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Product availability as an omni channel coordination strategy

an empirical study into consumers' preference towards an online product availability insight

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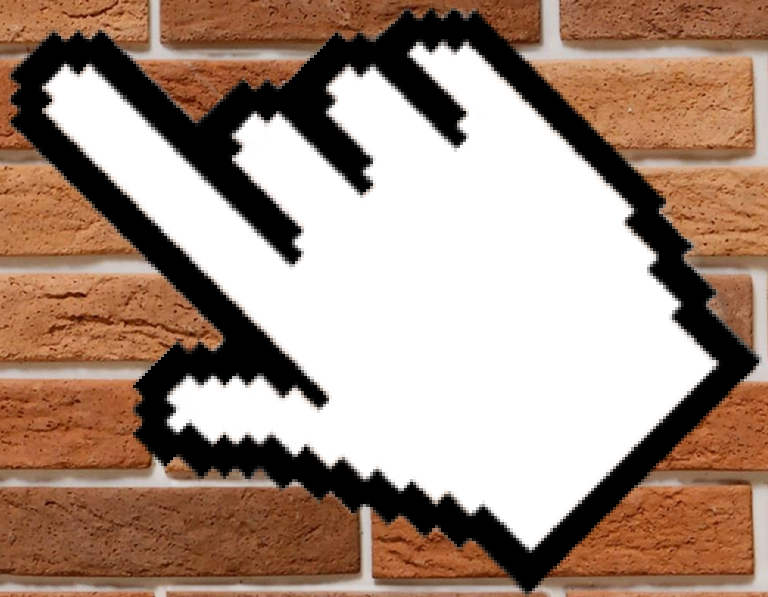

Product availability as an omni channel coordination strategy

An empirical study into consumers' preference towards an online product availability insight

Eindhoven, July 2016

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Preface

This report is the result of my graduation project which was part of the Master track Real Estate Management & Development at the Eindhoven University of Technology. This study regards to retailers' online and offline channel coordination strategies. Therefore, the study contributes to the field of omni channel retailing, but also urban management. With the aid of an online functionality which consumers can use to check product availability in physical stores, this research examines to what extent consumers would purchase a product in the offline store instead of a retailers' web store. A stated choice experiment was used to examine the functionality in relation to other drivers in consumers' channel choice decisions.

The work that lies before you could not have been accomplished without the help of others. First and foremost I want to thank my supervisors Astrid Kemperman and Aloys Borgers for their guidance, knowledge, and inexhaustible support. Thanks to their expertise, they have brought the experiment to a higher level. Furthermore, I want to thank Pauline van den Berg for being my third reader. I want to thank Peter van de Waerden and Mandy van de Sande for their help with the survey-program, and patience for the many demands I had. In this regard, I also want to thank my brother Lucas Rob for bringing the questionnaire to the next level with his programming skills. I want to thank the respondents of the survey for their time, and the focus group of the research design as well as the panel of the test questionnaire for their opinions. Last but not least, I want to thank my parents Hans and Kitty Rob, and my partner Coen Enklaar for their unconditional support.

I hope you enjoy reading my master thesis as much as I did writing it,

Marius Rob

Oosterbeek, July 2016

Summary

Due to the economic crises and the growth of online purchases, the vacancy rates of Dutch shopping centers has increased, which in turn has negative impact on shopping centers´ liveliness and livability. At the same time, many research has been done to methods, and instruments that increase the chance of online purchases (e.g. security and privacy warrantees, short lead times, low shipping costs, product evaluation techniques). Instead of finding ways to increase the chance of offline purchase as a counterattack, nowadays, retailers rather benefit from channel coordination strategies that increase their overall revenues – since several researchers state that a more synergetic approach is what the growing amount of omni channel consumers requires (e.g. Brynjolfsson et al., 2009; Emrich et al., 2015; Neslin and Shankar, 2009). Omni channel consumers use channels constantly, interchangeably and simultaneously, and they expect retailers comply to their desires. This research captures both developments outlined above, by introducing and examining a so-called online product availability insight – a functionality that displays the stock of products in retailers' physical stores on their web store. Such a functionality is expected to have a positive effect on offline commerce because the risk of product unavailability in physical stores no longer exists.

In order to ascertain consumers' preference for an online product availability insight, a stated choice experiment was executed. A stated choice experiment provides the ability to examine the preference of a non-existing functionality such as an online product availability insight. Furthermore, the relative importance of other influencing factors during consumers' channel choice considerations can be detected as well. In the experiment systematically designed, hypothetical choice situations are presented to decision makers. The choice options (or profiles), consist of the online and offline purchase channels that each includes accompanying factors (or attributes) that influence consumers' channel usage. Based on decision makers' choices, the importance of the factors can be determined. Before the experiment could be executed, a literature study was needed towards the most decisive factors in consumers' channel choice decisions. Eleven influencing attributes were found; for the online channel these were delivery time, delivery appointment, delivery costs, and retour effort, for the offline channel these were travel time, friendliness of personnel, product availability insight, and personalized service, and for both channels this was product price (discounts). Moreover, product category (apparel and electronics) and time constraints (with and without a time pressure) were used as context variables for the choice situations.

The choice situations were presented within a web-based questionnaire. Data was collected during the end of November 2015, and the end of January 2016. In total, data of 618 respondents was used for the analyses. The data was analyzed with two discrete choice models; the Multinomial Logit model (MNL model), and the Latent Class model (LC model). The MNL model estimates decision makers' mean preferences for the alternatives and attributes. The LC model is an extension of the MNL model where groups of decision makers – with comparable choice behavior (preferences) – can be distinguished. For both the MNL and LC model two separate models were estimated; one for the product category apparel (specifically a jeans), and one for the product category electronics (specifically an external hard disk).

According to both MNL models for the jeans and external hard disk (EHD), the online product availability insight has significant influence on consumers' channel choice decisions. Especially in case of a high involvement experience good such as a jeans, consumers perceive such an insight as useful. The chance to find a substitute is smaller for a jeans (color, size, fit, fabric), than for a low involvement search good such as an EHD (Kim and Lennon, 2011; Sloot et al., 2005). Also other interesting results were found with regard to the remaining factors. For the purchase channels, not unexpectedly, the offline channel was more preferred in case of a jeans, whereas both channels were equally preferred in case of an EHD. For the attributes, especially in case of an EHD, but also for the jeans, delivery time, delivery costs, and travel time are the most decisive factors in consumers' channel choice decisions, indicating that utilitarian-related factors have great influence on their shopping behaviors. However, friendly personnel in physical stores, is an important factor in case of

buying a jeans as well. In case of a time pressure (purchase urgency), delivery costs, and travel time are less important in case of a jeans. This might indicate that consumers are willing to make more costs (time as well as euros), if it concerns a high involvement experience good such as apparel.

The LC models unraveled three types of segments for each product category. The segments of both LC models (jeans and EHD) could best be distinguished based on decision makers' channel preferences. No clear results with regard to demographic and psychographic characteristics were found. The segments of the model for the jeans are offline shoppers, aversive shoppers, and multichannel shoppers. For the EHD the segments are online shoppers, aversive shoppers, and offline shoppers. According to both LC models for the jeans and EHD, the online product availability insight has significant influence on the offline shoppers of both models, and the multichannel and aversive shoppers of the jeans model. These shoppers perceive an online product availability insight as a useful feature during their shopping process. Also other interesting results were found with regard to the remaining factors. Moreover, some similarities between the segments of the models were found in attribute preferences. The offline shoppers of both models are price conscious (due to their high preferences for free delivery, and price discounts), and perceive many attributes as important in their channel choice considerations (namely: delivery time, delivery costs, travel time, product availability, and product price). A similarity between multichannel shoppers (jeans model), and online shoppers (EHD model), is that they feel most pressured in time. Probably, this is one of the reasons their preference for the online channel is high. In contrast to the offline shoppers, delivery costs, and product price discounts are less important to them. They rather prefer different kind of online services; namely an 'any desired part of day' delivery appointment possibility, and the possibility to return products for free themselves at a return point. For the offline channel, travel time is very important to them. Lastly, the aversive shoppers have mostly logical but low attribute utility patterns. In case of a jeans, friendly personnel in physical stores is very important to them.

Although this research provides some clear findings with regard to a product availability insight, and its importance relative to other factors influencing consumers' channel choice behavior, also some recommendations for further research towards an online product availability insight can be remarked. In case the stated choice method is used, images of web pages of products with an online product availability insight could be used to increase the external validity somewhat – for this research it was difficult to find an equivalent for the offline channel. Another recommendation in this regard is to extent the questionnaire with additional questions about decision makers' shopping behavior (e.g. their mode of transport) in order to better clarify the shopping behaviors of the segments. Another, more practical possibility is to actually implement an online product availability insight and measure the differences before and after the implementation. Unfortunately, the internal validity of such an experiment is low.

An product availability insight would be an effective functionality for funneling consumers to the offline channel. Especially when it concerns a high involvement experience good such as apparel, and/or consumers who shop both online and offline but prefer to shop offline.

Contents

1. Introduction

1.1 Motivation

The Dutch retail sector is currently facing difficult times. The economic climate has had negative effects on consumers' expenditure and the amount of online purchase possibilities is growing and improving (NRW, 2014; Thuiswinkel.org, 2016). Both developments are having a tremendous impact on the revenues of retailers and vacancy rates of Dutch shopping centers. A decline in number of visitors can have major impacts on shopping centers' liveliness and livability. In many cities, urban districts and villages, shopping centers are the beating heart of communities. For that reason, many people have interest in a vital city center.

From an urban management perspective, much attention is paid to obvious interventions for the offline shopping environment such as facility mix, social safety, accessibility, physical atmospherics, and shopping mall experiences. When these conditions are present, consumers might be more inclined to visit a shopping center instead of the World Wide Web. Although these instruments proved to be very effective, they do not tackle the root of the problem (Chocarro et al., 2013; Heitz-Sphan, 2013). The main reason for the decline of retailers' offline revenue is the growing competition from online channels.

Regarding consumers' channel choice decisions, many practitioners and academics focused on methods, instruments, and other ways that increased the chance of online purchases. Examples of these are security and privacy warrantees (Watchravesringkan and Shim, 2003), short lead times (Forsythe and Shi, 2003), low shipping costs (Kim and Kim, 2004) and product evaluation techniques (Lim et al., 2012). A possible counterattack is to find ways that increase the chance of offline purchase. Although this might be interesting from an urban management perspective, many retailers who sell products both online and offline, do not necessarily benefit from more offline purchases instead of less online purchases. Most studies which focused on the competition between online and offline channels suggest that channels should complement each other rather than compete (e.g. Armour, 2008; Brynjolfsson et al., 2009; Blázquez, 2014; Wikström, 2005). Furthermore, when taking recent literature regarding consumers' channel choice decisions into account, the most lucrative way proves to be a coordination between both channels (Emrich et al., 2015; Herhausen et al., 2015). The underlying reason is to create better customer value; provide consumers best of both worlds during their shopping process (Neslin et al., 2006; Neslin and Shankar, 2009).

To date, research to channel integration in relation to consumers' channel choice decisions is scarce. Retailers have several possibilities to integrate their channels (Emrich et al., 2015; Herhausen et al., 2015; Neslin and Shankar, 2009; Zhang et al., 2010). This research will focus on channel coordination strategies that stimulate offline commerce (number of visitors and sales). It is hoped that such a strategy serves a twofold purpose. On the one hand, this research should contribute to the field of effective channel integration strategies for retailers by improving their offline (physical stores) revenues. On the other hand, this research should contribute to the field of urban management by attracting more consumers to the offline environment (shopping centers).

1.2 Background

The latest paradigm within research into consumers' channel choice decisions, is the omni channel phenomenon. In an omni channel retail world, consumers as well as retailers use different channels constantly, interchangeably, and simultaneously (Van Delft, 2013; Verhoef et al., 2015). According to Rigby (2011), and Verhoef et al. (2015), the omni channel phenomenon is the evolution of the multichannel phenomenon. The main difference between both worlds is the channel siloed focus in the multichannel world, and the channel integrated focus in the omni channel world (Verhoef et al.,

2015). In this regard, two elements are of importance; omni channel shopping behavior (demand), and omni channel retail management (supply). Subsequently, these elements are discussed.

1.2.1 Omni channel shopping behavior

Due to the emergence of the internet, consumers' shopping behaviors (patterns and channel choice) are difficult to predict nowadays. During their buying process, consumers use various channels interchangeably, and simultaneously (Van Delft, 2013; Verhoef et al., 2015). Instead of searching and purchasing purely online or offline, there is a growing number of consumers who have learned to obtain best of both worlds (Heitz-Spahn, 2013; Zhang et al., 2010). They are using shopping channels interchangeably to take advantage of channel-specific characteristics (Verhoef et al., 2007). For example, they use the online channel to search for product information or to compare products, while they use the offline channel to evaluate the quality of a product. These varying shopping patterns are called 'research shopping' – "the propensity of consumers to research the product in one channel (e.g., the Internet), and then purchase it through another channel (e.g., the store)" (Verhoef et al., 2007) – or 'cross channel free riding behavior' – "consumers' use of one retailers' channel only to obtain information and evaluate products and switch to another supplier to purchase the product" (Van Baal and Dach, 2005).

In general, two omni channel shopping patterns can be identified; showrooming and webrooming or 'research online, purchase offline behavior' (ROPO-behavior) (Binder, 2014). When consumers start to gather information offline, whereafter they purchase a product at a competitors' Web store for a better price (with for example their mobile phone), they use the offline channel as a showroom (Mehra et al., 2013). If consumers start to orientate online for product information and then purchase the product in a competitors' offline store nearby, they exhibit ROPO-behavior or webrooming (Verhoef et al., 2007).

1.2.2 Omni channel retailing

Since the advent of online channels, much attention is paid to the effects of multichannel retailing by practitioners and academicians. Initially, the focus was on the effects of adding online channels on the performance of a firms' existing offline, and/or catalog channels (e.g. Deleersnyder et al., 2002; Geyskens et al., 2002). Later, also the reverse effects were examined (e.g. Avery et al., 2012; Pauwels and Neslin, 2015). Neslin et al. (2006) appoints these strategies as part of retailers' multichannel customer management, which they define as; "the design, deployment, coordination, and evaluation of channels to enhance customer value through effective customer acquisition, retention, and development". Besides channel additions, other challenges they identified are related to the coordination of channels and management of consumer behavior across channels.

According to Rigby (2011), and Verhoef et al. (2015) multichannel retailing is evolving to omni channel retailing. Verhoef et al. (2015) defined omni channel management as the "synergetic management of the numerous available channels and customer touch points, in such a way that the customer experience across channels and the performance over channels is optimized". The main difference with multichannel customer management is that the omni channel focus takes, besides the store, online website and catalog, also several mobile, social media, and mass communication (advertisements on for example TV, and Radio) channels into account. Within omni channel management, all these channels are integrated in such a way that a retailer can provide their customers a seamless experience of their brand.

Many scientists believe that the answer to omni channel shopping management are channel integration strategies (Herhausen et al., 2015; Verhoef et al., 2015; Neslin and Shankar, 2009; Zhang et al., 2010). Bendoly et al. (2005) defined channel integration as the degree to which different channels interact with each other. This research focuses on channel integration strategies that stimulate offline commerce. In this regard, some researchers recommend strategies whereby the Internet should be used as a search service to funnel customers into the store (e.g. Wang et al., 2013). Herhausen et al. (2015) identified four common offline stimulating channel integration strategies; efficient dealer search, the ability to check product availability in the physical store via the

Internet, the possibility to reserve products online for purchase in the physical store, and to return products purchased online at the offline store. Examples of these are the 'buy online, pick-up-in-store' functionality (Brynjolfsson et al., 2013), 'shop online, purchase in-store' phenomenon (Armour, 2008), 'inventory-only showrooms' (Bell et al., 2014), and 'Local Inventory ads' by Google (Krueger, 2015). This research focuses on a combination of the preceding examples, which will be called online product availability insight; an online insight on retailers' web stores displaying products in stock in their physical stores.

1.3 Objectives and research questions

Derived from the motivation and background as described above, the objective of this research is twofold. On the one hand, the livability of the shopping center has to be ensured by stimulating offline commerce. On the other hand, retailers' revenues have to be improved by integrating their channels. Specifically, this research focuses on an online product availability insight as channel integration technique; are consumers more inclined to visit the physical store and to buy products, when the multichannel retailers provide on their web store an online insight about their products in stock in their physical stores? Furthermore, this research focuses on the importance of the online product availability insight relative to other factors influencing consumers' channel choice decisions; for example, the travel time to a city center or the delivery time for a product purchased online.

Consequently, the aim of this research is to examine the 'online product availability insight' channel integration strategy's effectiveness on a retailers' total revenue growth through offline purchases and traffic to the offline environment, and its importance compared to other factors influencing consumers' channel choice decisions. This aim results in the following research question:

"How can an online product availability insight from offline stores affect omni channel consumers' shopping behavior such that offline commerce will be stimulated?"

In order to answer the research question, the following sub-questions must be answered:

- What factors influence consumers' omni channel shopping behaviors, and how?
- What instruments for an online product availability insight can stimulate offline commerce?
- What is the effectiveness of the most relevant online product availability insight on offline commerce?
- What is the importance of the online product availability insight relative to other factors influencing consumers' channel choice decisions?

The first and second sub-question will be answered with the aid of a literature study. The third and fourth sub-question will be answered with the aid of an experiment. On the one hand, the experiment will examine the impact of the most relevant instrument for an online product availability insight on offline commerce. On the other hand, also other factors that influence consumers' channel choice considerations will be tested with the experiment.

1.4 Research structure

The remainder of this research consists of four chapters. In order to answer the first and second sub-questions, the following chapter includes a literature study on factors that influence consumers' omni channel shopping behaviors, and instruments for an online product availability insight. The results of the investigation towards these factors and instruments will function as the input for the experiment. The third chapter discusses the methodology of the experiment. This chapter starts with the theory the method of this research is based on, and ends with the questionnaire for data collection. In chapter four, the results of the experiment are described. The chapter provides an

answer to the third sub-question of this research; specifically, the importance of the online product availability insight relative to other factors influencing consumers' channel choice decisions are discussed. In the last chapter the conclusions are drawn. Furthermore, this chapter outlines suggestions for managerial implications, and discusses the limitations of this research and gives recommendations for further research.

2. Literature study

The literature study consists of two parts. Section 2.1 contains an investigation to consumers' omni channel shopping behavior. The accompanying question is "which factors influence omni channel consumers' shopping behavior, and how?". Section 2.2 contains an investigation to channel coordination strategies which stimulate offline commerce. The corresponding question is "What instruments for an online product availability insight can stimulate offline commerce?".

2.1 Consumers' shopping behavior in an omni channel environment

The first part of the literature study contains an investigation of omni channel shopping behavior. The results of the investigation provide an answer to the question "which factors influence omni channel consumers' shopping behavior, and how?" Subsection 2.1.1 describes the most important omni channel buying patterns of consumers within their buying process. The aim of this part is to understand the complex buying patterns due to the different shopping channels. The accompanying question is "what does the buying patterns of the omni channel consumers' buying process look like?" Subsection 2.1.2 describes the factors that influence consumers' channel usage. The aim of this part is to investigate the factors that affect consumers' channel choice behavior most. The associated question is; "to what extent do the factors investigated in the literature study affect consumers' channel choice behavior." The results of this investigation function as input for the experiment of this research. Subsection 2.1.3 includes the conclusion of the first part of the literature study.

2.1.1 Consumers' omni channel buying process

During the buying process, the choices for consumers among products, retailers, brands and sales channels are endless. However, the extent of a consumers' buying process depends on consumers' channel choice behavior. Several variables can influence this behavior. Before these factors are discussed, first the buying process of consumers is described.

Much research has been done regarding the buying process of consumers (Engel et al., 1995; Etezadi-Amoli and Farhoomand, 1991; Liu et al., 2008; Solomon et al., 2002; Steinfield et al., 2002; and, Suominen, 2005). Although the amount of phases of the buying process differs, all studies have at least three main phases in common. First of all, there has to be a need or problem recognition which appears to be the first phase. The need recognition could be stimulated in many ways. A consumer could be triggered by some form of marketing, by people in their social environment and/or just by the necessity of the need. The second phase is the orientation phase. If consumers do not have a resolute preference for a specific product or brand, they will gather information about several alternatives and evaluate them with one another. After a successful evaluation, in the third phase the consumer can decide to purchase the product if he or she is content with the best alternative. If the best option is unclear, the orientation phase will probably start over again. Finally, some studies incorporate a post-purchase phase which pertains the consumers' evaluation of the satisfaction about the product bought. However, in each phase, the consumer generates knowledge about product attributes (like quality and price) and experiences with the seller (like service and convenience) which can have major influence on consumer behavior for iterations.

Although the consumers´ buying process as described above sounds clear, the internet has made predicting consumers' shopping behavior very difficult. For each phase of the process, consumers can choose from multiple online as well as offline channels. Consumers have seen the benefits of it; the online and offline channels can bring them distinct values at different phases of their buying process (McGoldrick and Collins 2007). Consequently, they are taking advantage of channel-specific characteristics (Verhoef et al., 2007). While some research state that the choice for an initial channel increase the likelihood of buying through it (Citrin et al., 2003; Danaher et al. 2003), many studies suggests that consumers use various channels in two stages of the buying process (Alba

et al. 1997; Verhoef et al., 2007; Wang et al., 2013; Weathers et al. 2007; Wind and Mahajan, 2002). In general, two types of consumers' omni channel shopping patterns can be distinguished; showrooming and ROPO ("Research online, purchase offline"). When consumers start to gather information offline, whereafter they purchase a product at a competitors' Web store for a better price (for example with their mobile phone), they use the offline channel as a showroom (Mehra et al., 2013). If consumers start to orientate online for product information and then purchase the product in a competitors' offline store nearby, they exhibit ROPO-behavior (Binder, 2014). These types of shopping patterns are called cross channel free-riding behavior. According to Van Baal and Dach (2005), consumers engage in free riding behavior "when they use one retailers' channel only to obtain information and evaluate products and switch to another supplier to purchase the product".

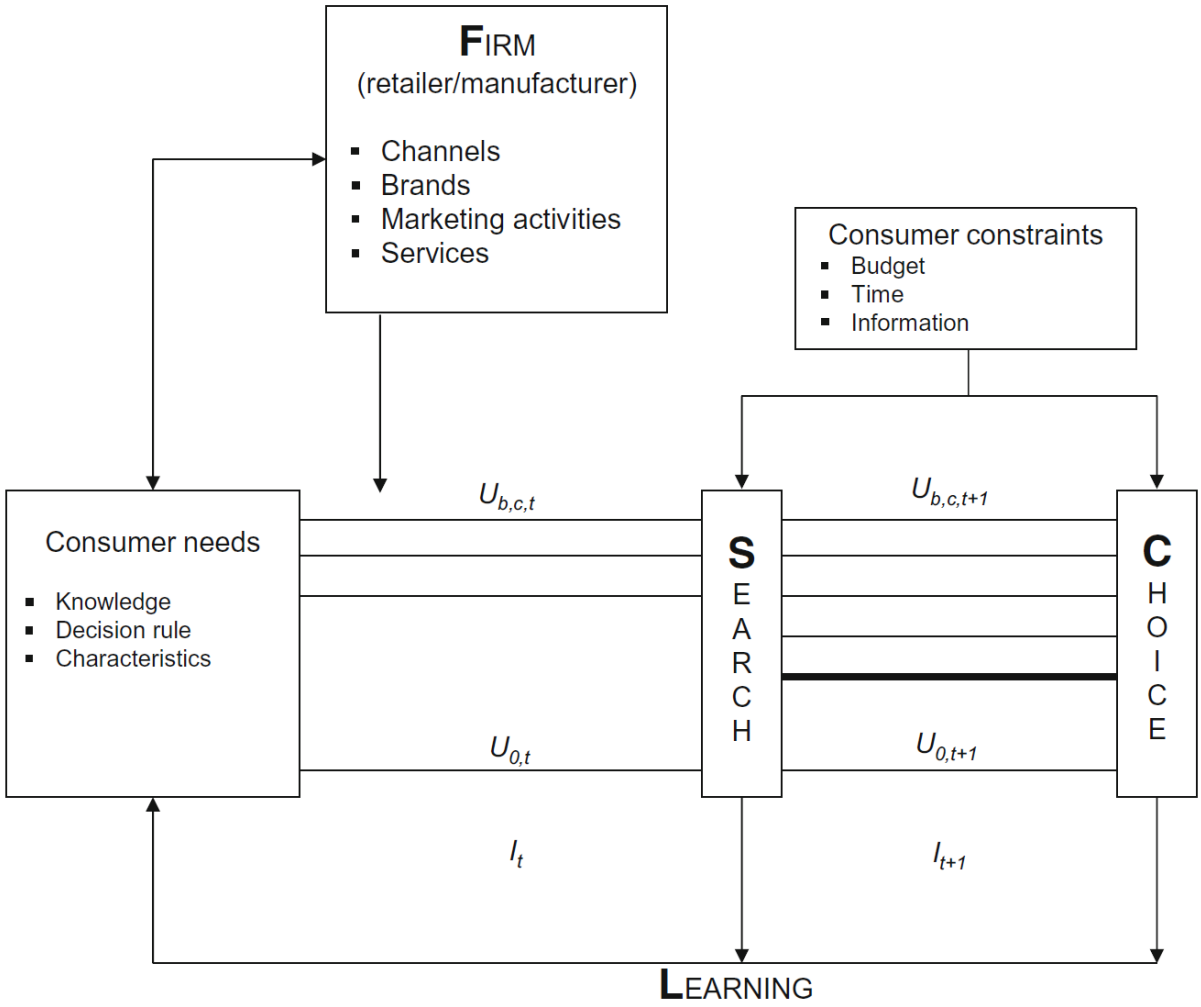


Figure 1. Framework product/channel interrelationship (Source: Neslin et al., 2014).

Recenty, Neslin et al. (2014) designed a framework which can take into account these free-riding behaviors in the consumers' buying process (see figure 1). Furthermore, their framework is based on utility theory. In the research field of consumers' channel choice behavior, many studies use the utility theory as theoretical underpinning (e.g. Gallino and Moreno, 2014; Heitz-Spahn, 2013; Konus et al., 2008). The utility theory in this regard, assumes that consumers' channel usage during their buying process depends on the utility they derive from online and offline channels in the orientation, and purchase phase. The channel with the highest utility (highest benefits, and lowest costs) is perceived as the best choice by the consumer, and will probably be used. As can be seen in

figure 1, the utilities[1] can be affected by the consumer him- or herself, the product, the purchase situation (constraints), and/or the retailer. Firstly, the amount of choices for a consumer are determined by the products and channels offered by retailers. Secondly, the amount of choices can be limited by the type of consumer him- or herself. For example, if a consumer only orientates and purchases products offline, she is not aware of the online channel/product combinations. Thirdly, the suitability of the channel and extensiveness of the buying process are determined by the type of products. For example, if a product has a high content of tangibility, the consumer will probably use the offline channel in his/her buying process. Furthermore, if a product is perceived as highly important by a consumer, especially the search process might be longer. Finally, the extensiveness of the buying process is also determined by the purchase situation. Place, costs, mental, and physical states might constrain consumers' decision rules.

The framework of Neslin et al. (2014) will broadly function as a starting point for this research. First of all, the utility theory will also be used as theoretical underpinning for this research. Chapther 3 'Methodology' addresses this theory in more detail. Secondly, the factors shown in the framework (see figure 1) that influence consumers' channel choice behavior will be investigated in the remaining part of this section. The factors in the framework are categorized in consumer characteristics, product characteristics, situational factors, and retailer services (see subsection 2.1.2). Lastly, from the consumers' buying process only the period between the search and purchase phase – called choice phase in the framework – will be used for the remainder of this research. Reason for this is the fact that when consumers face a product availability insight, it will take place during this period of the consumers' buying process.

The next subparagraph describes the factors that influence consumers' omni channel shopping behavior in more detail.

2.1.2 Factors influencing the consumers' omni channel buying process

Several factors can influence consumers' shopping behavior (channel choice decisions) during the period between the search and purchase phase of consumers' buying process. Studies such as the one from Chocarro et al. (2013) identified many of these factors. Because of the psychological aspect, the consumers´ choice to purchase a product could depend on an endless amount of factors in situation A or just one decisive factor in situation B. This literature highlight the most important factors with regard to consumers' channel usage: consumer characteristics; product characteristics; situational factors; and retailer services. On the basis of the phases in the buying process, literature reviews of these factors are described consecutively. Special attention goes out to the factor 'product characteristics' since it is believed it is one of the most important affecting factors in consumers' channel choice behavior and will provide an important element for the context of this research. The results of this investigation function as input for the experiment of this research.

Consumer characteristics

Consumers themselves can have major influence on the extent of their buying process. On the one hand they determine the amount of choices for channel/product combinations, and on the other hand determine their shopping pattern.

Firstly, the extensiveness of choices for channel/product combinations depends on the amount of channels they use. In general, previous research identified four types of shoppers based on channel usage with regard to consumer(channel) segmentation: single channel; multichannel; cross channel; and omni channel shoppers. Consumers who use only the offline channel for purchases are named single channel shoppers. Consumers who use offline as well as online channels to fulfill their needs for products are named multichannel shoppers. Consumers who switch easily and continuously between those channels during their buying process are named cross channel or

[1] Neslin et al. (2014) believe that the utility of a channel is intertwined with product brands. Therefore, the utilities in the framework are based on channel/brand combinations. The scope of this literature is – at least initially – wider. Therefore, the utilities in this study are based on channel/product combinations.

omni channel shoppers (Van Delft, 2013). The literature study is focused on this type of consumers; multi-, cross-, and omni channel shoppers who use online, and offline channels interchangeably. Two reasons underlie this determination. Firstly, from all types of consumers, these consumers use the online channel the most (Heitz-Spahn, 2013; Konus et al., 2008; Van Delft, 2013). Since the aim of this study is to stimulate offline commerce, they form the biggest threat. Secondly, several studies show that the number of omni channel consumers is growing significantly, and predict that eventually most consumers will turn into these type of shoppers (e.g. GE Capital Retail Bank, 2013; Heitz-Spahn, 2013; Zhang et al., 2010).

Previous studies proved that shoppers who use multiple channels during their buying process, have major benefits compared to single channel shoppers. On average, they spend more money (Ansari et al., 2008; Chintagunta et al., 2012; Lu and Rucker, 2006; Neslin et al. 2006; Venkatesan et al., 2007), buy more frequently (Kumar and Venkatesan, 2005), and have a higher lifetime value (Girard et al., 2014; Neslin and Shankar, 2009; Schramm-Klein et al., 2011). At the same time, they are more demanding and the tendency they engage in free-riding behavior is high: they seek more variety (Kumar and Venkatesan, 2005; Rohm and Swaminathan, 2004); are more price conscious (Konus et al. 2008); and, also appear to be less loyal (Ansari et al. 2008; Heitz-Sphan, 2013) in comparison with conventional single channel shoppers.

Secondly, the extensiveness of consumers' shopping patterns depends on their characteristics. An identification of omni channel consumer characteristics can create a better understanding of their shopping behavior. Previous studies towards consumers' channel usage found that several socio demographics – such as gender, age, education, and income – can be significant in consumers' channel choice for orientation and purchase (e.g. Ansari et al., 2008; Chocarro et al., 2013; Girard et al., 2003). Besides socio demographics, recent studies on especially consumer channel segmentation paid special attention to psychographics. Even though socio-demographic characteristics are often investigated, many of these studies found no significant relations with consumer segments in the context of channel usage (Ailawadi et al. 2001; Gupta et al. 2004; Keen et al. 2004; Knox 2006; Konus et al. 2008; Kushwaha and Venkatesh 2008; Heitz-Sphan, 2013).

Psychographics, or shopping motivations, are related to benefits consumers seek in their channel selections (Konus et al., 2008). In the context of consumers' channel usage, Konus et al. (2008) were the first who segmented consumers based on psychographics. They identified six psychographics of hedonic as well as of economic nature: price consciousness, shopping enjoyment, innovativeness (finding out new/different products/experiences), motivation to conform (opinion seeking), brand/retailer loyalty, and time pressure. Multichannel shoppers tend to be more innovative, less loyal,enjoy shopping the most, and are more price conscious compared to the so called uninvolved shoppers, and store-focused consumers. No significant relations were found with motivation to conform, and time pressure. Van Delft (2013) used the same psychographics for her study to omni channel shopping behavior. She concluded that omni channel shoppers are also innovative, price conscious, and enjoy shopping. However, she also found that they are loyal, need motivation to conform, and feel pressured in time. Related to this, Heitz-Sphan (2013) examined five utilitarian and hedonic shopping motivations for cross channel shoppers: convenience, need for flexibility (in shopping times), price comparison, variety seeking, and shopping enjoyment. In particular, the utilitarian motivations (first three) prove to be most important for them.

Based on previous research findings with regard to the ongoing growth of omni channel shoppers, Binder (2014) suggests that customer segmentation is likely to lose its importance. Instead, he states that a customer 'activity-based' channel classification might provide a better multichannel retail approach. According to Payne and Frow (2004) this customer classification recognizes that each shopping task (product) requires another combination of channel usage during a consumers' buying process (pattern). Examples of such shopping patterns are ROPO and showrooming. However, such a customer classification for this research is unnecessary. This research just focuses on the stimulation of offline purchases with the aid of a product availability insight. In this regard, demographic and psychographic characteristics are sufficient variables for consumer classification.

Product characteristics

It is believed that the factor product characteristics is one of the most important affecting factors in consumers' channel choice behavior (e.g. Brynjolfsson et al., 2009; Heitz-Spahn, 2013; Thomas and Sullivan, 2005). Furthermore, for the purpose of this research it is interesting to know which products are mostly bought online and which offline and what the product-channel division will be in the future. The product categories will take an important place in the experiment of this research. Because of these two reasons, special attention goes out to the factor product characteristics.

Previous research on consumers' channel usage have taken various product attributes into account. Overall, the main focus has been on experience attributes, containing product quality (e.g. Chocarro et al., 2013; Li and Gery, 2000; Lim et al., 2012). However, other product attributes of interest have been products' uniqueness, monetary value, frequency of purchase, utilitarian vs. hedonic value etc. When it comes to consumers' channel choice considerations, these attributes are mostly linked to consumers perceived risks. According to Jacoby and Kaplan (1972) – and widely used among research in this regard – solely product-related risks are performance risks (concern about quality), financial risks (concern about overpayment), psychological risks (concern about self-image), and social risks (concern about others' opinion). Especially, performance risks – defined as "whether a purchased product will perform as expected and satisfy the consumers' requirements" (Nöteberg et al, 2003) – have influence on consumers' channel choice decision.

It is therefore not surprising that in the context of consumers' channel usage, most studies classify products into search and experience goods (SE-goods) (e.g. Chiang and Dholakia, 2003; Girard et al., 2003; Nakayama et al., 2010; Weathers and Makienko, 2006), although there is no universally-agreed product classification scheme. Other product classification schemes which have been used by previous research are: low-, and high-involvement goods (LH-goods), convenience, shopping, and specialty goods (CSS-goods), and popular and niche products (PN-goods). The former two product classification schemes takes besides the performance risks, other risks (as described above) into account, because they take also more product attributes into account. PN-goods only addresses the popularity of a product. These attributes are linked to time risks (concern about time pressures), which is part of the time-related situational factor (see next section). Thus, although the latter three classification schemes are redundant when it comes to consumers' perceived performance risks, studies to these schemes might provide additional insights with regard to consumers' shopping behavior during their buying process. High-involvement goods for example, might have significant influence on the extent of consumers' buying process, and consequently, their channel choice in the purchase phase. These classification schemes are discussed in more detail consecutively.

Search and experience goods classification

The SE-classification origins from a study of Nelson (1970). Nelson defined search goods as "those dominated by product attributes for which full information can be acquired prior to purchase" (Klein, 1998). Examples of these are books and airline tickets (Chocarro et al., 2013; Gupta et al., 2004). "Experience goods are dominated by attributes that cannot be known until purchase and use of the product or for which information search is more costly and/or difficult than direct product experience" (Klein, 1998). Examples of these are apparel and furniture (Weathers and Makienko, 2006; Lim et al., 2012). In summary, search goods have more or dominant search attributes than experience attributes and vice versa for experience goods. Darby and Karni (1973) extended the classification by so-called credence goods. They defined the third kind of product as "those products with attributes that the consumer cannot verify even after use" (Klein, 1998). Examples of these are vitamin pills, and air purifiers (Girard et al., 2003; Nakayama et al., 2010). Credence goods are not included in this research, because, previous research to these goods is scarce.

At first sight, a plausible answer to the question 'which products perceive consumers as more suitable to purchase offline, and which online?' would be the online channel for search goods and the offline channel for experience goods. For a search product such as a book, consumers have the ability to evaluate its attributes online conveniently; it is easy to compare prices for example. For experience products, physical stores provide consumers the possibility to see, feel, smell, taste,

and/or test the product. However, it is not that easy. Since the advent of online shopping, results of studies to the SE-classification contradict in consumers' channel choice decision. The main element of discussion is the question if the online environment can overcome the possible performance risks of experience goods that consumers face. A performance risk is the most aversive motivation for consumers to purchase experience products online (Lim et al., 2012; Blázquez, 2014). While some research state that online information transmission capabilities can give consumers the ability to evaluate experience products online (e.g. Klein, 1998; Lim et al., 2012), other research prove touch-and-feel environments stay indispensable (Nakayama et al., 2010; Weathers et al., 2007).

As one of the first, Klein (1998) suggested that the internet medium can transform experience attributes into search attributes by online information technologies[2]. More specifically, she stated that the internet medium was capable to let consumers "virtually experience" experience goods. With two experience goods (computer software, and wine) she showed three possible routes (online information technologies) to 'shift' experience goods into search goods (ES-shift): information search (e.g. online-databases, user forums); information presentation (e.g. third-party reviews; product information); and simulated product experience (e.g. demonstration version, expert sources). Nakayama et al. (2010) critically examined Kleins' assumptions and had some remarks. Firstly, they state that computer software are digital goods with digital attributes. Using demonstration versions of computer software enable consumers to evaluate the complete product online for a certain period. However, they questioned; "how much virtual experience is available for other products which are not in digital form?" Their second remark pertains Kleins' assumption that product information is neutral, and objective, and that online recommendation agents such as third-party reviews, and expert sources give impartial assessments. Although this might be true, retailers are always emphasizing the positive aspects of products online, and manipulating on what consumers 'like'. Because wine also contain some credence attributes, it might be a type of product whereat product information or expert sources can convince consumers easily. However, what about a dress or perfume? Someone else can state it smells delicious or fits wonderful, but it might be not your taste or does not fit your body. Furthermore, Nakayama et al. (2010) reviewed several studies between 1992 and 2006 and concluded that there were hardly any shifts of search goods into experience goods (ES shifts). The results of their own study did not show significant ES shifts either. Besides, they examined which factors influence consumers' ratings of search, experience and, credence goods (SEC ratings). In general, there were no significant changes in the three product classifications.

However, how can it than be that some previous research (e.g. Lim et al., 2012; Weathers et al., 2007) found that online information technologies can help consumers to evaluate products without physically experience them? The answer might lie in the distinction in Kleins' (1998) definition of experience goods. As defined before, two conditions for an experience good can hold: 1) full information on dominant attributes cannot be known without direct experience; or 2) information search for dominant attributes is more costly/difficult than direct product experience. It might be possible that the former refers to products people want to taste, feel, smell, and/or see, and the latter to the complexity of a product. Examples of the former (tangible experience product) might be feeling the fabric of a sofa, fitting the dress, smelling the perfume, and tasting the French cheese. Examples of the latter (complex experience product) might be testing the digital camera, mobile phone, or computer software such as a photo editing program. Many studies did not take this distinction into account which might be a possible cause to the contradicting outcomes regarding the ES-shift (see table 1). However, studies who did take this distinction into account found more conclusive answers. Lynch et al. (2001), and Konus et al. (2008) used the terms 'high touch', and 'low touch' products and found that the consumers were more likely to purchase 'high touch' products offline while 'low touch' products online. Similarly, Chiang and Dholakia (2003) used only the first condition of Kleins' experience good definition and also found that the online shopping intention was

[2] Technologies which provide consumers information about product qualities online, and enable them to transform experience attributes into search attributes online.

higher when consumers perceive the product to be search goods than experience goods. Thus, it might be that some experience goods of Kleins' two-fold definition – which is widely used among researchers in this regard – can be transformed into search attributes.

Previous research to online information technologies further strengthen this finding. For example, Weathers et al. (2007) found that 'evoking vividness through pictures' reduced consumers' uncertainty about the product performance of the experience good CD/MP3 player they tested. Schlosser (2003) found for a similar product (digital camera) that 'virtual object interactivity' increased online purchase intention. Also Gu et al. (2012) examined the digital camera and found that external online word-of-mouth sources had a significant impact on the retailers' sales. However, studies to online information technologies regarding apparel found no groundbreaking ES-shift results. For example, Kim and Kim (2004) found that site design (e.g. three-dimensional product simulations, and virtual tour/experience) was not an important predictor for consumers' online purchase intention for clothes, jewelry, and accessories. However, some studies state that the more personalized 'online fitting rooms' can have a positive influence on consumers' online purchase intention (Fiore et al., 2005; Merle et al., 2012; Retail Week, 2012; Rosa et al., 2006). Nevertheless, Merle et al. (2012) – who examined several online 'image interactivity technologies' (like a personalized 'virtual try-on technology') on purchase intention for clothing – state that "self-congruity and body esteem are of utmost importance in explaining how 'virtual try-on technologies' influence responses to the Web site". Since personalized holograms for 'virtual try-on sessions' do not exist yet, these current models probably not become a breakthrough in overcoming consumers' perceived performance risk. Moreover, in the case of a hologram-technology, products' fabrics still cannot be felt and touched.

Furthermore, a comparison of examined products by previous research regarding SE-goods in relation to consumers' channel choice decisions, also strengthen the finding. Table 1 shows that apparel is almost always classified under experience goods, books always under search goods, and electronics under both categories. This occurrence might imply an emerging ES-shift of electronics.

Table 1. Research classification scheme of search and experience goods

Search and experience goods classification								
Researches	**Chiang and Dholakia, 2003**	**Girard et al., 2003**	**Gupta et al., 2004**	**Weathers and Makienko, 2006**	**Nakayama et al., 2010**	**Lim et al., 2013**	**Chocarro et al., 2013**	**Wang et al., 2013**
Empirically determined? (yes/no)	No	Yes	No	Yes	No	Yes	No	Yes
Search goods	Books	Books PCs	Airline tickets Books	Baby supplies Books Car supplies Cleaning suppl. Computer softw. Luggage Medical suppl. Office supplies	Books Cars* PCs	Books External hard-drives	Airline tickets Books	Books Digital cameras Luggage Mobile phones Music PCs Tv's
Experience goods	Perfumes	Clothing[1] Perfumes[1] Cell phones[2] Televisions[2]	Stereo systems Wine	Art Clothing Electronics Eyewear Furniture Jewelry Musical instrum. Movie DVD's	Auto insurances Cars* Cell phones	Apparel Digital cameras Flat panel-monitors Movie DVD's	PCs T-shirts	Automobile Clothing Healthccare prod. Household items Toys

The literature study to the SE-classification provides an answer to the question 'which products perceive consumers as more suitable to purchase offline, and which online?' For most consumers, experience products such as apparel and related products thereto (e.g. jewelry, and accessories) are probably purchased offline. Whereas search products such as books, music, and airline tickets are mostly purchased online. Finally, experience products such as electronics (e.g. PCs, mobile phones, digital cameras, and TVs) will probably be purchased online by most consumers when

the retailer provide sufficient online information technologies such as external word-of-mouth (e.g. Gu et al., 2012). However, the SE-classification cannot give an adequate answer to the question 'which products influence the extent of consumers' shopping pattern during their buying process?'. Although it might be likely that an omni channel consumers' buying pattern for search goods looks like *orientate : online → purchase : online*, and for experience goods looks like *orientate : online → purchase : offline*, or *orientate : offline → purchase : offline*, or when she find a lower price online on her mobile phone: *orientate : offline → purchase : online*, many other product attributes might influence the extent or sequence of consumers' buying pattern. The LH-, and PN-classification schemes provide better, and broader insights to these attributes. Below, these schemes and their influence on consumers' buying process are discussed.

Other product classifications

Also for the LH- and PN-classification consumers' perceived risks have significant influence on consumers channel usage. As stated before, these risks are determined by the product attributes a classification scheme incorporate. Where it is the tangibility, and complexity which affect consumers' performance risks for the SE-classification, the affecting product attributes for the other schemes are popularity for the PN-classification, and all imaginable attributes for the LH-classification. For the PN-classification, the popularity or the uniqueness of a product affect consumers' perceived time risk (concern about wasting time). Although this is a situational variable, Brynjolfsson et al. (2009) showed that especially niche products have major influence on consumers' channel usage. For the LH-classification all imaginable product attributes can affect consumers perceived risks because "product involvement refers to consumers' perceived value (importance) of a product" (Krugman, 1965). Besides performance, and time risks, consumers' perceived important product attributes might also affect other perceived risks as defined by Jacoby and Kaplan (1972).

The LH-classification is the most extensive classification scheme of all because product involvement refers to consumers' perceived value (importance) of a product (Krugman, 1965). Since every product attribute can be perceived as important, consumers are consequently engaged in more risks, which in turn influence consumers' buying pattern. The LH-classification goes back to the year 1923 when Copeland developed the scheme of convenience, shopping, and specialty goods. Among others, Holton (1958) argued that instead of separate categories, products might be placed more appropriately along a continuum (low till high involvement level) reflecting consumers' search effort. He found that "the essence of the distinction between convenience goods and shopping goods may lie in the gain resulting from price and quality comparisons relative to the searching costs" (Holton, 1958). From this time, the high-, and low-involvement good classification was born. Needless to say, high involvement goods probably leads consumers to search for more information and to spend more time searching for the right selection compared to low involvement goods (Clarke and Belk, 1978; Zaichkowsky, 1985).

Although less used recently, Li and Gery (2000) their research to convenience, shopping, and specialty goods hold decent insights to possibly important product attributes, and examples for the LH-continuum. Most research pertaining the LH-classification only contain purely low-involvement goods, and high-involvement goods (e.g. Gu et al., 2012; Wang et al., 2013). Imagining the LH-continuum, the product type with the lowest involvement is the convenience or consumable good. Subsequently, homogeneous shopping goods, heterogeneous shopping goods, and specialty goods complement the LH-continuum. Firstly, convenience goods are characterized by low prices, and slight differences in quality (e.g. groceries, office supplies). Almost no risks are involved. Furthermore, gaining the best deal probably not outweigh the search costs, causing it to be low (Holton, 1958). Secondly, Li and Gery (2000) stated for the shopping goods, it is only the differences in price that warrant shopping comparisons for the homogeneous goods (e.g. books, airline tickets, microwaves, washing machines), whereas for the heterogeneous goods it is both the price and product qualities that can differ essentially between products (e.g. furniture, clothing, cameras). Qualities of perceived importance is consumer specific, however, some general quality aspects can be found. For example, Brucks et al. (2000) identified six quality dimensions of durable goods: ease of use; versatility,

durability, serviceability, performance, and prestige. Long story short; where especially the financial risk determines the consumer shopping behavior for the homogeneous shopping goods, it could be the financial, performance, and time, as well as psychological, social, physical (concern about physical harm or injury), and/or source risks (concern about a retailers' credibility) for the heterogeneous shopping goods. Finally, Li and Gery (2000) defined specialty goods as "products with exclusive characteristics that buyers treasure and make a special and willing effort to obtain" (e.g. Rolex watches, Mercedes cars, Gucci handbags, and Tiffany jewelry). The specialty good category is a little bit odd man out; although the purchase pattern can be long, it is not caused by price and quality comparisons. Because of the brand preference, these products are difficult to substitute. Most probably, consumers perceive less risks for such first-class products with high-end service once they are willing to pay for it.

Because consumers' buying process for high-involvement goods can take long, it is difficult to predict their final channel choice decision for purchase. Although many research suggest that low-involvement goods are more suitable to purchase online, whereas high-involvement goods offline, no strong evidence exists (e.g. Chocarro et al., 2013; Wang et al., 2013). For example, Wang et al. (2013) found no strong evidence for a substitution effect of one shopping channel (e.g. online) in the orientation phase on another shopping channel (e.g. offline) in the purchase phase regarding low- and high-involvement goods. Which implies that it does not automatically mean that low-involvement goods are purchased at online channels, and high-involvement goods at offline channels. However, they did found evidence that consumers' prefer traditional channels when product involvement is high.

The PN-classification refers to consumers' perceived product demand (Brynjolfsson et al., 2009). For popular products the demand is high, whereas it is low for niche products. Examples of popular products are best-selling books, blockbuster movies, and last-season clothes. Niche products could also be books, movies, or clothes, but are unpopular or unknown by the general public. For example, Brynjolfsson et al. (2009) identified products that generated 80% of total sales as popular products (15% percent of total products), and 20 percent of total sales as niche products (85 percent of total products) for their research. Because the PN-classification only takes the popularity degree of products into account, in principle, consumers do not perceive more product-related risks for one of both categories. However, according to Brynjolfsson et al. (2009) the unique, or alternative attributes of niche products can affect consumers' perceived time risk. Although that has to do with situational variables (see 'situational factors'), a niche product such as a purple colored sandwich toaster (with the purple color as a unique feature) can have major influence on a consumers' initial channel choice in the orientation phase. For such a specific product she might start her shopping journey online, because there is a clear risk that the local shop around the corner, is not able to meet her specific need. Brynjolfsson et al. (2009) found that although the competition between online and offline channels for popular products was fierce, the online channels were almost immune from competition for niche products.

In conclusion, the literature study on product characteristics generated some interesting insights about their influence on consumers' shopping behavior. The SE-classification predicts consumers' channel choice in the purchase phase as best, and consequently, provides an answer to the question 'which products perceive consumers as more suitable to purchase offline, and which online?' For most consumers, tangible experience products such as apparel and related products thereto (e.g. jewelry, and accessories) are probably purchased offline. Whereas search products such as books, music, and airline tickets are mostly purchased online. Finally, technically complex experience products such as electronics (e.g. PCs, mobile phones, digital cameras, and TVs) will probably be purchased online by most consumers when the retailer provides sufficient online information technologies such as external worth-of-mouth (e.g. consumer opinions, user experiences, and product reviews).

The LH-classification predict the extent of a consumers' buying process, and consequently, provides better insights into the question 'which products influence the extent of consumers' buying

pattern during their buying process?' Especially, the products between the low and high involvement goods (homogeneous and heterogeneous shopping goods) can have major influence on a consumers' buying pattern due to high differences in price, product qualities, and brands. Because the product is important to them, and mostly have a high monetary value, they easily join in free riding behavior to obtain the best deal, whether it is online or offline. However, if the brand is of importance (specialty goods) and the product possess some experience attributes, consumers are likely to purchase the product offline. Low involvement goods, such as convenient/consumable goods (e.g. groceries, office supplies), or cheaper homogeneous goods (e.g. books, sandwich toaster) probably have short buying patterns due to slight differences in quality and price. Their channel choice decision might depends on the situation (see 'situational factors'). Finally, the PN-classification have significant influence on consumers initial channel choice in the orientation phase. Where niche products can be found online easily, popular products can be found both online and offline easily.

Table 2. Product examples of combined product classifications, and the chance that consumers once visit the offline store

Product examples of combined product classifications					
Nr.	**S/E**	**L/H**	**P/N**	**Example**	**Offline chance**
1	Search	Low involv	Niche	Purple sandwich toaster	low
2	Search	Low involv	Popular	Sandwich toaster	low
3	Search	High involv	Niche	PC with high performance video card	low
4	Search	High involv	Popular	PC for basic use	medium
5	Experience	Low involv	Niche	Long or poncho raincoat	low
6	Experience	Low involv	Popular	Dark blue raincoat	medium
7	Experience	High involv	Niche	Rabbit fur coat	medium
8	Experience	High involv	Popular	Last-season jacket	high

Now the question is, what if a niche attribute has experience attributes or is perceived as a high involvement product? Or, what if a low involvement good has experience attributes? Table 2 gives product examples with all possible combinations of the categories of each classification scheme in conjunction. Furthermore, the table shows the chance a consumer will visit the offline channel during their buying process.

Situational factors

Several situational factors can influence consumers' shopping patterns and eventually, their channel choice decision. Situational factors are related to place, time, mental states, and physical states. Belk (1975) identified five groups of situational factors which can constrain or encourage consumers' needs: variables relating to physical surrounding (distance-to-store, crowdedness, the weather, and retail store environment variables); time-related variables (time-of-day or day-of-the-week, urgency of purchase, product availability, and time pressures); variables relating to social environment (presence of others, the apparent roles of such persons and, the chance for social interaction); variables relating to antecedent states (temporary physical or mental states, moods, and fatigue); and task definition variables (cognitive and motivational aspects of the purchase situation). All the five factors have been studied with regard to consumers' channel usage. However, most interest was in time-related variables. Nicholson et al. (2002), and Chocarro et al. (2013) were the only ones who examined all five factors. Remarkably, both studies found that the physical, temporal, and social variables were most relevant. In the context of channel usage, clear findings to antecedent states, and task definition variables could not be found.

Although Belk (1975) found a broad range of factors, the factors are based on the offline environment; competing physical shops. Chocarro et al. (2013) already extended the physical surrounding with online variables such as 'web store environment'. However, an important benefit of the online environment which are not incorporated in Belks' situational factors are convenience and

cost-saving triggers; consumers can easily orientate for products, have a wide range of products, can easily compare prices, and order products with free-shipping costs on the web. These benefits may be best described as so-called transaction costs. Chircu and Mahajan (2006) identified three types of transaction costs; "price-type costs (such as parking fees, installation fees, credit charges, taxes, travel costs, transaction fees, etc.), time-type costs (such as travel time, waiting time, search time, overall shopping time, delivery time, etc.), and psychological-type costs (such as perceived ease of use, inconvenience, frustration, annoyance, anxiety, depression, dissatisfaction, disappointment, personal hassle, etc., due to the store physical environment and interactions with salespeople and other customers)". However, these cost-saving or utility-related factors do not merely depend on situational factors. Many of them depend on the conditions retailers have. In the following part of this subsection (retailer services) these conditions are addressed in more detail.

Situations that influence consumers' online channel usage are rather utilitarian-related (functional) than hedonic (enjoyable) (e.g. Forsythe et al., 2006; Overby and Lee, 2006). With regard to physical surrounding, website clarity (e.g. layout, ease of use) has influence on consumers' online channel usage (Chocarro et al., 2013; Nicholson et al., 2002). For the time/costs-related variables, consumers tend to use online channels when they experience a time pressure (Chocarro et al., 2013; Nicholson et al., 2002; Verhoef and Langerak, 2001). However, other studies proclaim consumers are more inclined to visit the offline store when they are in a hurry (e.g. Gehrt and Yan, 2004). Further, delivery time (Forsythe and Shi, 2003; Gallino et al., 2014), and shipping costs (Kim and Kim, 2004; Parker, 2000) are effective time/cost-related variables as well. Obviously, during the orientation phase online channels offer consumers convenient possibilities through easy accessibility to product information (Wind and Mahajan, 2002; Oppewal et al., 2012; Schröder and Zaharia, 2008), and a wide range of alternatives (Manyika and Roxburgh, 2011; Ray, 2001). However, these factors are not relevant for the experiment of this research, because the moment when consumers face a product availability insight, these factors are not important (anymore) – unless the concerning product is out of stock and the orientation phase starts over again.

Situations that influence consumers' offline channel usage have a more hedonic nature in general. Although also some utilitarian-related situations with regard to physical and temporal situations. For the physical surrounding factor, distance-to-store (Chiang and Dholakia, 2003; Chocarro et al., 2013; Forman et al., 2009; Oppewal et al., 2012), store tidiness (Chocarro et al., 2013; Nicholson et al., 2002; Oppewal et al., 2012), the availability and vicinity of parking places (e.g. Koopstromenonderzoek, 2011; Van der Waerden and Oppewal, 1996), crowdedness (Chiang and Dholakia, 2003), and the weather (Chintagunta et al., 2012) have influence on consumers' offline channel usage. Costs of visiting a store (Gallino et al., 2014; King et al., 2004), and opening hours (Chocarro et al., 2013; Schröder and Zaharia, 2008) are effective time/cost-related variables. Variables related to the social environment pertains the more hedonic stimulations such as face-to-face communication (Javadi et al., 2012), and social pleasure (Borges et al. 2010; Dennis et al., 2005; Nicholson et al., 2002). However, consumers' decision to shop for social pleasure probably takes place before the product availability insight will be used. Therefore, also this factor is not relevant for the experiment of this research.

Special attention goes out to distance-to-store and time pressure since it is believed that those are the most important situational variables in consumers' channel choice decisions (e.g. Chocarro et al., 2013; Nicholson et al., 2002). For what concerns distance-to-store, the longer the distance to the store is, the higher the chance of online purchases (Chocarro et al., 2013; Forman et al., 2009; Nicholson et al., 2002). In the context of research to consumers' channel choice behavior, Forman et al. (2009) found that for popular products such as books, most consumers shift from the online channel to the offline channel after a local book store was opened. Gallino and Moreno (2014) showed that offline sales grow significantly from consumers living close to a 'Crate and Barrel' store that implemented a so-called online 'Buy Online, Pick-up-in-Store' feature. For what concerns time pressure, most studies found that consumers´ perceived time constraints is a significant motivation to purchase a product online (Chocarro et al., 2013; Nicholson et al., 2002; Verhoef and Langerak,

2001). However, Gehrt and Yan (2004) found that physical stores are more preferred than catalogs or web stores when consumers perceive a time pressure.

Retailer services

Now it is clear what type of consumers prefer what type of channels, what products are mostly bought offline, online, or in-between, and which situations stimulate consumers to buy a product online/offline, the only thing that remains are the conditions of the retailers. Not every retailer offers his products through every existing channel. Just like the consumer typology, there are single channel retailers (traditional physical retailers as well as e-tailers), and multichannel or omni channel retailers. However, another important condition is the way retailers try to make it easier for shoppers in each channel and between the channels. For example free shipping and fast delivery time probably incline consumers to buy a product online. On the other hand, friendly personnel and expert advice might incline consumers to visit the physical store. However, the possibility to exchange online bought products in a physical shop or vice versa – return an offline bought product and get a refund – might has an effect on consumers' channel choice behavior as well. Thus besides the type of channels a retailer offer, also the quality of the service in each single channel play a role in consumers' channel choice considerations (Binder, 2014; Parasuraman et al., 2005).

Offline service quality

Service quality is a significant predictor for the offline environment. Most consumers perceive the service quality in the offline environment as higher as in the online environment (Binder, 2014). Offline service quality includes several aspects, such as physical aspects/tangibles, personal interaction/responsiveness, and reliability (e.g. Dabholkar et al., 1996; Parasuraman et al., 1988; Brady and Cronin, 2001). Although no general consensus has been reached among scientists for a comprehensive model to measure service quality, much similarities between those models can be observed. In general, three measurement dimensions can be deduced: physical environment, personal interaction, and organizations' policy (e.g. accuracy, and problem solving). This research focuses on the quality of personal interaction solely, since it is believed that personal assistance is a competitive advantage of the offline channel. Also the quality of the physical environment can be a predictor for the offline environment. However, this research perceives this as a situational factor that can be used as a context variable. In the context of omni channel shopping, organizations' policy is an interesting aspect for research and practices to channel integration strategies. However, organization specifications does not belong to the scope of this research. This research solely focus on channel specific attributes.

Personnel interaction quality or personnel assistance has a wide meaning. In the context of research to the measurement of service quality, several aspects have been considered. Parasuraman et al. (1988) assigned personal interaction to four of their five service quality measurement dimensions. These dimensions are called responsiveness (helpfulness and prompt service), assurance (knowledge, courtesy, and inspire trust and confidence), empathy (caring, individualized attention), and personnel's appearance (as part of their 'tangibles' measurement dimension). For their 'personal interaction' measurement dimension, Dabholkar et al. (1996) identified two sub-dimensions named 'inspiring confidence', and 'courteous/helpful'. Lastly, Brady and Cronin (2001) found for their 'interaction quality' dimension, three sub-dimensions called attitude, behavior, and expertise. Based on the literature to personal interaction quality, two main dimensions can be divided; the service or friendliness of the personnel, and the personalized service or expertise of the personnel.

Online service quality

Just as for the offline service quality, research has been done to the measurement of online service quality (e.g. Bauer et al., 2006; Parasuraman et al., 2005; Yoo and Donthu, 2001; Zeithaml et al., 2002). In general, six measurement dimensions can be deduced: 1) efficiency (speed of process, and ease of use), 2) aesthetic design, 3) information quality and availability, 4) privacy/security, 5) interaction quality/customer service/responsiveness, and 6) reliability/fulfillment (order delivery and

item availability). This research will focus solely on the 'reliability/fulfillment' dimensions. It is believed this is the most important dimension of them all (e.g. Parasuraman et al., 2005; Wolfinbarger and Gilly, 2003). Furthermore, especially during the moment between the search and purchase phase of the buying process this is a significant factor. Also for the online service quality, the dimensions 1 till 3 (efficiency, aesthetic design and information quality) are considered as one situational factor, which together can be named as 'website design' for example. Consumers' perceived security and privacy is an important predictor for resisting the online channel. However, this might not be a problematic issue for omni channel shoppers due to their experience. Dimension 5 'interaction quality' is an important dimension for the online environment as well. However, it is not a predictor as it is for the offline environment.

The reliability/fulfillment dimension includes predominantly order delivery accuracy (e.g. Parasuraman et al., 2005; Wolfinbarger and Gilly, 2003). The associated 'online transaction costs' are important predictors for consumers' channel choice decisions. Within the context of research to consumers' channel choice behavior, the most common transaction costs are shipping cost, lead time, and return effort. According to Brynjolfsson et al. (2009) online retailers have improved delivery time, increasingly offering free-shipping, and have invested in customer services to improve their return policy during the last decades. Several scientist also show that no or low shipping costs (e.g. Kiang et al., 2004; Kim and Kim, 2004), short delivery times (e.g. Forsythe and Shi, 2003; Smith and Brynjolfsson, 2001), and a convenient return policy (e.g. Kim and Kim, 2004; Watchravesringkan and Shim, 2003) are important predictors of consumers' online purchase intentions. Another interesting predictor might be to make an appointment for the delivery.

2.2 Offline channel coordination strategies

The second part of the literature study takes the retailer perspective into account. Specifically, the question is "what instruments for an online product availability insight can stimulate offline commerce?". After the challenges and opportunities for an omni channel retail approach are described (subsection 2.2.1), several offline commerce stimulating channel coordination strategies follow (subsection 2.2.2). Furthermore, subsection 2.2.3 describes consumer responses to stockouts (product unavailability). Finally, subsection 2.2.4 includes the conclusion of the second part of the literature study.

2.2.1 Omni channel customer management

As stated before, previous studies showed that omni channel shoppers have major benefits compared to traditional single channel shoppers (subsection 2.1.2). Logically, retailers want to take advantage of that. The question is, how do they respond to consumers' free riding/omni channel shopping behavior? Among others, Neslin and Shankar (2009) showed that Multichannel Customer Management (MCM) – "the design, deployment, and evaluation of channels to enhance customer value through effective customer acquisition, retention, and development" (Neslin et al., 2006) – have been receiving major interest from academics and practitioners in recent years. Based on previous research to MCM, Neslin and Shankar (2009) used a so-called MCM decision framework to identify key issues which retailers should consider while elaborating multichannel customer strategies. For this part of the literature study, especially the third task (Design channels), and fourth task (Implement) in their framework are interesting. Accompanying issues which might be of interest are 'how can the firm harness research shopping?', 'which channels should a firm employ?', and 'what organization structure (coordinated or independent) should a firm use?'. In the context of consumers' channel choice decision, many researchers suggest that retailers with multiple channels should consider their channels more holistically (integrated) instead of working in channel silos (Binder, 2014; Krueger, 2015). The situation described below gives an idea about a possible consequence for retailers whose business units work segmented:

"It was on a Saturday afternoon when my friend and I decided to go to the shopping center nearby to buy New Balance shoes in the color combination black and white. Because I never had these shoes before, I decided I wanted to try them on first before ordering them online. I knew several shops in the center where I had the chance to find these shoes. However, in all the three shops I visited, none of them had the black and white color combination. I returned home empty-handed. Once home, I decided to order the shoes online. At least I found out the right shoe size in the first store. Zalando turned out to offer me the best deal. However, afterwards, I was astonished by the idea that none of the sales staff of the three stores, told me they could have sent me the black and white version directly to my home from their distribution center..."

An integrated channel strategy can take various forms; the next subsection takes a closer look to them. Firstly, the challenges that previous studies associate with channel coordination strategies are described.

Previous studies identified possible challenges when retailers apply channel coordination strategies. The predominantly cited challenges are the substitution effect (Alba et al., 1997; Neslin et al., 2006; Wang et al., 2013), and consumers' free-riding behavior or the 'research shopper phenomenon' (Heitz-Spahn, 2013; Van Baal and Dach, 2005; Verhoef et al., 2007). According to Wang et al. (2013) the substitution effect "refers to the negative influences of one channel (e.g. offline) on another channel (e.g. online), which decrease the latter channels' performance". They show that especially for search goods, consumers' initial channel choice in the search phase has a negative influence for another type of channel in the purchase phase. The substitution effect can cause for example income cannibalization (Deleersnyder et al., 2002; Pauwels and Neslin, 2009), and evaluative conflicts (dissynergies) (Falk et al., 2007), between online and offline channels. According to Van Baal and Dach (2005) consumers engage in free riding behavior "when consumers use one retailers' channel only to obtain information and evaluate products and switch to another supplier to purchase the product". Heitz-Spahn (2013) show that cross-channel free riding behaviors will be stimulated if many retailers offer various channels to shop. Free riding behavior can cause for example low conversion rates from Web store visits (Van Baal and Dach, 2005).

2.2.2 Offline channel coordination strategies

Several channel coordination strategies have been identified. However, the question is, "how can retailers, who sell both online and offline, respond to omni channel consumers' needs through a more holistically approach whereby they can overcome the channel integration challenges?" Since the initial urban management related aim of this research is to stimulate offline commerce, this literature study seeks to channel coordination strategies which support ROPO. However, in such a way that cross channel free riding behavior is limited; that omni channel consumers stick to the retailer with the highest utility, found during the search phase online. Examples of possibilities like these are the 'Buy Online, Pick-up-in-Store' (BOPS) functionality, 'inventory-only showrooms' (Bell et al., 2014), and 'local inventory ads' by Google (Krueger, 2015). This subsection further describes the advantages of these channel coordination possibilities for retailers through the opportunities they provide for consumers.

With BOPS, *"the retailer shows online viewers the locations at which the items are available and gives customers the option to close the transaction online and then pick up the products at one of the retailer's locations shortly after closing the purchase"* (Gallino and Moreno, 2014). Although BOPS was originally introduced to fulfill consumers' need for short lead times (instant gratification), and saving of shipping costs in favor of online channel revenue, Gallino and Moreno (2014) found that the online 'availability inventory information' of BOPS can generate an additional positive side effect for retailers' offline channel revenue. They found that BOPS provide an additional benefit to customers that might not be evident right away: "when customers are offered the possibility of buying their items online and picking them up from a store shortly after, they learn that the items are available in the store. Hence, they can decide to check their items' availability online and drive to the store to pick them up without closing the transaction online" (Gallino and Moreno, 2014). Thus, besides the BOPS functionality can save shipping costs, and lead times, it offers consumers reliable availability information of products in the physical stores. Due to the reliable availability information,

Gallino and Moreno (2014) showed that BOPS increases ROPO behavior between the online and offline channel of a retailer. Consequently, besides BOPS can be used for which it was intended for, BOPS provide consumers also the possibility to evaluate the performance of products before purchase without the risk that products are not available in the physical store.

Gallino and Moreno (2014) studied the impact of a BOPS experiment on company channel sales and customer behavior. The experiment was held at a houseware, furniture and home accessories retailer (Crate and Barrel) with more than 80 physical stores in the United States and Canada. During the half-year experiment online sales decreased with 7% and offline sales increased with 6%. Because the online sales represent roughly one fourth of the total sales for the company, the net increase was approximately 4% overall. However, the total number of BOPS transactions and cross-selling incremental sales (additional impulsive purchases in store) are not high enough to explain the increase of offline sales with 6%. The main reason is that BOPS provide the possibility for customers to check the availability of a product online, where after they can decide to go to the store to pick the product up without closing the transaction online. As a result, also the traffic to the stores increased significantly (Gallino and Moreno, 2014). If Gallino and Moreno (2014) only had evaluated the impact of BOPS on the retailers' online channels, the results would have been negative. However, they examined the effects of BOPS in a holistic way (online and offline channels) and showed that BOPS proved to be a decent channel coordination strategy. With BOPS retailers can funnel customers from the online environment to the offline stores, while making more profit.

Also 'inventory-only showrooms' and 'local inventory ads' by Google appear to be plausible possibilities for stimulating offline commerce. Bell et al. (2014) describes inventory-only showrooms as third-party locations that display the full assortment of an online brand or retailer. At the luxury apparel retailer Saks or the menswear brand Bonobos for example, customers can make an online appointment to visit an offline store nearby, try their desired clothes (demos) on and get their purchased clothes delivered at home the following day. With this possibility, potential consumers are assured that the products they want to experience are available offline. An investigation of the influence of this tool on consumer offline commerce might be interesting. However, a possible disadvantage for consumers could be that these retailers cannot provide them instant gratification in the sense that they have to wait until the following day for their clothes; this might lead to some perceived inconveniences for the consumers. According to Krueger (2015) 'local inventory ads' by Google "show customers searching online for a particular item exactly where it is available at a nearby store location, along with local store hours, and other helpful information like directions". In her article she mentions that by means of the ads the physical store visits of 'Sears Hometown and Outlet Stores' (home and garden goods provider in America) increased with 122% compared to 'product listing ads' by google (which do not include inventory information of local stores). Furthermore, 'Office Depot' (global provider of workplace products) found a three times higher return on the companies' digital marketing spend.

2.2.3 Product availability

Product availability can have a major influence on consumers´ shopping behavior. When a consumer face a product which is unavailable or out-of-stock, the most common responses are: 1) substitute for the item, 2) delay the purchase until the next trip to the store, 3) go to another store to buy the item, or 4) cancel the purchase (Corsten & Gruen, 2003). Another possibility is to go to the same shop elsewhere. In case of the latter two responses stockouts can lead to great financial losses for a retailer in the short term. What is more, in the long term stockouts can lead to even greater financial losses (e.g. Doyle, 2006; Fitzsimons, 2000). Induced by customer dissatisfaction, Fitzsimons (2000) shows that consumers confronted to a stockout are substantially less likely to visit the same store on their next shopping trip. Doyle (2006) finds that most grocery shoppers perceive stockouts as the most irritating situation driving them away from a store.

Several studies state that consumers' response to stockouts differ between product categories (e.g. Campo et al., 2000; Kim and Lennon, 2011; Sloot et al., 2005). However, a recent literature review by Helm et al. (2013) shows that most studies to product availability in relation to

consumer behaviors just focused on groceries. Among others, Sloot et al. (2005) found that product or brand switching (substitution) is the most prevalent response when consumers face a stockout for groceries. In most cases, switching stores, or delaying, or cancelling a purchase, is more costly than finding a substitution. Considering for example a product like milk, consumers can easily switch to another size (0,5 or 2 liters instead of 1 liter), or different brand (Sloot et al., 2005). Although literature to other product categories is scare, these stockout responses probably do not apply to high involvement products such as apparel. According to Kim and Lennon (2011) consumers are more likely to delay or cancel the purchase, instead of substitute an unavailable apparel product. Substitutions are probably costly (decision making), infeasible (e.g. size), or irreplaceable (brand preference).

Stockouts have influence on both offline (e.g. Su and Zhang, 2009) as well as online channels (e.g. Kim and Lennon, 2011). However, the consequences for consumers greatly differ per channel. When online shoppers face a stockout, they easily switch to another web store (Accenture, 2000). Here, almost no costs are involved for consumers. In contrast, costs are much higher when consumers face a stockout in a physical store. Consumers' perceived uncertainty about the availability of a product in physical stores can increase the chance of online purchase, due to high expected offline transportation costs (Forman et al, 2009; Gallino and Moreno, 2014). Besides they often invest time and energy into their shopping trip to the first store, also the switching costs to an alternative store are higher if a product is unavailable (Su and Zhang, 2009). Consequently, product availability in physical stores can attract or induce demand because stockouts are costly to consumers (Su and Zhang, 2009). The risk of product unavailability in offline stores might be an important predictor in consumers' channel choice behavior. In this regard, the online channel might have a competitive advantage. Studies that focused on offline stockouts found several policies to mitigate or overcome negative consumer responses to stockouts. Examples of these are compensations such as discount coupons, rain checks, and home delivery (Verhoef and Sloot, 2006); commitment and availability guarantees (Su and Zhang, 2009); and online product availability insights (Gallino and Moreno, 2014).

2.3 Conclusion

The literature review on factors that influence consumers' omni channel shopping behaviors, and instruments for an online product availability insight, generated some interesting findings. Before the investigation towards factors that influence consumers' channel choice considerations took place, first the buying process of omni channel shoppers was described in order to derive a better understanding of the shopping phases in which their behaviors could occur. In this process, two significant omni channel buying patterns could be identified; ROPO, and showrooming. Furthermore, four factors which influence consumers shopping behavior were identified; retailers, consumers, product/brand characteristics, and situational factors.

The question for the first part of the literature study was "which factors influence omni channel consumers' shopping behavior, and how?" In the first place, the type of consumer determines the channels he/she uses and, as a consequence, his/her shopping pattern. This literature study focuses in particular on consumers who use both online and offline channels interchangeably; the omni channel shopper. Based on previous research into their psychographics, omni channel shoppers can be defined as consumers who are price conscious, innovative, and enjoy shopping. However, these studies contradict in the degree these consumers are loyal and feel pressured in time. Maybe, these psychographics depend on the type of product (e.g. low-/high-involvement good), or situation (limited in time or not).

Also product characteristics have major influence on consumers' shopping behavior; both in their channel usage (search or experience good), and extensiveness of their buying pattern (low-/high involvement good). Although one might expect that search goods are mostly purchased online, and experience goods offline, the low- and high-involvement degree of a product makes a

consumers' final channel choice decision difficult to predict. However, what can be concluded is that consumers probably will not visit an offline store for a low involvement niche product with search attributes (e.g. purple sandwich toaster). On the other hand, for a high involvement popular product with experience attributes they probably will (e.g. last season jacket). However, also contradictions were found among results of previous research towards omni channel shopping behavior in relation to product characteristics. Where some studies state omni channel shopping behaviors were particularly common for search goods or (technically complex) experience goods such as books and computers (e.g. Konus et al., 2008), others found (tangible) experience goods such as apparel were sensitive for these behaviors (e.g. Van Delft, 2013). Furthermore, there are also researchers who found that these behaviors could appear for both search and experience goods. For example, Heitz-Sphan (2013) found that these behaviors will mainly occur for products – whether it were search or experience goods – with some similar characteristics, high monetary value, which consumers do not buy frequently (expensive homogeneous goods of temporal importance such as electronics, furniture, and appliances).

Several situational factors and retailers' services can influence consumers shopping patterns and eventually, their channel choice as well. These influences are list in table 3[3]. Chocarro et al. (2013), and Nicholson (2002) found that especially physical (e.g. distance-to-store, tidiness of store, crowdedness), and time/costs-related variables (e.g. perceived time pressures, time-of-day-of-purchase, cost of shipping/trip to the store) were important situational predictors for consumers' channel usage. For retailers' services, several studies are done to determine factors of service quality for both the offline and online channel. For the offline channel, especially personal interaction quality is a competitive advantage (Parasuraman et al., 1988). Based on previous research findings, two dimensions of personnel interaction quality can be distinguished; friendliness of personnel, and personalized service. For the online channel, reliability or fulfillment – which includes predominantly order delivery accuracy – is the most decisive dimension of online service quality (Parasuraman et al., 2005; Wolfinbarger and Gilly, 2003). Accompanying factors are shipping costs, delivery time, delivery appointment, and return policy.

Table 3. Factors influencing consumers' channel choice behavior

Factors influencing consumers' channel choice behavior			
Online channel		**Offline channel**	
Factor	Source(s)	Factor	Source(s)
Time constraints	23; 86; 118	Travel costs	43; 60
Website design	8; 23; 86; 92; 128; 129	Distance-to-store	20; 23; 89
Product info. quality	63; 72; 80; 89; 104; 125; 127; 130	Store tidiness	15; 23; 28; 86; 89; 91
Privacy/security	92; 128; 129; 130	Opening hours	23; 104
Responsiveness	8; 92; 128	Crowdedness	20
Shipping costs	60; 61; 93	Parking	66; 122
Delivery time	41; 43; 106	Weather	21
Return policy	61; 123	Friendliness personnel	15; 28; 91
		Personalized service	15; 28; 91
		Organizations' policy	15; 28; 91

The question for the second part of the literature study was "what instruments for an online product availability insight can stimulate offline commerce?". In recent years, many academics and practitioners have been having major interest for omni channel shopping management strategies.

[3] The factors in the table are based on 1) all type of consumers, 2) search and experience goods, and 3) the period between the orientation and purchase phase of consumers' buying process. Furthermore, unfair competitive advantages such as instant gratification for the offline channel are excluded from the table. These factors are not relevant for the experiment of this research.

Several studies state that retailers with multiple channels should consider their channels holistically (integrated) instead of working in channel silos. Some retailers have already shown the benefits of it (e.g. Crate and Barrel, Sears Hometown and Outlet Stores, Office Depot). This literature study focused on channel coordination strategies that stimulate offline commerce with the aid of the online channel. In this regard, some implementations proved to be effective (BOPS, 'inventory-only showrooms', and 'local inventory ads). Due to increased traffic to the store and improvements in sales, these implementations can overcome the aforementioned channel coordination challenges (substitution effect, and research shopper phenomenon). Especially the BOPS implementation appears promising for an increase of offline commerce. BOPS can ensure product availability, and provide instant gratification.

The risk of product unavailability in offline stores might be an important predictor in consumers' channel choice behavior. However, research towards product availability in relation to channel integration is scarce. How do consumers respond when information about product availability online is given in a physical store? Or how do consumers respond when information about product availability offline is given on a retailers' web store? This research will focus on the latter. Omni channel consumers who orientate online might be attracted to the offline store when they can check the product availability in there. The risk about costly shopping trips no longer exists. In case of experience goods or the need for instant fulfillment a product availability insight might be a solution.

3. Methodology

This chapter describes the method that is used for the experiment of this research; from the theoretical foundations till the questionnaire for data collection. The results of the experiment should show the effectiveness of an online product availability insight on offline commerce, and its importance relative to other factors that influence consumers' channel choice decisions. In order to detect the relative importance of varying influencing factors, a stated choice experiment is a sufficient method. Furthermore, the stated choice method provides the ability to examine the preference of a non-existing functionality such as an online product availability insight.

The methodology consist of four parts. Section 3.1 outlines the random utility theory, the accompanying discrete choice models, and the data collection method. Section 3.2 describes the stimuli (alternatives, attributes, and attribute levels) for the channel choice experiment. In section 3.3 the experimental design is discussed. Lastly, section 3.4 contains a more detailed description of the questionnaire.

3.1 Random Utility theory

In the research field of consumers' channel choice behavior, many studies use the random utility theory as theoretical underpinning (e.g. Gallino and Moreno, 2014; Heitz-Spahn, 2013; Konus et al., 2008). The random utility theory assumes decision makers (e.g. individuals, firms, organizations) make choices between alternatives (e.g. products, services, strategies) that provide them with the highest level of utility or satisfaction. The underlying influences on an individuals' choice behavior are their preferences – in case of buying a car, an individual might prefer a Ferrari – and constraints – the individual may cannot afford a Ferrari. Several factors (which are called 'attributes') of an alternative might affect decision makers' preferences and eventually their choice. The random utility theory provides a framework to measure, and estimate the level of influence (utility) of each attribute.

The utility (U_i) for an alternative *i* such as the online shopping channel, can be divided into an observed or deterministic component (V_i) and an unobserved or error component (ε_i). The observed component consists of the attributes of an alternative. The relative importance of the attributes can be determined with the aid of a choice experiment. Since it is almost impossible to observe all conceivable attributes for all participating decision makers, the unobserved component captures the unmeasured factors that affect decision makers´ utility as well. The components are assumed to be independent of each other and additive, which results in the following expression for a certain alternative (Hensher et al., 2015):

$$U_i = V_i + \varepsilon_i$$

For decision makers, some attributes can be more important than others, which means that each attribute has to be weighted singularly. For that reason, the observed component consists of a certain number (K) of attributes (X_{ik}) and their associated weights (β_k). The accompanying linear function is expressed as (Hensher et al., 2015):

$$U_i = \sum_{k=1}^{K} \beta_k X_{ik} + \varepsilon_i$$

When the utilities of the alternatives are determined, the alternatives can be compared with one another. Since the utility theory assumes that decision makers will maximize their utility

(Hensher et al., 2015), the probability that they will choose the alternative with the highest utility can be written as (Hensher et al., 2015):

$$p_i = prob(U_i > U_j \forall\, j \neq i)$$

With the aid of discrete choice models, observed components can be calculated and unobserved components can be investigated (through demo- and psychographics for example). These model(s) are described in subsection 3.1.1. The remainder of this section contains a description of different data collection methods (3.1.2).

3.1.1 Discrete choice models

Random utility theory as introduced above can be considered as discrete choice models. The two main types of discrete choice models are probit models and logit models. The difference lies in the way the unobserved components are distributed in the model. Where the probit models are based on a normal distribution (Thurstone, 1927), the logit models rely on a Gumbel distribution (McFadden, 1974). Although the possibilities to estimate the unobserved component are advanced and extensive with probit models, for most research settings the more practical and less complicated logit models are sufficient. The most commonly used logit model to determine decision makers' overall choice behavior is the Multinomial Logit model (MNL model). The Latent Class model (LC model) is an extension of the MNL model where groups of decision makers – with comparable choice behavior – can be distinguished.

Multinomial Logit Model (MNL)

According to Hensher et al. (2015), the MNL model is a convenient starting point to estimate decision makers' preferences. The MNL model assumes that the variance of the unobserved component of all alternatives are constant. Consequently, the unobserved component is independent and identically distributed (IID); where 'independent' relates to no correlations between alternatives and 'identically' to similar distributions of the unobserved components. In fact, the MNL model estimates decision makers' mean preferences. The probability a decision maker will choose alternative *i* from the set of *J* alternatives is formulated as follows (Hensher et al., 2015):

$$P_i = \frac{\exp(V_i)}{\sum_{j=1}^{J} \exp(V_j)}$$

Latent Class Model (LC)

Where the MNL model results in a single set of utility weight parameters for all respondents, the LC model results in multiple classes with each their own different set of utility weight parameters. The classes are determined by similarities in decision makers' observed variable distributions. These underlying latent structures of preferences (heterogeneity) varies with factors that are unobserved by the analyst (Hensher et al., 2015). The LC model can take into account factors (e.g. socio-demographics, psychographics) to test their influence on these underlying latent structures. In that case, the MNL model will be complemented with decision makers' characteristics. The probability a decision maker belongs to class *c* is formulated as follows (Hensher et al., 2015):

$$P_{i|c} = \frac{\exp(V_{i|c})}{\sum_{j=1}^{J} \exp(V_{j|c})}$$

Besides the utility performance of the attributes and attribute levels, it is interesting to know what the performance of the models is in general. The likelihood ratio index or McFadden's Rho^2 (ρ^2) is the

most commonly used goodness-of-fit measure for discrete choice models. ρ^2 compares the estimated model ($LL(\beta)$) with a base model ($LL(0)$) in which all utilities are zero. The outcome of ρ^2 range from 0 to 1; the higher the outcome, the better the model predicts the observed data. ρ^2 is formulated as follows (Train, 2009):

$$\rho^2 = 1 - \frac{\mathrm{LL}(\beta)}{\mathrm{LL}(0)}$$

3.1.2 Data collection method

Several data collection methods can be used to measure decision makers' preferences. A distinction can be made between revealed choice methods and stated choice methods. The main difference between both methods is that the revealed methods relate to observations of decision makers' choices made in real market situations, whereas stated choice methods relate to choices made in hypothetical situations (Hensher et al., 2015). Due to the hypothetical situations, the stated choice method can take new alternatives or attributes among existing ones into account. Since this study aims to examine the influence of a non-existing online product availability insight functionality, this one is the most appropriate. Furthermore, other advantages of the stated choice method is that the internal validity is high, and decision makers could be subjected to multiple choice situations (Kemperman, 2000).

3.2 Stimuli refinement

This section describes the determination of the alternatives, attributes and attribute levels (i.e. stimuli) for the stated choice experiment. The literature study has already identified many factors that influence consumers' channel choice considerations (see subsection 2.1.2). Here, these factors are further refined into stimuli for the experiment. Besides the literature study, other identification or refinement approaches are in-depth interviews with experts or focus groups with the target population (Hensher et al. 2015; Louviere et al., 2010). Here, the outcomes of the literature study are used as well as a focus group for further refinement. This section starts with the refinement of the alternatives (3.2.1), continuous with further refinement of the attributes and attribute levels (3.2.2), and ends with a description of the context variables (3.2.3).

3.2.1 Refinement of alternatives

The first step is to identify the alternatives. Alternatives are the possibilities a decision maker can choose from. In the case of this research, the alternatives are shopping channels. As a reminder, this research examines the effect of an online product availability insight on consumers' shopping channel choice behavior and on offline commerce (i.e. offline channels) in particular. Nowadays, the main competitor of the offline channels are the online channels and to a lesser extent catalogs. Although the offline channel could be specified into brick and mortar shops, shopping malls, and shop-in-shops and the online channel into web stores, mobile applications, and social media for example, these specifications are irrelevant for this research. This research just focuses on the effect of an online product availability insight on the offline channel. Whether shoppers use a web store or mobile application to orientate and to check the product availability in physical stores, and whether they visit a brand store or a shopping mall to actually buy the product, it does not belong to the scope of this research. In conclusion, the alternatives for the experiment of this research are the offline channel and online channel.

According to Hensher et al. (2015), in hypothesized choice situations a 'no preference' option has to be taken into account as well, to be able to refer to demand. Indeed, some decision makers may not use the shopping channels for the concerning products in the experiment.

3.2.2 Refinement of attributes and attribute levels

The second step is to identify the attributes. Attributes are the characteristics of the alternatives that influence a decision makers' choice. In the case of this research, the attributes of the shopping channels are factors that influence consumers' channel choice decision during the period between the orientation and purchase phase of their buying process. Examples of such attributes are distance-to-store for the offline channel and shipping costs for the online channel. Once again, it is important to note that factors that influence consumers' channel choice decisions during for example the orientation phase are not taken into account as attributes. Examples of these are easy accessibility to product information (Wind and Mahajan, 2002; Oppewal et al., 2012; Schröder and Zaharia, 2008), and a wide range of alternatives (Manyika and Roxburgh, 2011; Ray, 2001).

Many shopping channel attributes are already identified by previous studies towards consumers' channel choice behavior. The most decisive shopping channel attributes are clarified in the literature study (chapter 2). However, in order to ensure a comprehensive identification of attributes, a focus group was used. In total, ten persons participated in the focus group. The participants are 25 till 35 years old, high educated, and they regularly purchase apparel or electronic devices online. One of the questions was "what are the advantages and disadvantages of buying clothes/electronic devices in a web store; and physical store?". Given their answers some attributes could be abstracted (see table 4 for an overview). As can be seen in the table, the most commonly mentioned factors for the online channel are especially time pressure (+), product performance evaluation (+), delivery time (-), and retour effort (-). For the offline channel these are experiencing products (+), and annoying salesmen (-), bad weather (-), and crowdedness (-).

Table 4. Overview of the attribute investigation through a focus group

Attribute investigation through focus group			
Online		**Offline**	
Advantages	freq.	Advantages	freq.
Time pressure	5	Experiencing products	5
Product performance evaluation	4	Instant gratification	2
Comfortable	2	Social pleasure	2
Product/brand variety	2		
Online product information	1		
Surprise-effect	1		
Targated searching	1		
Disadvantages	freq.	Disadvantages	freq.
Retour effort	5	Annoying salesmen	3
Delivery time	3	Bad weather	3
Shipping costs	2	Crowdedness	3
		Limited parking space	2
		Long shopping streets	1
		Small fitting rooms	1

Almost all factors in table 4 can be found in the literature study as well (see table 3). Furthermore, frequently mentioned factors such as time pressure (situational factor), retour effort (online service), experiencing products (product characteristic), and annoying salesman (personal interaction quality) are according to the literature study decisive factors as well. The most important factors in consumers' channel choice decisions found in the literature study are; product categories (search vs experience goods), physical related situational factors (distance-to-store), time related situational factors (time pressure), the retailers' offline service quality (personal interaction quality), and online service quality (reliability/fulfillment). These factors will be used for the experiment of this

research. Product performance evaluation (online information technologies or product information quality) in the convenient environment of consumers' homes is a factor that might be of importance during consumers' channel choice decisions as well. For example, functionalities such as virtual reality, three-dimensionality or even holograms that virtually display products might increase online commerce. However, these functionalities do not belong to the scope of this research. This research just focuses on a channel coordination functionality; an online product availability insight.

The remainder of this subsection further refines these factors into attributes and attribute levels for the experiment of this research. Besides, the product availability insight will be further refined. Since product category and time constraint are no online or offline channel attributes, these factors are designated as context variables in the channel choice situations of the experiment. These are described in the following subsection.

Distance-to-store

Several studies have shown the importance of distance-to-store as predictor for consumers' channel choice decision (e.g. Chocarro et al., 2013; Forman et al., 2009; Nicholson et al., 2002). The longer the distance-to-store, the higher the chance for online purchases. Since most studies to distance-to-store took place in foreign countries, it would not be prudent to copy their levels for this research. People in the Netherlands probably experience these distances differently. For that reason, another focus group was used to determine the levels for the distance-to-store attribute. The participants were asked what the maximum distance-to-the-store would be instead of buying a product online when they are willing to buy a new product. The first group of eight participants were asked about the product category clothing, another group of eight respondents were asked about the product category electronics. Besides the product category, place of residence and modes of transport were taken into account (half of each group of participants live in a medium till large-sized city, the other half live in a village; six out of the sixteen participants only possess a bike, the remaining ten also possess a car). The group with the clothing category are willing to make a trip of maximum 22 minutes on average to a physical store. For the group with the electronics category the maximum distance is 12 minutes. The average of both categories is 17 minutes. Based on the results of the focus group, the accompanying levels for the distance-to-store attribute is: 1) '5 minutes', 2) '15 minutes', and 3) '25 minutes'.

Offline service quality

Service quality is a significant predictor for the offline environment. Most consumers perceive the service quality in the offline environment as higher as in the online environment (Binder, 2014). Offline service quality includes several aspects, such as physical aspects/tangibles, personal interaction/responsiveness, and reliability (e.g. Dabholkar et al., 1996; Parasuraman et al., 1988; Brady and Cronin, 2001). This research focuses on the quality of personal interaction solely, since it is believed that this is a competitive advantage of the offline channel. Based on the literature to personal interaction quality, two dimensions can be divided; personnel friendliness, and personalized service. As far as known, previous research have not identified or investigated levels within personal product availability in the context of consumers' channel choice behavior. For personnel friendliness, a scale from low to high is sufficient (specifically: 1) 'very friendly', 2) 'normal', 3) 'not so friendly'). For personalized service the levels are 1) 'you could make an appointment with an expert/stylist', 2) 'you could ask store personnel for advice', and 3) 'self-service'.

Product availability

The (un)certainty of product availability can have major influence on consumers´ shopping behavior. Consumers' perceived uncertainty about the availability of products in physical stores can increase the chance of online purchase, due to high expected offline transportation costs (Forman et al, 2009; Gallino and Moreno, 2014). As far as known, previous research has not identified or investigated gradations within product availability in the context of consumers' channel choice behavior. For the determination of attribute levels, effective policies to mitigate or overcome negative consumer

responses to stockouts from the literature can possibly form attribute levels. Examples of these are compensations in case of stockouts, commitment and availability guarantees, online product reservations through a BOPS functionality, and product substitutions. From these, availability guarantees probably is the most obvious possibility. The accompanying levels range from high till low certainty of product availability: 1) '5 products available', 2) '1 product available', and 3) 'unknown'.

Online service quality

Just as for the offline service quality, research has been done to the measurement of online service quality (e.g. Bauer et al., 2006; Parasuraman et al., 2005; Yoo and Donthu, 2001; Zeithaml et al., 2002). Several aspects can be deduced, however, this research will focus solely on the reliability or fulfillment dimension. It is believed this is the most important dimension of them all (e.g. Parasuraman et al., 2005; Wolfinbarger and Gilly, 2003). The reliability/fulfillment dimension includes predominantly order delivery accuracy. The associated, and most decisive online transaction costs are delivery time, delivery appointment, delivery costs, and retour effort. As far as known, there is no research done to consumer online purchase intention in relation to gradations of these transaction costs. With the aid of an inventory to online transaction costs (appendix 1), levels for each attribute can be determined based on means or frequency. For the delivery time possibly levels are 1) 'tomorrow', 2) '2 days', and 3) '4 days'. An interaction effect can be achieved between the delivery time attribute and the delivery appointment attribute. For the delivery appointment possibly levels are 1) 'any hour of the day', 2) 'any part of the day (morning, afternoon, evening, or weekend)', and 3) 'not possible'. For the shipping costs possibly levels are 1) '€ 0,00-', 2) '€ 2,50-', and 3) '€ 5,00-'. Lastly, for the return effort possibly levels are 1) 'picked up at home by retailer or a courier service company without retour costs', 2) 'return it yourself at return point without retour costs', and 3) 'return it yourself at return point with retour costs'. See table 5 for an overview of the nine attributes and attribute levels for the research design.

Table 5. Overview of attributes and attribute levels

Overview of attributes and levels			
Online		**Offline**	
Attribute	**Level**	**Attribute**	**Level**
1. Delivery time	1. Tomorrow	5. Travel time	1. 5 min.
	2. 2 days		2. 15 min.
	3. 4 days		3. 25 min.
2. Delivery appoint-ment	1. Any hour of day	6. Friendliness personnel	1. Very friendly
	2. Any part of day		2. Normal
	3. Not possible		3. Not so friendly
3. Delivery costs	1. € 0.00	7. Product avail-ability insight	1. 5 products available
	2. € 2.50		2. 1 product available
	3. € 5.00		3. Unknown
4. Retour effort	1. Picked up at home	8. Personalized service	1. Appointment with expert/stylist
	2. Return point without retour costs		2. Store personnel available for advice
	3. Return point with retour costs		3. Self-service
Both online and offline			
Attribute	**Level**		
9 Product price	1. No difference		
	2. 10% cheaper offline		
	3. 10% cheaper online		

3.2.3 Context variables

Besides the channel specific attributes, the experiment takes into account two context variables; product category, and time constraint. These factors are expected to have influence on consumers' channel choice decisions as well. The variables are described consecutively.

Product category
The type of product has significant influence on consumers' channel choice decisions. Where the online channel is convenient for appliances and books, the offline channel is useful for tailored clothes or complicated electronics. Previous research on consumers' channel usage have classified products into search and experience goods (e.g. Chocarro et al, 2013), high- and low involvement goods (e.g. Gu et al., 2012), hedonic and utilitarian goods, and popular and niche products (Brynjolfsson et al., 2009). Overall, the main focus has been on experience attributes, since performance risk is the most aversive motivation for consumers to purchase products online (Lim et al., 2012; Blázquez, 2014). It is therefore not surprising that in this regard, most studies classify products into search and experience goods (e.g. Chiang and Dholakia, 2003; Nakayama et al., 2010; Weathers and Makienko, 2006). Concrete examples for both categories are apparel, furniture, and complicated electronics for the experience category, and appliances, simple electronics, and books for the search category. For the experiment, an external hard disk is chosen as a low involved search good, and a jeans is chosen as an high involved experience good.

Time constraint
Several time-related situational factors can be of importance during the consumers' channel choice consideration. Examples of these are time-of-day or day-of-the-week, urgency of purchase, and time pressures (Belk, 1975). Consumers´ perceived time constraint is a significant motivation to purchase a product online (Chocarro et al., 2013; Nicholson et al., 2002; Verhoef and Langerak, 2001). Chocarro et al. (2013) and Nicholson et al. (2002) found that perceived time pressure is one, if it is not thé most important situational variable for consumers' channel choice decision. In the context of research to consumers channel choice decision, two studies applied gradations to the time constraints variable. For the 'time availability' variable, Gehrt and Yan (2004) used the levels 'plenty of time' and 'under time pressure'. Chocarro et al. (2013) 'a lot to do' and 'nothing to do' for their situational variable 'time pressures'. However, these levels might be vague for respondents. Furthermore, respondents might interpret them differently. For that reason, specific urgent as well as no urgent purchase situations will be presented in the questionnaire. The context variable will be integrated in the question, for example for the apparel product category the question with a time pressure will be "It is Tuesday night seven o'clock, you want to wear the jeans on Saturday night during a party, do you prefer the web store or physical store?" Of course, the respondents have to take the conditions (attribute levels) of both channels into account as well. Subsection 3.4.2 (Questionnaire content) describes the choice situations in more detail.

3.3 Experimental design

Now the number of alternatives, attributes, and attribute-levels have been determined, the design of the experiment can be established. In the experimental design the attribute levels are systematically allocated to the attributes of the alternatives to create profiles (Hensher et al., 2015). Normally, each profile can be compared with another profile by decision makers in a stated choice experiment. However, in the case of the experiment of this study, the online channels have to be compared with the offline channels. Each channel has its own characteristics (attributes). Consequently, in the experiment of this study, each profile consists of two alternatives, and has nine attributes in combination with an unique allocated attribute level. As a result, the profiles of the experimental design also serve as the choice sets for the stated choice experiment. The choice-sets can be used for the questionnaire.

In general, two experimental designs can be distinguished; the full factorial design, and the fractional factorial design (Hensher et al., 2015). The full factorial design combines the attribute levels in all possible combinations. The total amount of profiles can be calculated with the equation $P = M^A$ (where A is the number of attributes, and M the number of attribute levels). For the

experimental design of this study, the total amount of profiles will be $P = 3^9$. Obviously, it is impossible to present all these profiles to a decision maker. However, the fractional factorial design offers a solution to reduce the amount of profiles.

The fractional factorial design generates an orthogonal (non-correlated) subset of profiles. Addelman and Kempthorne (1961) developed standard plans of fractional factorial designs where the amount of profiles depends on the number of main effects (attributes, and attribute levels), and interaction effects (combination of two or more attributes). According to Hensher et al. (2015) "an *effect* is the impact that a particular attribute level has on choice." The selection criteria for the experimental design of this research were 9 attributes with each 3 levels, and 1 two-way interaction effect since it is believed delivery time, and delivery appointment interact. Taking into account the selection criteria, the smallest predefined fractional factorial design by Addelman and Kempthorne has 27 profiles. To control for possible order effects, the profiles (choice sets) will appear in a randomized order across the survey for each respondent.

The experiment with the accompanying choice sets will be executed with the aid of a questionnaire. The next section describes the questionnaire of this research.

3.4 Questionnaire

This section clarifies the content of the questionnaire of this research in more detail. The questionnaire will be presented in digital form (web-based) to the respondents. Compared to a paper and pencil questionnaire or telephone interview, this is the most efficient way to derive the data for this research. The questionnaire is designed with the survey-program of the Eindhoven University of Technology named 'Berg Systeem'. Before the eventual questionnaire was distributed, first a test questionnaire was held among test respondents. The most important findings are described in subsection 3.4.1. This section further describes the content of the final questionnaire in subsection 3.4.2. The conditions of the participants for the questionnaire are addressed in subsection 3.4.3.

3.4.1 Test questionnaire

In order to assure the eventual respondents realistic choice situations and a comprehensible questionnaire, first four different trial questionnaires were held among 12 test respondents. The questionnaires differed in the number of questions, the number of product categories (1 or 2), and the presence of twofold questions regarding time pressure (with or without time pressure). After they finished the questionnaires, they were asked to evaluate the questionnaires on several criteria. The criteria related to the amount of text, the description of the situations, the number of questions, the type of attributes, the type of attribute levels, the product categories, the combination of both product categories in one questionnaire, and the twofold questions regarding time pressure.

With regard to the amount of text (of the introductions, and description of the situations) some test respondents thought the descriptions could be more concise. Moreover, some test respondents found the repetition of the description of the situation at each question unnecessary. For the final questionnaire, the text of the introduction and descriptions were condensed, and after the first question, the descriptions of the situations were concealed in so called pop-up boxes which could be appealed by the respondents if they would hover over the button 'description of the situation'. Some respondents might perceive such a functionality as useful in case they forget the context of the question during the execution of the questionnaire. The same functionality was applied to the descriptions of the attributes and their levels in order to save text (see appendix 2 for an example). With regard to the amount of questions, most test respondents believed 18 choice situations is not too much. Pertaining the attributes, and attribute levels some test respondents had some simplifying proposals for improvements. Furthermore, most test respondents believed the situations with the accompanying attributes, and attribute levels are realistic. Proposed additions were weather conditions, mode of transport, parking facilities, and substitutability. However, they believed these factors were not as important as the given attributes. Lastly, the test respondents had

no issues with the questionnaires where both categories appeared in, or where the questions were twofold (question with, and without time pressure). More than that, test respondents thought these questionnaires were easier to understand, better to compare and assess the situations, and/or more tantalizing. For that reason, the final questionnaire will consist of 18 twofold-questions (with and without time pressure), of which 9 questions relate to the apparel product category, and 9 questions to electronics.

3.4.2 Questionnaire content

The questionnaire contains three parts. Besides the choice situations (part 3), respondents are asked about their personal (part 1) and psychographic characteristics (part 2). The questionnaire starts with a short introduction, followed with a conditional question about respondents' online shopping frequency. Specifically, respondents were asked if they had bought one or more products online during the last year. The respondents who answered no, received a message that they could not participate. Here, each part of the questionnaire is shortly described. For the exact questions and, if applicable, the response possibilities see appendix 3.

Part I: Personal characteristics

The first part of the questionnaire contains a list of questions about respondents' personal characteristics. Based on previous research, demographics such as age and level of education presumably have a relation with consumers' channel choice behaviors (e.g. Ansari et al., 2008; Chocarro et al., 2013; Girard et al., 2003). In the questionnaire of this research respondents are asked about their gender, age, education level, work, income level and household situation.

Part II: Psychographic characteristics

Besides respondents' personal characteristics, this research also take their psychographic characteristics into account, which is the second part of the questionnaire. Some studies state psychographic variables have greater value for consumer segmentation than demographic variables (e.g. Ailawadi et al, 2001, and Konus et al, 2008). Konus et al. (2008) did an extensive investigation to possible psychographic characteristics for their study. In total, they determined six psychographic variables; 1) innovativeness, 2) loyalty, 3) motivation to conform, 4) shopping enjoyment, 5) time pressure, 6) price consciousness. For each psychographic variable they established 2 till 5 statements which respondents could respond to through a five-point Likert scale (ranging from totally agree till totally disagree). Examples of these statements are "I like to try new and different products" for innovativeness and "I generally purchase the same brands" for loyalty (see appendix 3 for an overview of all statements). To be able to indicate consumers' psychographic characteristics, these statements are used for this research as well.

Part III: Choice situations

The last part of the questionnaire contains 18 choice situations from the stated choice experiment. Each respondent is subjected to 18 choice situation, of which 9 questions relate to the product category clothing (trousers), and 9 questions to electronics (external hard disk). Figure 2 shows an example of a choice situation about trousers. As can be seen in the figure, respondents must not only consider a channel choice, they also have to make them with and without the condition of time pressure (question A and B). Before the respondents are subjected to the 18 choice situations, the third part of the questionnaire starts with a sample question. Here, the situation as well as the attributes are described. However, the respondents have also the possibility to appeal these descriptions during the completion of the choice situations; by moving their mouse over the "description of the situation" button above the table or the names of the attributes in the table the related description will appear.

In order to overcome possible order effects, a total of 8 questionnaire variants are composed which differ in the order of the product categories (first/second in the questionnaire), shopping channels (left/right in the table), and the time pressure condition (sub-question A/B).

Which option do you prefer...,

Description of the situation

Web store		Physical store		No preference
Delivery time:	Tomorrow	**Travel time:**	15 min.	-
Delivery appointment:	Not possible	**Friendliness personnel:**	Normal	-
Delivery costs:	euro 5.00	**Product availability:**	5 products available	-
Retour effort:	Return point with retour costs	**Personalized service:**	Appointment possibility with stylist	-
Product price: 10% cheaper in web store				-

a) ... if you want to wear the jeans on Saturday night during a party (now it is Tuesday night 7 p.m.)?

Web store	Physical store	No preference
○	○	○

b) ... if you want to have the jeans because you are looking for such a jeans quite a while?

Web store	Physical store	No preference
○	○	○

Figure 2. Example of a choice situation

3.4.3 Participant conditions

Not every person can participate in the questionnaire. Respondents have to conform two conditions. The first condition is that respondents must have experience with online shopping. If consumers have not occasionally or regularly bought products online, they probably be more inclined to choose for the offline channel when faced to a channel choice situation. The second condition is that respondents have to be aged between 20 till 65 years old. People of that age belong to the working population of the Netherlands which make comparisons between groups more logical and easier.

3.5 Conclusion

The stated choice method will be used for the experiment of this research. A stated choice experiment provides the ability to examine the preference of a non-existing functionality such as an online product availability insight, and detect its importance relative to competing influences. The stated choice method is based on the random utility theory. The random utility theory assumes decision makers make choices between alternatives – shopping channels in the case of this research – that provide them with the highest level of utility or satisfaction. With the aid of a survey, data can be collected about decision makers' channel preferences. Discrete choice models can be used to estimate this data and predict decision makers' choices between the alternatives. For this research, the MNL model and LC model will be used.

In order to perform the stated choice experiment, stimuli for the choice situations had to be determined. The factors that have most influence on consumers' channel choice decisions, which were extracted from the literature study, were further refined. In total, 9 attributes and 2 context variables were derived. The attributes are delivery time, delivery appointment, delivery costs, and retour effort for the online channel, and travel time, friendliness personnel, product availability insight, and personalized service for the offline channel. Lastly, product price is a joint attribute (see also table 5). The context variables are product category and time pressure (purchase urgency). With

the amount of alternatives, attributes, and attribute levels the experimental design could be established. A fractional factorial design with 27 profiles was chosen.

The web-based questionnaire will contain three parts; respondents will be asked about their personal characteristics, their psychographic characteristics, and their channel preferences through 18 choice situations. From these 18 choice situations, 9 questions relate to the product category clothing (trousers), and 9 questions to electronics (external hard disk). Furthermore, the questions in the choice situations are twofold; what their choice will be if they perceive a time pressure and what if not. To control for possibly order effects, the choice situations will appear in a randomized order across the survey for each respondent. Furthermore, a total of 8 questionnaire variants are composed which differ in the order of the product categories (first/second in the questionnaire), shopping channels (left/right on the screen), and the time pressure condition (sub-question A/B).

4. Results

This chapter discusses the results of the survey and experiment. The results provide an answer to the third and fourth sub-question of the research; “what is the effectiveness of the most relevant online product availability insight on offline commerce?”, and “what is the importance of the online product availability insight relative to other factors influencing consumers’ channel choice decisions?”. Especially these sub-questions should provide an answer to the main question of the research; “how can an online product availability insight from offline stores affect omni channel consumers’ shopping behavior such that offline commerce will be stimulated?”.

With the aid of a web-based questionnaire data was collected for the experiment. The data was collected during two periods; the end of November 2015, and the end of January 2016. During the end of November 2015, 253 respondents completed the questionnaire. During the end of January 2016, 427 respondents completed the questionnaire through a panel from PanelClix. Added together, 680 respondents completed the questionnaire in total. However, 58 respondents did not fully complete the questionnaire. Furthermore, 4 respondents indicated to have ‘no preference’ in all 18 choice sets. The data of those respondents were removed. In total, data of 618 respondents are used for the analyses.

The results of this study consist of three parts. In section 4.1 the descriptive statistics are given and possibly relationships between demographics are tested. Section 4.2 contains the results of the stated choice experiment of this research. The results should answer the main question of this research. Section 4.3 describes the conclusion of the results.

4.1 Descriptive analyses

This section discusses the descriptive statistics of this research, compares the demographic results with the Dutch population (4.1.1), and examines the most relevant relationships between the demographic variables (4.1.2).

4.1.1 Demographics

This subsection describes the demographic information of the respondents of this research. First the frequencies of the demographic variables of the sample survey are described. Subsequently, the sample is compared with the frequencies of the population in the Netherlands (between 20 and 65 years old) with chi square tests. The information about the Dutch population is retrieved from the website Statline belonging to Statistics Netherlands. The demographic variables included are gender, age, education, work, income, and household situation.

As shown in table 6, 48.7% of the 618 respondents are male and 51.3% are female. For the age variable, the respondents are almost equally distributed over the categories; 33.8% of the respondents are aged between 20 - 34 years old, 35.8% between 35 - 49 years old, and 30.4% between 50 - 65 years old. Almost half of the respondents is high educated (49.7%), while low educated respondents are underrepresented (14.6%). For work, more than half of the respondents has a full time job (55%), a quarter works part-time, and 20% have no job. The category ‘no job’ consist of people between 20 and 65 years old who are unemployed, retired, students without a job or others who do not belong to the working population (e.g. homemakers or disabled people). Most respondents’ household have an average (39.4%) or high income (38.3%), a smaller percentage has a low income (22.3%). In total, 85 respondents (13.8%) did not want to answer the question. Lastly, respondents who live in a household with children (whether they are single or a couple and/or parent or child) are with 53.1%, overrepresented compared to the other classes in the sample (19.8% singles and 27% couples).

Table 6. Demographics of sample survey and Dutch population

Demographics			
Demographic variable	**Category**	**Survey (N=618) %**	**Dutch population %**
Gender	Males	48.7	50.2
	Females	51.3	49.8
Age	20 - 34 years old	33.8	30.5
	35 - 49 years old	35.8	33.7
	50 - 65 years old	30.4	35.8
Education	Low	14.6	22.8
	Middle	35.7	40.5
	High	49.7	36.7
Work	Full-time	55.0	38.1
	Part-time	24.9	31.0
	No job	20.1	30.9
Income	Low	22.3	21.7
	Average	39.4	34.4
	High	38.3	43.9
Household situation	Single	19.8	21.7
	Couple	27.0	34.4
	Household with children	53.2	43.9

To compare the differences between the sample survey and the Dutch population in demographics, the chi-square test is used. This is a common analysis for the examination of differences between samples. Table 7 shows the results of the chi-square tests. Gender, age, and income show insignificant results, indicating that the differences between the sample survey and Dutch population are small. This can also be seen in table 6, where for example for age the percentages in the categories of both populations are comparable. Contrary, the differences in education, work, and household situation are large enough to be significant. For education, the group of respondents who are high educated are overrepresented compared to the Dutch population (49.7% vs. 36.7%). Although high education is an important characteristic of omni channel consumers, this has to be taken into account while drawing conclusions. This also applies for the population differences in work and household situation. For work, full-timers are overrepresented in the survey, whereas part-timers and people with no job are less represented compared to the Dutch population. This might have consequences on the context variable 'time pressure' for example. For household situation, singles are underrepresented in the survey.

Table 7. Relationships between sample survey and Dutch population

Differences between survey population and Dutch population			
Variables	**Test**	**Results**	**Significant**
Gender	Chi-square	$\chi^2 = 0.262$, df = 1, p = 0.609	No
Age	Chi-square	$\chi^2 = 4.167$, df = 2, p = 0.125	No
Education	Chi-square	$\chi^2 = 25.030$, df = 2, p = 0.000	Yes
Work	Chi-square	$\chi^2 = 37.598$, df = 2, p = 0.000	Yes
Income	Chi-square	$\chi^2 = 4.308$, df = 2, p = 0.116	No
Household situation	Chi-square	$\chi^2 = 23.777$, df = 2, p = 0.000	Yes

4.1.2 Relationships between demographic characteristics

This subsection describes the results of the relationships between the demographic variables for this research. It is important to take possible interdependencies into account while drawing conclusions. Furthermore, the results might be interesting additions to the findings of the discrete choice model estimations (see section 4.2). If both variables have an ordinal measurement level, the relationship is examined with the Spearman's Rank-Order Correlation test. If one of the variables has a nominal measurement level, the chi-square test is used. Table 8 provides an overview of the results of the relationships between the demographic variables. The crosstables are shown in appendix 4.

Table 8. Relationships between demographic variables

Relations between demographic variables			
Variables	**Test**	**Results**	**Significant**
Gender - age	Chi-square	$\chi^2 = 1.180$, df = 2, p = 0.554	No
Gender - education	Chi-square	$\chi^2 = 7.392$, df = 2, p = 0.025	Yes
Gender - work	Chi-square	$\chi^2 = 101.775$, df = 2, p = 0.000	Yes
Gender - income	Chi-square	$\chi^2 = 2.836$, df = 2, p = 0.242	No
Gender - household situation	Chi-square	$\chi^2 = 0.503$, df = 2, p = 0.778	No
Age - education	Spearman	$r_s = -0.296$, p = 0.000	Yes
Age - work	Chi-square	$\chi^2 = 44.070$, df = 4, p = 0.000	Yes
Age - income	Spearman	$r_s = 0.026$, p = 0.544	No
Age - household situation	Chi-square	$\chi^2 = 118.282$, df = 4, p = 0.000	Yes
Education - work	Chi-square	$\chi^2 = 54.184$, df = 4, p = 0.000	Yes
Education - income	Spearman	$r_s = 0.259$, p = 0.000	Yes
Education - household situation	Chi-square	$\chi^2 = 24.536$, df = 4, p = 0.000	Yes
Work - income	Chi-square	$\chi^2 = 95.470$, df = 4, p = 0.000	Yes
Work - household situation	Chi-square	$\chi^2 = 30.964$, df = 4, p = 0.000	Yes
Income - household situation	Chi-square	$\chi^2 = 97.353$, df = 4, p = 0.000	Yes

As can be seen in table 8, most relationships between the demographic variables are significant. Only gender – age, gender – income, gender – household situation, and age – income are not. In these cases, the categories of the first demographic variable are almost equally distributed over the categories of the second. For example, the amount of males and females is in each category of age category (20 - 34, 35 - 49, and 50 - 65 years old) equal.

From the significant relationships, only the strongest or most interesting relationships are discussed. The first strong relationship is the one between gender and work ($\chi^2 = 101.775$, df = 2, p = 0.000). The distribution of males and females over the work categories differs considerably (see appendix 4 for the crosstable). For example, 74.4% of the males work full time, and 9.3% part time, whereas for females these percentages are 36.6% and 39.7% respectively. Also the relationship between age and household situation is quite strong ($\chi^2 = 118.282$, df = 4, p = 0.000). Not unexpectedly, especially younger respondents are single or part of a couple, whereas older respondents are part of a household with children. An interesting relationship is the one between education and work ($\chi^2 = 54.184$, df = 4, p = 0.000). If respondents have a high education, they have mostly a full time job, whereas a relative high percentage of low educated respondents have no job (41.1% vs. 21.1% mean value). Another quite strong relationship is the one between work and income ($\chi^2 = 95.470$, df = 4, p = 0.000). Especially full timers have high incomes (46.9% vs. 38.3%), whereas respondents with no job have low incomes (54.9% vs. 22.3%). Lastly, the relationship between income and household situation is interesting and quite strong ($\chi^2 = 97.353$, df = 4, p = 0.000). Especially households with children have high incomes, whereas most singles have low incomes. A finding which is logical since respondents could indicate their net disposable household income in the questionnaire.

4.2 Model estimation

This section describes the results of the stated choice experiment. Subsection 4.2.1 discusses the results of the MNL models. The subsequent section (4.2.2) discusses the results of the LC models. The last subsection (4.2.3) is an extension of the results of the LC model, containing the relationships between the segments of the LC models, and the demographic and psychographic variables.

4.2.1 Multinomial logit models

The MNL models are estimated with Nlogit 5. In total, two MNL models were estimated; one for the product category jeans, and one for the external hard disk (EHD). The results of the MNL models are shown in table 9 (jeans) and 11 (EHD). For each product category the utility weights (β) and significance levels (p) of the attribute levels are given. Effect coding is used to estimate the utility weights. The higher the utility weight, the stronger the preference for the attribute level is. The utility weights in the table are the means of decision makers' preference. Except for the attribute personal attention in the jeans model, all attributes have at least one significant attribute level. Both models have a high goodness-of-fit; the ρ^2 of the jeans model is 0.287 and of the EHD model is 0.262.

The models are extended with the context variable time pressure (see table 10 and 12). Therefore, context-dependent explanatory variables have been added to the model. These additional variables will be identified as Z-variables in order to distinguish these variables from the main X-variables. The attributes are estimated in the same manner as the standard attributes. However, the effects of with or without time pressure are included in the estimation. Also these models have a high goodness-of-fit; the ρ^2 of the jeans model is 0.292, and 0.270 for the EHD model. Attributes with a significance value (p-value) higher than 0.15 for both the first and second attribute levels were excluded from the model. Only the constant variables, delivery time, delivery costs, and travel time for the jeans have the required p-value. For the EHD it is only the constant variables, delivery time, and delivery appointment (and consequently the interaction variable) that have a higher p-value.

As a supplement to the tables, figures 3, 4 and 5 show the relative preferences for the attribute levels. The graphs in the figures make it easier to compare the utility weights between the products as well as the attribute levels of the products themselves.

Jeans

The positive constant variables in table 9 indicate that decision makers prefer one of the channels over the 'no preference' option. Furthermore, the decision makers slightly prefer the offline channel (2.51) over the online channel (1.88) in case of buying a jeans.

The results in table 9 are as hypothesized. The utility weights of the attribute levels show mostly logical patterns as can be seen in figure 3; the first levels have the highest β and p-values, and are in most cases also the most favorable levels (e.g. low delivery/travel time). For the online channel, delivery time has the most influence on decision makers' channel choice behavior in case of a jeans. Obviously, they prefer a fast delivery time. Furthermore, they prefer no delivery costs – which is the second most decisive factor for the online channel. However, for delivery appointment they prefer 'any part of day' instead of 'any hour of day'. The interaction variable shows the same results as can be seen in figure 3; although the pattern is logical, in each combination with the levels of delivery time, 'any part of day' is more preferred than 'any hour of day'. Possibly, decision makers prefer more freedom in their schedule for deliveries. For retour effort, they prefer 'return point without retour costs' instead of a free 'pick-up-at-home' service. Possibly, they perceive a return point as more convenient.

Also for the offline channel the results were as hypothesized; low travel times, friendly personnel, and high product availability are most preferred by the decision makers (see figure 9). Especially travel time, and friendly personal have great influence on decision makers' channel choice behavior. However, also product availability plays a significant role. If decision makers see through an online product availability insight that many jeans are in stock in a physical store, they are more inclined to visit this store. Contrary, if the product availability in physical stores are unknown or low

(1 product available), the attribute has a negative significant impact for the offline channel. Probably, the risk of product unavailability in the physical store is too high. Only personal attention has no significant effect on their channel choice considerations in case of a jeans.

Lastly, the results for the product price (discount) attribute have to be interpreted slightly differently. The utility weight for the online channel ('10% cheaper in web store') is displayed correctly in table 9 and figure 3, because the attribute was estimated for the online channel in the model. However, the effect of the second attribute level ('10% cheaper in physical store') has negative consequences for the online channel, but have to be interpreted as positive for the offline channel. If the utility weight of 'no difference' is positive, the utility of the web store increases, and if the result of this attribute level is negative, decision makers' preference for the offline channel increases. In the case of the jeans, the impact of product price discounts are for both channels equally important.

Table 9-1. MNL model estimation, Jeans

MNL model, Jeans				
Alternative	**Attribute**	**Level**	**β**	**p**
Both channels	Constant online channel	-	1.89248	0.0000
	Constant offline channel	-	2.50444	0.0000
Online channel	Delivery time	Tomorrow	0.35045	0.0000
		2 days	0.13088	0.0000
		4 days	-0.48133	-
	Delivery appointment	Any hour of day	0.01689	0.5685
		Any part of day	0.14049	0.0000
		Not possible	-0.15738	-
	Delivery costs	€ 0.00	0.27374	0.0000
		€ 2.50	0.01194	0.6887
		€ 5.00	-0.28568	-
	Retour effort	Picked up at home for free	0.07806	0.0069
		Return point without retour costs	0.16588	0.0000
		Return point with retour costs	-0.24394	-
	Delivery time *	Tomorrow * Any hour of day	-0.04415	0.2804
	Delivery appointment	Tomorrow * Any part of day	-0.07384	0.0701
		2 days * Any hour of day	0.04527	0.2564
		2 days * Any part of day	0.01329	0.7508
Offline channel	Travel time to shopping center	5 min.	0.29350	0.0000
		15 min.	-0.00604	0.8330
		25 min.	-0.28746	-
	Friendliness personnel	Very friendly	0.19900	0.0000
		Normal	0.09143	0.0020
		Not so friendly	-0.29043	-
	Product availability	5 products available	0.16035	0.0000
		1 product available	-0.07289	0.0121
		Unknown	-0.08746	-
	Personal attention	Appointment possibility with expert/stylist	0.04097	0.1553
		Store personnel available for advice	0.02761	0.3449
		Self-service	-0.06858	-
Both channels	Product price	No difference	-0.04567	0.1253
		10% cheaper in physical store	-0.16651	0.0000
		10% cheaper in web store	0.21218	-
LL(0) = -12220,96; LL(β) = -8717,75; ρ^2 = 0,287				

Table 9-2. Interaction variable of MNL model estimation, Jeans

Interaction variable of MNL model, Jeans				
Alternative	**Attribute**	**Level**	**β**	**p**
Online channel	*Delivery time **	*Tomorrow * Any hour of day*	*0.32319*	-
	Delivery appointment	*Tomorrow * Any part of day*	*0.41710*	-
		*Tomorrow * Not possible*	*0.31106*	-
		*2 days * Any hour of day*	*0.19304*	-
		*2 days * Any part of day*	*0.28466*	-
		*2 days * Not possible*	*-0.08506*	-
		*4 days * Any hour of day*	*-0.46556*	-
		*4 days * Any part of day*	*-0.28029*	-
		*4 days * Not possible*	*-0.69814*	-

Table 10 shows the results of the MNL model for the jeans with the context variable time pressure included (see appendix 5 for the *X*-attributes). Most *Z*-attributes are not shown in the table, since most *Z*-attributes are not significant (*p*-value < 0.15). The utility weights with time pressure are the results of the utility weight from the standard model plus the utility weight of the *Z*-variables, for the utility weights without time pressure, these weights are subtracted. For the constant variables, only the offline channel is significant. If decision makers perceive a time pressure the offline channel is preferred (2.65 with vs. 2.37 without a time pressure). Furthermore, if decision makers perceive a time pressure, the time-related attribute for the online channel (delivery time) is more important whereas the costs-related attribute (delivery costs) is less important to them. For the offline channel, travel time is less important if decision makers perceive a time pressure. Probably, they are willing to travel longer if the purchase situation is urgent.

Table 10. MNL model estimation with time pressure, Jeans

MNL model with time pressure, Jeans					
Alternative	**Attribute**	**Level**	**β**		**p**
			with	**without**	
Both channels	Z Constant online channel	-	1.85036	1.91370	0.4907
	Z Constant offline channel	-	2.64728	2.36530	0.0015
Online channel	Z Delivery time	Tomorrow	0.51315	0.21393	0.0000
		2 days	0.23072	0.05508	0.0026
		4 days	-0.74387	-0.26901	-
	Z Delivery costs	€ 0.00	0.21967	0.32331	0.0824
		€ 2.50	0.01144	0.01058	0.9885
		€ 5.00	-0.23111	-0.33389	-
Offline channel	Z Travel time to shopping center	5 min.	0.23903	0.34317	0.0769
		15 min.	0.00806	-0.01866	0.6408
		25 min.	-0.24709	-0.32451	-
LL(0) = -12220,96; LL(β) = -8656,34; ρ^2 = 0,292					

External hard disk

Just like the jeans, also the MNL model for the EHD has positive constant variables as well, indicating that decision makers prefer one of the channels over the 'no preference' option (see table 11). The channels are equally popular in case of a EHD.

Also the results of the MNL model for the EHD are as hypothesized, and largely the same as the results for the jeans (see figure 3). Similarly as the results for the jeans, delivery time has the most influence on decision makers shopping behavior for the online channel, followed by delivery costs; decision makers prefer fast delivery, and no delivery costs. However, the utility weights of delivery time and costs are higher for the EHD than for the jeans. The decision makers also prefer 'any part of day' instead of 'any hour of day' for delivery appointment. The interaction variable

shows the same pattern as for the jeans (see figure 3). Just like the jeans, they prefer 'return point without retour costs' instead of a free 'pick-up-at-home' service for retour effort.

Also for the offline channel the results are as hypothesized and consequently almost similar as the results for the jeans; low travel times, friendly personnel, and high product availability are also for the EHD most preferred by the decision makers (see figure 3). However, also for travel time the utility weights of the attribute levels are higher for the EHD than for the jeans. Contrary to the results of the jeans, personal attention has significant attribute levels. Decision makers prefer the possibility to ask store personnel for advice in case of an EHD. The possibility to make an appointment with an expert has no significant effect, indicating that decision makers do not perceive that possibility as important.

Product price (discounts) in both web stores and physical stores has impact on decision makers' channel choice consideration. However, offline discounts have greater influence.

Table 11-1. MNL model estimation, EHD

MNL model, EHD				
Alternative	**Attribute**	**Level**	**β**	**p**
Both channels	Constant online channel	-	2.20480	0.0000
	Constant offline channel	-	2.24900	0.0000
Online channel	Delivery time	Tomorrow	0.49000	0.0000
		2 days	0.07778	0.0072
		4 days	-0.56778	-
	Delivery appointment	Any hour of day	0.03201	0.2781
		Any part of day	0.08663	0.0020
		Not possible	-0.11864	-
	Delivery costs	€ 0.00	0.31736	0.0000
		€ 2.50	-0.03767	0.1933
		€ 5.00	-0.27969	-
	Retour effort	Picked up at home for free	0.05085	0.0833
		Return point without retour costs	0.11416	0.0001
		Return point with retour costs	-0.16501	-
	Delivery time * Delivery appointment	Tomorrow * Any hour of day	0.01304	0.7455
		Tomorrow * Any part of day	-0.02219	0.5749
		2 days * Any hour of day	0.00654	0.8791
		2 days * Any part of day	0.02464	0.5301
Offline channel	Travel time to shopping center	5 min.	0.30529	0.0000
		15 min.	0.07358	0.0090
		25 min.	-0.37887	-
	Friendliness personnel	Very friendly	0.14990	0.0000
		Normal	0.06224	0.0279
		Not so friendly	-0.21214	-
	Product availability	5 products available	0.11228	0.0001
		1 product available	-0.02468	0.3711
		Unknown	-0.08760	-
	Personal attention	Appointment possibility with expert/stylist	-0.02005	0.4896
		Store personnel available for advice	0.10108	0.0004
		Self-service	-0.08103	-
Both channels	Product price	No difference	-0.10756	0.0002
		10% cheaper in physical store	-0.20072	0.0000
		10% cheaper in web store	0.30828	-
LL(0) = -12220,96; LL(β) = -9023,90; ρ^2 = 0,262				

Table 11-2. Interaction variable of MNL model estimation, EHD

Interaction variable of MNL model, EHD				
Alternative	**Attribute**	**Level**	**β**	**p**
Online channel	*Delivery time **	*Tomorrow * Any hour of day*	*0.53505*	-
	Delivery appointment	*Tomorrow * Any part of day*	*0.55444*	-
		*Tomorrow * Not possible*	*0.38051*	-
		*2 days * Any hour of day*	*0.11633*	-
		*2 days * Any part of day*	*0.18905*	-
		*2 days * Not possible*	*-0.07204*	-
		*4 days * Any hour of day*	*-0.55535*	-
		*4 days * Any part of day*	*-0.48360*	-
		*4 days * Not possible*	*-0.66439*	-

The results of the MNL model for the EHD with the inclusion of the context variable time pressure are shown in table 12 (see appendix 5 for the *X*-attributes). As can be seen in the table, less *Z*-attributes in the MNL model for the EHD are significant compared to the jeans (*p*-value < 0.15). Both constant variables are significant and equally important. However, also for the EHD the difference in the effect of time pressure is greater for the offline channel compared to the online channel. Decision makers prefer the offline channel more if they perceive a time pressure (2.56 with vs. 1.96 without a time pressure). Only the online channel has a significant *Z*-attribute in case of the EHD; delivery time. Decision makers prefer fast delivery time when they perceive a time pressure. Although delivery appointment has no significant attribute levels, it is shown in the table since the interaction variable has a significant attribute level as well. As can be seen in figure 5, delivery time is more important to decision makers if they perceive a time pressure.

Table 12-1. MNL model estimation with time pressure, EHD

MNL model with time pressure, EHD					
Alternative	**Attribute**	**Level**	**β**		**p**
			with	**without**	
Both channels	Z Constant online channel	-	2.29229	2.12905	0.0721
	Z Constant offline channel	-	2.56057	1.96343	0.0000
Online channel	Z Delivery time	Tomorrow	0.68114	0.31898	0.0000
		2 days	0.15673	0.02103	0.0180
		4 days	-0.83787	-0.34001	-
	Z Delivery appointment	Any hour of day	0.02870	0.03196	0.9559
		Any part of day	0.08605	0.09075	0.9332
		Not possible	-0.11475	-0.12271	-
	Z Delivery time *	Tomorrow * Any hour of day	0.08222	-0.05328	0.0920
	Z Delivery appointment	Tomorrow * Any part of day	-0.04207	-0.00531	0.6404
		2 days * Any hour of day	0.01441	0.00627	0.9230
		2 days * Any part of day	0.00810	0.03664	0.7155
LL(0) = -12220,96; LL(β) = -8922,49; ρ^2 = 0,270					

Table 12-2. Interaction variable of MNL model estimation with time pressure, EHD

Interaction variable of MNL model with time pressure, EHD					
Alternative	**Attribute**	**Level**	**β**		**p**
			with	**without**	
Online channel	*Z Delivery time **	*Tomorrow * Any hour of day*	*0.79206*	*0.29766*	-
	Z Delivery appointment	*Tomorrow * Any part of day*	*0.72512*	*0.40442*	-
		*Tomorrow * Not possible*	*0.52624*	*0.25486*	-
		*2 days * Any hour of day*	*0.19984*	*0.05926*	-
		*2 days * Any part of day*	*0.25088*	*0.14842*	-
		*2 days * Not possible*	*0.01947*	*-0.14459*	-
		*4 days * Any hour of day*	*-0.90580*	*-0.26104*	-
		*4 days * Any part of day*	*-0.71785*	*-0.28059*	-
		*4 days * Not possible*	*-0.88996*	*-0.47840*	-

Product comparison

The utility patterns of the attributes show many similarities between the products (see figure 3). However, also some differences can be identified. For the shopping channels (constant variables), the offline channel is more preferred in case of a jeans, whereas for the EHD the online and offline channel are equally preferred.

The attributes, delivery time, delivery costs, and travel time have great influence on decision makers' channel choice considerations. However, especially in case of the EHD. The utility weights of the attribute levels are for these three attributes clearly higher compared to the other attributes. Furthermore, also product price has a greater effect on the EHD than the jeans. Probably, the more utilitarian-related time, and costs-related attributes have greater impact on search goods such as simple electronic devices than on experience goods such as apparel. Personal attention is only significant for the EHD, and if it concerns the availability of store personnel.

In case of a jeans, delivery time, delivery costs, and travel time are also the most decisive factors in the decision makers' channel choice considerations. However, the utility weights of some of the remaining attributes come closer to the preference heights of the three most decisive factors compared to the EHD. For the online channel, retour effort has more influence on decision makers' channel choice considerations compared to the EHD. Prior to an online order for a jeans, decision makers might take into account possibly misfits. For the offline channel, friendliness of personnel, and product availability play a more significant role in decision makers' channel choice behavior. A possibly explanation for friendliness of personnel is that in most cases the purchase of a jeans takes more time – time they rather prefer to spend with (very) friendly personnel. Product availability might be more important in case of buying a jeans, for example some decision makers might believe that a substitute for a jeans is harder to find than for an EHD. This might also be the explanation for the significant second level of product availability ('1 product available'). Possibly, they perceive a product unavailability risk higher for the jeans than for the EHD. Lastly, costs and price discounts are found to be slightly less important for high involvement experience goods such as a jeans.

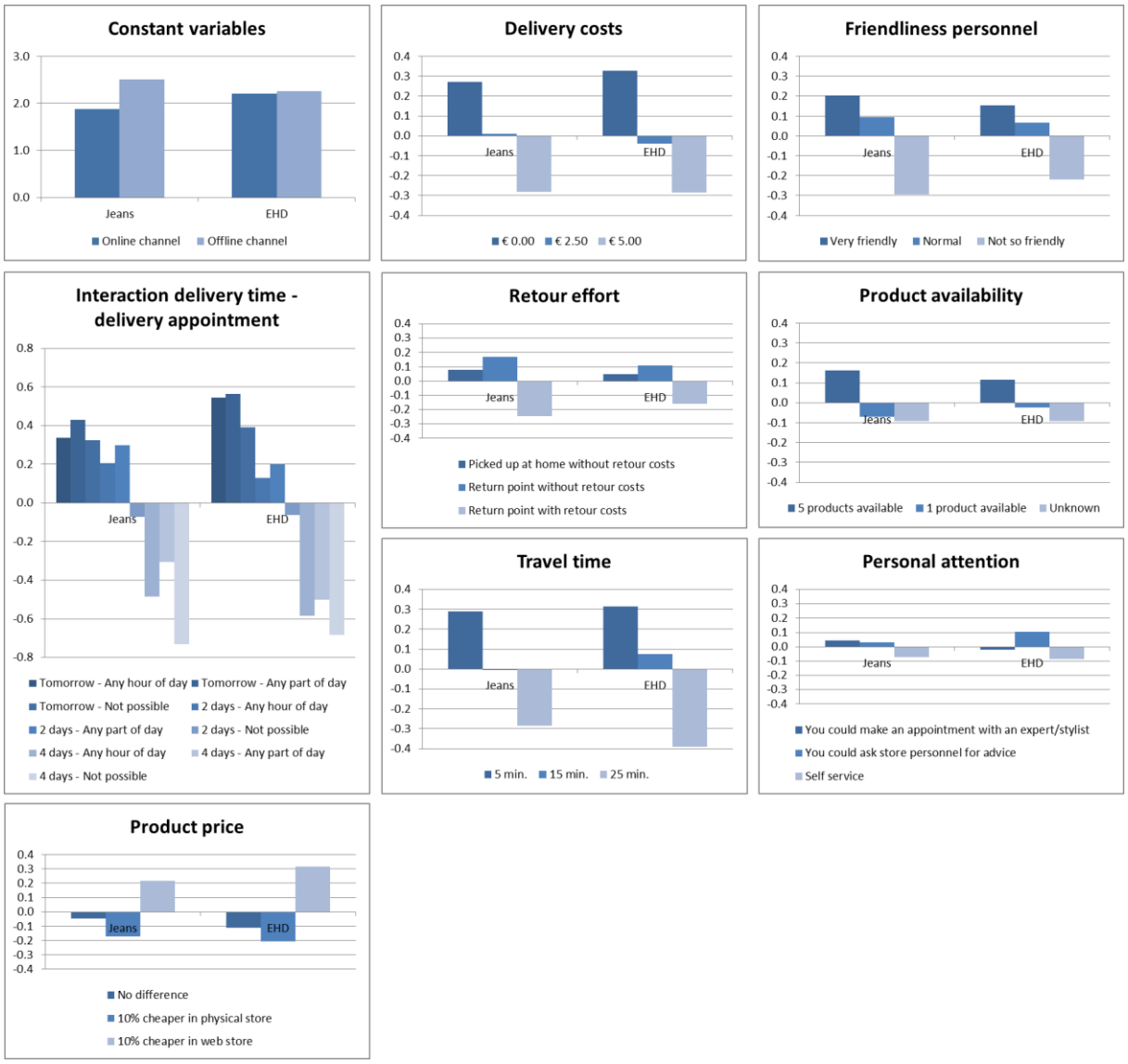


Figure 3. Relative preferences MNL model, Jeans and EHD

The relative utility weights for the *Z*-attributes are shown in figure 4 and 5. For the jeans, more *Z*-attributes are significant compared to the EHD. Only the utility patterns of the constant variables and delivery time can be compared since the significant *Z*-attributes (p-value < 0.15) are not the same for the products. The utility patterns of the *Z*-constant variables are similar between the products; if decision makers perceive a time pressure they are more inclined to purchase a product in the offline channel. Also the results of the *Z*-attribute delivery time show similar results. If decision makers are in a hurry, delivery time has more influence on their channel choice behavior. Delivery costs and travel time are only significant for the jeans – if decision makers perceive a time pressure, delivery costs and travel time are less important to them. The fact that these differences are not significant for the EHD, may indicate that decision makers are willing to make more costs for a high involvement experience good such as a jeans than for a low involvement search good such as an EHD in case the purchase is urgent.

Figure 4. Relative preferences MNL model with time pressure, Jeans

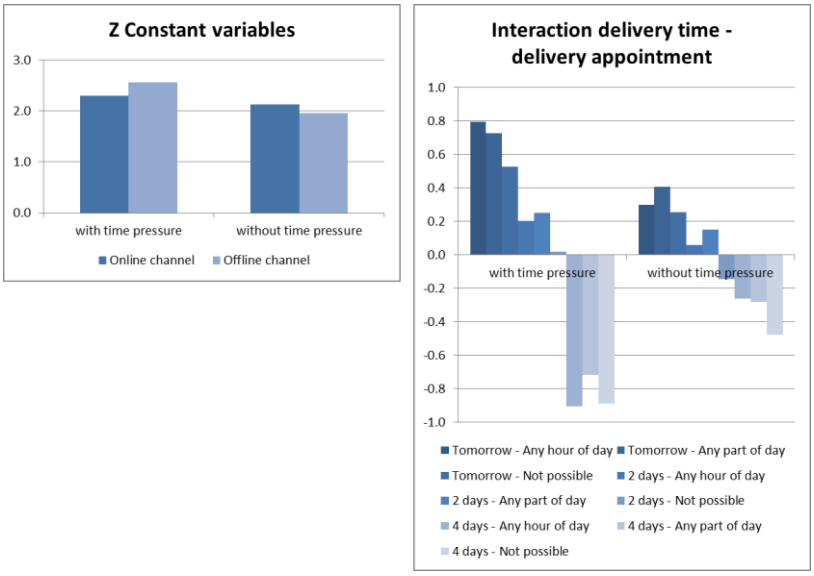


Figure 5. Relative preferences MNL model with time pressure, EHD

4.2.2 Latent class models

The LC models are also estimated with Nlogit 5. Just like the MNL models, two LC models were estimated; one for the product category jeans, and one for the EHD. The results of the LC models are shown in table 13 (jeans), and 15 (EHD). Where the utility weights of the MNL models are the mean preferences of all respondents, the utility weights of the LC models belong to groups of respondents with similar channel choice behavior.

Each of the LC models are estimated with 2, and 3 classes (or segments). Nlogit was not able to estimate the LC models with 4 segments. The estimated models have very high goodness-of-fits. The ρ^2 of the models for the jeans are 0.408, and 0.455 respectively. For the EHD, the ρ^2 is 0.355 for the model with 2 segments, and 0.406 for the model with 3 segments. Furthermore, all four estimated models show decent results (e.g. appropriate segment distributions, high utility weights, low standard errors). Consequently, for both products the LC model with 3 segments is chosen because of the highest ρ^2 values.

Just like the MNL models, the LC models are extended with the context variable time pressure so the effects of time pressure could be estimated as well. These models have also a very high goodness-of-fit; the ρ^2 of the jeans model is 0.462, and 0.418 for the EHD model. Also for the LC models, the attributes with a significance value (p-value) higher than 0.15 for both the first and

second attribute level were excluded from the model. Not surprisingly, the remaining attributes are exactly the same as for the MNL models. Reiterating; the constant variables, delivery time, delivery costs, and travel time for the jeans, and the constant variables, delivery time, and delivery appointment (and consequently the interaction variable) for the EHD.

As a supplement to the tables, figures 6 and 7 show the relative preferences for the attribute levels. The graphs in the figures make it easier to compare the utility weights between the segments as well as the attributes itself.

Jeans

As can be seen in table 13, 39.5% of the respondents (decision makers) belong to the first segment, 11.5% to the second segment, and 49% to the third segment. The constant variables show that the decision makers in segment 1 prefer the offline channel (4.82) over the online channel (1.72). Members of the second segment prefer the 'no preference' option over the online channel. Furthermore, the offline channel is insignificant, indicating that the members of this segment are indifferent between the offline channel and the 'no preference' option. The decision makers in segment 3 almost equally prefer both channels.

The utility weight patterns of segment 1 are largely as hypothesized. For the mostly offline orientated decision makers, delivery costs is the most decisive attribute for the online channel. Furthermore, also delivery time is an important factor during their channel choice considerations. Compared to the other segments, they have the strongest preference for a fast delivery. Contrary, the results of delivery appointment are insignificant, indicating that this attribute has no influence on decision makers' channel choice behavior. Furthermore, the interaction variable shows that 'any part of day' is the least preferred option of delivery appointment by decision makers if delivery time is tomorrow or 2 days (see figure 6). Differing from the other two segments, members of the first segment prefer a free 'pick-up-at-home' service over a 'return point without retour costs' possibility. The results for the offline channel in the LC model are also largely as hypothesized. Low travel times, friendly personnel, and high product availability are most preferred by the offline orientated shoppers of the first segment. Especially the high utility weight for a high product availability is remarkable. The attribute level is just as important as travel time for the members of segment 1. Probably, an online product availability insight is particularly effective for mostly offline orientated consumers. Personal attention show insignificant results. Lastly, online and especially offline price discounts have the greatest influence on decision makers of segment 1. Based on the findings of delivery costs and product price, decision makers of the first segment seem the most price conscious.

Most results of segment 2 have not met the expectations. The members of the second segment are aversive to the online channel and are not interested in the offline channel. Possibly, they do not like shopping for a jeans at all. For the online channel, delivery time has the most influence on their shopping behavior. However, the results of this attribute are less strong compared to the first segment. As the only segment, they prefer 'any hour of day' for delivery appointment. Furthermore, they prefer no delivery costs, and just as the third segment 'a return point without retour costs' instead of a free 'pick-up-at-home' service for retour effort. For the offline channel, friendliness of personnel is very important to the members of segment 2 who are characterized as aversive shoppers. Also low travel times, and a high product availability show significant results. Just as segment 1, personal attention has no influence on their shopping behavior. The results of product price are also insignificant since the high negative utility weight for 'no difference' (-0.21) withdraws the positive utility weight for price discounts in the web store (0.15).

Decision makers in the third segment almost equally prefer both channels. Just as segment 1, also the results of this last segment have met most of the expectations. However, the utility weights for many attributes are less high than in the first segment. Except for delivery time, which is therefore the most decisive factor for the online channel. For delivery costs, these multichannel shoppers prefer free shipping, obviously. Differing from the first and second segment, they prefer 'any part of day' for delivery appointment. Just as the second segment, they prefer 'a return point without retour costs' for retour effort. For the offline channel, the multichannel decision makers

prefer low travel times the most. Since the utility weights of delivery time are high as well, members of the third segment attach great value to time savings. Furthermore, they prefer friendly personnel. Also a high product availability is important for this segment. Noticeably, they have an aversion against the '1 product available' attribute level, indicating that the risk the jeans will be out-of-stock is too high for the decision makers of the third segment. As the only segment, personal attention shows significant results for the appointment possibility with a stylist. For product price, they almost equally prefer price discounts in the physical store, and web store.

Table 13-1. LC model estimation, Jeans

LC Model, Jeans								
			Segment 1		Segment 2		Segment 3	
Alternative	**Attribute**	**Level**	**β**	**p**	**β**	**p**	**β**	**p**
Both channels	Constant online channel	-	1.71978	0.0000	-0.47639	0.0000	3.98200	0.0000
	Constant offline channel	-	4.81576	0.0000	0.07647	0.3795	3.54871	0.0000
Online channel	Delivery time	Tomorrow	0.68119	0.0000	0.36477	0.0007	0.53813	0.0000
		2 days	0.12831	0.3937	0.13767	0.1844	0.16245	0.0002
		4 days	-0.80950	-	-0.50244	-	-0.70058	-
	Delivery appointment	Any hour of day	0.04216	0.7264	0.27717	0.0061	0.00411	0.9254
		Any part of day	0.01368	0.9202	0.12596	0.2376	0.19694	0.0000
		Not possible	-0.05584	-	-0.40313	-	-0.20105	-
	Delivery costs	€ 0.00	0.92708	0.0000	0.20681	0.0453	0.33611	0.0000
		€ 2.50	-0.11567	0.4745	0.06658	0.5244	0.01155	0.7961
		€ 5.00	-0.81141	-	-0.27339	-	-0.34766	-
	Retour effort	Picked up at home for free	0.31683	0.0080	0.02531	0.8034	0.06224	0.1478
		Return point without retour costs	0.06636	0.7135	0.34452	0.0008	0.25198	0.0000
		Return point with retour costs	-0.38319	-	-0.36983	-	-0.31422	-
	Delivery time *	Tomorrow * Any hour of day	0.06226	0.7532	-0.02652	0.8568	-0.12373	0.0507
	Delivery appointment	Tomorrow * Any part of day	-0.20207	0.2886	-0.11290	0.4655	0.11321	0.0876
		2 days * Any hour of day	0.11405	0.5176	0.07891	0.5704	0.09752	0.1060
		2 days * Any part of day	-0.24924	0.2263	-0.07376	0.6247	-0.08137	0.1994
Offline channel	Travel time to shopping center	5 min.	0.50547	0.0010	0.29870	0.0009	0.45235	0.0000
		15 min.	-0.06131	0.6274	0.10785	0.2235	0.01048	0.8083
		25 min.	-0.44416	-	-0.40655	-	-0.46283	-
	Friendliness personnel	Very friendly	0.38682	0.0018	0.48859	0.0000	0.21404	0.0000
		Normal	0.06616	0.5990	0.09324	0.2986	0.04911	0.2799
		Not so friendly	-0.45298	-	-0.58183	-	-0.26315	-
	Product availability	5 products available	0.45254	0.0009	0.16749	0.0543	0.17710	0.0001
		1 product available	0.01480	0.9113	-0.06794	0.4651	-0.15397	0.0007
		Unknown	-0.46734	-	-0.09955	-	-0.02313	-
	Personal attention	Appointment possibility with expert/stylist	-0.10557	0.3696	-0.08905	0.3135	0.10953	0.0130
		Store personnel available for advice	0.09524	0.4624	0.12791	0.1594	0.03994	0.3764
		Self-service	0.01033	-	-0.03886	-	-0.14947	-
Both channels	Product price	No difference	0.08667	0.5353	-0.20748	0.0523	-0.02646	0.5479
		10% cheaper in physical store	-0.47413	0.0016	0.05308	0.6106	-0.21970	0.0000
		10% cheaper in web store	0.38746	-	0.15440	-	0.24616	-
Class probability			0.39463		0.1158		0.48963	
LL(0) = -12220.96; LL(β) = -6659.21; ρ^2 = 0.455								

Table 13-1. Interaction variable of LC model estimation, Jeans

Interaction variable of LC model, Jeans								
			Segment 1		Segment 2		Segment 3	
Alternative	**Attribute**	**Level**	**β**	**p**	**β**	**p**	**β**	**p**
Online channel	*Delivery time **	*Tomorrow * Any hour of day*	*0.78561*	-	*0.61542*	-	*0.41851*	-
	Delivery appointment	*Tomorrow * Any part of day*	*0.49280*	-	*0.37783*	-	*0.84828*	-
		*Tomorrow * Not possible*	*0.76516*	-	*0.10106*	-	*0.34760*	-
		*2 days * Any hour of day*	*0.28452*	-	*0.49375*	-	*0.26408*	-
		*2 days * Any part of day*	*-0.10725*	-	*0.18987*	-	*0.27802*	-
		*2 days * Not possible*	*0.20766*	-	*-0.2706*	-	*-0.0548*	-
		*4 days * Any hour of day*	*-0.94365*	-	*-0.2777*	-	*-0.6703*	-
		*4 days * Any part of day*	*-0.34451*	-	*-0.1898*	-	*-0.5355*	-
		*4 days * Not possible*	*-1.14034*	-	*-1.0398*	-	*-0.8960*	-

The results of the LC model for the jeans with the context variable time pressure can be seen in table 14 (see appendix 6 for the *X*-attributes). The same *Z*-attributes as in the MNL model do not reach the *p*-value criterion of 0.15. Just as in the MNL model, only the offline channel is significant for the constant variables. Members of all three segments rather prefer the offline channel if they perceive a time pressure. The *Z*-attributes have only influence on the third segment; the multichannel shoppers. Maybe, those shoppers feel most pressured in time since also the time-related attributes are important to them. For the online channel, the results are as expected. Delivery time have far more influence on decision makers channel choice behavior if they are in a hurry (0.76 with vs. 0.33 without). Contrary, delivery costs is less important to them if they perceive a time pressure (0.25 with vs. 0.45 without). For the offline channel, travel time is less important if decision makers in the third segment perceive a time pressure. Probably, they are willing to pay more delivery costs, and travel longer if the purchase situation is urgent.

Table 14. LC model estimation with time pressure, Jeans

LC model with time pressure, Jeans												
			Segment 1			Segment 2			Segment 3			
Alternative	Attribute	Level	β		p	β		p	β		p	
			with	without		with	without		with	without		
Both channels	Z Constant online channel	-	1.71046	1.67640	0.9285	-0.42005	-0.53815	0.4521	3.98290	3.96698	0.9535	
	Z Constant offline channel	-	5.14654	4.53484	0.0826	0.19453	-0.05923	0.0644	3.80605	3.26223	0.0476	
Online channel	Z Delivery time	Tomorrow	0.89716	0.55390	0.1102	0.43617	0.31105	0.5197	0.75708	0.32490	0.0000	
		2 days	0.38018	0.03188	0.1148	0.18027	0.08857	0.6312	0.27120	0.06382	0.0162	
		4 days	-1.27734	-0.58578	-	-0.61644	-0.39962	-	-1.02828	-0.38872	-	
	Z Delivery costs	€ 0.00	1.01522	0.89490	0.5586	0.10594	0.28678	0.3504	0.25110	0.44760	0.0297	
		€ 2.50	-0.05547	-0.15921	0.6414	0.09075	0.04297	0.8089	0.00005	0.01221	0.8891	
		€ 5.00	-0.95975	-0.73569	-	-0.19669	-0.32975	-	-0.25115	-0.45981	-	
Offline channel	Z Travel time to shopping center	5 min.	0.57264	0.46178	0.6222	0.21785	0.38729	0.3111	0.35290	0.57616	0.0096	
		15 min.	0.00427	-0.10379	0.5930	0.12120	0.09838	0.8950	0.01348	0.01022	0.9697	
		25 min.	-0.57691	-0.35799	-	-0.33905	-0.48567	-	-0.36638	-0.58638	-	
Class probability			0.39658			0.11515			0.48827			
LL(0) = -12220.96; LL(β) = -6571.06; ρ^2 = 0.462												

Segment comparison

Figure 6 shows the relative utility weights of the segments for the constant variables and attributes. As stated before, the results of the constant variables differ completely between the segments; in the first segment the offline channel is most preferred (they are mostly offline shoppers), in the second segment it is the 'no preference' option (they are aversive shoppers), whereas both channels are almost equally preferred in the third segment (they are multichannel shoppers).

For the utility patterns of the attributes, there are many similarities between the segments. Especially delivery time, delivery costs, travel time, and friendliness personnel show similar utility patterns. However, the height of the utility weights can vary considerably; the attribute results of the offline shoppers have primarily high utility weights, whereas the opposite applies for the aversive shoppers. Probably, many attributes play an important role in the channel choice considerations for the offline shoppers; delivery time, delivery costs, travel time, and product availability have high utility weights. In contrast, for the multichannel shoppers especially delivery time is important for the online channel, whereas travel time has the biggest influence for the offline channel.

Differences in utility patterns can be detect as well. For delivery appointment, the results for the offline shoppers are insignificant, the aversive shoppers prefer 'any hour of day', whereas the multichannel shoppers prefer 'any part of day'. For retour effort, the offline shoppers prefer a free 'pick-up-at-home' service, whereas the aversive and multichannel shoppers prefer a return point without retour costs. Lastly, only the multichannel shoppers have significant results for personal attention; they are interested in a possibility to make an appointment with a stylist.

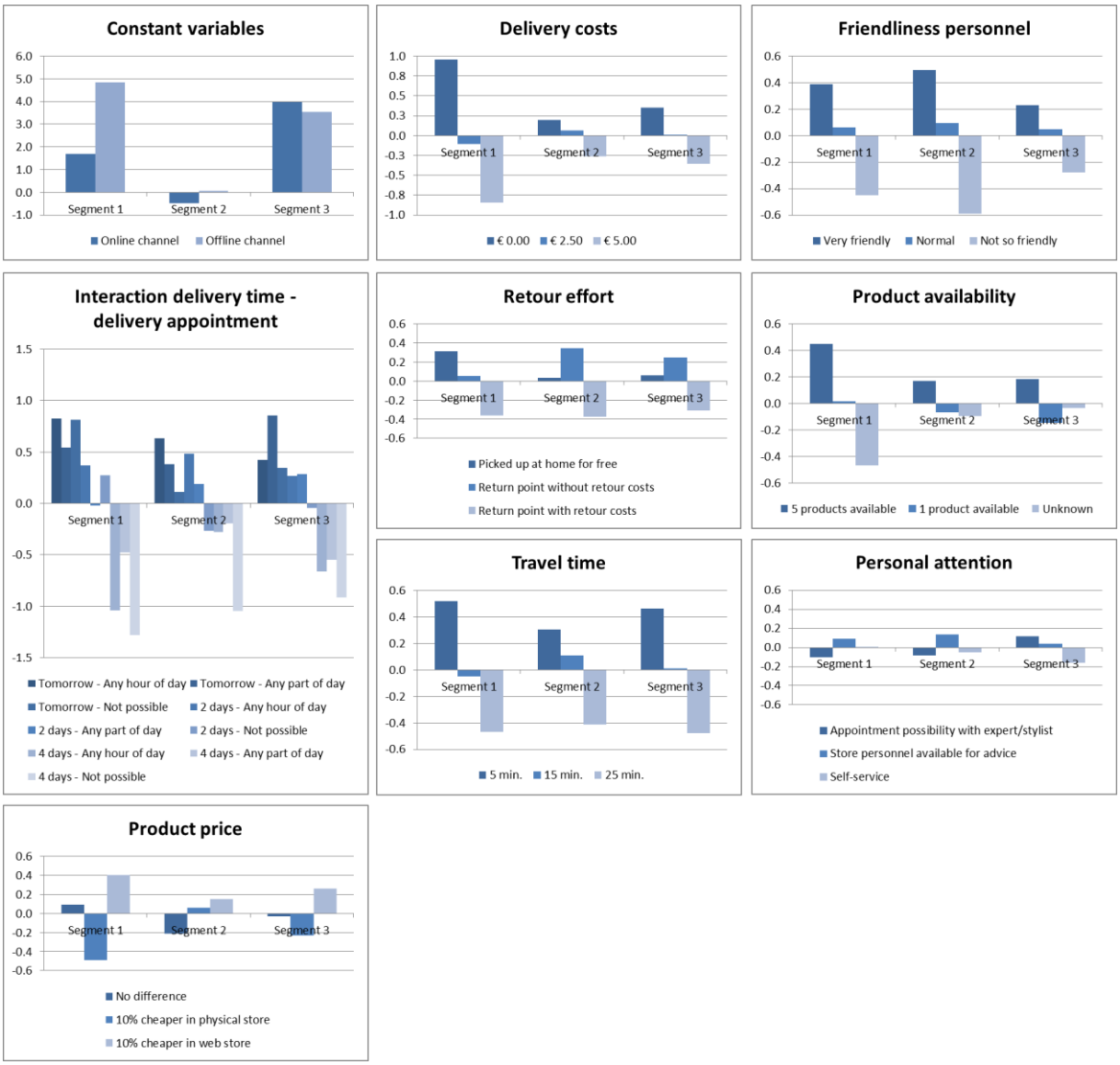


Figure 6. Relative preferences segments LC model, Jeans

Figure 7 shows the relative utility weights for the *Z*-constant variables and *Z*-attributes. As stated before, in all three segments the preference for the offline channel grows if decision makers perceive a time pressure. For the *Z*-attribute delivery time, the utility weights follow the same pattern for all three segments. If decision makers perceive a time pressure, delivery time is more important to them. For delivery costs, the results between the segments differ. If the aversive and multichannel shoppers are in a hurry, delivery costs are less important to them. For the offline shoppers, the opposite applies – which is not a surprise since decision makers of segment 1 are price conscious. Also the results of travel time differ between the segments. If offline shoppers perceive a time pressure, travel time plays a more decisive role in their channel choice considerations. In contrast, travel time is less important for aversive and multichannel shoppers if they perceive a time pressure. Probably, they are willing to travel longer if the purchase situation is urgent.

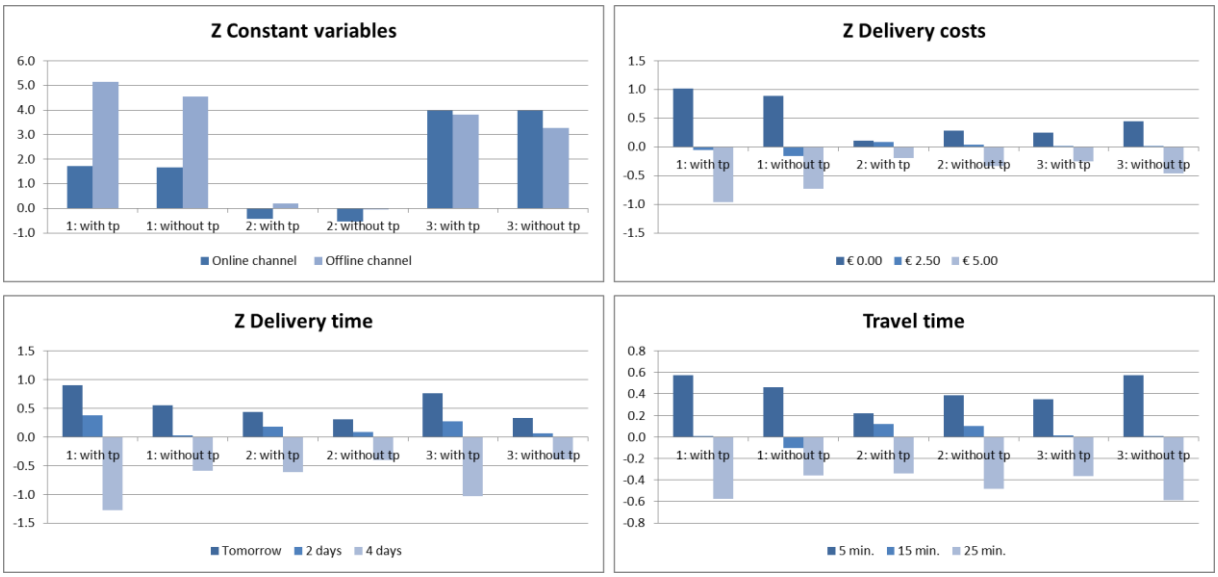


Figure 7. Relative preferences segments LC model with time pressure, Jeans

External hard disk

The segment-distribution of the respondents for the EHD is 40%, 11%, and 49% respectively (see table 15)[4]. The decision makers in segment 1 prefer the online channel (5.23) over the offline channel (3.86), whereas the opposite applies for segment 3 (3.03 vs. 4.18). The decision makers in segment 2 rather prefer the 'no preference' option than one of the channels.

The results of segment 1 are largely as hypothesized. For the online channel, delivery time is the most decisive factor for the mostly online orientated decision makers; they prefer fast delivery, although 2 days waiting is also more than acceptable (0.26). The other online attributes are almost equally important to them. For delivery appointment they prefer 'any part of day', and 'return point without retour costs' for retour effort. Also no delivery costs is of importance to them, but the utility weights are less high compared to the other segments. For the offline channel, travel time is most important for the segment members. They prefer low travel times. Probably, they perceive time as a scarce commodity since delivery time is a decisive factor as well. For friendliness of personnel, they prefer a normal attitude as much as a 'very friendly' attitude. Furthermore, they prefer the possibility to ask store personnel for advice (personnel attention). As the only segment, they have an aversion against the possibility to make an appointment with an expert. The online orientated shoppers of the first segment are not sensitive to a high product availability. They seem not sensitive for product price discounts as well since the negative utility weight of the attribute level 'no difference' eliminates the positive utility weight of '10% cheaper in web store'. Based on the findings of delivery costs and product price, decision makers of the first segment seem the most price unconscious.

In contrast to segment 1, many results of segment 2 have not met the expectations. The most important reason for this is that the members of the second segment prefer the 'no preference' option over the online channel. The offline channel is insignificant, indicating that these aversive shoppers are indifferent between the offline channel and the 'no preference' option. For the attributes, the utility weights are in general the lowest in the second segment. Nevertheless, delivery time has – just like segment 1 – the most influence on decision makers online shopping behavior. Furthermore, they prefer no delivery costs, and 'any part of day' for delivery appointment. As the only segment, they have an aversion towards 'any hour of day'. The attribute levels of retour effort are insignificant, indicating that the segment members do not care about retour effort. For the

[4] Although the segment-distribution of the LC model for the EHD is almost the same as the one for the jeans, it does not mean the members of the segments are the same for both products. After all, decision makers can differ in channel choice behavior when it comes to different product categories.

offline channel, the results of segment 2 are even more unexpected. Although the aversive shoppers of segment 2 prefer low travel times, the remaining attributes of the offline channel; friendliness of personnel, product availability, and personal attention, are not important to them since the results of these attributes are insignificant. Lastly, the segment members respond positively towards offline product discounts, and are not sensitive for online discounts since the negative utility weight of the first level ('no difference') eliminates the positive utility weight of online product price discounts.

Table 15-1. LC model estimation, EHD

LC Model, EHD								
			Segment 1		Segment 2		Segment 3	
Alternative	Attribute	Level	β	p	β	p	β	p
Both channels	Constant online channel	-	5.22909	0.0000	-0.45920	0.0000	3.03333	0.0000
	Constant offline channel	-	3.86080	0.0000	-0.13622	0.1162	4.17716	0.0000
Online channel	Delivery time	Tomorrow	0.73098	0.0000	0.41560	0.0000	0.64652	0.0000
		2 days	0.26274	0.0009	0.01907	0.8564	0.07944	0.1673
		4 days	-0.99372	-	-0.43467	-	-0.72596	-
	Delivery appointment	Any hour of day	-0.00501	0.9476	-0.21425	0.0611	0.09909	0.0852
		Any part of day	0.22280	0.0030	0.32275	0.0018	0.12011	0.0268
		Not possible	-0.21779	-	-0.10850	-	-0.21920	-
	Delivery costs	€ 0.00	0.18903	0.0067	0.28257	0.0063	0.61602	0.0000
		€ 2.50	0.09590	0.1865	0.01059	0.9224	-0.14582	0.0164
		€ 5.00	-0.28493	-	-0.29316	-	-0.47020	-
	Retour effort	Picked up at home for free	0.03592	0.6350	0.08931	0.3932	0.19012	0.0008
		Return point without retour costs	0.28097	0.0004	0.10249	0.3249	0.05438	0.3856
		Return point with retour costs	-0.31689	-	-0.19180	-	-0.24450	-
	Delivery time *	Tomorrow * Any hour of day	-0.00784	0.9371	0.17081	0.2458	-0.02031	0.7771
	Delivery appointment	Tomorrow * Any part of day	0.16640	0.1190	-0.23830	0.0997	-0.04354	0.5490
		2 days * Any hour of day	0.14258	0.2108	-0.14843	0.3545	0.10889	0.1743
		2 days * Any part of day	-0.15013	0.1297	0.11450	0.4172	0.00994	0.8954
Offline channel	Travel time to shopping center	5 min.	0.40740	0.0000	0.32956	0.0004	0.57588	0.0000
		15 min.	0.08644	0.2058	0.09427	0.3112	0.07976	0.1497
		25 min.	-0.49384	-	-0.42383	-	-0.65564	-
	Friendliness personnel	Very friendly	0.15423	0.0266	0.13353	0.1676	0.26591	0.0000
		Normal	0.16624	0.0061	0.03708	0.6943	0.12071	0.0270
		Not so friendly	-0.32047	-	-0.17061	-	-0.38662	-
	Product availability	5 products available	-0.05784	0.4075	-0.02794	0.7618	0.25785	0.0000
		1 product available	0.12365	0.0536	0.13409	0.1316	-0.16207	0.0018
		Unknown	-0.06581	-	-0.10615	-	-0.09578	-
	Personal attention	Appointment possibility with expert/stylist	-0.17695	0.0122	-0.00434	0.9618	-0.01078	0.8454
		Store personnel available for advice	0.17741	0.0042	0.13726	0.1253	0.11704	0.0299
		Self-service	-0.00046	-	-0.13292	-	-0.10626	-
Both channels	Product price	No difference	-0.18250	0.0033	-0.32530	0.0030	-0.04078	0.4676
		10% cheaper in physical store	-0.04313	0.5465	0.19210	0.0932	-0.49446	0.0000
		10% cheaper in web store	0.22563	-	0.13320	-	0.53524	-
Class probability			0.39788		0.11099		0.49113	
LL(0) = -12220.96; LL(β) = -7255.41; ρ^2 = 0.406								

Table 15-2. Interaction variable of LC model estimation, EHD

Interaction variable of LC model, EHD								
			Segment 1		Segment 2		Segment 3	
Alternative	Attribute	Level	β	p	β	p	β	p
Online channel	*Delivery time **	*Tomorrow * Any hour of day*	*0.71813*	-	*0.37216*	-	*0.72530*	-
	Delivery appointment	*Tomorrow * Any part of day*	*1.12018*	-	*0.50005*	-	*0.72309*	-
		*Tomorrow * Not possible*	*0.35463*	-	*0.37459*	-	*0.49117*	-
		*2 days * Any hour of day*	*0.40031*	-	*-0.34361*	-	*0.28742*	-
		*2 days * Any part of day*	*0.33541*	-	*0.45632*	-	*0.20949*	-
		*2 days * Not possible*	*0.05250*	-	*-0.05550*	-	*-0.25859*	-
		*4 days * Any hour of day*	*-1.13347*	-	*-0.67130*	-	*-0.71545*	-
		*4 days * Any part of day*	*-0.78719*	-	*0.01188*	-	*-0.57225*	-
		*4 days * Not possible*	*-1.06050*	-	*-0.64459*	-	*-0.89018*	-

Decision makers of the third segment prefer the offline channel over the online channel. Just as segment 1, the results of segment 3 are largely as hypothesized. Delivery time, and delivery costs are the most decisive factors for the online channel. Not surprisingly, the mostly offline orientated shoppers prefer fast delivery, and no delivery costs the most. Based on the utility weights of delivery costs, they seem much more price conscious than the members of segment 1, and 2 (0.62 for segment 3 vs 0.19, 0.28 for segment 1, 2). For delivery appointment they prefer 'any part of day', but are also content with 'any hour of day'. Contrary to the other segments as well, is that they prefer a free 'pick-up-at-home' service over a 'return point without retour costs' (retour effort). For the offline channel the segment members prefer just like the other segments, low travel times the most. However, the differences between the other offline attributes – except for personal attention – are less significant. Also product availability and friendly personnel play a significant role in their channel choice considerations. Obviously, the decision makers prefer a high product availability, and very friendly personnel. For product price (discounts), the members of the third segment equally prefer online and offline product price discounts. Furthermore, the attribute has great influence on their channel choice behavior since the utility weights are high. Based on the findings of delivery costs and product price, decision makers of segment 3 seem the most price conscious.

Table 16 shows the results of the LC model for the EHD with the context variable time pressure included (see appendix 6 for the *X*-attributes). In contrast to the results of the MNL model, only the offline channel is significant for the constant variables. Although decision makers in all segments are more inclined to choose for the offline channel if they perceive a time pressure, especially the mostly online orientated shoppers of the first segment do so. Not surprisingly, fast delivery time is more important to all segments if decision makers perceive a time pressure. Also in the LC model the interaction variable is significant which is the reason why it is shown in table 16.

Table 16-1. LC model estimation with time pressure, EHD

LC model with time pressure, EHD											
			Segment 1			Segment 2			Segment 3		
Alternative	Attribute	Level	β		p	β		p	β		p
			with	without		with	without		with	without	
Both channels	Z Constant online channel	-	5.53153	4.92159	0.2082	-0.45509	-0.50647	0.7484	3.15554	2.92246	0.3986
	Z Constant offline channel	-	4.48220	3.13558	0.0057	0.28160	-0.63430	0.0000	4.50062	3.88884	0.0254
Online channel	Z Delivery time	Tomorrow	0.90389	0.51445	0.0021	0.61075	0.26683	0.0754	0.91608	0.43400	0.0000
		2 days	0.35930	0.17662	0.1361	0.12144	-0.04086	0.4230	0.15706	0.05314	0.2817
		4 days	-1.26319	-0.69107	-	-0.73219	-0.22597	-	-1.07314	-0.48714	-
	Z Delivery appointment	Any hour of day	0.04335	-0.09403	0.2609	-0.26072	-0.18038	0.7050	0.05448	0.11594	0.5412
		Any part of day	0.21322	0.27474	0.6108	0.33967	0.31043	0.8800	0.07900	0.13860	0.5356
		Not possible	-0.25657	-0.18071	-	-0.07895	-0.13005	-	-0.13348	-0.25454	-
	Z Delivery time *	Tomorrow * Any hour of day	0.05029	-0.10751	0.3783	0.17930	0.15660	0.9343	0.12033	-0.12293	0.0630
	Z Delivery appointment	Tomorrow * Any part of day	0.16595	0.21105	0.8052	-0.26735	-0.23099	0.8923	-0.05296	-0.03260	0.8726
		2 days * Any hour of day	0.17056	0.16476	0.9749	-0.15494	-0.12834	0.9300	0.11072	0.11500	0.9758
		2 days * Any part of day	-0.21677	-0.15437	0.7205	0.17605	0.06373	0.6777	0.02373	0.01397	0.9419
Class probability				0.39355			0.10947			0.49699	
LL(0) = -12220,96; LL(β) = -7118,45; ρ^2 = 0,418											

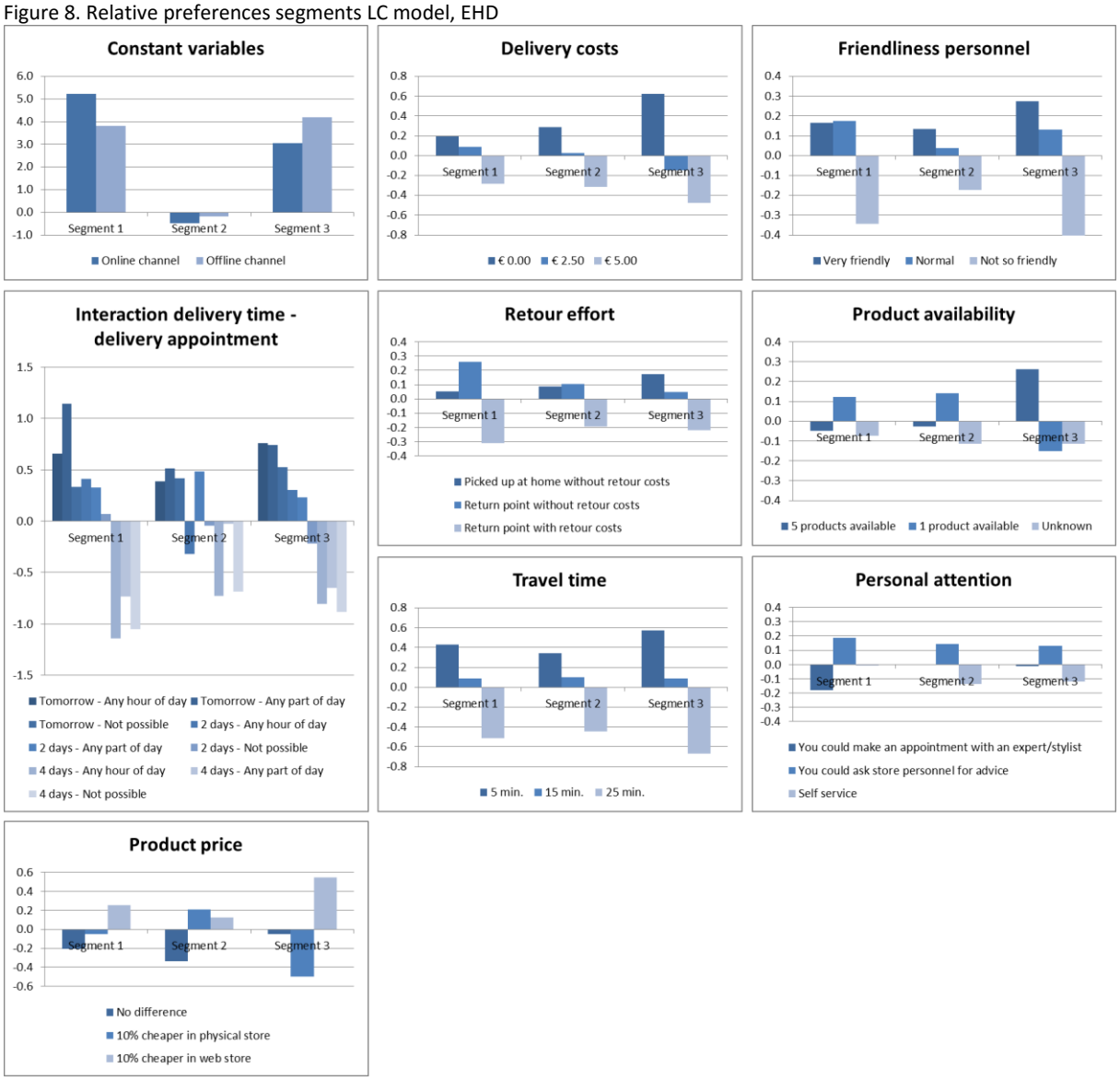
Table 16-2. Interaction variable of LC model estimation with time pressure, EHD

Interaction variable of LC model with time pressure, EHD											
			Segment 1			Segment 2			Segment 3		
Alternative	Attribute	Level	β		p	β		p	β		p
			with	without		with	without		with	without	
Online channel	*Z Delivery time **	*Tomorrow * Any hour of day*	*0.99753*	*0.31291*	-	*0.52933*	*0.24305*	-	*1.09089*	*0.42701*	-
	Z Delivery appointment	*Tomorrow * Any part of day*	*1.28306*	*1.00024*	-	*0.68307*	*0.34627*	-	*0.94212*	*0.54000*	-
		*Tomorrow * Not possible*	*0.43108*	*0.23020*	-	*0.61985*	*0.21117*	-	*0.71523*	*0.33499*	-
		*2 days * Any hour of day*	*0.57321*	*0.24735*	-	*-0.29422*	*-0.34958*	-	*0.32226*	*0.28408*	-
		*2 days * Any part of day*	*0.35575*	*0.29699*	-	*0.63716*	*0.33330*	-	*0.25979*	*0.20571*	-
		*2 days * Not possible*	*0.14894*	*-0.01448*	-	*0.02138*	*-0.10630*	-	*-0.11087*	*-0.33037*	-
		*4 days * Any hour of day*	*-1.44069*	*-0.84235*	-	*-1.01727*	*-0.43461*	-	*-1.24971*	*-0.36327*	-
		*4 days * Any part of day*	*-0.99915*	*-0.47301*	-	*-0.30122*	*0.25172*	-	*-0.96491*	*-0.32991*	-
		*4 days * Not possible*	*-1.34973*	*-0.75785*	-	*-0.87808*	*-0.49502*	-	*-1.00480*	*-0.76824*	-

Segment comparison

The utility patterns of the constant variables and attributes from the LC model for the EHD are shown in figure 8. Just like the LC model for the jeans, the results of the constant variables completely differ between the segments; decision makers of the first segment prefer the online channel (they are mostly online shoppers), whereas the members of the third segment prefer the offline channel (they are mostly offline shoppers). The decision makers of the second segment rather choose the 'no preference' option than one of the channels (they are aversive shoppers).

Figure 8. Relative preferences segments LC model, EHD



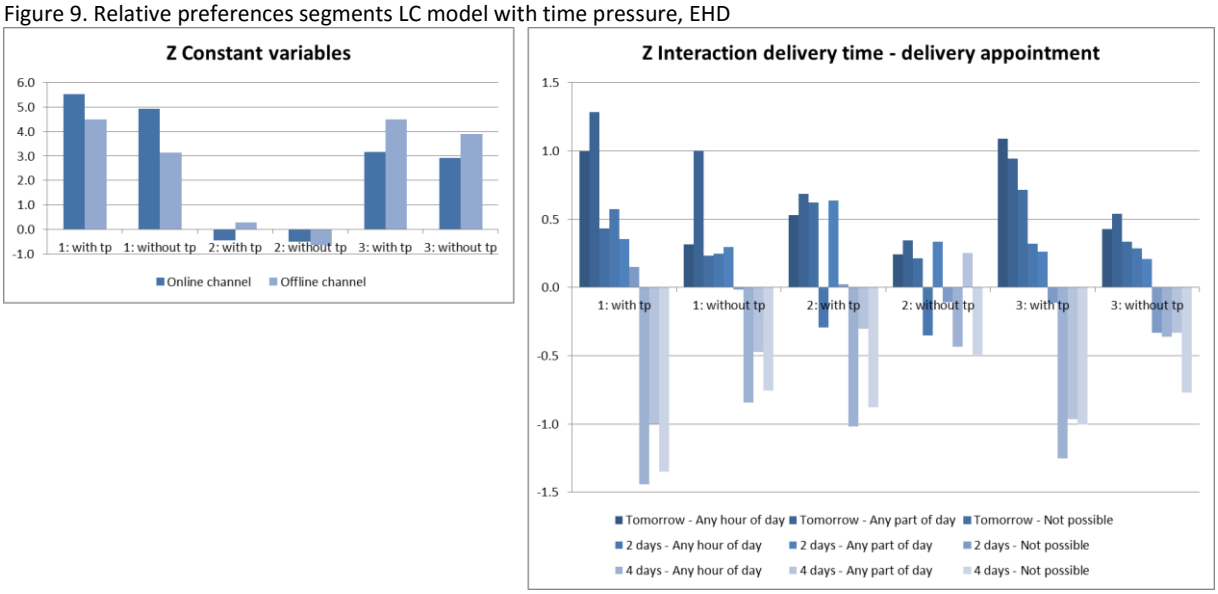
As can be seen in the figure, the utility patterns of the attributes show many similarities between the segments of the LC model for the EHD. Similar utility patterns can be noticed for delivery time, delivery costs, travel time, and to a lesser extent delivery appointment, friendliness of personal, and personal attention. However, just like the jeans, the height of the utility weights can vary considerably; the attribute results of the offline shoppers in third segment have primarily high utility weights, whereas the opposite applies for the aversive shoppers in the second segment. Furthermore, similarities are found in attribute preferences between the segments of the LC model for the jeans and EHD. Just like the third segment of the LC model for the jeans (multichannel shoppers), decision makers of segment 1 of the EHD (online shoppers) pay great attention to delivery time, and travel time compared to the other attributes. Simultaneously, many attributes play an

important role in the channel choice considerations for decision makers in the third segment (offline shoppers), just like they do for the first segment of the LC model for the jeans (offline shoppers).

However, also some interesting differences in utility patterns are found. Although the patterns of the interaction variable are broadly the same, the online and aversive shoppers prefer 'any part of day', whereas the offline shoppers are also pleased with 'any hour of day'. For retour effort, the online shoppers prefer 'return point without retour costs, whereas the offline shoppers prefers a free 'pick-up-at-home' service. For product availability, the offline shoppers seem most sensitive to an online product availability insight. For product price (discounts), only offline price discounts are effective for the aversive shoppers, whereas the offline shoppers are sensitive for both online and offline price discounts. The online shoppers are not sensitive for price discounts at all.

The relative utility weights for the *Z*-constant variables and *Z*-attributes are shown in figure 9. Just like the *Z*-constant variables in the LC model for the jeans, in all three segments the preference for the offline channel grows if decision makers perceive a time pressure. For the *Z*-attribute delivery time, a fast delivery is more important to the decision makers of all three segments if they perceive a time pressure. Furthermore, the interaction variable in figure 9 shows that the decision makers in all three segments respond relatively similar if they perceive a time pressure. However, 'any hour of day' gets more important for the online shoppers if they perceive a time pressure, whereas, delivery appointment has hardly influence on the aversive and offline shoppers.

Figure 9. Relative preferences segments LC model with time pressure, EHD



4.2.3 Demographic and psychographic characteristics

For the examination of the relationships between the segments of the LC models and the demographic and psychographic variables, chi-square tests and tree-analyses are applied. The findings of these analyses are discussed consecutively.

Chi-square tests

The chi-square test is the first analysis to examine the relationships between demographics and psychographics, and the segments of the LC model. Chi-square tests are used since the dependent variable segment-membership has a nominal measurement scale. The results of the chi-square test for the jeans and EHD are described separately.

Jeans

The results of the chi-square tests show significant relationships for two demographics with the segments of the LC model for the EHD, namely gender, and age (see appendix 7). The categories of

the insignificant demographic variables are in proportion almost equally distributed over the segments.

Especially the relationship with gender is strong ($\chi^2 = 11.050$, df = 2, p = 0.004), indicating that males and females are not equally distributed over the segments. The crosstab in table 17 shows that offline orientated shoppers exist of more males, whereas females are overrepresented in the other segments. Probably, males slightly prefer the offline channel in case of buying a jeans. Furthermore, males might be slightly more price conscious in general, since delivery costs and product price discounts were very important to this segment.

Table 17. Cross-table: Gender – Segments of the Jeans model

Gender - Segments Jeans Crosstabulation

			Gender		Total
			Males	Females	
Segments	Offline shoppers (s.1)	observed %	56.9	43.1	100.0
	Aversive shoppers (s.2)	observed %	42.3	57.7	100.0
	Multich. shoppers (s.3)	observed %	43.5	56.5	100.0
Total		observed %	48.7	51.3	100.0

For age ($\chi^2 = 10.879$, df = 4, p = 0.028), the offline and aversive shoppers have an overrepresentation of respondents between 50 and 65 (see table 18). Possibly, older respondents are more price conscious, and prefer the offline channel more (first segment), or do not like shopping for a jeans or EHD (second segment). Furthermore, the aversive shoppers are mainly between 35 and 49 years old. Multichannel shoppers are mostly younger (38.2% vs 33.8%). Furthermore, these shoppers equally prefer the offline and online channel in case of a jeans, and may be pressured in time; three characteristics of omni channel shoppers.

Table 18. Cross-table: Age – Segments of the Jeans model

Age - Segments Jeans Crosstabulation

			Age			Total
			20 - 34 years old	35 - 49 years old	50 - 65 years old	
Segments	Offline shoppers (s.1)	observed %	32.1	33.3	34.6	100.0
	Aversive shoppers (s.2)	observed %	21.1	43.7	35.2	100.0
	Multich. shoppers (s.3)	observed %	38.2	35.9	25.9	100.0
Total		observed %	33.8	35.8	30.4	100.0

The results of the chi-square tests show little significant relationships between psychographics and the segments of the LC model for the jeans (see appendix 7). Only the two statements of the time pressure psychographic are significant. For the categories of the remaining psychographics, the observed amounts of respondents do not differ much from the expected amounts or average amounts of respondents per concerning category.

The crosstab for the first statement of time pressure ('I am always busy', $\chi^2 = 8.520$, df = 4, p = 0.074) shows that the multichannel shoppers feel most pressured in time (see table 19). This finding supports previous results of the LC model estimation. The aversive shoppers feel least pressured in time (14.5% observed vs. 22.4% expected).

Table 19. Cross-table: Time pressure 1 (I am always busy) – Segments of the Jeans model

Always busy - Segments Jeans Crosstabulation						
			I am always busy			
			Agree	Neutral	Disagree	Total
Segments	Offline shoppers (s.1)	observed %	40.6	32.8	26.6	100.0
	Aversive shoppers (s.2)	observed %	40.6	44.9	14.5	100.0
	Multich. shoppers (s.3)	observed %	47.0	32.3	20.7	100.0
Total		observed %	43.7	33.9	22.4	100.0

'I usually find myself pressed for time' is the second statement of the psychographic time pressure. The crosstab (see table 20) shows that the mostly offline orientated shoppers feel least pressured in time – possibly, this finding has an association with the high preference for the offline channel, these consumers might perceive more time for offline shopping – whereas the multichannel shoppers feel most pressured in time. This confirms previous findings regarding the time pressured characteristic of respondents in the last segment once again.

Table 20. Cross-table: Time pressure 2 (I usually find myself pressed for time) – Segments of the Jeans model

Time pressured - Segments Jeans Crosstabulation						
			I usually find myself pressed for time			
			Agree	Neutral	Disagree	Total
Segments	Offline shoppers (s.1)	observed %	34.4	30.3	35.3	100.0
	Aversive shoppers (s.2)	observed %	35.2	42.3	22.5	100.0
	Multich. shoppers (s.3)	observed %	41.5	31.2	27.3	100.0
Total		observed %	38.0	32.1	29.9	100.0

External hard disk

Education, work, and income have a significant relationship with the segments of the LC model for the EHD (see appendix 7). The categories of the remaining demographic variables are in proportion almost equally distributed over the three segments of the LC model.

With regard to education ($\chi^2 = 9.930$, df = 4, p = 0.042), the online and especially the offline shoppers are mostly high educated (see table 21). In contrast, aversive shoppers are mostly middle educated. Furthermore, low educated respondents are overrepresented in this segment with aversive shoppers. Probably, shoppers with lower education levels have less interest in shopping for an EHD.

Table 21. Cross-table: Education – Segments of the EHD model

Education - Segments EHD Crosstabulation						
			Education level			
			Low	Middle	High	Total
Segments	Online shoppers (s.1)	observed %	15.2	35.8	49.0	100.0
	Aversive shoppers (s.2)	observed %	19.4	47.8	32.8	100.0
	Offline shoppers (s.3)	observed %	13.0	33.1	53.9	100.0
Total		observed %	14.6	35.8	49.7	100.0

With regard to work ($\chi^2 = 7.814$, df = 4, p = 0.099), especially the online orientated shoppers work more often full time as can be seen in table 22. This might explains their sensitivity to time pressures found in the LC model. Furthermore, respondents with no job are overrepresented in the segment with aversive shoppers (28.4% vs. 20.1%).

Table 22. Cross-table: Work – Segments of the EHD model

Work - Segments EHD Crosstabulation						
			Work			
			Full-time	Part-time	No job	Total
Segments	Online shoppers (s.1)	observed %	60.1	21.4	18.5	100.0
	Aversive shoppers (s.2)	observed %	50.7	20.9	28.4	100.0
	Offline shoppers (s.3)	observed %	51.9	28.6	19.5	100.0
Total		observed %	55.0	24.9	20.1	100.0

Lastly, with regard to the income variable ($\chi^2 = 8.624$, df = 4, p = 0.071), especially online orientated shoppers have a high income as can be seen in table 23 (44.7% vs. 38.3%). This might be associated with their high education level and/or employment status (mostly full time workers). In contrast, the aversive shoppers have mostly an average income. Furthermore, aversive shoppers are overrepresented in the low income category, and underrepresented in the high income category. Probably, this finding associates with the findings concerning their education level (on average more low and middle educated respondents), and employment status (on average more respondents with no job).

Table 23. Cross-table: Income – Segments of the EHD model

Income - Segments EHD Crosstabulation						
			Income levels			
			Low	Average	High	Total
Segments	Online shoppers (s.1)	observed %	18.1	37.2	44.7	100.0
	Aversive shoppers (s.2)	observed %	26.8	46.4	26.8	100.0
	Offline shoppers (s.3)	observed %	24.8	39.7	35.5	100.0
Total		observed %	22.3	39.4	38.3	100.0

The results of the chi-square tests for the examination of the relationships between psychographics and the three segments of the LC model for the EHD are shown in appendix 7. In total, three variables (statements) of two psychographics are significant; the ones of time pressure and the fifth statement of innovativeness. For the categories of the insignificant psychographics, the observed amounts of respondents do not differ much from the expected amounts.

The crosstab for the fifth statement of innovativeness ('I always have the newest gadgets', $\chi^2 = 9.036$, df = 4, p = 0.060) shows that the aversive shoppers are least innovative (see table 24). Probably, this finding has an association with their aversion against online shopping. There are no clear innovative shoppers to reveal. However, the segment with mostly offline orientated shoppers contains the most respondents who disagreed on the statement. Possibly, this finding has an association with the high preference for the offline channel; these shoppers might be more conservative on average.

Table 24. Cross-table: Innovative 5 (I always have the newest gadgets) – Segments of the EHD model

Has newest gadgets - Segments EHD Crosstabulation						
			I always have the newest gadgets			
			Agree	Neutral	Disagree	Total
Segments	Online shoppers (s.1)	observed %	16.9	31.4	51.7	100.0
	Aversive shoppers (s.2)	observed %	13.4	40.3	46.3	100.0
	Offline shoppers (s.3)	observed %	17.9	23.8	58.3	100.0
Total		observed %	17.0	28.6	54.4	100.0

The crosstab for the first statement of time pressure ('I am always busy', $\chi^2 = 9.006$, df = 4, p = 0.061) shows that the online shoppers feel most pressured in time (see table 25). This finding emphasizes again the time pressured characteristic of the respondents who are mostly online orientated when it comes to product purchases. In contrast, aversive shoppers feel least pressured in time (29.2% vs. 43.7%). This finding might associates with the previous finding regarding the high percentage of shoppers without a job. Probably, they have more time compared to respondents with a job. The mostly offline orientated shoppers are approximately similar distributed across the categories of the statement as the average numbers.

Table 25. Cross-table: Time pressure 1 (I am always busy) – Segments of the EHD model

Always busy - Segments EHD Crosstabulation						
			I am always busy			
			Agree	Neutral	Disagree	Total
Segments	Online shoppers (s.1)	observed %	49.2	29.7	21.1	100.0
	Aversive shoppers (s.2)	observed %	29.2	44.6	26.2	100.0
	Offline shoppers (s.3)	observed %	42.5	35.0	22.5	100.0
Total		observed %	43.7	33.9	22.4	100.0

As can be seen in table 26, also the second statement of time pressure ('I usually find myself pressed for time', $\chi^2 = 9.021$, df = 4, p = 0.061) confirms that the group of online shoppers feel most pressured in time. Furthermore, the respondents who agreed on the statement are also for the second statement of time pressure underrepresented in the segment with aversive shoppers. These shoppers might perceive less time pressures because they have no job. The only contrast with the first statement of time pressure, is that respondents who do not feel pressured in time are slightly overrepresented in the third segment of the LC model.

Table 26. Cross-table: Time pressure 2 (I usually find myself pressed for time) – Segments of the EHD model

Time pressured - Segments EHD Crosstabulation						
			I usually find myself pressed for time			
			Agree	Neutral	Disagree	Total
Segments	Online shoppers (s.1)	observed %	43.8	31.0	25.2	100.0
	Aversive shoppers (s.2)	observed %	28.8	40.9	30.3	100.0
	Offline shoppers (s.3)	observed %	35.4	31.2	33.4	100.0
Total		observed %	38.0	32.1	29.9	100.0

Tree-analysis

Tree-analysis is applied as an extension of the chi-square tests described above. Tree-analysis are based on chi-square tests as well, but instead of one at a time, tree-analysis examines the relationships between segment-membership (dependent variable), and all demographics and psychographics (independent variables) at once. Therefore, a decision tree provides the interrelationships between the demographic and psychographic variables as well as the relative significance of the independent variables in explaining the dependent variable. For this research, maybe some extra or other insights can be found with three-analyses. The results of the tree-analysis for the LC model for the jeans and EHD are described consecutively.

Jeans

The decision tree for the jeans shows some extra insights about the distribution of females (see figure 10). For gender however, the single chi-square test with the segments of the jeans model already showed that males are overrepresented in the segment with offline shoppers, whereas

females in the segment with multichannel shoppers. Probably, males slightly prefer the offline channel in case of buying a jeans, whereas females purchase jeans from both channels. Females might have more experience with buying apparel online, and/or have seen the time-saving benefit of it since the segment with multichannel shoppers feel also most pressured in time. Since the relationship between gender and work is quite strong (χ^2 = 101.775, df = 2, p = 0.000, see subsection 4.1.2), multichannel shoppers might be slightly overrepresented by part timers, whereas offline shoppers by full-timers. However, this finding does not correspond with the time pressured characteristic of multichannel shoppers which makes the association questionable.

Although no new finding, for age the decision tree shows a more detailed segment distribution for females. The nodes of age show that especially younger females, but also middle aged females are overrepresented in the segment with multichannel shoppers, whereas older females (> 57 years) are in the segment with offline shoppers. On average, older females still use the offline channel more compared to younger females. A quite strong relationship between age and household situation was found (χ^2 = 118.282, df = 4, p = 0.000, see subsection 4.1.2). The older generation of females represent more often a household with children. Therefore, offline shoppers are expected to be more often part of a household with children.

The tree-analysis found motivation to conform (second statement; 'I find it very boring when other people criticize my behaviors') as an extra explanatory variable for younger females regarding channel choice considerations for a jeans. Especially younger females who need motivation to conform are overrepresented in the segment with multichannel shoppers.

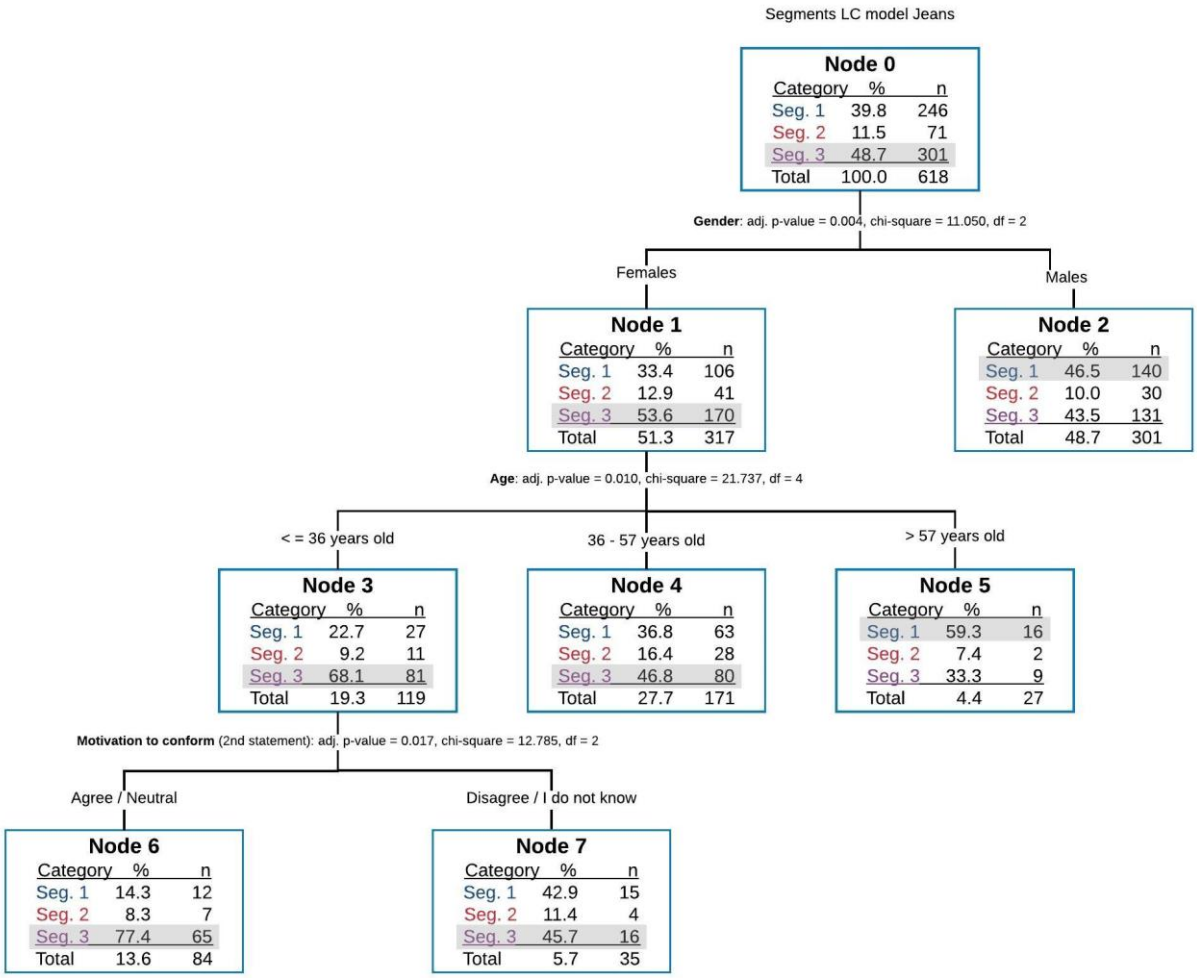


Figure 10. Tree analysis for the LC model for the jeans

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The tree analysis for the EHD found only more detailed interrelationships between two demographics (education and income) and a psychographic variable (the second statement of time pressure) as can be seen in figure 11. The segment with offline shoppers represents slightly more high educated decision makers, whereas the aversive shoppers are overrepresented in the low till middle educated node. As stated before, shoppers with lower education levels have probably less interest in shopping for a jeans or EHD.

The low and middle education group can be split in shoppers with high income vs. low or average income. The latter group tend to be more aversive and offline shoppers while the high income group tend to be more online shoppers. The low or average income situation of shoppers is also associated with their employment situation (on average more respondents do not have a job). Most online shoppers with a low or middle education level have a high income. As can be found in subsection 4.1.2, the relationships between work and income (χ^2 = 95.470, df = 4, p = 0.000), and work and household situation (χ^2 = 30.964, df = 4, p = 0.000) are quite strong. Therefore, the online shoppers who tend to be low till middle educated and tend to have a high income, also tend to work slightly more full-time. A finding which corresponds with the finding found earlier in this subsection (see single chi-square tests). Furthermore, these shoppers tend to be more part of a household with children as well. Shoppers who are low till middle educated and have a low till average income (and thus tend to be offline shoppers) might be mostly single. Decision makers with a high education level tend to shop more offline. This is especially true for those who disagreed on the second statement of time pressure ('I usually find myself pressed for time'), which confirms the previous findings regarding their time pressured characteristic once again.

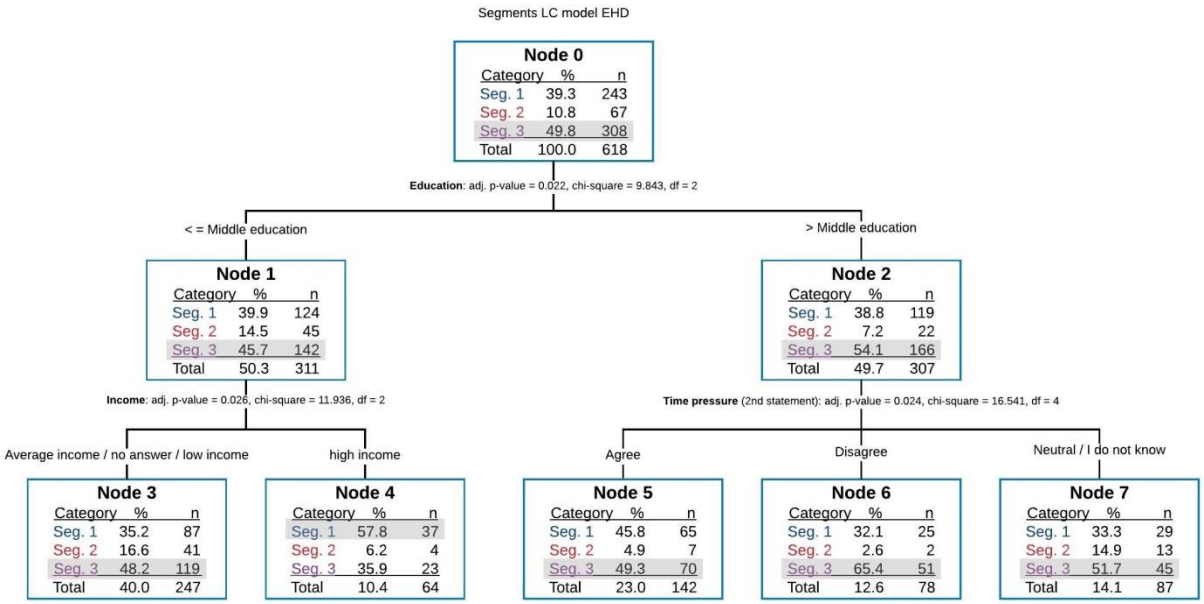

Figure 11. Tree analysis for the LC model for the jeans

4.3 Conclusion

The results of the stated choice experiment answers the third and fourth sub-question of this research. The third sub-question was "what is the effectiveness of the most relevant online product availability insight on offline commerce?". The findings of the experiment show that an online product availability insight would be effective for attracting customers to physical stores. Product availability plays a significant role in consumers channel choice behavior. The fourth sub-question was "what is the importance of the online product availability insight relative to other factors

influencing consumers' channel choice decisions?". The remainder of this section discusses the most important findings of the choice experiment.

The data of the stated choice experiment was estimated with two discrete choice models; the MNL model and the LC model. In each model, the product categories were estimated separately. First the most important results of the MNL model are discussed. With regard to the channels (constant variables), the offline channel is more preferred in case of a jeans, whereas for the EHD the online and offline channel are equally preferred. With regard to the attributes, delivery time, delivery costs, and travel time are the most important factors during consumers' channel choice consideration in case of an EHD. Possibly, utilitarian-related attributes have great impact on search goods such as simple electronic devices. In case of a jeans, delivery time, delivery costs, and travel time are also the most decisive factors, but some of the remaining attributes play a more significant role in their channel choice considerations as well. For the online channel, retour effort has more influence compared to the EHD. For the offline channel, friendliness of personnel, and product availability are also significant factors when decision makers are considering a channel to buy their desired jeans. Product availability might be more important compared to the EHD, because some decision makers might believe that finding a substitute for a jeans is more difficult than for an EHD. This might be also an explanation for the significant second level of product availability ('1 product available'). Decision makers might perceive a product unavailability risk higher for the jeans than for the EHD. Costs and price discounts are found to be slightly less important for high involvement experience goods such as a jeans. For the MNL model with the inclusion of the context variable time pressure, delivery costs and travel time are only significant for the jeans – if decision makers perceive a time pressure, delivery costs and travel time are less important to them. The fact that these differences are not significant for the EHD, may indicate that decision makers are willing to make more costs for a high involvement experience good such as a jeans than for a low involvement search good such as an EHD in case the purchase is urgent.

The LC models are an extension of the MNL models. For both models for the jeans and EHD, Nlogit was able to estimate three segments of decision makers with comparable channel choice behavior. The remainder of this section contains descriptions of the segments of both LC models, and a comparison between the segments of both models. The offline shoppers (segment 1) of the LC model for the jeans consists of slightly more males than females (57% vs. 43%), are slightly older, are predominantly offline shoppers, are price conscious, and perceive many attributes as important in their channel choice considerations (namely: delivery time, delivery costs, travel time, product availability, and product price). Lastly, a product availability insight would be very effective for this segment. The aversive shoppers (segment 2) consists of slightly more females than males (58% vs. 42%), are mostly middle aged (35 – 49 years old), feel least pressured in time, have an aversion against the online channel, are indifferent between the offline channel and the 'no preference' option, have mostly logical but low attribute utility patterns, and have a great preference for personnel friendliness. Furthermore, a product availability insight would be effective for this segment. The multichannel shoppers (segment 3) are slightly overrepresented by females (56.5% vs. 43.5%), are mostly younger (25 – 34 years old), feel most pressured in time (also the time-related attributes have great influence on their channel choice considerations), equally prefers the offline and online channel, and a product availability insight would be effective for this segment. However, if the insight show a low stock the feature has a negative effect on the offline channel. Probably, the risk of product unavailability (time costly trip to the physical store) is too high (see table 27). Findings with regard to interrelationships between demographic variables are not included in the segment descriptions, due to the their uncertainty.

The online shoppers (segment 1) of the LC model for the EHD are mostly high educated (not as high as the third segment), have mostly a full time job, have mostly high incomes, feel most pressured in time (also the time-related attributes have most influence on their channel choice considerations), prefer the online channel, and are price unconscious. The aversive shoppers (segment 2) consists of mostly middle educated decision makers, has a great percentage of respondents with no job, has a great percentage of respondents with a low income and have mostly

average incomes, and is the least innovative segment. Furthermore, the aversive shoppers feel least pressured in time, have an aversion against the online channel, are indifferent between the offline channel and the 'no preference' option, have mostly logical but low attribute utility patterns. Lastly, a product availability insight would not be effective for this segment (insignificant results). The offline shoppers (segment 3) of the LC model for the EHD consists of decision makers who are high educated, have mostly a full time job (not as much as the first segment), have a mostly average or high income (not as high as the first segment), are not quite innovative, feel sometimes time pressured (not as much as the first segment), prefer the offline channel over the online channel, are price conscious, perceive many attributes as important in their channel choice considerations (delivery time, delivery costs, travel time, friendliness personnel, product availability, and product price have high utility weights), and product availability has great influence on their channel choice considerations (see table 28). Again, findings with regard to interrelationships between demographic variables are not included in the segment descriptions, due to the their uncertainty.

Table 27. Description of segments LC model, Jeans

Segments LC model, Jeans		
Offline shoppers	**Aversive shoppers**	**Multichannel shoppers**
predominantly offline shoppers	aversion against the online channel	equally prefer channels
product availability would be effective	offline ch. and 'no prefer.' are indifferent	product availability would be effective
price conscious	product availability would be effective	feel most pressured in time
many attributes are important	mostly logical, low utility patterns	overrepresented by females
more males than females	personal friendliness is very important	mostly younger
slightly older	feel least pressured in time	
	more females than males	
	mostly middle aged	

Table 28. Description of segments LC model, EHD

Segments LC model, EHD		
Online shoppers	**Aversive shoppers**	**Offline shoppers**
prefer the online channel	aversion against the online channel	prefer the offline channel
feel most pressured in time	offline ch. and 'no prefer.' are indifferent	product availability would be effective
are price unconscious	product availability wouldn't be effective	price conscious
mostly high educated	mostly logical, low utility patterns	many attributes are important
mostly a full time job	feel least pressured in time	feel sometimes time pressured
mostly high incomes	mostly middle educated	mostly high educated
	many with no job	mostly a full time job
	many with low income, most average	not quite innovative
	least innovative	

Except for the demographics and psychographics, similarities are found between the segments of both product categories. The offline shoppers of the jeans as well as the EHD model prefer the offline channel over the online channel, are price conscious, perceive many attributes as important in their channel choice considerations (namely: delivery time, delivery costs, travel time, product availability, and product price), and product availability has great influence on their channel choice considerations. They might perceive an online product availability insight as a useful feature for their shopping processes. Also a similarity is found between the multichannel shoppers of the jeans model and online shoppers of the EHD model; in both segments the online channel is preferred over the offline channel – although the difference is greater in case of the EHD. Furthermore, shoppers in both segments feel most pressured in time. This might be one of the reasons their preference for the online channel is high. A product availability insight would only be effective for the multichannel shoppers of the jeans model. However, if the insight shows a low stock the feature has a negative effect on the offline channel. Probably, the risk of product unavailability (time costly trip

to the physical store) is too high. The online shoppers of the EHD are not sensitive to a high product availability. Similarities are also found between the aversive shoppers of both models. Decision makers in these segments have an aversion against the online channel, are indifferent between the offline channel and the 'no preference' option, and have mostly logical but low attribute utility patterns. Lastly, a product availability insight would be effective in the second segment of the jeans model but not in the second segment of the EHD model.

5. Conclusion

Retailers with multiple channels are searching for coordination strategies that complement their channels in order to provide their consumers the best possible service through a complete omni channel experience. As a result of those strategies, several diverging functionalities and applications have been developed. Concrete examples are online style advice from store personnel (e.g. MS Mode), virtual reality programs (e.g. IKEA), personalized mobile marketing in physical stores (e.g. T-Mobile), in-store kiosks for home deliveries (e.g. Blokker), mobile store navigation (e.g. Media-Saturn), appointment possibilities to test demos in physical stores (e.g. Saks), and an online product availability insight (e.g. River Island). This research focused on a channel coordination strategy that stimulate offline commerce (number of visitors and sales); more specifically, an online product availability insight. The expectation is that consumers will be more inclined to visit the physical store and to buy products if multichannel retailers provide on their web stores an online insight about their products in stock in their physical stores.

Research to the effect of a product availability insight on consumers' channel choice decisions, serves a twofold purpose. On the one hand, this study should contribute to the field of effective channel integration strategies for retailers by improving their offline (physical stores) revenues. On the other hand, this study should contribute to the field of urban management by attracting more consumers to the offline environment (shopping centers). Despite the focus on the offline channel revenues, the consequences of the concerning channel coordination strategy does not necessarily affect the online channel. Consumers who visit retailers' online channels will probably do that for the same reasons as now – whether it depends on the product category or other motive. It is just a feature for funneling consumers from the online channel to the offline channel; an extra service that improves consumers' omni channel shopping experiences.

The main question of this research was "how can an online product availability insight from offline stores affect omni channel consumers' shopping behavior such that offline commerce will be stimulated?". The first and second accompanying sub-questions were answered with a literature study. The sub-questions were "what factors influence consumers' omni channel shopping behaviors, and how?", and "what online product availability insights and instruments can stimulate offline commerce?". Based on the outcomes from the literature study, the stated choice experiment could be established. The third and fourth sub-questions were answered with the aid of the experiment. The sub-questions were "what is the effectiveness of the most relevant online product availability insight on offline commerce?", and "what is the importance of the online product availability insight relative to other factors influencing consumers' channel choice decisions?". The stated choice experiment provides the ability to examine the preference of a non-existing functionality and detect its importance relative to competing influences. For the stated choice experiment, two discrete choice models were used: the MNL model and the LC model.

The remainder of this chapter describes the most important findings of this research in the next section (5.1). Moreover, the findings are compared with results of previous studies. Section 5.2 discusses the limitations of this research, and proposes suggestions for further research. In the last section (5.3), managerial implications for retailers are appointed.

5.1 Consumers´ shopping channel preferences

Before the stated choice experiment could be started, input for the choice situations was needed. The literature study broadly functioned as an investigation to stimuli for the experiment. Besides further exploration into a product availability insight as a channel coordination functionality, the literature study contained an investigation to the most decisive factors during consumers' channel choice considerations. The most important factors found in the literature study were consumer characteristics, product characteristics, situational factors, and retailer services. These factors were

specified into concrete attributes and variables that constituted the contexts of the choice situations. The choice situations were used as questions for the survey.

For each product category, discrete choice models were estimated with data of 618 decision makers times 9 twofold questions (with and without time pressure). The data was collected with the aid of a web-based questionnaire during two periods; the end of November 2015, and the end of January 2016. First, the MNL model was estimated. The results of the channels (constant variables) showed that the offline channel is more preferred in case of a jeans, whereas for the EHD the online and offline channel are equally preferred. This finding is consistent with previous research (e.g. Chiang and Dholakia, 2003; Konus et al., 2008). The results of the attributes of both models for the jeans and EHD indicated that delivery time, and delivery costs are the most important factors for the online channel, while travel time is the most important factor for the offline channel. Comparable results were found in other studies, whether it were consumers' utilitarian shopping motivations (Heitz-Spahn, 2013), situational factors (Chocarro et al., 2013; Nicholson et al., 2002), or retailer services (Parasuraman et al, 2005; Wolfinbarger and Gilly, 2003), all these studies show that utilitarian-related factors had most influence on consumers' shopping channel behavior. For the jeans however, the utility weights of the remaining attributes come much closer to the most decisive ones mentioned above. Friendliness of personnel, and product availability are also significant factors when decision makers are considering a channel to buy their desired jeans. Product availability might be more important compared to the EHD, because some decision makers might believe that finding a substitute for a jeans is more difficult than for an EHD. This might be also an explanation for the significant negative second level of product availability ('1 product available'). Decision makers might perceive a product unavailability risk higher for the jeans than for the EHD. Similar results can be found in the literature; where Sloot et al. (2005) found that product or brand switching is the most prevalent response when consumers face a stockout for groceries, Kim and Lennon (2011) found that consumers are more likely to delay or cancel the purchase in case of apparel. Costs and price discounts are found to be slightly less important for high involvement experience goods such as a jeans. This was also found in previous studies (e.g. Li and Gery, 2000). Lastly, in case of a time pressure (purchase urgency), delivery costs, and travel time are less important in case of a jeans. This might indicate that consumers are willing to make more costs (time as well as euros), if it concerns a high involvement experience good such as apparel.

The LC models are an extension of the MNL models. However, the LC model unravels possibly groups or segments of decision makers based on similarities in preferences. The segments of both LC models (jeans and EHD) could best be distinguished based on decision makers' channel usage; offline, aversive, and multichannel shoppers for the jeans model, and online, aversive, and offline shoppers for the EHD model. Similarities were found between both offline, and aversive shoppers of the models, and the online shoppers and multichannel shoppers. No clear results with regard to demographic and psychographic characteristics were found. Also previous studies in the context of consumer channel segmentation did not found major findings regarding demographics, however, they did for psychographics (Heitz-Sphan, 2013; Konus et al., 2013; Van Delft, 2013). These studies found that omni channel shoppers are at least price conscious, innovative, and enjoy shopping. Van Delft (2013) found they are also loyal, and feel pressured in time. The multichannel shoppers of the jeans model show most similarities in characteristics with omni channel shoppers; this research found these shoppers are mostly younger (20 - 34 years old), equally prefer the online and offline channel in case of a jeans, and feel most pressured in time. Besides decision makers' channel usage, similarities were also found in attribute preferences. The offline shoppers of both models are price conscious (due to their high preferences for free delivery, and price discounts), perceive many attributes as important in their channel choice considerations (namely: delivery time, delivery costs, travel time, product availability, and product price), and product availability has great influence on their channel choice considerations. Probably, they perceive an online product availability insight as a useful feature during their shopping process. A similarity between multichannel shoppers (jeans model), and online shoppers (EHD model), is that they feel most pressured in time. Probably, this is one of the reasons their preference for the online channel is high. This was also found in the study of

Van Delft (2013). A product availability insight would only be effective for the multichannel shoppers of the jeans model. However, if the insight shows a low stock the feature has a negative effect on the offline channel. Probably, the risk of product unavailability (time costly trip to the physical store) is too high. Comparable results were found in other studies (Forman et al., 2009; Gallino and Moreno, 2014). The online shoppers of the EHD are not sensitive to a high product availability. Lastly, the aversive shoppers have mostly logical but low attribute utility patterns, and a product availability insight would be effective in the segment of the jeans model but not in the one of the EHD model.

Based on the most important results of the discrete choice models described above, a product availability insight would be an effective functionality for funneling consumers to the offline channel. Especially when it concerns a high involvement experience good such as apparel, and/or consumers who shop both online and offline but prefer to shop offline.

5.2 Limitations and further research

Although this research provides some clear findings with regard to a product availability insight, and its importance relative to other factors influencing consumers' channel choice behavior, also some limitations can be remarked. This section describes these limitations, and will be supplemented with recommendations for further research.

A disadvantage of the stated choice method might be the low external validity since the choice situations of the accompanying experiment are hypothetical. Although a clear explanation of the situation was given in the questionnaire, consumers still might react differently when they are confronted with a product availability insight on the web page of the product they want to buy. Two solutions might increase the external validity. The first solution is to use images instead of text solely. The images could exist of web pages of products with an online product availability insight (e.g. '5 products in stock') which refer to the closest store in the neighborhood for example. For this research, it was difficult to find an equivalent for the offline channel. However, for a study that just focuses on the online channel, this might be a solution. The other solution, which is more practical in nature, is the revealed choice modeling approach. For example, a before and after measurement approach could be used. Maybe, more consumers visit the offline channel during the period the online product availability insight was deployed. Unfortunately, the internal validity of such an experiment is low.

Another limitation of the stated choice method is that only a limited number of attributes can be taken into account. In the experiment of this study, 9 attributes were included while more factors might influence consumers' channel choice decisions. For example, website design, and online product information technologies might influence online channel usage, whereas opening hours and the vicinity of parking places do this for the offline channel. A possibly solution is to arrange additional questions about decision makers' use of online information technology and/or mode of transport for shopping for example. Their answers might explain their shopping behaviors as well. However, besides the choice situations, the questionnaire of this research already contained 30 questions about respondents' demographic and psychographic characteristics. More questions about their shopping behaviors might have led to fatigues and in return less reliable results.

5.3 Managerial implications

Based on the findings of this research, several managerial implications for retailers can be given. The implications focus on retailers who sell low involvement search goods (e.g. simple electronics) or high involvement experience goods (e.g. apparel), and who are searching for services that trigger new and/or sustain their current customer target groups into their web store and/or physical stores. Specifically, the implications concern recommendations for an online product availability insight, retailers' online services, personal interactions' in retailers' physical stores.

According to the results of the MNL model, retailers with multiple channels who sell apparel or other high involvement experience goods, should implement an online availability insight for their physical stores in order to increase offline commerce. With an online product availability insight they can funnel consumers – who like to experience the product before purchase – from their online channel to their offline stores. If the product availability is high, consumers are assured their desired product is in the physical store they would like to visit. An additional benefit is that when these visitors are in the physical store, they could be tempted to buy other products as well. However, there is more, since the experiment also took other influencing factors during consumers' shopping channel considerations into account to determine their importance relative to an online product availability insight. In this regard, a major finding was that delivery time, and travel time are very important during consumers' channel choice considerations, indicating that retailers should be close to their customers; whether it is online or offline. Also implications for retailers' online services can be given. Fast delivery at any desired part of day would be a meaningful service, since it is one or maybe even thé most decisive factor for consumers' online channel usage in case of low involvement search goods such as simple electronics. Furthermore, retailers should provide their customers with the possibility to return products for free themselves at a return point. This feature is preferred especially for apparel. Implications for retailers' physical stores concern personal interactions. Retailers, who sell high involvement products such as apparel, should supply their stores with friendly personnel since this is a significant factor in consumers' considerations of visiting the offline store. Retailers who sell electronics, should provide their consumers with qualified personnel that can give their customers advice about the products.

The results of the LC models show that retailers who sell apparel or electronics could expand their customer services for especially their offline shoppers by the implementation of an online product availability insight. Furthermore, also multichannel shoppers of the jeans model were sensitive to such an insight. These shoppers perceive an online product availability insight as a useful feature during their shopping process. Retailers could advertise with this functionality in order to stimulate visits to their physical stores instead of their competitors. With regard to the remaining factors that were estimated, also some other interesting implications can be given for the segments of each LC model. Firstly, if retailers want to trigger the offline shoppers to their online store, they should offer them free and fast delivery, and product price discounts since these factors have great influence on their online channel usage. If retailers want to sustain these shoppers in their physical stores they should be close to them (since travel time is significant to them), and supply their stores with friendly personnel. Secondly, if retailers want to sustain multichannel shoppers (jeans), and online shoppers (EHD) in their web stores, they should provide them with different kind of services; namely an 'any desired part of day' delivery appointment possibility, and the possibility to return products for free themselves at a return point. Also delivery time is important to these shoppers, since they feel most pressured in time, but low delivery costs and product price discounts are less effective to them. If retailers want to trigger the multichannel and online shoppers to their offline stores, they should be physically close to them since travel time is very important to them. Furthermore, retailers who sell high involvement experience goods such as apparel, should provide their multichannel customers with an appointment possibility with a stylist, since such a possibility has an effect on these shoppers' offline channel usage. Retailers who sell electronics should supply their physical stores with qualified personnel that can give the online shoppers advice. Thirdly, if retailers want to encourage aversive shoppers to buy a product through their online channel they should offer free delivery. Furthermore, a return point without retour costs would be effective in case of selling apparel, whereas an 'any desired part of day' delivery appointment possibility would be in case of simple electronics. For the offline channel, friendly personnel stimulates aversive shoppers' offline channel usage in case of apparel.

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Appendices

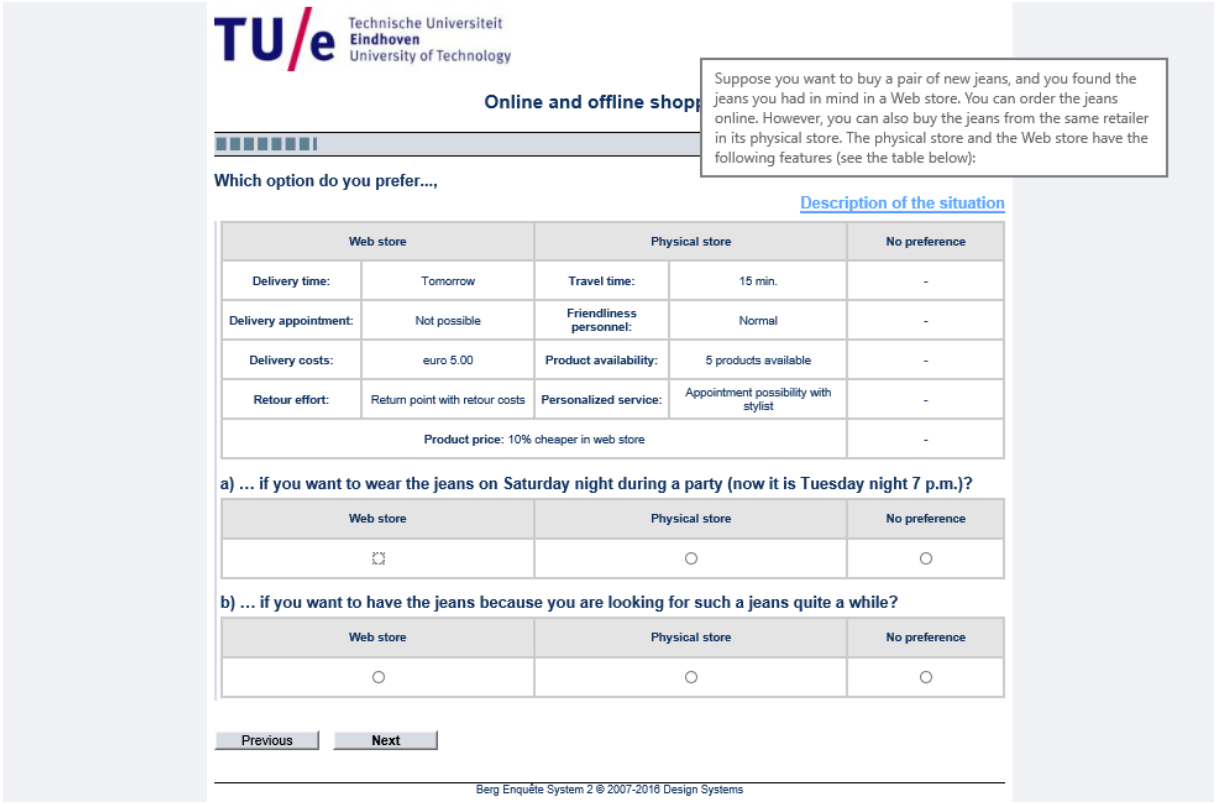
Appendix 1. Online transaction costs fashion and electronics

Online transaction costs (fashion)							
Retailer	**Shipping costs**		**Lead time**	**Delivery Place**	**Time/day appointment**	**Retour effort Costs**	**Effort**
G-Star	< 50	4.95	2-3 days	Home adress	Not possible	0.00	Return point (UPS/Kiala), physical store, or picked up at -
	> 50	0.00		Pick up point (UPS/Kiala point)			Return within 14 days - home by
				Physical store			Return with delivery package, returnform, and retourlabel
H&M		4.90	3-5 days	Home address	Not possible	1.00	Return point (post office, Kiala point), or physical store*
				Pick up point (Kiala point)			Return within 14 days
							Return with returnform, and adress label
Jack & Jones	< 50	4.95	3-4 days	Home adress	Not possible	0.00	Return at DHL Parcelshop
	> 50	0.00					Return within 44 days
	Express	19.95	1-2 days				Return with delivery package, returnform, and retourlabel
Mango	< 30	2.95	2-5 days	Home address	Not possible	Own	Return point (own choice), or physical store
	> 30	0.00		Pick up point (PostNL point)		costs	Return within 14 days
	Express	8.95	1-2 days				Return with returnform
Mc Gregor		0.00	1-2 days	Home adress	Not possible	0.00	Return point (Post NL point or Kiala point)
				Physical store (click and collect)			Return within 14 days
							Return with returnform, and adress label
Men at Work		3.95	1-2 days	Home address	Not possible	0.00	Return at DHL Servicepoint, or physical store
				Physical store			Return within 14 days
							Return with delivery package, returnform, and adress label
Scotch & Soda		0.00	2-7 days	Home adress	Not possible	Own	Return point (own choice)
						costs	Return within 30 days
							Return with returnform
Tommy Hilfiger	< 50	3.95	3-4 days	Home address	Not possible	0.00	Return point (post office)
	> 50	0.00		Pick up point (Kiala point)			Return within 14 days
	Express	15.00	1-2 days				Return with delivery package, returnform, and adress label
Vila	< 50	4.95	3-4 days	Pick up point (Kiala point)	Not possible	0.00	Return point (Kiala point)
	> 50	0.00					Return within 30 days
							Return with delivery package, returnform, and adress label
Wehkamp		5.95	1 day	Home address	Day appointment	0.00	Return point (DHL Parcelshop), or picked up at home
				Pick up point (DHL parcelshop/ station)	possible		Return within 14 days
							Return with returnform, and adress label
Zalando		0.00	Unknown	Home address	Not yet possible	0.00	Return point (PostNL point)
				Pick up point (PostNL point)			Return within 100 days
							Return with delivery package, returnform, and adress label
Zara	< 50	3.95	3-5 days	Home adress	Not possible	0.00	Return to physical store, or picked up at home by Zara
	> 50	0.00		Physical store			Return within 30 days
	Express	9.95	1-2 days				

* Merchandise Return Card

Online transaction costs (electronics)							
Retailer	**Shipping costs**		**Lead time**	**Delivery**		**Retour effort**	
				Place	**Time/day appointment**	**Costs**	**Effort**
BCC		0.00	1 day	Home adress Physical store	Not possible	Own costs	Return point (post office), or physical store 14 days Return with returnform
Bol.com	< 20 > 20 Appointm.	1.99 0.00 + 0,99	1-2 days	Home adress Pick up point (Kiala or AH point)	Possible (only day appm., or on tues- or thursday night, however, extra €)	0.00	Return point (PostNL, Kiala, or Bol.com point) Return within 14 days
		4.99	0,5-1 day				
Coolblue		0.00	1 day	Home adress	Possible (however, extra €)	0.00	-
	Appointm.	9.95	0,5-1 day	Physical store Pick up point (PostNL point)			Return within 14 days Through the website
Dixons		0.00	1 day	Home adress	Not possible	Own costs	Return point (PostNL point), or physical store Return within 14 days
EP		0.00	1-2 days	Home adress Physical store	Possible	Own costs	Return point (PostNL point), or physical store Return within 14 days
Expert	< 25 > 25	4.95 0.00	1 day	Home adress	Not possible	depends, max. 30.00	Closest physical store, or return point Return within 14 days
Kijkshop	< 30 > 30	2.99 0.00	1 day	Home adress Physical store	Not possible		Return point, or physical store Return within 16 days
Media-markt		0.00	1-2 days	Home adress Physical store	Possible (when bought in shop)	Own costs	Return point, or physical store Return within 14 days

Appendix 2. Pop-up boxes ‘Description of the situation’ and ‘Product availability’



Technische Universiteit Eindhoven University of Technology

Online and offline shopp

Suppose you want to buy a pair of new jeans, and you found the jeans you had in mind in a Web store. You can order the jeans online. However, you can also buy the jeans from the same retailer in its physical store. The physical store and the Web store have the following features (see the table below):

Which option do you prefer...,

Description of the situation

Web store		Physical store		No preference
Delivery time:	Tomorrow	Travel time:	15 min.	-
Delivery appointment:	Not possible	Friendliness personnel:	Normal	-
Delivery costs:	euro 5.00	Product availability:	5 products available	-
Retour effort:	Return point with retour costs	Personalized service:	Appointment possibility with stylist	-
Product price: 10% cheaper in web store				-

a) ... if you want to wear the jeans on Saturday night during a party (now it is Tuesday night 7 p.m.)?

Web store	Physical store	No preference
⬚	○	○

b) ... if you want to have the jeans because you are looking for such a jeans quite a while?

Web store	Physical store	No preference
○	○	○

Previous Next

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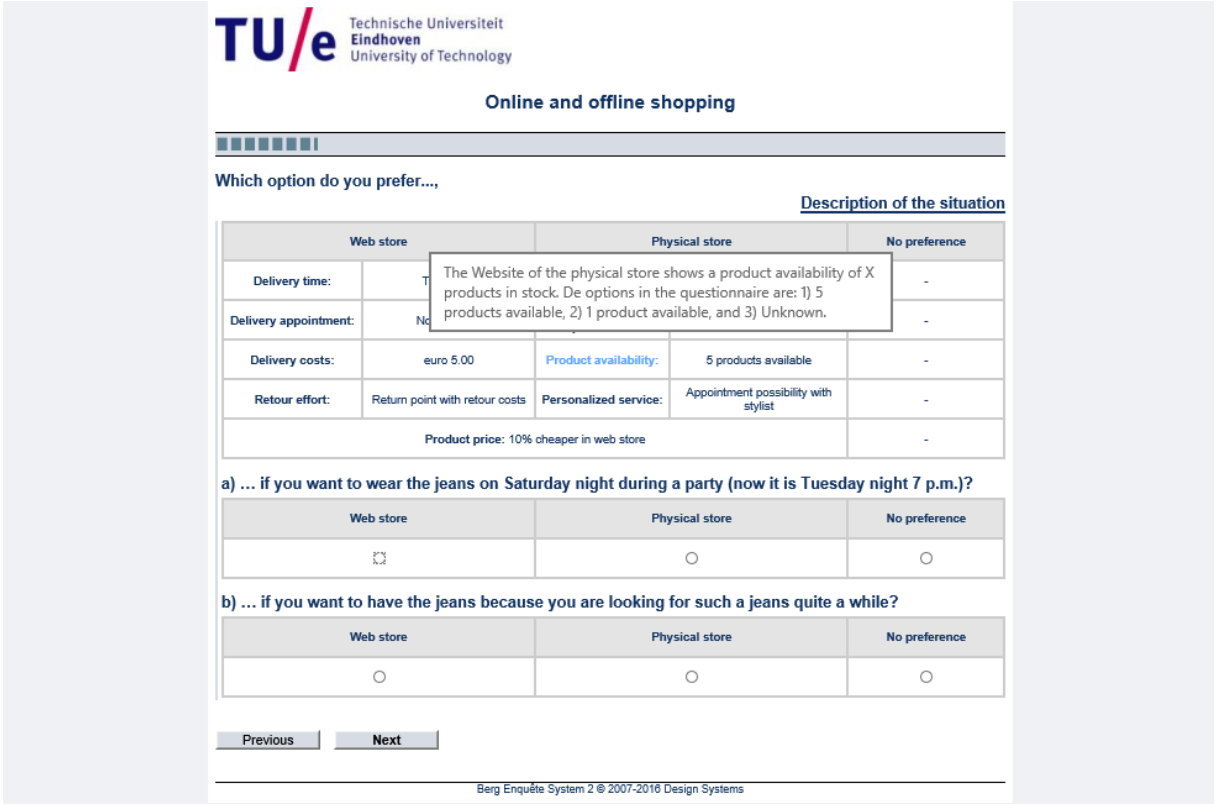

Technische Universiteit Eindhoven University of Technology

Online and offline shopping

Which option do you prefer...,

Description of the situation

Web store		Physical store		No preference
Delivery time:	T			-
Delivery appointment:	No			-
Delivery costs:	euro 5.00	Product availability:	5 products available	-
Retour effort:	Return point with retour costs	Personalized service:	Appointment possibility with stylist	-
Product price: 10% cheaper in web store				-

The Website of the physical store shows a product availability of X products in stock. De options in the questionnaire are: 1) 5 products available, 2) 1 product available, and 3) Unknown.

a) ... if you want to wear the jeans on Saturday night during a party (now it is Tuesday night 7 p.m.)?

Web store	Physical store	No preference
⬚	○	○

b) ... if you want to have the jeans because you are looking for such a jeans quite a while?

Web store	Physical store	No preference
○	○	○

Previous Next

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Appendix 3. Questions respondents' demographic and psychographic characteristics

Demographic characteristics		
Demographic	**Question**	**Options**
Gender	What is your gender? *Wat is uw geslacht?*	Man Woman
Age	What is your year of birth? *Wat is uw geboortejaar?*	. . . .
Education	What is your highest educational degree? *Wat is uw hoogst voltooide opleiding?*	No education Primary school LBO, VBO, LTS, LHNO, VMBO MAVO, VMBO-t, MBO-short MBO, MTS, MEAO HAVO, VWO, Gymnasium HBO, HEAO, PABO, HTS University Other, namely: . . . .
Household situation	What is your household situation? *Wat is uw thuissituatie?*	Single without children Single with child(ren) living at home Single with child(ren) living away from home Single with child(ren) living at home and away Couple without children Couple with child(ren) living at home Couple with child(ren) living away from home Couple with child(ren) living at home and away Living in a student house No answer Other, namely: . . . .
Work	Do you have a job? *Wat doet u in het dagelijks leven?*	I work full time ≥ 32 I work part time < 32 I have no job I am studying I am retired Other, namely: . . . .
Work partner	Does your partner has a job? *Wat doet uw partner in het dagelijks leven?*	My partner works full time ≥ 32 My partner works part time < 32 My partner has no job My partner is studying My partner is retired I have no partner Other, namely: . . . .
Income	What is your net disposable household income? *Wat is uw netto besteedbaar hh.inkomen?*	Less than € 750 € 750 - € 1500 € 1500 - € 2250 € 2250 - € 3000 € 3000 - € 3750 € 3750 - € 4500 more than € 4500 No answer

Psychographic characteristics	
Psychographic	**Question**
Innovative	1. I regularly purchase different variants of a product just for a change. *Ik koop vaak verschillende varianten van een product om af te wisselen* 2. I am one of those people who try a new product firstly just after the launch. *Ik probeer nieuwe producten meteen nadat ze geïntroduceerd zijn* 3. I find it boring to use the same product (or brand) repetitively. *Ik vind het saai om hetzelfde product/merk herhaaldelijk te gebruiken* 4. I like to try new and different products. *Ik vind het leuk om nieuwe producten en verschillende producten te proberen* 5. I always have the newest gadgets. *Ik heb altijd de nieuwste gadgets*
Loyalty	6. I generally do my shopping in the same way. *Ik doe mijn aankopen meestal op dezelfde manier* 7. The brand of the product is important for me in my purchase decisions. *Het merk van het product speelt een belangrijke rol in mijn aankoopbeslissing* 8. I generally purchase the same brands. *Ik koop meestal dezelfde merken* 9. The place where I do my shopping is very important to me. *De locatie waar ik mijn aankopen doe is erg belangrijk voor mij*
Motivation to conform	10. Being accepted by other people is very important to me. *Geaccepteerd worden door anderen is erg belangrijk voor mij* 11. I find it very boring when other people criticize my behaviours. *Ik vind het erg vervelend als anderen kritiek geven op mijn gedrag* 12. I like to have some problems that I can solve without much thinking. *Ik vind het erg vervelend als anderen kritiek geven op mijn gedrag*
Shopping enjoyment	13. I like shopping. *Ik vind het leuk om te winkelen* 14. I take my time when I shop. *Ik neem de tijd voor winkelen*
Time pressure	15. I am always busy. *Ik heb het altijd druk* 16. I usually find myself pressed for time. *Ik ondervind vaak een tijdsdruk*
Price conscious	17. It is important for me to have the best price for the product. *Ik vind het belangrijk om de beste prijs voor een product te betalen* 18. I compare the prices of various products before I make a choice. *Ik vergelijk prijzen van verschillende producten voordat ik een keuze maak*

Appendix 4. Relationships between demographics

Relations between demographic variables

Variables	Test	Results	Significant
Gender - age	Chi-square	$\chi^2 = 1.180$, df = 2, p = 0.554	No
Gender - education	Chi-square	$\chi^2 = 7.392$, df = 2, p = 0.025	Yes
Gender - work	Chi-square	$\chi^2 = 101.775$, df = 2, p = 0.000	Yes
Gender - income	Chi-square	$\chi^2 = 2.836$, df = 2, p = 0.242	No
Gender - household situation	Chi-square	$\chi^2 = 0.503$, df = 2, p = 0.778	No
Age - education	Spearman	$r_s = -0.296$, p = 0.000	Yes
Age - work	Chi-square	$\chi^2 = 44.070$, df = 4, p = 0.000	Yes
Age - income	Spearman	$r_s = 0.026$, p = 0.544	No
Age - household situation	Chi-square	$\chi^2 = 118.282$, df = 4, p = 0.000	Yes
Education - work	Chi-square	$\chi^2 = 54.184$, df = 4, p = 0.000	Yes
Education - income	Spearman	$r_s = 0.259$, p = 0.000	Yes
Education - household situation	Chi-square	$\chi^2 = 24.536$, df = 4, p = 0.000	Yes
Work - income	Chi-square	$\chi^2 = 95.470$, df = 4, p = 0.000	Yes
Work - household situation	Chi-square	$\chi^2 = 30.964$, df = 4, p = 0.000	Yes
Income - household situation	Chi-square	$\chi^2 = 97.353$, df = 4, p = 0.000	Yes

Gender - Work Crosstabulation

			Work			Total
			Full-time	Part-time	No job	
Gender	Male	observed %	74.4	9.3	16.3	100.0
	Female	observed %	36.6	39.7	23.7	100.0
Total		observed %	55.0	24.9	20.1	100.0

Gender - Education Crosstabulation

			Education			Total
			Low	Middle	High	
Gender	Male	observed %	11.6	33.6	54.8	100.0
	Female	observed %	17.4	37.9	44.8	100.0
Total		observed %	14.6	35.8	49.7	100.0

Age - Work Crosstabulation

			Work			
			Full-time	Part-time	No job	Total
Age	20 - 34 years old	observed %	68.4	14.4	17.2	100.0
	35 - 49 years old	observed %	55.7	30.3	14.0	100.0
	50 - 65 years old	observed %	39.4	30.3	30.3	100.0
Total		observed %	55.0	24.9	20.1	100.0

Age - Household situation Crosstabulation

			Household situation			
			Single	Couple	HH with children	Total
Age	20 - 34 years old	observed %	34.4	42.6	23.0	100.0
	35 - 49 years old	observed %	12.7	20.8	66.5	100.0
	50 - 65 years old	observed %	11.7	17.0	71.3	100.0
Total		observed %	19.7	27.0	53.2	100.0

Education - Work Crosstabulation

			Work			
			Full-time	Part-time	No job	Total
Education	Low	observed %	27.8	31.1	41.1	100.0
	Middle	observed %	49.8	29.9	20.4	100.0
	High	observed %	66.8	19.5	13.7	100.0
Total		observed %	55.0	24.9	20.1	100.0

Education - Household situation Crosstabulation

			Household situation			
			Single	Couple	HH with children	Total
Education	Low	observed %	13.3	23.3	63.3	100.0
	Middle	observed %	16.3	20.8	62.9	100.0
	High	observed %	24.1	32.6	43.3	100.0
Total		observed %	19.7	27.0	53.2	100.0

Work - Income Crosstabulation

			Income			
			Low	Average	High	Total
Work	Full-time	observed %	10.7	42.4	46.9	100.0
	Part-time	observed %	24.6	36.1	39.3	100.0
	No job	observed %	54.9	34.3	10.8	100.0
Total		observed %	22.3	39.4	38.3	100.0

Work - Household situation Crosstabulation

			Household situation			
			Single	Couple	HH with children	Total
Work	Full-time	observed %	19.7	31.2	49.1	100.0
	Part-time	observed %	11.0	18.8	70.1	100.0
	No job	observed %	30.6	25.8	43.5	100.0
Total		observed %	19.7	27.0	53.2	100.0

Income - Household situation Crosstabulation

			Household situation			
			Single	Couple	HH with children	Total
Income	Low	observed %	49.6	18.5	31.9	100.0
	Average	observed %	21.9	25.7	52.4	100.0
	High	observed %	3.4	35.8	60.8	100.0
Total		observed %	21.0	28.0	51.0	100.0

Appendix 5. MNL model with time pressure, Jeans and EHD, *X*-attributes

MNL model with time pressure, Jeans				
Alternative	**Attribute**	**Level**	**β**	**p**
Both channels	Constant online channel	-	1.88203	0.0000
	Constant offline channel	-	2.50629	0.0000
Online channel	Delivery time	Tomorrow	0.36354	0.0000
		2 days	0.14290	0.0000
		4 days	-0.50644	-
	Delivery appointment	Any hour of day	0.01916	0.5203
		Any part of day	0.14062	0.0000
		Not possible	-0.15978	-
	Delivery costs	€ 0.00	0.27149	0.0000
		€ 2.50	0.01101	0.7144
		€ 5.00	-0.28250	-
	Retour effort	Picked up at home for free	0.07714	0.0082
		Return point without retour costs	0.16932	0.0000
		Return point with retour costs	-0.24646	-
	Delivery time *	Tomorrow * Any hour of day	-0.04595	0.2628
	Delivery appointment	Tomorrow * Any part of day	-0.07421	0.0696
		2 days * Any hour of day	0.04244	0.2896
		2 days * Any part of day	0.01406	0.7379
Offline channel	Travel time to shopping center	5 min.	0.29110	0.0000
		15 min.	-0.00530	0.8545
		25 min.	-0.28580	-
	Friendliness personnel	Very friendly	0.20269	0.0000
		Normal	0.09269	0.0018
		Not so friendly	-0.29538	-
	Product availability	5 products available	0.16224	0.0000
		1 product available	-0.07126	0.0146
		Unknown	-0.09098	-
	Personal attention	Appointment possibility with expert/stylist	0.04223	0.1450
		Store personnel available for advice	0.02935	0.3177
		Self-service	-0.07158	-
Both channels	Product price	No difference	-0.04635	0.1214
		10% cheaper in physical store	-0.17022	0.0000
		10% cheaper in web store	0.21657	-
LL(0) = -12220,96; LL(β) = -8656,34; ρ^2 = 0,292				

Interaction variable of MNL model with time pressure, Jeans				
Alternative	**Attribute**	**Level**	**β**	**p**
Online channel	*Delivery time **	*Tomorrow * Any hour of day*	*0.33675*	-
	Delivery appointment	*Tomorrow * Any part of day*	*0.42995*	-
		*Tomorrow * Not possible*	*0.32392*	-
		*2 days * Any hour of day*	*0.20450*	-
		*2 days * Any part of day*	*0.29758*	-
		*2 days * Not possible*	*-0.07338*	-
		*4 days * Any hour of day*	*-0.48377*	-
		*4 days * Any part of day*	*-0.30567*	-
		*4 days * Not possible*	*-0.72988*	-

Multinomial Logit Model with time pressure, EHD				
Alternative	**Attribute**	**Level**	**β**	**p**
Both channels	Constant online channel	-	2.21067	0.0000
	Constant offline channel	-	2.26200	0.0000
Online channel	Delivery time	Tomorrow	0.50006	0.0000
		2 days	0.08888	0.0023
		4 days	-0.58894	-
	Delivery appointment	Any hour of day	0.03033	0.3093
		Any part of day	0.08840	0.0018
		Not possible	-0.11873	-
	Delivery costs	€ 0.00	0.32580	0.0000
		€ 2.50	-0.04051	0.1652
		€ 5.00	-0.28529	-
	Retour effort	Picked up at home for free	0.04929	0.0958
		Return point without retour costs	0.10809	0.0002
		Return point with retour costs	-0.15738	-
	Delivery time * Delivery appointment	Tomorrow * Any hour of day	0.01447	0.7204
		Tomorrow * Any part of day	-0.02369	0.5516
		2 days * Any hour of day	0.01034	0.8111
		2 days * Any part of day	0.02237	0.5713
Offline channel	Travel time to shopping center	5 min.	0.31384	0.0000
		15 min.	0.07643	0.0073
		25 min.	-0.39027	-
	Friendliness personnel	Very friendly	0.15451	0.0000
		Normal	0.06650	0.0200
		Not so friendly	-0.22101	-
	Product availability	5 products available	0.11710	0.0001
		1 product available	-0.02342	0.4001
		Unknown	-0.09368	-
	Personal attention	Appointment possibility with expert/stylist	-0.02073	0.4792
		Store personnel available for advice	0.10607	0.0002
		Self-service	-0.08534	-
Both channels	Product price	No difference	-0.11130	0.0001
		10% cheaper in physical store	-0.20635	0.0000
		10% cheaper in web store	0.31765	-
LL(0) = -12220,96; LL(β) = -8922,49; ρ^2 = 0,270				

Interaction variable of MNL model with time pressure, EHD				
Alternative	**Attribute**	**Level**	**β**	**p**
Online channel	*Delivery time * Delivery appointment*	*Tomorrow * Any hour of day*	*0.54486*	-
		*Tomorrow * Any part of day*	*0.56477*	-
		*Tomorrow * Not possible*	*0.39055*	-
		*2 days * Any hour of day*	*0.12955*	-
		*2 days * Any part of day*	*0.19965*	-
		*2 days * Not possible*	*-0.06256*	-
		*4 days * Any hour of day*	*-0.58342*	-
		*4 days * Any part of day*	*-0.49922*	-
		*4 days * Not possible*	*-0.68418*	-

Appendix 6. LC model with time pressure, Jeans and EHD, *X*-attributes

LC Model with time pressure, Jeans								
			Class 1		Class 2		Class 3	
Alternative	**Attribute**	**Level**	**β**	**p**	**β**	**p**	**β**	**p**
Both channels	Constant online channel	-	1.69343	0.0000	-0.47910	0.0000	3.97494	0.0000
	Constant offline channel	-	4.84069	0.0000	0.06765	0.4438	3.53414	0.0000
Online channel	Delivery time	Tomorrow	0.72553	0.0000	0.37361	0.0005	0.54099	0.0000
		2 days	0.20603	0.1866	0.13442	0.1970	0.16751	0.0001
		4 days	-0.93156	-	-0.50803	-	-0.70850	-
	Delivery appointment	Any hour of day	0.05146	0.6664	0.27829	0.0063	0.00933	0.8341
		Any part of day	0.01486	0.9149	0.12390	0.2474	0.19704	0.0000
		Not possible	-0.06632	-	-0.40219	-	-0.20637	-
	Delivery costs	€ 0.00	0.95506	0.0000	0.19636	0.0595	0.34935	0.0000
		€ 2.50	-0.10734	0.5200	0.06686	0.5258	0.00613	0.8926
		€ 5.00	-0.84772	-	-0.26322	-	-0.35548	-
	Retour effort	Picked up at home for free	0.31084	0.0098	0.03217	0.7520	0.05735	0.1898
		Return point without retour costs	0.04998	0.7815	0.34302	0.0009	0.25040	0.0000
		Return point with retour costs	-0.36082	-	-0.37519	-	-0.30775	-
	Delivery time *	Tomorrow * Any hour of day	0.04887	0.7975	-0.02042	0.8898	-0.12567	0.0494
	Delivery appointment	Tomorrow * Any part of day	-0.20082	0.2915	-0.11874	0.4416	0.11721	0.0802
		2 days * Any hour of day	0.10975	0.5336	0.06922	0.6186	0.09013	0.1408
		2 days * Any part of day	-0.24033	0.2482	-0.06829	0.6519	-0.08185	0.2031
Offline channel	Travel time to shopping center	5 min.	0.51721	0.0006	0.30257	0.0007	0.46453	0.0000
		15 min.	-0.04976	0.6973	0.10979	0.2172	0.01185	0.7879
		25 min.	-0.46745	-	-0.41236	-	-0.47638	-
	Friendliness personnel	Very friendly	0.38747	0.0018	0.49471	0.0000	0.22779	0.0000
		Normal	0.06402	0.6028	0.09476	0.2931	0.05034	0.2771
		Not so friendly	-0.45149	-	-0.58947	-	-0.27813	-
	Product availability	5 products available	0.45113	0.0006	0.16737	0.0561	0.18297	0.0001
		1 product available	0.01740	0.8957	-0.07051	0.4520	-0.14935	0.0012
		Unknown	-0.46853	-	-0.09686	-	-0.03362	-
	Personal attention	Appointment possibility with expert/stylist	-0.09988	0.3896	-0.08506	0.3376	0.11535	0.0103
		Store personnel available for advice	0.09126	0.4775	0.13619	0.1438	0.04297	0.3513
		Self-service	0.00862	-	-0.05113	-	-0.15832	-
Both channels	Product price	No difference	0.09130	0.5045	-0.21003	0.0496	-0.02839	0.5255
		10% cheaper in physical store	-0.49220	0.0009	0.05957	0.5710	-0.23082	0.0000
		10% cheaper in web store	0.40090	-	0.15046	-	0.25921	-
Class probability			0.39658		0.11515		0.48827	
LL(0) = -12220.96; LL(β) = -6571.06; ρ^2 = 0.462								

Interaction variable of LC model with time pressure, Jeans								
			Class 1		Class 2		Class 3	
Alternative	**Attribute**	**Level**	**β**	**p**	**β**	**p**	**β**	**p**
Online channel	*Delivery time **	*Tomorrow * Any hour of day*	*0.82586*	-	*0.63148*	-	*0.42465*	-
	Delivery appointment	*Tomorrow * Any part of day*	*0.53957*	-	*0.37877*	-	*0.85524*	-
		*Tomorrow * Not possible*	*0.81116*	-	*0.11058*	-	*0.34308*	-
		*2 days * Any hour of day*	*0.36724*	-	*0.48193*	-	*0.26697*	-
		*2 days * Any part of day*	*-0.01944*	-	*0.19003*	-	*0.28270*	-
		*2 days * Not possible*	*0.27029*	-	*-0.26870*	-	*-0.04714*	-
		*4 days * Any hour of day*	*-1.03872*	-	*-0.27854*	-	*-0.66363*	-
		*4 days * Any part of day*	*-0.47555*	-	*-0.19710*	-	*-0.54682*	-
		*4 days * Not possible*	*-1.28041*	-	*-1.04845*	-	*-0.91505*	-

LC Model with time pressure, EHD

			Class 1		Class 2		Class 3	
Alternative	**Attribute**	**Level**	**β**	**p**	**β**	**p**	**β**	**p**
Both channels	Constant online channel	-	5.22656	0.0000	-0.48078	0.0000	3.03900	0.0000
	Constant offline channel	-	3.80889	0.0000	-0.17635	0.0543	4.19473	0.0000
Online channel	Delivery time	Tomorrow	0.70917	0.0000	0.43879	0.0000	0.67504	0.0000
		2 days	0.26796	0.0008	0.04029	0.7082	0.10510	0.0671
		4 days	-0.97713	-	-0.47908	-	-0.78014	-
	Delivery appointment	Any hour of day	-0.02534	0.7449	-0.22055	0.0583	0.08521	0.1416
		Any part of day	0.24398	0.0015	0.32505	0.0020	0.10880	0.0457
		Not possible	-0.21864	-	-0.10450	-	-0.19401	-
	Delivery costs	€ 0.00	0.19230	0.0059	0.28801	0.0057	0.62372	0.0000
		€ 2.50	0.08931	0.2215	0.02690	0.8076	-0.14923	0.0136
		€ 5.00	-0.28161	-	-0.31491	-	-0.47449	-
	Retour effort	Picked up at home for free	0.05265	0.4949	0.08857	0.4022	0.17157	0.0022
		Return point without retour costs	0.25941	0.0010	0.10377	0.3292	0.04866	0.4346
		Return point with retour costs	-0.31206	-	-0.19234	-	-0.22023	-
	Delivery time *	Tomorrow * Any hour of day	-0.02861	0.7764	0.16795	0.2592	-0.00130	0.9853
	Delivery appointment	Tomorrow * Any part of day	0.18850	0.0823	-0.24917	0.0883	-0.04278	0.5540
		2 days * Any hour of day	0.16766	0.1458	-0.14164	0.3860	0.11286	0.1563
		2 days * Any part of day	-0.18557	0.0629	0.11989	0.4021	0.01885	0.8013
Offline channel	Travel time to shopping cente	5 min.	0.42811	0.0000	0.34408	0.0004	0.57426	0.0000
		15 min.	0.08848	0.1962	0.10326	0.2816	0.09190	0.0939
		25 min.	-0.51659	-	-0.44734	-	-0.66616	-
	Friendliness personnel	Very friendly	0.16590	0.0198	0.13336	0.1807	0.27433	0.0000
		Normal	0.17638	0.0050	0.03819	0.6961	0.13280	0.0137
		Not so friendly	-0.34228	-	-0.17155	-	-0.40713	-
	Product availability	5 products available	-0.04856	0.4998	-0.02721	0.7730	0.26316	0.0000
		1 product available	0.12180	0.0614	0.14156	0.1200	-0.15059	0.0035
		Unknown	-0.07324	-	-0.11435	-	-0.11257	-
	Personal attention	Appointment possibility with expert/stylist	-0.17873	0.0128	-0.00475	0.9594	-0.01039	0.8497
		Store personnel available for advice	0.18519	0.0034	0.14155	0.1253	0.13211	0.0127
		Self-service	-0.00646	-	-0.13680	-	-0.12172	-
Both channels	Product price	No difference	-0.20339	0.0014	-0.33258	0.0031	-0.05223	0.3426
		10% cheaper in physical store	-0.04866	0.5065	0.20851	0.0761	-0.49437	0.0000
		10% cheaper in web store	0.25205	-	0.12407	-	0.54660	-
Class probability			0.39355		0.10947		0.49699	

LL(0) = -12220,96; LL(β) = -7118,45; ρ^2 = 0,418

Interaction variable of LC model with time pressure, EHD

			Class 1		Class 2		Class 3	
Alternative	**Attribute**	**Level**	**β**	**p**	**β**	**p**	**β**	**p**
Online channel	*Delivery time **	*Tomorrow * Any hour of day*	*0.65522*	-	*0.38619*	-	*0.75895*	-
	Delivery appointment	*Tomorrow * Any part of day*	*1.14165*	-	*0.51467*	-	*0.74106*	-
		*Tomorrow * Not possible*	*0.33064*	-	*0.41551*	-	*0.52511*	-
		*2 days * Any hour of day*	*0.41028*	-	*-0.32190*	-	*0.30317*	-
		*2 days * Any part of day*	*0.32637*	-	*0.48523*	-	*0.23275*	-
		*2 days * Not possible*	*0.06723*	-	*-0.04246*	-	*-0.22062*	-
		*4 days * Any hour of day*	*-1.14152*	-	*-0.72594*	-	*-0.80649*	-
		*4 days * Any part of day*	*-0.73608*	-	*-0.02475*	-	*-0.64741*	-
		*4 days * Not possible*	*-1.05379*	-	*-0.68655*	-	*-0.88652*	-

Appendix 7. Relationships between segments of the LC models and demographics/psychographics

Relations between demographics and segments, LCM 3 segments Jeans

Variables	Test	Results	Significant
Gender	Chi-square	$\chi^2 = 11.050$, df = 2, p = 0.004	Yes
Age	Chi-square	$\chi^2 = 10.879$, df = 4, p = 0.028	Yes
Education	Chi-square	$\chi^2 = 3.479$, df = 4, p = 0.481	No
Work	Chi-square	$\chi^2 = 2.358$, df = 4, p = 0.670	No
Income	Chi-square	$\chi^2 = 2.686$, df = 4, p = 0.612	No
Home situation	Chi-square	$\chi^2 = 3.979$, df = 4, p = 0.409	No

Relations between psychographics and segments, LCM 3 segments Jeans

Psychographic	Variables	Test	Results	Significant
Innovative	Purchases different products	Chi-square	$\chi^2 = 4.149$, df = 4, p = 0.386	No
	Firstly tries new products	Chi-square	$\chi^2 = 2.327$, df = 4, p = 0.676	No
	Gets bored when using same products	Chi-square	$\chi^2 = 3.585$, df = 4, p = 0.465	No
	Likes to try different and new products	Chi-square	$\chi^2 = 6.265$, df = 4, p = 0.180	No
	Has newest gadgets	Chi-square	$\chi^2 = 1.863$, df = 4, p = 0.761	No
Loyalty	Mostly shops in the same way	Chi-square	$\chi^2 = 5.022$, df = 4, p = 0.285	No
	Find brand important	Chi-square	$\chi^2 = 1.949$, df = 4, p = 0.745	No
	Puchases same brands	Chi-square	$\chi^2 = 2.950$, df = 4, p = 0.566	No
	Find place of shopping important	Chi-square	$\chi^2 = 3.825$, df = 4, p = 0.430	No
Motivation to conform	Find acceptation by others important	Chi-square	$\chi^2 = 5.668$, df = 4, p = 0.225	No
	Gets bored when others criticize them	Chi-square	$\chi^2 = 4.033$, df = 4, p = 0.401	Yes
	Likes to easily solve problems	Chi-square	$\chi^2 = 3.483$, df = 4, p = 0.480	No
Shopping enjoyment	Likes shopping	Chi-square	$\chi^2 = 7.354$, df = 4, p = 0.118	No
	Takes time when shopping	Chi-square	$\chi^2 = 7.334$, df = 4, p = 0.291	No
Time pressure	Always busy	Chi-square	$\chi^2 = 8.520$, df = 4, p = 0.074	Yes
	Time pressured	Chi-square	$\chi^2 = 8.874$, df = 4, p = 0.064	Yes
Price consciousness	Find paying the best price important	Chi-square	$\chi^2 = 5.953$, df = 4, p = 0.203	No
	Compares prices	Chi-square	$\chi^2 = 4.033$, df = 4, p = 0.402	No

Relations between demographics and segments, LCM 3 segments EHD

Variables	Test	Results	Significant
Gender	Chi-square	$\chi^2 = 1.263$, df = 2, p = 0.532	No
Age	Chi-square	$\chi^2 = 3.155$, df = 4, p = 0.532	No
Education	Chi-square	$\chi^2 = 9.930$, df = 4, p = 0.042	Yes
Work	Chi-square	$\chi^2 = 7.814$, df = 4, p = 0.099	Yes
Income	Chi-square	$\chi^2 = 8.624$, df = 4, p = 0.071	Yes
Home situation	Chi-square	$\chi^2 = 3.575$, df = 4, p = 0.466	No

Relations between psychographics and segments, LCM 3 segments EHD				
Psychographic	**Variables**	**Test**	**Results**	**Significant**
Innovative	Purchases different products	Chi-square	$\chi^2 = 4.473$, df = 4, p = 0.346	No
	Firstly tries new products	Chi-square	$\chi^2 = 2.987$, df = 4, p = 0.560	No
	Gets bored when using same products	Chi-square	$\chi^2 = 2.971$, df = 4, p = 0.563	No
	Likes to try different and new products	Chi-square	$\chi^2 = 5.800$, df = 4, p = 0.215	No
	Has newest gadgets	Chi-square	$\chi^2 = 9.036$, df = 4, p = 0.060	Yes
Loyalty	Mostly shops in the same way	Chi-square	$\chi^2 = 6.054$, df = 4, p = 0.195	No
	Find brand important	Chi-square	$\chi^2 = 1.646$, df = 4, p = 0.801	No
	Puchases same brands	Chi-square	$\chi^2 = 5.817$, df = 4, p = 0.213	No
	Find place of shopping important	Chi-square	$\chi^2 = 4.985$, df = 4, p = 0.289	No
Motivation to conform	Find acceptation by others important	Chi-square	$\chi^2 = 1.870$, df = 4, p = 0.760	No
	Gets bored when others criticize them	Chi-square	$\chi^2 = 1.082$, df = 4, p = 0.897	No
	Likes to easily solve problems	Chi-square	$\chi^2 = 3.337$, df = 4, p = 0.503	No
Shopping enjoyment	Likes shopping	Chi-square	$\chi^2 = 4.519$, df = 4, p = 0.340	No
	Takes time when shopping	Chi-square	$\chi^2 = 6.506$, df = 4, p = 0.164	No
Time pressure	Always busy	Chi-square	$\chi^2 = 9.006$, df = 4, p = 0.061	Yes
	Time pressured	Chi-square	$\chi^2 = 9.021$, df = 4, p = 0.061	Yes
Price consciousness	Find paying the best price important	Chi-square	$\chi^2 = 7.759$, df = 4, p = 0.101	No
	Compares prices	Chi-square	$\chi^2 = 6.554$, df = 4, p = 0.161	No