneity. If the value of an attribute-

covariate interaction is positive it means that corresponding customers are more likely to choose a TBVD order.

4.4.2 Hypothesis testing

The hypotheses in this study refer to the influence of a customer's recent order-type experiences on a customer's order-type decisions. It is hypothesized that the recent experience of a BWC order, as well as the recent experience of a TBVD order, influence a customer's order-type decision for items with uncertainty regarding the item's properties (hypotheses H1 and H2), but they do not influence a customer's order-type decisions for items without this uncertainty (hypotheses H3 and H4).

4.4.2.1 Items with uncertainty regarding the item's properties

For the three items with uncertainty regarding the item's properties – pair of jeans, sofa blanket, and noise-canceling headphones – Figure 4-3 shows that the influence of both recent experience covariates is positive and different from zero. For this research, we consider an influence as different from zero if the value differs at least one standard deviation from zero (Lenk et al. 1996). For all three items, the change in partworth utility of a TBVD order is more than one standard deviation from zero; for *recent experience return BWC order* the values are: 3.00 std. dev. for the pair of jeans, 4.09 std. dev. for the blanket, and 3.57 std. dev. for the headphones; and for *recent experience TBVD order* they are: 3.82 std. dev. for the pair of jeans, 2.31 std. dev. for the blanket, and 1.61 std. dev. for the headphones. This provides initial support for hypotheses H1 and H2 across all three products.

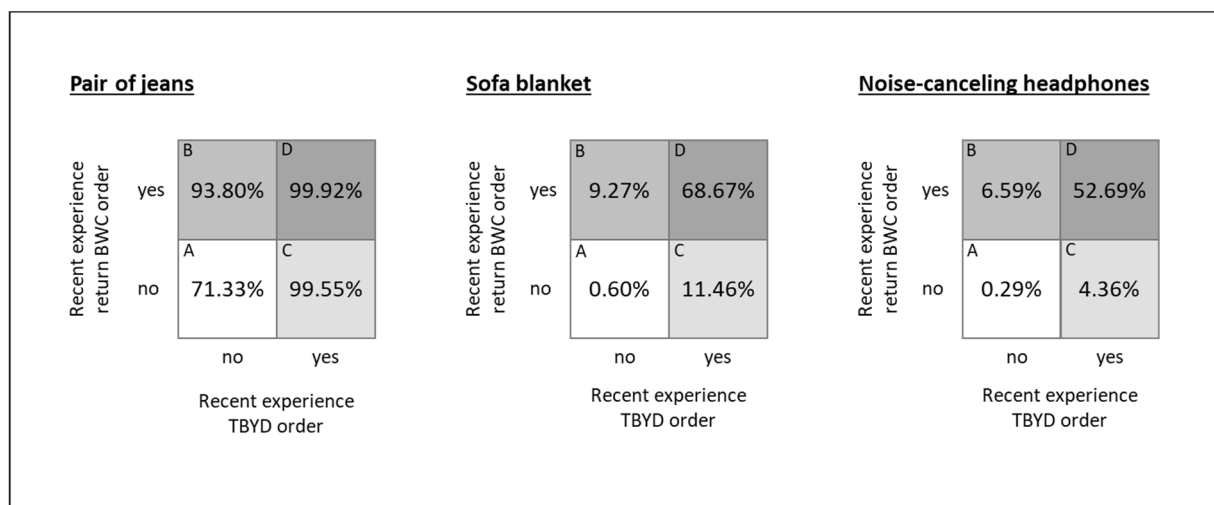


Figure 4-3: Probabilities of customers choosing a TBVD order (items with uncertainty)

In the second step, the actual probabilities of choosing a TBYD order were calculated. In Figure 4-3 the upper half refers to customers that have recent BWC return experience, while the lower half refers to customers without such experience. This shows an increase in all cases, which is substantial in all but one case. This provides further support for hypothesis H1. The only case without a substantial increase is from quadrant C to quadrant D for the pair of jeans (from 99.55% to 99.92%). The probabilities displayed in Figure 4-3 also provide support for H2: moving from the left half (quadrants A and B) to the right half (quadrants C and D) yields a substantially higher probability for all three products.

4.4.2.2 Items without uncertainty regarding the item's properties

For the hard drive, the item without uncertainty, the BWC return experience, and the TBYD experience covariates have a positive partworth utility that differs more than one standard deviation from zero: 2.58 std. dev. for *recent experience return BWC order*; and 2.10 std. dev. for *recent experience TBYD order*. However, both recent BWC return experience and recent TBYD experience have no noteworthy impact on the probability of choosing a TBYD order (see Figure 4-4). The reason for this is that the difference between the utility of a BWC order and the utility of a TBYD order at the starting point in quadrant A is relatively large, and even a substantial decrease in this difference in quadrants B, C, and D results, in all cases, in probabilities of choosing a TBYD order below 0.50 percent. This provides support for hypotheses H3 and H4.

External hard drive

		Recent experience TBYD order	
		no	yes
Recent experience return BWC order	yes	B 0.01%	D 0.46%
	no	A 0.00%	C 0.03%

Figure 4-4: Probabilities of customers choosing a TBYD order (items without uncertainty)

4.5 Discussion

4.5.1 Theoretical contribution

This research sought a better understanding of how customers decide between TBVD and BWC orders in online retailing. Our results extend the existing literature by proving a focus on the under-researched, but practically highly relevant, issue of TBVD ordering. They contribute to the literature in several ways.

First, the results of this study reveal that the order-type decision in online retailing is influenced by recent customer ordering experiences and that the Disappointment Theory (Bell 1985) is useful for understanding decision-making. In previous studies experience has often been seen as a good predictor for future behavior (Dai et al. 2014; Foscht et al. 2013; Petersen and Kumar 2009; Festervand et al. 1986). The recency of the experience, in particular, has been suggested to be a strong predictor (Hertwig 2012; Hertwig et al. 2004; Bagozzi et al. 1992; Bagozzi and Warshaw 1990). Our research supports this view by showing that recent experience with different order types is a good predictor for future order-type decisions. Additionally, our findings are consistent with Disappointment Theory in that the experience of a disappointing outcome of a recent decision, in our research, the return of a BWC order, increases the probability that customers will choose a safer alternative for subsequent ordering of products with uncertainty.

Second, our research further highlights that the impact of negative and positive experience depends on the uncertainty of the situation. The aforementioned effect is only effective for products with uncertainty, while for the external hard drive, a product that can be fully judged in the webstore, recent experience with BWC returns and TBVD ordering have no substantial impact on the order-type decision. The probability of choosing a TBVD order for such an item is below 0.50 percent, even if the customer has recent experience of BWC returns and/or TBVD ordering, which, again, is consistent with Disappointment Theory.

Third, Disappointment Theory states that negative experiences have a stronger effect on behavior than positive experiences (Liu and Shum 2013; Brandstätter and Kriz 2001; Zeelenberg et al. 2000). This does not fully correspond to the observations in our study, where the positive experience (recent TBVD ordering) had a larger impact for the pair of jeans, as well as for the sofa blanket, compared to the negative experience (recent BWC return). For both products, the difference between quadrants A and C was larger than the difference between quadrants A and B (see Figure 4-3). One possible explanation for this phenomenon is that

placing a TBVD order is not the only possibility to avoid disappointment. In general, customers that want more certainty can also visit a traditional brick-and-mortar store to buy these products. This corresponds to the fact that the study participants, when asked to rate the likelihood on a 5-point Likert scale, with 1 being highly unlikely and 5 being highly likely, indicated that they were more likely to purchase an external hard drive (4.51) and noise-canceling headphones (4.39) online than a sofa blanket (3.88) and a pair of jeans (2.84).

Fourth, our research extends Disappointment Theory in that a combination of both negative and positive recent experiences leads to a much larger increase of TBVD ordering probability than each experience alone. This effect is most noteworthy for the sofa blanket and the noise-canceling headphones, both of which can be considered products with medium uncertainty. The combination of both recent experiences leads to a total increase of 68.07 percentage points for the sofa blanket and 52.40 percentage points for the headphones; a recent BWC return and a recent TBVD experience each leads to a probability increase of less than 11 percentage points. This means that the two types of experience are superadditive. This leads to situations where, for customers with recent BWC return and TBVD ordering experience, TBVD ordering becomes the preferred option. This phenomenon was observed for both these products even though customers usually have a strong tendency to purchase them via BWC order. For the external hard drive, we see a similar pattern, albeit at a much lower level, below 1 percent. And for the pair of jeans we see a different pattern, because the probability is already at a very high level, close to 100 percent for TBVD ordering with one of the two recent experiences; no substantial additional increase is possible when both experiences are combined.

4.5.2 Managerial contribution

This research comprises different insights for online retailing practice regarding the prevalent issue of TBVD orders. First, our findings provide managers with a better understanding of consumer behavior in online retailing. Recent experience with both BWC and TBVD ordering has a very substantial impact on the probability that customers choose TBVD and order a range of multiple similar items to select from at home. For most retailers this is a factor that will be outside their control, as recent ordering experience in many cases will also involve having ordered at other online retailers. Based on our results, online retailers should refrain from jumping to conclusions regarding the stability of individual ordering patterns. The likelihood of placing a TBVD is not predominantly determined by characteristics of the

individual customer, but rather by situational factors such as recent ordering experience and contextual factors such as shipping fees.

Second, the influence of recent experience is most relevant for products with moderate uncertainty; it is less relevant for products with more extreme uncertainty. For jeans and other products with high uncertainty, customers placing a TBVD order is so common that online retailers must design both their business model and their operations set-up in such a way that they are able to process large quantities of returns and recuperate their value through restocking, reselling, refurbishing, remanufacturing, or cannibalizing for parts (Morgan et al. 2018; Röllecke et al. 2018). At the other end of the spectrum, products with no, or very low, uncertainty, such as the external hard drive, are virtually immune to TBVD orders. Therefore, recent online ordering experience will not impact these product categories. In contrast, products with moderate uncertainty are subject to highly variable probabilities. Here, products that are usually ordered via BWC can easily turn into TBVD orders for customers that have recent experience with both BWC returns and TBVD ordering. It can be assumed that such “perfect storms” will increase in frequency in the future as the phenomenon of TBVD becomes even more prevalent in the online industry. Previous TBVD orders have the potential to influence even more future TBVD orders.

If retailers want to avoid exposure to such perfect storms, we see two potential avenues that retailers could take. One would be to lower the uncertainty of these products. This could be done, for example, by using technologies such as augmented reality or digital product fitting (Gustafsson et al. 2019) to bring the uncertainty level closer to items such as the hard drive. Another would be the use of adaptable shipping fees. Additional analyses showed that the shipping fee attribute has a 3.3 to 3.6 times higher importance weight than the order-type attribute for the sofa blanket and the noise-canceling headphones. This indicates that when the customer is directly exposed to having to pay a higher shipping fee for TBVD compared to BWC, the probability of placing a TBVD order shrinks back down to the initial situation of clearly favoring a BWC order. However, such an approach comes with the drawback that it will not always be clear whether an order actually is a TBVD order or not. For example, does a customer that orders a certain T-shirt in different colors have the intention of buying all of them? This scenario is simply multiple BWC orders summed together. Or is the customer simply aiming to keep the best of the selection? This would be the TBVD order. Additionally, many online retailers offer free shipping when the shopping basket exceeds a certain minimum order value (Koukova et al. 2012; Lewis 2006; Lewis et al. 2006), which would run counter to

a retailer wanting to increase shipping fees for TBVD orders. A viable alternative to this could be the use of a restocking fee that only applies to items that are actually returned (Janakiraman et al. 2016; Heiman et al. 2002).

4.5.3 Limitations and future research

As with all research, there are limitations with this research. These, in turn, indicate opportunities for further research. First, as the research is experimental, it does not include real customer ordering data. In order to verify that these experimentally determined influences also apply to real ordering situations, this study should be repeated in further research using secondary data of one or more online retailers. As all of the participants in the experiment resided in the United States, a replication of this study in other countries would help to confirm that the results are valid across countries.

Second, this research is limited to the examination of how customers decide on an order type when they want to satisfy one buying need only and when the needed item is not simply a replacement of an exact same item they already own. Further research could consider the satisfaction of multiple buying needs by a combination of multiple items in one order and the influence of a replacement article in such a combined order.

A third limitation is that the question regarding customers' recent experiences with the order types in the questionnaire of the experiment did not focus on recent experiences with one specific online retailer. The questions instead were aimed at the participants' recent order-type experiences, independent of the online retailer. To examine if a retailer can predict future order-type decisions based on the recent experience data of a customer with this specific online retailer as well, it could be interesting to use instead one retailer's order history data for subsequent research.

Fourth, and already briefly mentioned in the managerial implications chapter, this research reveals a gap in the field of order-type definitions. Further research should address how retailers can detect whether orders are TBVD orders and how retailers can best justify the additional cost of such an order type to their customers.

5 Conclusion

The research in this dissertation is among the first to investigate the order-type decision in online retailing. Understanding a customer's online order-type decision helps retailers to adapt their supply chain and operations to the target customer group and the sold item category. This chapter focuses on a summary of the research findings of Chapters 2, 3, and 4 and on highlighting the overarching findings of this research, as well as its limitations and future research opportunities. More detailed presentations of the respective findings, limitations, and further research opportunities can be found in Chapters 2.5, 3.6, and 4.5.

5.1 Main research findings

The findings of Chapter 2 contribute to the practice and literature in different ways. First, the research in Chapter 2 contributes to the literature by providing a classification of order types in online retailing on the basis of two dimensions: the order mode, and the number of individual needs that are grouped into one order. Based on this typology, it outlines 31 possible reasons why customers choose one order type over others, differentiating between logistics-related reasons and non-logistics-related reasons. A further contribution to the literature lies in confirmation of the applicability of the Perceived Risk Theory (Bauer 1960) to the order-type decision. All 31 determined possible order-type influencing reasons can be assigned to the perceived risk facets of convenience, financial, time, performance, psychological, and social. Each facet encompasses at least two possible reasons. Additionally, this research points out that a retailer's logistics can affect the customer's order-type decision. It highlights 15 logistics-related potential reasons why customers choose one or the other order type, which can, to a certain extent, be influenced by retailers and their logistics.

Chapter 3 builds on the findings of Chapter 2 and examines the influence of certain reasons and therefore certain perceived risk facets empirically. The research in this chapter confirms the hypothesis that the retailer's logistics could have an impact on the customer's order-type decision. Whether a parcel is delivered to the customer's home address or a parcel pick-up point, as well as whether the return is picked up at the customer's home address or must be brought to a drop-off point, influences a customer's order-type decision. It also shows that, in addition to these logistics-related reasons, the personal characteristics of the customer, and especially his/her recent return experience, also affect his/her decision.

A further important finding of Chapter 3 is that the item category has an impact on the customer's order-type decision. This confirms the findings of Dai et al. (2014), who state in their research that such a classification is necessary when analyzing risk perception and

purchasing intentions in an online shopping context. Especially when comparing the influence of the type of delivery and type of return for different items, it becomes clear that customers behave differently for different item categories. This finding informs practitioners that there is no single operations and logistics strategy appropriate for every type of retailer. The right strategy of a retailer is determined by the type of items sold.

Chapter 4 focuses on the influence of a customer's recent positive or negative order-type experiences on his/her future order-type decision. The findings of this research reveal that the probability of choosing a TBVD order is, as hypothesized, influenced by a customer's recent order-type experiences. The analyses in this chapter, like the analyses in Chapter 2, demonstrate that a separation of different product categories is necessary when examining the order-type decision. Customers that order items with high uncertainty regarding the item's properties, such as apparel (Peck and Childers 2003), are highly influenced by recent positive, as well as negative, experiences. However, for items with no, or very low, uncertainty such an experience has no noteworthy influence on the subsequent order-type decision. Additionally, the research extends Disappointment Theory in that a combination of both negative and positive recent experiences leads to a much larger increase of TBVD ordering probability than each experience alone when ordering items with medium uncertainty. For items with medium uncertainty, such negative and positive experiences even reverse the preference for a TBVD versus a BWC order. For items with medium uncertainty, such combinations of negative and positive experiences lead to customers preferring TBVD orders over BWC orders, although customers in general prefer BWC orders for items with medium uncertainty.

Summarizing the findings of all the chapters, this dissertation offers valuable insights that extend the scant research in the field of order-type decisions in online retailing and forms a solid basis for further research. Three overarching findings of this dissertation relate to confirmation of the applicability of the Perceived Risk Theory (see Chapters 2 and 3) and the Disappointment Theory (see Chapter 4) to the customer's order-type decision, the possibility for retailers to influence the customer's order-type decision (see Chapters 2 and 3), and the necessity to differentiate between item categories (see Chapters 3 and 4).

5.2 Limitations and further research

During the research process of this dissertation, care was taken to ensure that the work was conducted with the highest academic rigor and that all relevant literature streams and theoretical foundations were considered in order to ensure high validity and reliability. This

chapter points out the limitations of this research and offers promising future research opportunities by combining the results of this research with its limitations. While detailed limitations and further research possibilities are discussed in Chapters 2.5.2, 3.6.3, and 4.5.3, this chapter encompasses the discussion of limitations and research proposals at a higher level.

The fundamental research of this dissertation in Chapter 2 gives, to the best of the authors' knowledge, an all-encompassing overview of the differences between the order types that may be relevant reasons for customers to decide on one of the order types. Two limitations of the research in Chapter 2 are that it does not analyze the behavior of a single customer in a specific ordering situation, focusing on general influencing factors only; and that the included factors relate to the differences between the order type only and do not relate to personal, customer-related factors, which might also influence a customer's order-type decision. These limitations are, to some extent, addressed in the research in Chapters 3 and 4.

Based on this research in Chapter 2 one opportunity for further research might be to focus on a combination of the determined factors with predictive analytics, as this might help retailers to anticipate returns of items and to manage their stock. A retailer could, for example, in the case of a TBVD order, only remove from stock the item that the retailer considers most likely to be retained by the customer. All other items might virtually remain in the retailer's inventory because of the high likelihood that the customer will return them. Such items can often be resold by the retailer after refurbishing (Morgan et al. 2018; Röllecke et al. 2018). The classification of order types is also important when it comes to influencing the customer through incentives. If the retailer, for example, recognizes that an order is a TBVD order, the retailer could incentivize the customer to return the unwanted items as quickly as possible so that the retailer can reprocess and resell these items earlier. However, if the retailer recognizes that it is a multi-need order instead of a TBVD order (both containing several items), such incentives may not be beneficial for the customer, as the customer should keep as many of the ordered items as possible.

As the research in Chapters 3 and 4 is based on experimental data only, it faces multiple limitations. This leads to different interesting opportunities for further research. First, as the research is experimental, it does not include real customer ordering data. Future research could confirm the findings of this research by examining real customer ordering decisions. Research using real customer data could also examine the influence of recent return experiences with a specific retailer, which is a limitation of Chapter 4, as it only focuses on the recent return

experiences of a customer in general. This would help retailers to learn even more from customer behavior.

Second, data were collected from participants in the United States only. This raises questions about the extent to which the findings can be generalized within another cultural context. A replication of the studies in Chapters 3 and 4 in other cultural environments would therefore be conceivable for future research.

Third, the included four items, which were wisely chosen to cover a wide range of different items and different uncertainty levels, are only a subset of possible items. Further items might be needed to confirm the findings of this research. Additionally, it would be interesting to find a method to measure the uncertainty levels of an item. This would make the findings of such research more generalizable and transferable.

Fourth, the research in Chapters 3 and 4 focuses, because of high complexity, on a subset of potential influencing factors (determined in Chapter 2) only. It might therefore be interesting to focus on different factors in further research. This might include customers' attitudes toward sustainability, as customers' awareness about the sustainability of last-mile delivery and the returns process is growing (Morgan et al. 2018). Another possible aspect could be customers' shopping motivation: hedonic vs. utilitarian. In the context of hedonic shopping, customers more often focus on the enjoyment of the shopping process; whereas customers doing utilitarian shopping simply focus on the task of getting a suitable item (Vieira et al. 2018; Arnold and Reynolds 2003).

Fifth, this research examined the order-type decision regarding the order mode for single-need orders only. Because an order could have a combination of needs and requirements (Acimovic and Graves 2015; Xu et al. 2009), further research could consider combining multiple needs in one order. Additional interesting aspects arising from this are: (i) whether the preferred order type of one included item influences that of another, or whether the order-type decisions of each included item are made independently of each other; (ii) whether the item that dictates the order type of the other can be characterized by the uncertainty; and (iii) whether there is a combination of item categories where a usually dictating item has no influence. To answer question (ii) it would also constitute an important step forward in research to make the item uncertainty measurable. This also offers opportunities for further research.

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Appendices

Appendix – Pretest 1

Welcome

In this survey we are going to ask you some questions on the subject of online shopping. Please answer the questions imagining an online shopping situation that is typical for you.

Prior to participating in this survey, please read the following consent form.

1. I consent to participate in this study on online shopping.
2. My decision to consent is entirely voluntary and I understand that I am free to withdraw at any time without giving a reason.
3. I consent to the publication of the results of this study, so long as the participant information is anonymous.
4. I have had the opportunity to ask the researcher any questions that I have about the study and my involvement in it. I can contact the lead researcher of the project via Prolific at any time.

- I have read and understood the explanations and I DO voluntarily consent to participate in this study.
- I have read and understood the explanations and I DO NOT voluntarily consent to participate in this study.

Please insert your Prolific ID:

I have ordered the following clothes online before:

Mark with a cross where applicable. Multiple selection is possible.

- T-shirt
- Coat
- Trousers
- Shoes
- Underwear
- Socks
- Sweater
- Dress
- Skirt
- Other (please specify):
- I have never ordered clothes online.

I have placed my last online order at the following online shop:

Please enter the internet address of the online shop.

I am...

- female.
- male.

I am...

- younger than 25 years.
- between 25 und 35 years.
- between 35 und 50 years.
- older than 50 years.

My monthly net income is...

- below 1,000£.
- between 1,000£ and 2,000£.
- above 2,000£.

You have decided to order a blue T-shirt at your preferred online shop. 5 different models are available – each in sizes S to XXL.

**How would you describe your typical order placement?**

Please select one answer option.

- I would order **multiple different T-shirts** in **multiple sizes** and decide on one later.
- I would order **multiple different T-shirts** in **one particular size** and decide on one later.
- I would decide on **one T-shirt** and order it in **multiple sizes**.
- I would decide on **one T-shirt** and order it in **one particular size**.

After you have just ordered a T-shirt, you remember that you also need a black raincoat. Your preferred online shop offers 5 different black raincoats – each in sizes S to XXL.



How would you describe your typical order placement?

Please select one answer option.

- I would order **multiple different black raincoats** in **multiple sizes** and decide on one later.
- I would order **multiple different black raincoats** in **one particular size** and decide on one later.
- I would decide on **one black raincoat** and order it in **multiple sizes**.
- I would decide on **one black raincoat** and order it in **one particular size**.

Note: For the pair of jeans, different images were chosen for women and men.

After you have just placed the order for a T-shirt and a raincoat, you decide to also order a pair of jeans. Your preferred online shop offers 5 different models – each in waist sizes 23 to 38 and lengths 28 to 36.



How would you describe your typical order placement?

Please select one answer option.

- I would order **multiple different pairs of jeans** in **multiple sizes** and decide on one later.
- I would order **multiple different pairs of jeans** in **one particular size** and decide on one later.
- I would decide on **one pair of jeans** and order it in **multiple sizes**.
- I would decide on **one pair of jeans** and order it in **one particular size**.

After you have just placed the order for a T-shirt and a raincoat, you decide to also order a pair of jeans. Your preferred online shop offers 5 different models – each in waist sizes 28 to 54 and lengths 28 to 40.



How would you describe your typical order placement?

Please select one answer option.

- I would order **multiple different pairs of jeans** in **multiple sizes** and decide on one later.
- I would order **multiple different pairs of jeans** in **one particular size** and decide on one later.
- I would decide on **one pair of jeans** and order it in **multiple sizes**.
- I would decide on **one pair of jeans** and order it in **one particular size**.

Finally you need a new pair of sports shoes. Your preferred online shop offers 5 different models – each in sizes 35,5 to 52,5.



How would you describe your typical order placement?

Please select one answer option.

- I would order **multiple different pairs of shoes** in **multiple sizes** and decide on one later.
- I would order **multiple different pairs of shoes** in **one particular size** and decide on one later.
- I would decide on **one pair of shoes** and order it in **multiple sizes**.
- I would decide on **one pair of shoes** and order it in **one particular size**.

Note: At this point the survey is split into three paths:

- 1) *If customers chose to order multiple items for all item categories, they were shown the following two pages:*

In the preceding fictitious order situations you have always decided to order multiple similar clothes at once. Do you always order clothes online in this pattern?

Please select one answer option.

- Yes, I always order multiple similar clothes at once.
- No, it differs. Sometimes I only order one piece of clothing.

Why did you decide to order multiple similar clothes at once in these four fictitious ordering situations when you sometimes order only one piece of clothing?

Mark with a cross where applicable. Multiple selection is possible.

- It depends on the type of clothing whether I order multiple similar pieces at once or only one. I always order multiple similar pieces at once when I am ordering the four types of clothing given in the examples. That is different for e.g.:
- I always order multiple similar clothes at once if I have already gained ordering experiences with the online shop.
- I always order multiple similar clothes at once if I have already gained ordering experiences with this type of clothing.
- I did not have enough information in the ordering situations to decide on one piece of clothing.
- Usually I take more time to examine the clothes when I order exactly one piece of clothing.
- The clothes' price was not listed, so I had no disadvantage in ordering multiple similar clothes at once.
- There are some clothes I always order from the same brand. So I know my size and in this case I order exactly one piece of clothing.
- I always order exactly one piece of clothing if I want to replace an old one with the exact same article.
- Other reasons (please elaborate):

2) If customers chose to order a single item for all item categories, they were shown the following two pages:

In the preceding fictitious order situations you have always decided to order exactly one piece of clothing. Do you always order clothes online in this pattern?

Please select one answer option.

- Yes, I always order exactly one piece of clothing.
- No, it differs. Sometimes I order multiple similar clothes at once.

Why did you decide to order exactly one piece of clothing in these four fictitious ordering situations when you sometimes order multiple similar clothes at once?

Mark with a cross where applicable. Multiple selection is possible.

I always order multiple similar clothes at the same time...

- ... if I do not have the time to decide on a particular piece of clothing.
- ... if I urgently need a fitting piece of clothing, in case one of the ordered articles does not fit.
- ... if I want to try the clothes on with my friends.
- ... if I have already gained ordering experiences with the online shop.
- ... if I have already gained ordering experiences with the type of clothing.
- ... if the fit is especially important to me, for example with:
- Other reasons (please elaborate):

3) *If customers chose different ordering options for the different item categories, they were shown the following page:*

Why did you choose different varieties of ordering in these four fictitious ordering situations?

Mark with a cross where applicable. Multiple selection is possible.

- The correct fit of some clothes is more important to me than the fit of others, so I have ordered multiple similar pieces at once in those cases.
- For some clothes I know my size and they always fit, so in this case I have only ordered one piece in that size.
- With supposedly expensive clothes I ordered only one so I do not have to advance too much money in reality.
- It is important to me that expensive clothing fits well. Therefore I ordered multiple similar pieces of these supposedly expensive clothes at once to try them on at home.
- I always order multiple similar clothes at once if I have already gained experiences in ordering this type of clothing.
- Other reasons (please elaborate):

Thank you very much for participating in this survey! We greatly appreciate the time you have taken to support our research. To complete the survey, please click on this link:

<https://www.prolific.ac/submissions/complete?cc=TNXG094M>

Your answers have been saved successfully.

Appendix – Pretest 2

Online version of pretest 2 for participants from the United States

Welcome to our survey regarding customer decisions in online retailing

Your responses to the following questions will be used to verify appropriateness of questions to be used in a study regarding customer decisions in online retailing. Your responses will be evaluated anonymously and will not be used in the analysis of the study.

Your participation is voluntary. If you wish to not participate, please leave the survey.

Please insert your Prolific ID:

Imagine yourself in the following situation:

You are at your computer visiting your favorite online shop. You desire to order a blanket for your sofa at a cost of \$70.

Would a shipping charge of \$2 prevent you from placing the order?

- yes
- no

Would a shipping charge of \$3 prevent you from placing the order?

- yes
- no

Would a shipping charge of \$4 prevent you from placing the order?

- yes
- no

Would a shipping charge of \$5 prevent you from placing the order?

- yes
- no

Would shipping charges of \$ 6 prevent you from placing the order?

- yes
- no

If you answered "no" to all the above questions, please indicate an amount that would prevent you from placing the order

\$

When would you expect the blanket to be delivered if you had chosen standard delivery?

- same day
- 1 business day
- 1-2 business days
- 2 business days
- 3 business days
- 4 business days
- 5 business days
- 6 business days
- 7 business days
- > 7 business days

When would you expect the blanket to be delivered if you had chosen fast delivery?

- same day
- 1 business day
- 1-2 business days
- 2 business days
- 3 business days
- 4 business days
- 5 business days
- 6 business days
- 7 business days
- > 7 business days

What would be the maximum delivery time you would deem to be acceptable?

- same day
- 1 business day
- 1-2 business days
- 2 business days
- 3 business days
- 4 business days
- 5 business days
- 6 business days
- 7 business days
- > 7 business days

Does it annoy you having to pick up your parcel at a pick up point, such as the post office or parcel delivery service access point, instead of having it delivered to your home?

- yes
 no

Do you usually collect your parcels by foot, bicycle, car or other?

- foot
 bicycle
 car
 other:

Do you think that a pick-up point...

... 1/4 mile from your home address is too far away to pick up parcels?

- yes
 no

... 1/2 mile from your home address is too far away to pick up parcels?

- yes
 no

... 1 mile from your home address is too far away to pick up parcels?

- yes
 no

... 1 and 1/4 miles from your home address is too far away to pick up parcels?

- yes
 no

If you answered "no" to all the above questions, please indicate the maximum distance that you would accept to pick up

mile(s)

Imagine yourself in the following situation:

You are thinking about an event for which you need new clothes, but you cannot remember when it is going to take place. You ask a friend when the event is going to take place; he/she answers: "The event is going to take place..."

Please indicate if you believe purchasing the clothes is urgent.

... tomorrow".

- urgent
- no time pressure

... 2 days".

- urgent
- no time pressure

... 3 days".

- urgent
- no time pressure

... 4 days".

- urgent
- no time pressure

... 5 days".

- urgent
- no time pressure

... 7 days".

- urgent
- no time pressure

... 10 days".

- urgent
- no time pressure

... 2 weeks".

- urgent
- no time pressure

... 1 month".

- urgent
- no time pressure

Please read the description of the scenarios and state afterwards whether the scenario is comprehensible or not.

Scenario 1: “You are looking for a new pair of jeans. You are at your computer considering to purchase them online. You have the possibility to either order several pairs of jeans at the same time with the intention of comparing them at home and only keeping a maximum of one and returning the others (postponed-selection) or to decide now on one particular pair of jeans and order them (speculation).

You realize that most likely nobody will be home when the delivery person will arrive. You will need to pick up your parcel from the nearest post office, parcel delivery service office or parcel delivery service access point – all are approximately 1/2 mile from your home. You also know, that in case of a return, you must drop off the parcel at the post office, parcel delivery service office or parcel delivery service access point.”

Is the situation above explained understandable and could you place yourself in the situation?

- yes
 no

Why not?

Please indicate on a scale from 1 (low effort) to 5 (high effort):

How would you rate your effort to receive the parcel in this scenario?

- 1 (low)
 2
 3
 4
 5 (high)

How would you rate your effort to return the parcel in this scenario?

- 1 (low)
 2
 3
 4
 5 (high)

Scenario 2: “The harddrive capacity of your computer is full. However, in order to save the images from your last vacation, you need more storage space and therefore you are looking for an external harddrive. You are at your computer considering to purchase it online. You have the possibility to either order several external harddrives at the same time with the intention of comparing them at home and only keeping a maximum of one and returning the others (postponed-selection) or to decide now on one particular external harddrive and order it (speculation).

You realize with certainty that someone can accept the parcel at your home address when the delivery person arrives and that you will not have to pick up the parcel anywhere else. In case of a return, you have the option to have the parcel picked up at your home address.”

Is the situation above explained understandable and could you place yourself in the situation?

- yes
 no

Why not?

Please indicate on a scale from 1 (low effort) to 5 (high effort):

How would you rate your effort to receive the parcel in this scenario?

- 1
 2
 3
 4
 5

How would you rate your effort to return the parcel in this scenario?

- 1
 2
 3
 4
 5

Thank you very much for participating in this survey! We greatly appreciate the time you have taken to support our research. To complete the survey, please click on this link:

<https://app.prolific.ac/submissions/complete?cc=14ARRMSD>

If the link does not work, please use the following completion code:

14ARRMSD

Your answers have been saved successfully.

Paper based version of pretest 2 for student participants

Pretest: Customer decisions in online retailing

Study contact: Josephine Harder, josephine.harder@whu.edu

Your responses to the following questions will be used to verify appropriateness of questions to be used in a study regarding customer decisions in online retailing. Your responses will be evaluated anonymously and will not be used in the analysis of the study.

Your participation is voluntary. If you wish to not participate, please leave the pretest blank.

Part 1

Imagine yourself in the following situation:

You are at your computer visiting your favorite online shop. You desire to order a blanket for your sofa at a cost of 70€.

- Would a shipping charge of 2€ prevent you from placing the order? yes no
- Would a shipping charge of 3€ prevent you from placing the order? yes no
- Would a shipping charge of 4€ prevent you from placing the order? yes no
- Would a shipping charge of 5€ prevent you from placing the order? yes no
- Would a shipping charge of 6€ prevent you from placing the order? yes no

If you answered "no" to all the above questions, please indicate an amount that would prevent you from placing the order: _____ €

When would you expect the blanket to be delivered if you had chosen standard delivery?

- | | | |
|-----------------------------------|---------------------------------|-----------------------------------|
| <input type="checkbox"/> same day | <input type="checkbox"/> 3 days | <input type="checkbox"/> 7 days |
| <input type="checkbox"/> 1 day | <input type="checkbox"/> 4 days | <input type="checkbox"/> > 7 days |
| <input type="checkbox"/> 1-2 days | <input type="checkbox"/> 5 days | |
| <input type="checkbox"/> 2 days | <input type="checkbox"/> 6 days | |

When would you expect the blanket to be delivered if you had chosen fast delivery?

- | | | |
|-----------------------------------|---------------------------------|-----------------------------------|
| <input type="checkbox"/> same day | <input type="checkbox"/> 3 days | <input type="checkbox"/> 7 days |
| <input type="checkbox"/> 1 day | <input type="checkbox"/> 4 days | <input type="checkbox"/> > 7 days |
| <input type="checkbox"/> 1-2 days | <input type="checkbox"/> 5 days | |
| <input type="checkbox"/> 2 days | <input type="checkbox"/> 6 days | |

What would be the maximum shipping time you would deem to be acceptable?

- | | | |
|-----------------------------------|---------------------------------|-----------------------------------|
| <input type="checkbox"/> same day | <input type="checkbox"/> 3 days | <input type="checkbox"/> 7 days |
| <input type="checkbox"/> 1 day | <input type="checkbox"/> 4 days | <input type="checkbox"/> > 7 days |
| <input type="checkbox"/> 1-2 days | <input type="checkbox"/> 5 days | |
| <input type="checkbox"/> 2 days | <input type="checkbox"/> 6 days | |

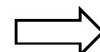
Does it annoy you having to pick up your parcel at a pick up point, such as the post office or parcel delivery service access point, instead of having it delivered to your home? yes no

Do you usually collect your parcels by foot, bicycle, car or other? foot bicycle car other: _____

Do you think that a pick-up point...

- | | |
|-----------------------------------------------------------------------|----------------------------------------------------------|
| ... 500 m from your home address is too far away to pick up parcels? | <input type="checkbox"/> yes <input type="checkbox"/> no |
| ... 1 km from your home address is too far away to pick up parcels? | <input type="checkbox"/> yes <input type="checkbox"/> no |
| ... 1,5 km from your home address is too far away to pick up parcels? | <input type="checkbox"/> yes <input type="checkbox"/> no |
| ... 2 km from your home address is too far away to pick up parcels? | <input type="checkbox"/> yes <input type="checkbox"/> no |

What is the maximum distance you would accept to pick up parcels? _____ km



Part 2

Imagine yourself in the following situation:

You are thinking about an event for which you need new clothes, but you cannot remember when it is going to take place. You ask a friend when the event is going to take place; he/she answers: "The event is going to take place... (please indicate if you believe purchasing the clothes is urgent)

- | | | |
|------------------|---------------------------------|-------------------------------------------|
| ... tomorrow". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |
| ... in 2 days". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |
| ... in 3 days". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |
| ... in 4 days". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |
| ... in 5 days". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |
| ... in 7 days". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |
| ... in 10 days". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |
| ... in 2 weeks". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |
| ... in 1 month". | <input type="checkbox"/> urgent | <input type="checkbox"/> no time pressure |

Part 3

Please read the description of the scenarios and state afterwards whether the scenario is comprehensible or not.

Scenario 1: "You are looking for a new pair of jeans. You are at your computer considering to purchase them online. You have the possibility to either order several pairs of jeans at the same time with the intention of comparing them at home and only keeping a maximum of one and returning the others (postponed-selection) or to decide now on one particular pair of jeans and order them (speculation).

You realize that most likely nobody will be home when the delivery person will arrive. You will need to pick up your parcel from the nearest post office or parcel delivery service access point – all are approximately 1 km from your home. You also know, that in case of a return, you must drop off the parcel at the post office or parcel delivery service access point."

Is the situation above explained understandable and could you place yourself in the situation? yes no

Why not? _____

Please indicate on a scale from 1 (low effort) to 5 (high effort):

	1 (low)	2	3	4	5 (high)
How would you rate your effort to receive the parcel in this scenario?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How would you rate your effort to return the parcel in this scenario?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Scenario 2: "The harddrive capacity of your computer is full. However, in order to save the images from your last vacation, you need more storage space and therefore you are looking for an external harddrive. You are at your computer considering to purchase it online. You have the possibility to either order several external harddrives at the same time with the intention of comparing them at home and only keeping a maximum of one and returning the others (postponed-selection) or to decide now on one particular external harddrive and order it (speculation).

You realize with certainty that someone can accept the parcel at your home address when the delivery person arrives and that you will not have to pick up the parcel anywhere else. In case of a return, you have the option to have the parcel picked up at your home address."

Is the situation above explained understandable and could you place yourself in the situation? yes no

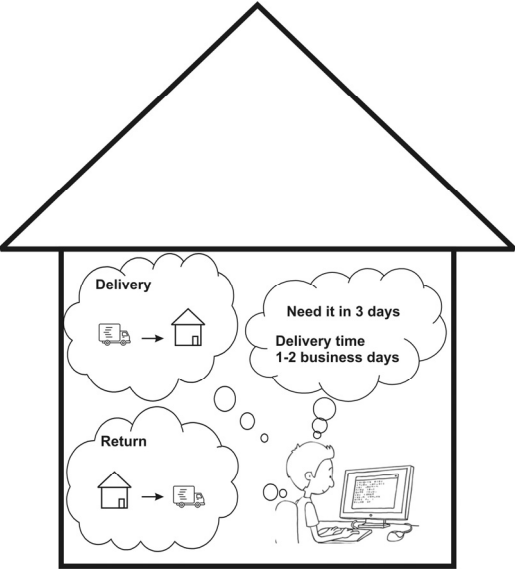
Why not? _____

Please indicate on a scale from 1 (low effort) to 5 (high effort):

	1 (low)	2	3	4	5 (high)
How would you rate your effort to receive the parcel in this scenario?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How would you rate your effort to return the parcel in this scenario?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix – Main experiment

Illustrations and descriptions of the eight different ordering situations

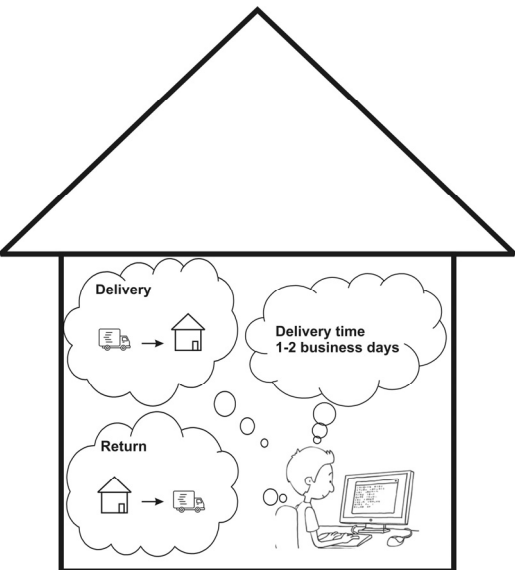


Before you choose between the ordering options, imagine yourself in the following situation:

It is Monday, you are at your computer and suddenly you remember some items you want to order. You have not informed yourself about these items in advance. You need them all by Thursday (in 3 days).

The standard delivery time is 1-2 business days. You realize with certainty that someone can accept the parcel at your home address when the delivery person arrives and that you will not have to pick up the parcel anywhere else. In case of a return, you have the option to have the parcel picked up at your home address.

Figure A - 1: Ordering situation A (home delivery, home return, urgent)



Before you choose between the ordering options, imagine yourself in the following situation:

It is Monday, you are at your computer and suddenly you remember some items you want to order. You have not preciously researched these items. You do not need the items within the next month.

The standard delivery time is 1-2 business days. You realize with certainty that someone can accept the parcel at your home address when the delivery person arrives and that you will not have to pick up the parcel anywhere else. In case of a return, you have the option to have the parcel picked up at your home address.

Figure A - 2: Ordering situation B (home delivery, home return, not urgent)

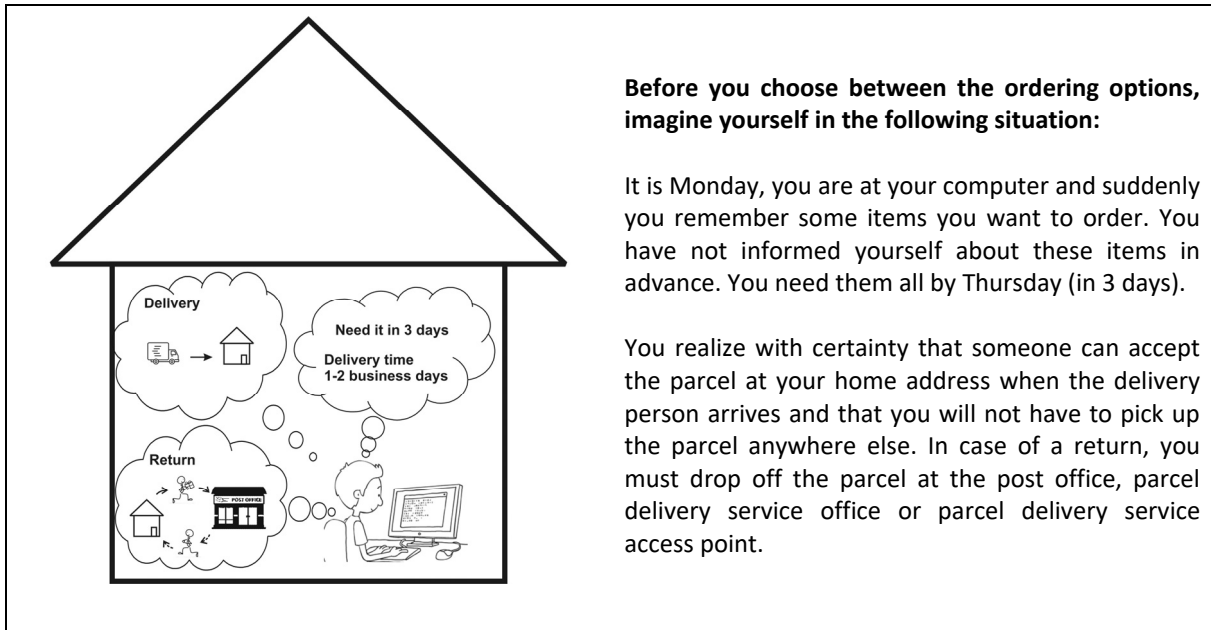


Figure A - 3: Ordering situation C (home delivery, drop-off return, urgent)

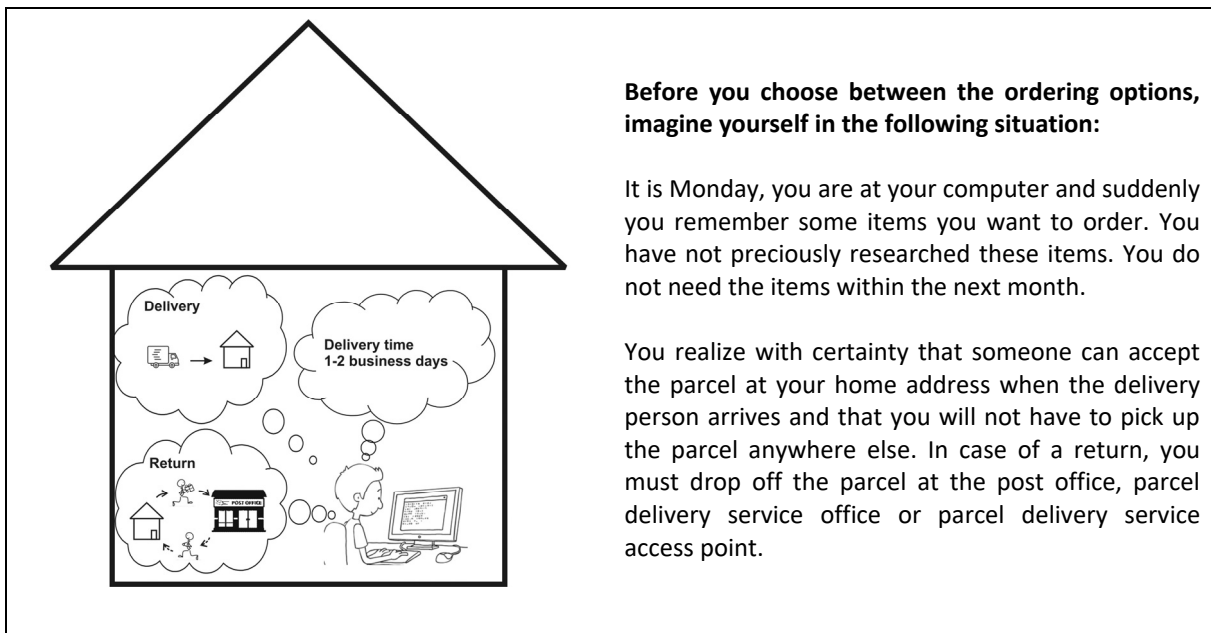


Figure A - 4: Ordering situation D (home delivery, drop-off return, not urgent)

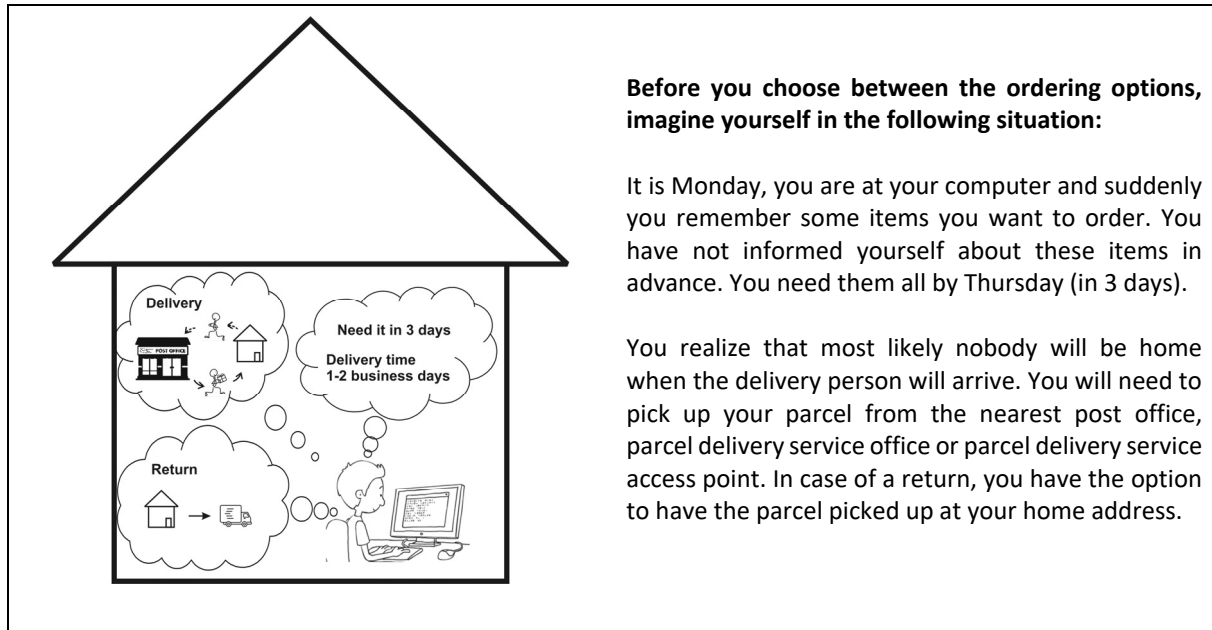


Figure A - 5: Ordering situation E (pick-up delivery, home return, urgent)

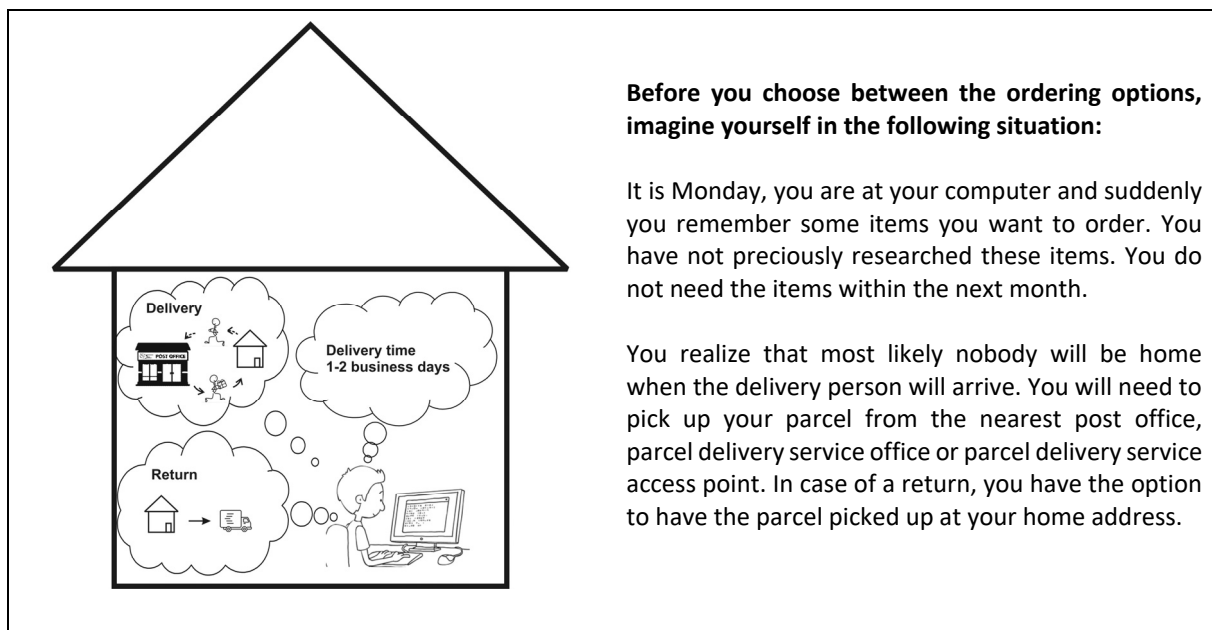


Figure A - 6: Ordering situation F (pick-up delivery, home return, urgent)

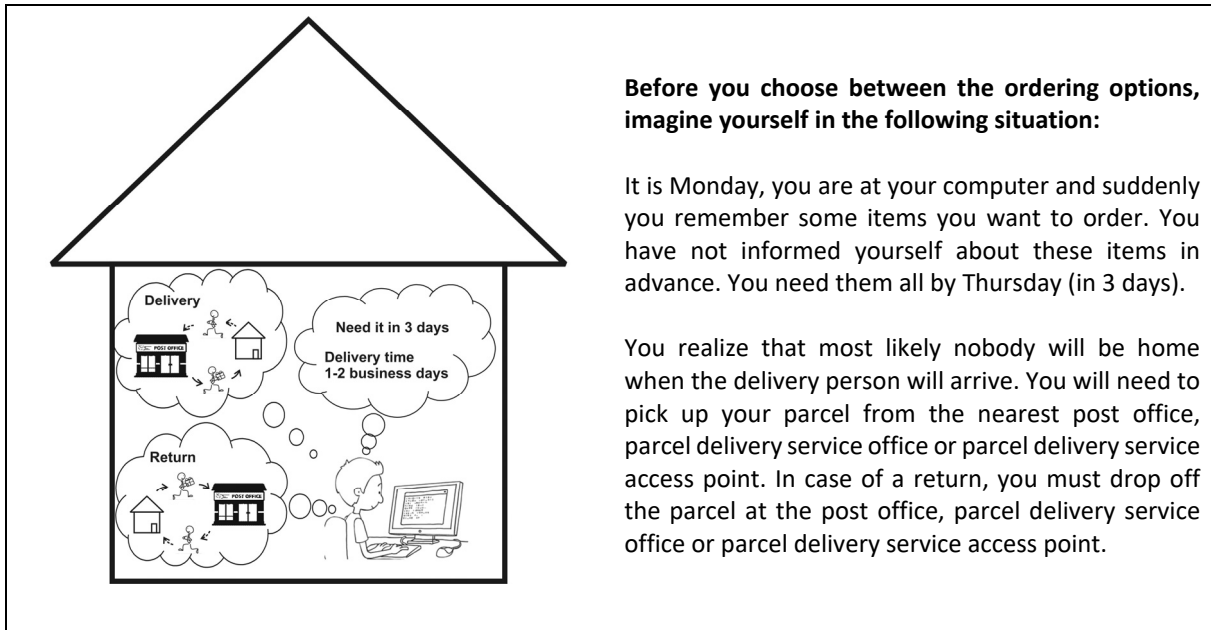


Figure A - 7: Ordering situation G (pick-up delivery, drop-off return, urgent)

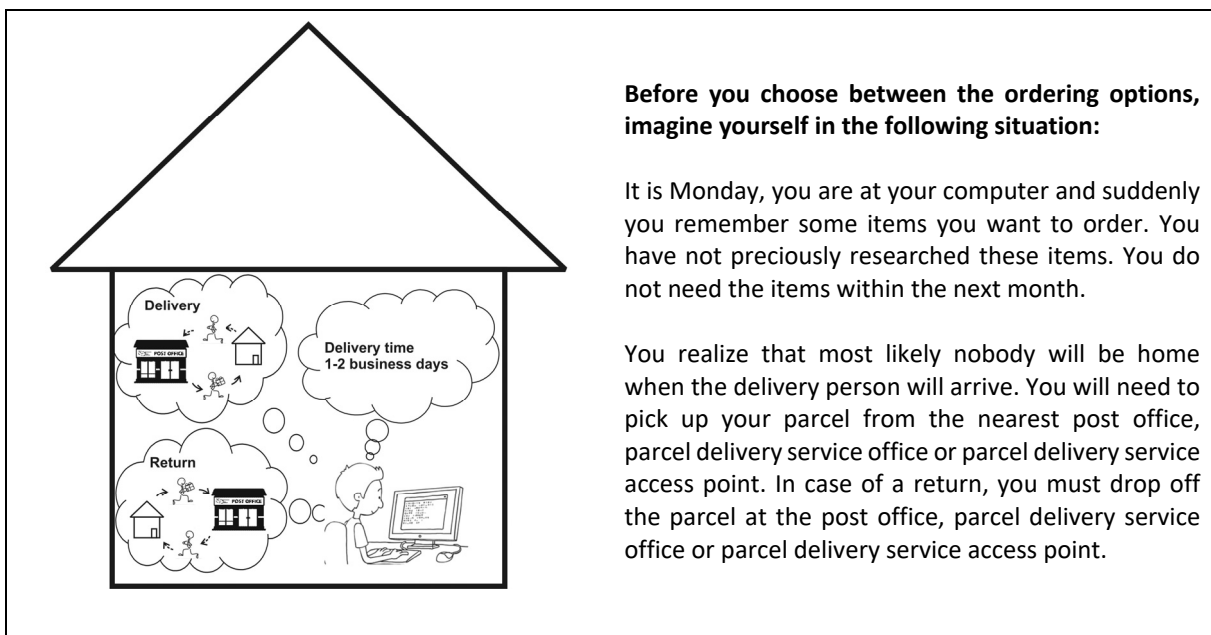


Figure A - 8: Ordering situation H (pick-up delivery, drop-off return, not urgent)

Example experiment group A (home delivery, home return, urgent)

Online Ordering Behavior A

Progress 0%

Welcome!


In this survey we will ask you several questions about your online ordering behavior.

[Prior to participating in this survey, please read the following consent form.](#)

1. My decision to consent is entirely voluntary and I understand that I am free to withdraw at any time without giving a reason.
2. I consent to the publication of the results of this study, as long as the participant information is anonymous.
3. I have had the opportunity to ask the researcher any questions that I have about the study and my involvement in it. I can contact the lead researcher of the project via Prolific at any time.

I consent to participate in this study on online shopping.

I do not consent to participate in this study on online shopping.





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Online Ordering Behavior A

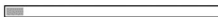
Progress 4%

Please insert your Prolific ID:

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Online Ordering Behavior A

Progress  8%



On the following pages we will show you different items (that you would like to buy) and offer you different ordering options to choose from. The ordering options differ in order type and shipping fees. Regarding the order types a distinction is made between: buy-with-confidence order / try-before-you-decide order. Please familiarize yourself with the following definitions of order types in order to understand what is discussed later in the survey.

buy-with-confidence order

With a buy-with-confidence order, you decide on exactly one model and size before the actual order placement and order it.

try-before-you-decide order

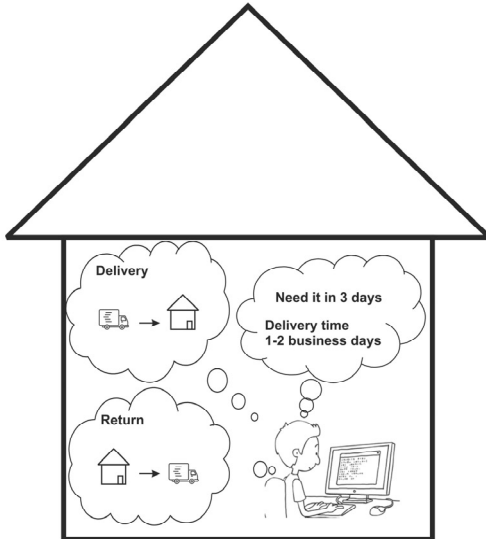
With a try-before-you-decide order, you choose some similar items (e.g. varying in size and color) and order all of them. You know, that you will only keep one of these items (the item that you like best) and return all the others.

Note that there are checks in this survey to assess whether you are reading the survey questions properly.



Online Ordering Behavior A

Progress  12%



Before you choose between the ordering options, imagine yourself in the following situation:

It is Monday, you are at your computer and suddenly you remember some items you want to order. You have not informed yourself about these items in advance. You need them all by Thursday (in 3 days).

The standard delivery time is 1-2 business days. You realize with certainty that someone can accept the parcel at your home address when the delivery person arrives and that you will not have to pick up the parcel anywhere else. In case of a return, you have the option to have the parcel picked up at your home address.

How quickly do you need the items?

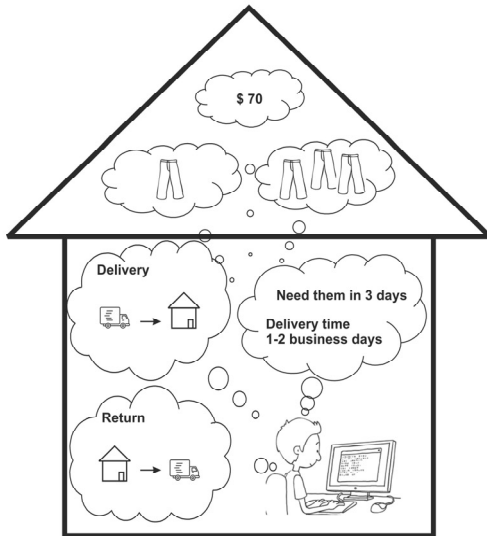
- tomorrow
- in 3 days
- next week
- not within the next month



Online Ordering Behavior A



Progress 16%



You are looking for a new pair of jeans. The cost of a pair of jeans is about \$70. You need the pair of jeans by Thursday (in 3 days) because you are going on vacation for a few days and would like to take them with you.

Repetition of the order type definitions:

buy-with-confidence order	try-before-you-decide order
With a buy-with-confidence order, you decide on exactly one model and size before the actual order placement and order it.	With a try-before-you-decide order, you choose some similar items (e.g. varying in size and color) and order all of them. You know, that you will only keep one of these items (the item that you like best) and return all the others.

Please decide here and on the next pages in each case whether you would choose the left, the right or none of the two ordering options. There are no return fees in this case.

1 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$3	\$7	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 18%

2 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$7	\$3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 19%

3 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$9	\$5	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 20%

4 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$5	\$9	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 22%

5 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$7	\$9	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 24%

6 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$9	\$7	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 25%

7 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$5	\$3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 26%

8 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$3	\$5	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 28%

How would you rate the effort in the situation described to you?	1 (low)	2	3	4	5 (high)
Effort to receive the parcel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effort to return the parcel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rate the urgency in the situation described to you?	1 (not urgent)	2	3	4	5 (urgent)
I felt ordering the items was ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

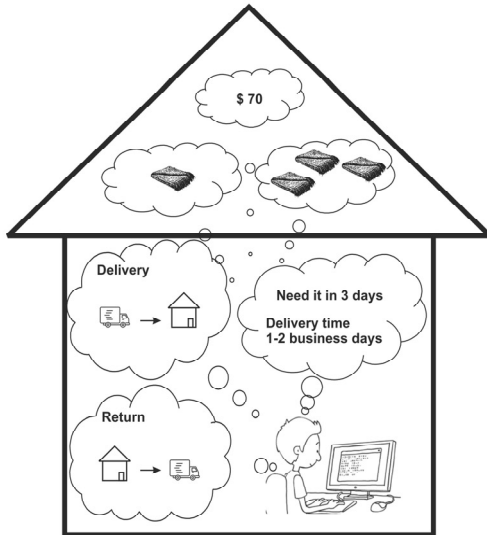


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Online Ordering Behavior A



Progress 32%



You just bought yourself a new sofa. You now need a new sofa blanket by Thursday (in 3 days) because you invited friends on Thursday evening and the sofa will look best with a matching blanket. The cost of a sofa blanket is about \$70.

Repetition of the order type definitions:

buy-with-confidence order	try-before-you-decide order
With a buy-with-confidence order, you decide on exactly one model and size before the actual order placement and order it.	With a try-before-you-decide order, you choose some similar items (e.g. varying in size and color) and order all of them. You know, that you will only keep one of these items (the item that you like best) and return all the others.

Please decide here and on the next pages in each case whether you would choose the left, the right or none of the two ordering options. There are no return fees in this case.

1 Which of these two ordering options would you choose?			
Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$3	\$7	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 34%

2 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$7	\$3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 35%

3 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$9	\$5	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 36%

4 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$5	\$9	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 38%

5 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$7	\$9	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 40%

6 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$9	\$7	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 41%

7 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$5	\$3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 42%

8 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$3	\$5	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 44%

How would you rate the effort in the situation described to you?

	1 (low)	2	3	4	5 (high)
Effort to receive the parcel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effort to return the parcel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rate the urgency in the situation described to you?

	1 (not urgent)	2	3	4	5 (urgent)
I felt ordering the items was ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 48%

Please assign the retail category for Amazon.

- Airline Tickets
- Online Retailer
- Swimming Pool Manufacturer

Please assign the retail category for Macy's.

- Department Store
- Groceries
- Tax Consultants

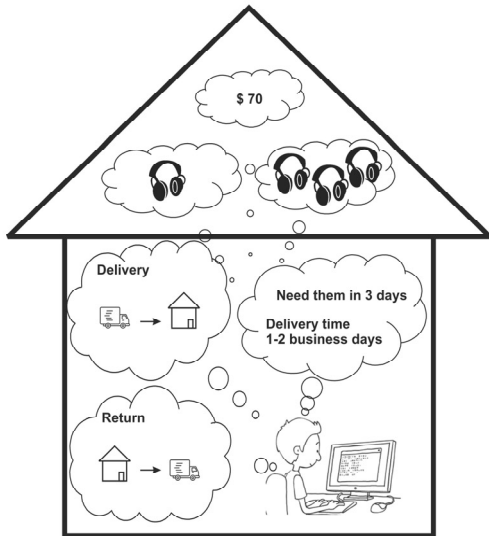


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Online Ordering Behavior A



Progress 52%



When you think back to your last time traveling, you remember how exhausting and noisy it was. To make future traveling more pleasant, you are looking for noise-canceling headphones. The cost of noise-canceling headphones is about \$70. You need the noise-canceling headphones by Thursday (in 3 days) because you are leaving on Friday morning.

Repetition of the order type definitions:

<u>buy-with-confidence order</u>	<u>try-before-you-decide order</u>
With a buy-with-confidence order, you decide on exactly one model and size before the actual order placement and order it.	With a try-before-you-decide order, you choose some similar items (e.g. varying in size and color) and order all of them. You know, that you will only keep one of these items (the item that you like best) and return all the others.

Please decide here and on the next pages in each case weather you would choose the left, the right or none of the two ordering options. There are no return fees in this case.

1 Which of these two ordering options would you choose?			
Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$3	\$7	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Online Ordering Behavior A



Progress 54%

2 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$7	\$3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 55%

3 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$9	\$5	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 56%

4 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$5	\$9	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 58%

5 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$7	\$9	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 60%

6 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$9	\$7	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 61%

7 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$5	\$3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 62%

8 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$3	\$5	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 64%

How would you rate the effort in the situation described to you?	1 (low)	2	3	4	5 (high)
Effort to receive the parcel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effort to return the parcel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

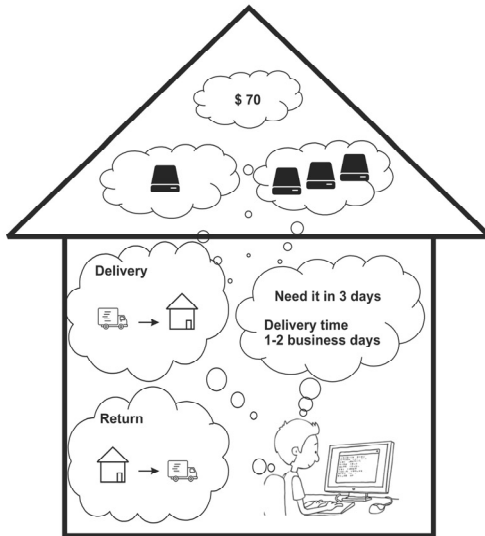
How would you rate the urgency in the situation described to you?	1 (not urgent)	2	3	4	5 (urgent)
I felt ordering the items was ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A

Progress 68%



The hard drive capacity of your computer is full. However, to save the images from your last vacation, you need more storage space and you are looking for an external hard drive. The cost of an external hard drive is about \$70. You need the external hard drive by Thursday (in 3 days) because you are going on vacation. To be able to use the camera again, the pictures from your last vacation must be saved from the camera to the external hard drive.

Repetition of the order type definitions:

<u>buy-with-confidence order</u>	<u>try-before-you-decide order</u>
With a buy-with-confidence order, you decide on exactly one model and size before the actual order placement and order it.	With a try-before-you-decide order, you choose some similar items (e.g. varying in size and color) and order all of them. You know, that you will only keep one of these items (the item that you like best) and return all the others.

Please decide here and on the next pages in each case weather you would choose the left, the right or none of the two ordering options. There are no return fees in this case.

1 Which of these two ordering options would you choose?			
Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$3	\$7	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Online Ordering Behavior A



Progress 70%

2 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$7	\$3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 71%

3 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$9	\$5	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 72%

4 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$5	\$9	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 74%

5 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$7	\$9	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 76%

6 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$9	\$7	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 77%

7 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$5	\$3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 78%

8 Which of these two ordering options would you choose?

Order type	buy-with-confidence order	try-before-you-decide order	I would not choose either of the two ordering options shown and abort my order.
Shipping fees	\$3	\$5	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 80%

How would you rate the effort in the situation described to you?	1 (low)	2	3	4	5 (high)
Effort to receive the parcel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effort to return the parcel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rate the urgency in the situation described to you?	1 (not urgent)	2	3	4	5 (urgent)
I felt ordering the items was ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How do you react if something went wrong with your order?	Highly unlikely	Somewhat unlikely	Neutral	Somewhat likely	Highly likely
If this was the first time something went wrong ordering an electronic device from a certain retailer, how likely would you order again from that retailer?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If this was the third time something went wrong ordering an electronic device from a certain retailer, how likely would you order again from that retailer?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Online Ordering Behavior A



Progress 84%

How likely would you order the following items <u>online</u> ?	Highly unlikely	Somewhat unlikely	Neutral	Somewhat likely	Highly likely
pair of jeans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
blanket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
external hard drive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
noise-canceling headphones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please tell us something about your last orders.	0	1	2	3	4	5
With how many of your last 5 online orders did you return something?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How many of your last 5 online orders were try-before-you-decide orders?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After how many of your last 5 <u>unsatisfying</u> online orders did you satisfy your need by purchasing offline instead of reordering?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please assign the retail category for Home Depot.

Office Supplies

Groceries

Home Improvement



Online Ordering Behavior A

Progress  88%



Please read the statements below and rate if you think it is **not a real disadvantage (1)** or a **strong disadvantage (5)**.

One potential downside of a try-before-you-decide order is that...	1 (not a real disadvantage)	2	3	4	5 (strong disadvantage)
... the retailer might block you, after you send back too many items.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... even if you keep one item, you have the effort to return the others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... you have to pay a larger amount of money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... compiling your order may take longer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... the probability of a problem with the return is higher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... it always involves a return and therefore is not as sustainable as a selection order.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

One potential downside of a buy-with-confidence order is ...	1 (not a real disadvantage)	2	3	4	5 (strong disadvantage)
... you cannot compare the items physically.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... that it takes longer for you to decide on one item before ordering.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... that you might need to place another order if the ordered item does not meet your expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which of the aforementioned potential disadvantages have influenced your decisions in this survey?

- Blocking by the retailer
- Return effort
- Payment of a larger amount of money
- Longer time to compile order
- A problem with the return
- Sustainability
- Physically comparing items
- Time for decision making
- Reordering effort
- None of these



Online Ordering Behavior A



Progress 92%

Finally, a few questions about yourself.

What gender are you?

woman

man

other

How old are you?

years

Do you live in the city, the suburbs or the countryside?

city

suburbs

countryside

Do you own a car?

yes

no

What is your gross income per month?

\$0 - \$1,999

\$2,000 - \$2,999

\$3,000 - \$3,999

\$4,000 - \$4,999

>\$5,000

Please read the following statements and indicate whether they do not fit at all (1) or fit completely (5).	1 (not fit at all)	2	3	4	5 (fit completely)
I like to take a risk rather than playing it safe.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am self-confident.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am quickly disappointed when something does not work out as I imagined it would.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a busy person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Online Ordering Behavior A

Progress  96%

As we continue research in this area, we are considering how these order types are named. We therefore ask for your opinion. How do you call these order types?

You decide on exactly one model and size before the actual order placement and then simply order it. The item is then shipped alone in one parcel.

You decide on exactly one model and size before the actual order placement. Then you think of other (completely different) articles, that you might need as well. You decide on exactly one model and size as well and then order it together with the item you decided on before. The items are then shipped together in one big parcel.

You choose some similar items (e.g. varying in size or color) and order all of them. You know, that you will only keep one of these items (the item that fits best) and return all the others. The items are then shipped alone in one large parcel.

You choose some similar items (e.g. varying in size or color) to order. Then you think of other (completely different) articles, that you might need as well. You also choose some similar items of the other articles and order them together with the items you chose before. You know, that you will only keep one item of each selection (the item that fits best) and return all the others. All items are then shipped together in one big parcel.



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Online Ordering Behavior A

Progress  96%

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Last Name: Harder

First Name: Josephine

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According to § 12 part 1 no. 6 of the Doctoral Program Regulations
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I hereby declare, that the

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Taylor, Asst. Prof. Dr.	Daniel	Co-author of Chapters 3 and 4	Gratuitous
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