Progress in IS

Manuel Trenz

Multichannel Commerce

A Consumer Perspective on the Integration of Physical and Electronic Channels

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A Consumer Perspective on the Integration of Physical and Electronic Channels

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This book is based on a doctoral thesis successfully defended at the Business School of the University of Mannheim.

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Foreword

Multichannel—this concept currently has the retail industry wrapped around its little finger.

Electronic commerce and the balance between brick and mortar business on the one hand and the increasing trend of adopting digitalized online business on the other was the main topic dominating the debate in retailing from the late 1990s to roughly 2010. Today, growth rates in online business remain consistently in the double digits in the Western world and increasingly in the BRIC countries as well, while the turnover figures for stationary downtown retail continue to decline. In the United States, many shopping malls—once the temples of commerce—are closing down, and large full-line distributors are finding themselves in hot water. More and more traditional companies are facing the inevitable consequences of this development and are now making steps toward embracing this novel development. However, to date, most research in this field has been geared toward the polarization and competitive measurement of online and offline sales.

Manuel Trenz takes a new approach, viewing the combination of an online and an offline channel as a continuum. This approach allows integration, success, and dynamics to be measured, while also focusing on the entire retailer value creation chain. The information systems and marketing literature have addressed many different factors that influence the success of online and offline retailing. However, to my knowledge, no study so far has addressed the behavior of the customer based on the channel choice in the particular way Manuel Trenz has chosen. Moreover, he quantifies the influencing factors that determine sensitivities of the behavior of the customer with regard to the channel choice. Thereafter, in another study with entirely novel design, Manuel Trenz investigates contingency factors for customer behavior in multichannel environments. In addition to the impressive contribution Trenz makes to an integration of theories and insights from information systems and marketing, he also contributes to the body of theory in business research.

As such, this book provides valuable insights for practitioners in the retailing industry looking to gain a deeper understanding of the key drivers derived from the behavioral responses of their customers to a rapidly changing business environment. With these drivers in mind, appropriate business strategies and tactics

can be developed based on a deeper understanding of the causalities involved in the ongoing change.

This book represents both a substantial contribution to the academic literature and an extremely valuable source of guidance for business professionals in the ever faster changing modern retailing industry. Hence, I would like to wish all the best to the readers of this book, executives, management students, and, last but not least, to its author.

Augsburg, Germany Prof. Dr. Daniel J. Veit
Copenhagen, Denmark, December 2014

Preface

I have been watching developments on the internet as well as the retail industry closely for many years now. During my time as a Ph.D. candidate, I talked to many executives working for large retail chains. Although the online channel had become the dominant shopping channel for my generation, the major questions many companies asked were "How can we prevent our online channel from cannibalizing our stores?" "How can we compete with these online players?" and soon also "How can we survive?" I above all became interested in this last question. Many important elements of our past, such as the music cassette, the phone booth, or the street map, have since been rendered obsolete by superior digital or IT-driven competitors, because they had no advantage over these innovations. Could large retail chains disappear in a similar fashion? In order to investigate opportunities instead of decline, I moved beyond the prevalent view of competition between offline and online channels and chose to look for opportunities of integrating the two in order to create competitive advantages. The results of these four years of searching, puzzling, discussing, and reflecting are depicted in the following five chapters.

My journey as a Ph.D. started in the "Operations and Information Systems" program offered by the University of Mannheim's Center of Doctoral Studies in Business. As a part of the interdisciplinary Graduate School of Economic and Social Sciences, I had the opportunity to attend a broad range of methodological, theoretical, and philosophical courses taught by internationally renowned scholars. Although a very challenging time, the investment in a "tool box" later allowed me to choose freely between the methods and theoretical perspectives most suitable for addressing my particular research puzzles. Throughout my Ph.D., my mentor Prof. Daniel Veit guided me and supported my development wherever possible. Without his active involvement and commitment, my project could never have evolved the way it did. The numerous international conferences attended, the Doctoral Consortium of the European Conference on Information Systems, and our yearly Danish–German Midsummer Colloquium at the Copenhagen Business School allowed me to meet many interesting people and learn about different approaches to research and academic life. And my time with Prof. Gerard Tellis

as a visiting scholar at the University of Southern California's Marshall School of Business was especially rewarding. On many occasions, Gerry's enthusiasm and his demanding and critical opinions pushed me to further refine my ideas.

At the beginning of my Ph.D., I was told that it would be a very intense time alternating between great euphoria and crises. And it was. Therefore, I am particularly happy that I had such great companions, who helped me through the crises and celebrated the victories with me. Though I cannot thank them all here, let me extend my thanks to a select few: First of all, my colleagues Jan Huntgeburth and Dennis Steininger, who shared my enthusiasm for pushing the envelope. Second, my fellows Behnaz Gholami, Ye Li, and Emilio Zamorano, who made the hard times at the graduate school worthwhile. Third, the new generation at our department, Sabrina Hauff, Amelie Sach, and An Bui, who foster our great team spirit. Fourth, my parents and my sister, whose unfailing faith has enabled me to go my own way. Last and most important, my partner Julia, who supported me through all the highs and lows of the Ph.D. and demonstrated once again why she is the most important person in my life.

It was an exhausting journey. But looking back, it was also a thrilling one that I would not want to miss for the world. And I am grateful for the many experiences gained and friendships made along the way.

Mannheim, December 2014

Contents

Abbreviations

ANOVA	Analysis of variance
AVE	Average variance extracted
CB	Covariance based
CBC	Choice-based conjoint
CI	Confidence interval
CMB	Common method bias
CMV	Common method variance
Cp.	Compare
CPR	Choice probability
CR	Composite reliability
DIS	Distance
GEN	Gender
HB	Hierarchical bayes
IMC	Instructional manipulation check
IMM	Pickup immediacy
IPBC	Online post-benefit convenience
IPER	Online performance risk
IPSR	Online psychological risk
ITRC	Online transaction convenience
MAE	Mean average error
MC	Multichannel
OEX	Online shopping experience
OPBC	Offline post-benefit convenience
OPER	Offline performance risk
OPS	Offline purchase share
OPSR	Offline psychological risk
OTRC	Offline transaction convenience
PIC	Pickup in store
PIN	Product involvement
PLS	Partial least square

PUN	Product uncertainty
SE	Standard error
SEM	Structural equation modeling
SRS	Service and return in store
VIF	Variance inflation factor
Wrt.	With regard to
WTP	Willingness to pay

Figures

Tables

Chapter 1
Introduction

To compete successfully against new online retailers, traditional retailers would need to find ways to transform the expensive liabilities of physical locations with limited hours and high labor and inventory costs into assets that complemented rather than competed with the online experience. […]

What you're hearing is the sound of a once-leading retailer whistling in the dark. The only question is whether Best Buy management and investors actually know that, or whether it's obvious only to consumers.

Larry Downes in Forbes (2012)

1.1 Importance and Motivation

The internet is a fast growing sales channel having generated revenues of €39.1 billion in Germany in 2013. The revenue in this channel has more than doubled within the last three years. Furthermore, its expansion is accelerating with a predicted growth rate of 24 % in 2014, reaching already a share of more than 9 % of the overall retailing market (BHV 2014). At the same time, retailing overall offers only marginal growth rates (cp. Fig. 1.1). Due to the popularity of the internet, its growing market size and share, many traditional retailers feel pressure to expand to electronic channels and offer their customers a choice between different channel options (Zettelmeyer 2000). These retailers that offer their products in local stores and online are in focus of this study and in the following referred to as multichannel (MC) retailers.

Multichannel retailers, however, still generate most of their revenues in the conventional retailing business when entering the online channel. Since the markets are not separate (Goolsbee 2001), information is exchanged and customers can

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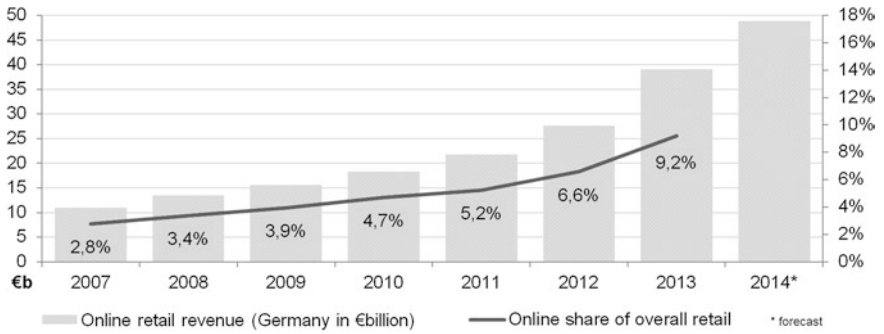

Fig. 1.1 Growth and importance of electronic commerce (*Source* BHV 2014)

move between the channels (Verhoef et al. 2007). Therefore, management decisions of multichannel retailers need to consider their consequences on both online and offline channels simultaneously. Having both channels in mind, it is difficult for multichannel retailers to compete via price on the internet with retailers that only operate online (pure play retailers). Competitive online prices are unsustainable in physical channels, since they are grounded on fundamentally different cost structures. At the same time, knowledge about the issue of multichannel price discrimination is scarce (Neslin et al. 2006; Wolk and Ebling 2010). Thus, many multichannel retailers still charge the same conventional prices online and offline (Ancarani 2002; Pan et al. 2002b; Tang and Xing 2001; Wolk and Ebling 2010), choosing to prevent cannibalization or harm from customer confusion over the opportunities of growth in the online channel. One variant of this strategy was employed by the largest European retailer for electronic goods, Media Markt. In October 2011, the company decided to offer the same prices online and offline and to give up its self-proclaimed strategy of price leadership (Metro Group 2012). A similar strategy was established by the largest American retailer for electronic goods, Best Buy, who claims to match every price of other local retailers. Its price guarantee, however, initially did not apply to online competitors' prices. The same also applied to other retailers such as Walmart or Toys R Us (Tuttle 2012). These implementations of "same price strategies" turned out to be not competitive in the online channel for most products while the few competitively priced products could not be sold profitably due to high overhead costs created by the physical stores. In the absence of alternatives, Best Buy recently decided to also match Amazon's online prices. However, this competition with companies with considerably different cost structures has massively shrunk Best Buy's margins to a point where it is unclear whether it can remain profitable (Matthews 2013). In summary, multichannel retailers face a huge dilemma when entering the online channel and their online business seems to lack a competitive advantage over pure play retailers.

One structural difference between multichannel retailers and pure online retailers is their infrastructure. While this costly infrastructure prevents them from being able to compete via price (Matthews 2013), it might be possible to leverage

these assets by offering additional services that pure online retailers cannot match. If services such as in-store pickup or in-store repair are valued by the customer, they might offer an opportunity for multichannel retailers to escape the online price pressure. Although some multichannel retailers are starting to integrate online and offline channels to enhance the customer experience, customers' valuation for multichannel integration services remains unclear. Therefore, it is still uncertain whether, how, and in which situations multichannel retailers can leverage such services to compete with pure play retailers on the internet (Neslin and Shankar 2009). The understanding of the impact of such integration activities on consumer behavior is in the center of this work.

A series of studies has focused on single channel retailers' decisions whether to add a second channel to become a multichannel retailer (Avery et al. 2012; Biyalogorsky and Naik 2003; Kauffman et al. 2009; Zhang 2009). However, the enormous success of online retailers has shifted the focus of this question from "whether" to "how" (Enders and Jelassi 2009). Multichannel research has focused on consumers' decision making between physical and electronic channels and firms' strategies to organize optimally to serve their needs (Neslin et al. 2006). However, almost all of these studies treat offline and online channels as two detached poles, while the possibility of synergies that create customer value is neglected. Accordingly, the question of the desirability, consequences and value of channel integration is one of the most under-investigated issues in multichannel research (Neslin et al. 2006; Neslin and Shankar 2009; Zhang et al. 2010a).

1.2 Research Questions and Scope

This work attempts to address this theoretical and practical gap and studies multichannel commerce as a phenomenon that goes beyond the dichotomy of online and offline. Its goal is to understand consumer behavior in the presence of multichannel integration services. Multichannel retailing or multichannel commerce is defined as the "set of activities involved in selling merchandise or services to consumers through more than one channel" (Zhang et al. 2010a, p. 168). Multichannel integration services (also termed multichannel services or integration services in the following) describe services that enhance a transaction pursued in one channel by activities that are performed using a different channel. These can either be online services that enhance transactions initiated in a store or offline services for online transactions. Due to the focus on multichannel retailers' online business, the latter category is in the center of this study (i.e., pickup, service, and return in store after an online purchase). Maintaining physical and electronic channels simultaneously can have many desirable consequences for firms such as potential cost savings or market extension (Steinfield et al. 2002). However, an understanding of consumers' perceptions and reactions to multichannel integration services is the key to make informed decisions about the channel configurations and investments. Therefore, the following research questions are raised and addressed within this thesis:

How does the integration of physical and electronic channels influence consumer behavior in a multichannel environment?

- Which types of multichannel integration services influence consumers' channel preferences and their willingness to pay?
- How can the differences in preferences for multichannel integration services be explained?
- How and why does the valuation for multichannel integration services vary between purchase situations and individuals' characteristics?

The overarching question refers to the consequences of services that enhance online transactions by additional services that make use of physical infrastructure. If these services influence consumer behavior, they alter our conception of physical and electronic channels and potentially enable multichannel retailers to create a competitive advantage. The question can be decomposed into three successive questions: First, it is necessary to analyze which multichannel integration services generally influence channel preferences and willingness to pay. Thereby, this work establishes the relevance of different types of integrated multichannel services for consumer decision making and firms. Second, it is desirable to understand the mechanisms that cause the potential differences in preferences for each type of integration service. This understanding enables researchers and practitioners to draw conclusions that go beyond the mere empirical findings themselves. Third, to gain a deeper understanding of multichannel commerce, contingency factors of the valuation for multichannel integration services are identified and evaluated. The evaluation of purchase specific and individual differences in the valuation of multichannel integration creates a detailed picture of how the integration of physical and electronic channels influences consumer behavior in a multichannel environment and, consequently, when specific services can be valuable for multichannel retailers.

The research questions are addressed for tangible consumer goods as the most popular type of business to consumer good exchanged in both channels (BHV 2014). The work builds upon previous literature on electronic commerce, but analyzes multichannel integration services within the full business environment (Noble et al. 2005) including the offline distribution channel.

The goal of this thesis is to understand multichannel integration services and to provide testable propositions and causal explanations of their impact (Gregor 2006). By theoretically and empirically addressing the described research problems, this work aims at making a theoretical contribution on three levels. First, it tries to create an understanding of causes and magnitude of the benefits derived from different integration services between physical and electronic channels. The varying impact of different service types on consumers' choices and willingness to pay should be explained through changed consumer perceptions of the transaction.

Understanding the virtue of different types of integration services advances research by departing from the imprecise meta-concept of integration services and providing explanations for the dissimilar impacts of the broad spectrum of possible integration activities. Second, it aims at contributing to the literature on channel choice and consumer behavior by identifying and testing contingency factors that influence consumer preferences in multichannel environments. Expanding previous findings from information systems and marketing research to a more complex multichannel environment allows a more fine-grained understanding of consumer behavior that is necessary in an environment characterized by channel convergence. Third, the study targets to propose a revised conceptualization of firms' and consumers' channel decisions that incorporate the increased dynamic complexity of integrated channels. In summary, the expected results help to understand how the internet transforms the retail business and which role the offline channel can play in e-business transactions.

These theoretical insights shall help multichannel retailers to make better decisions in their competition with pure online retailers. Multichannel retailers can benefit from the understanding which multichannel integration services are effective in general. Furthermore, they can base their decisions whether or not to invest in such services on an individual analysis of their customer and product portfolio and identify whether multichannel integration services can be exploited to differentiate themselves from their low cost pure online competitors.

1.3 Outline of the Thesis

The thesis is structured in five chapters. This chapter has described the motivation for the subsequent work by highlighting theoretical gaps in the understanding of multichannel integration services and their practical relevance. Based on this analysis, the research questions, the scope and the expected contributions to theory and practice were defined. Chapter 2 gives a systematic overview on the literature on online, offline and multichannel commerce relevant for the subject under investigation. The chapter is divided into three parts. First, the structural differences between online and offline commerce are analyzed. Second, literature on consumers' choice of physical and electronic channels and their behavior in a multichannel environment is organized and discussed. The last part of the chapter analyzes previous literature on multichannel integration. Thereby, different types of multichannel integration are delineated and previous studies on multichannel integration services are reviewed in detail. Chapter 3 comprises an experimental study that investigates the general impact of different types of multichannel integration services on consumer perceptions and eventually on their channel choice and willingness to pay. The nature of multichannel integration services is theoretically substantiated using previous studies as well as established frameworks and constructs. The findings deliver explanations for the impact of different types of multichannel integration services on consumer behavior. Chapter 4 builds upon

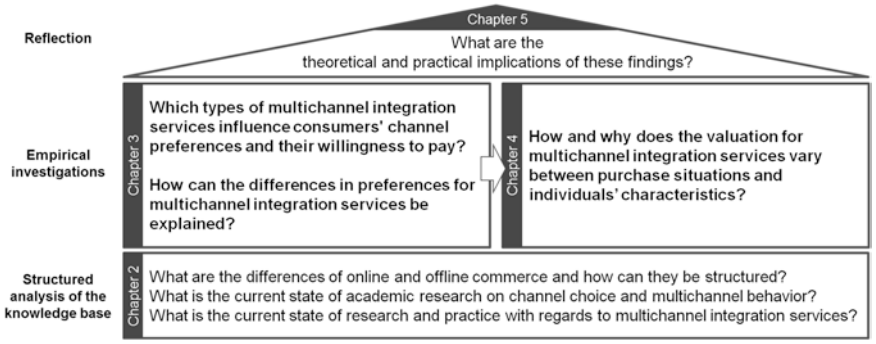

Fig. 1.2 Overview of the thesis and the addressed questions

these findings and tries to establish contingency factors of the valuation of integration services. The variations between purchase situations and individual differences are explained by regulatory focus theory. An incentive-aligned choice-based conjoint study using a representative sample of internet consumers is conducted. Individual-level utilities for each channel characteristic are estimated. These estimates allow the test of the valuation of each individual channel characteristic conditional on certain individual and purchase specific differences. The data is also used to gain insights on consumers' willingness to pay for integration services and their choices in different market situations. Chapter 5 comprises the reflection of the findings and a discussion of the theoretical and practical contributions of the work. The thesis closes with a framework for future research on multichannel integration. An overview on the different questions addressed in this thesis is given in Fig. 1.2.

Chapter 2
Offline, Online and Multichannel Commerce

2.1 Introduction

To understand multichannel commerce, it is first necessary to understand how online and offline channels differ from each other. If they would not differ from each other, an integration of both channel types would be meaningless. Therefore, the first part of this chapter gives a broad overview on the differences between online and offline commerce. Making the differences between online and offline commerce explicit enables us to identify reasons for deviations in consumer behavior and implications for the management of these channels. The second part of this chapter focuses on consumers reactions to these differences with regards to their channel choice within or between purchases. Due to the plentitude of studies in this area, a state of the art structured literature review is conducted. Three different perspectives on channel choice can be differentiated: choice of the purchase channel for one particular transaction, choice of purchase channels across transactions and the choice of different channels between the different stages of one purchase. The last part of this chapter structures different aspects of multichannel integration into a common framework and differentiates multichannel integration services from other types of multichannel integration activities. This part also discusses previous attempts to study multichannel integration services and highlights the need for the empirical studies in the subsequent chapters.

2.2 Differences Between Online and Offline Commerce

In the 1980s, Malone et al. (1987) stated that the innovations in information technology will lead to a shift from hierarchies towards markets. In markets, prices are no longer determined by managerial decisions but rather by market forces.

M. Trenz, *Multichannel Commerce*, Progress in IS,
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Table 2.1 Major differences between online and offline channels

		Offline	Online
Information transparency	Price information	High effort to compare prices	Lower prices Lower price dispersion Competitors prices are visible
	Product information	Easy evaluation of non-sensory attributes	Larger choice set Easy evaluation of sensory attributes
	Vendor information	Rely on personal inspection or acquaintances	Detailed feedback is available via specialized platforms
	Consumer information	Anonymous transactions possible	Personal data has to be provided Consumers are easily identifiable
Interactions	Relationship	Personal: personal relationship can be established	Anonymous: higher need and difficulty to mitigate transaction-specific and system-dependent uncertainties
	Communication	1:1, 1:n	1:1, n:m
	Intermediaries	Direct interactions	Increased need for intermediaries (trust, logistics)
	Location	Limited market and competition	Larger market with nationwide or transnational competitors
Cost structures	Operational costs	Higher personnel and infrastructure cost	Lower entry barriers
	Shipping costs	–	Have to be incorporated and can be used strategically
	Menu costs	Price changes costly and slow	Price changes cheap, fast and individualized

They indicate that these changes in the environment, that have accelerated even more within the last 20 years, have a huge influence on the way how goods are traded. Transacting on the internet has indeed some structural differences to traditional, offline trading that are classified into three major groups: information transparency, interactions and cost structures. These differences and its implications for electronic and physical channels are discussed in the following. An overview of the major differences is given in Table 2.1.

2.2.1 Information Transparency

Information is irrevocably connected to search. To receive any piece of information, a search has to be triggered. The classic search process is described in literature as a sequential process where costs occur for every new piece of information. Searching

in traditional retailing can be performed in different ways such as reading magazines and newspaper advertisements, consultations with friends and sales personnel, and directly sampling stores and store prices (Salop 1977). The total search costs are comprised of three components: costs for identifying the right product, the sellers, and their prices (Stigler 1961). These costs are mainly driven by the amount of time the individual buyer spends on searching. The level of these costs depends on the individual buyer's time valuation, mainly on income, and therefore on the opportunity cost of spending time with search. Furthermore, other factors such as phone or travel costs can add to the expense of searching. Stigler (1961) describes an economic cost-benefit model, where the quantity of searching is determined by a trade-off between the expected marginal return of search and the individual search costs. That means that each step of search is only undertaken if the expected savings are higher than the corresponding cost of searching. In the case of purchasing a product, these savings can be financial (price search), utilitarian (product search) or related to psychological or performance risk (vendor search).

Two major changes occur online. First, the search cost for each piece of information is reduced fundamentally by the introduction of information systems. Therefore customers have an incentive to search for more information. Second, electronic media offer more than one search pattern, search no longer has to be sequential (Su 2008). Instead, sequential search, parallel search or combinations of both can be applied (Iyer and Pazgal 2003). Thus, one search can be undertaken to find several pieces of information at once. Examples for information aggregators, among many others, are pricegrabber.com for prices, epinions.com for products and yelp.com for vendors. These two developments combined lead to information transparency, which can be defined as "the degree of visibility and accessibility of information" (Zhu 2004, p. 670).

Price transparency is supposed to reduce the range of prices in a market because search costs are lower, consumers have an incentive to search more and price discrimination is more difficult. However, as long as search costs occur, there will never be only one price in a market (Salop and Stiglitz 1977; Varian 1980). Since price search still incorporates some mental effort, one can assume that this is the case for the online channel. Earlier studies found that customers are surprisingly often unaware of the price of a product that they are buying in a supermarket, even though the price tag is just in front of them (Dickson and Sawyer 1990). If such inattentiveness is present in very price transparent situations in physical stores, one can expect to also find uninformed customers in transparent electronic markets. A series of studies have investigated the price levels of online and offline channels empirically. Overall, these studies suggest that online prices are lower than offline prices across product groups and industries (Ancarani and Shankar 2004; Brown and Goolsbee 2002; Brynjolfsson and Smith 2000; Morton et al. 2001). Brynjolfsson and Smith (2000) investigate the market for CDs and books as examples for homogenous products. They find that prices are on average 9–16 % lower in electronic channels. Ancarani and Shankar (2004) confirm their results but add that these results are conditional on the exclusion of shipping costs.

Besides the price levels, price dispersion is an indicator of "ignorance in the market" (Stigler 1961, p. 214) that can be used to study differences between online and offline channel. Dispersion can be measured either in terms of the range of prices (highest minus lowest) or by their standard deviation. Surprisingly, studies investigating the price dispersion range find very high price ranges with an average of 25 % for CDs and 33 % for books. Compared to offline channels, this is an increased price dispersion for books and approximately equal dispersion for CDs (Brynjolfsson and Smith 2000). Other studies confirm the higher online price dispersion ranges for other products and markets (e.g., Clay et al. 2002; Lee and Gosain 2002). The differences in prices can also not be fully explained by the maturity of the electronic channel (Baye et al. 2004; Bock et al. 2007; Scholten and Smith 2002), different service levels (Pan et al. 2002a), or shipping costs (Ancarani and Shankar 2004). However, Ancarani and Shankar (2004) find that, although retailers in electronic channels have higher price ranges (+4 %), the price variability in terms of standard deviation (−10 %) is lower. This finding suggests that most shops have similar prices with few outliers. This is in line with Ghose and Yao (2011) who investigate transaction prices and find much lower price dispersion than earlier studies that investigated posted prices. To conclude, although price dispersion and price levels are mostly lower online, price dispersion is found to be persistent in electronic channels (Chellappa et al. 2010; Walter et al. 2006). Therefore, price transparency leads to higher competition, but does not make online commerce frictionless (Brynjolfsson and Smith 2000).

Online prices are not only visible to the consumers but can also play an important role for competition. Competitors prices can be recorded much more cheaply (Levy et al. 1997). Price transparency can therefore enable vendors to react to competitors' price strategies more dynamically and finally facilitate a firm's ability to collude (Campbell et al. 2005). Consumers' reduced search costs make it more attractive for firms to collude or to react to a competitors' stock-out with a price increase (Dewan et al. 2007). Such an agreement on tacit collusion can lead to higher prices and can hardly be inferred (Campbell et al. 2005).

While price is a one-dimensional piece of information, product information is more difficult to analyze. Three different types of qualities can be distinguished: search, experience, and credence qualities (Darby and Karni 1973; Nelson 1970). Search qualities can be ascertained prior to purchase, one example is price information, as discussed before, or technical facts about a product such as weight, measures, or color. In contrast, experience qualities cannot, or only by the means of huge effort, be evaluated in advance. A typical example is the taste of food, e.g., a can of sauerkraut. While it would be possible to have an idea about the taste by reading consumer reports, the effort for this endeavor is often disproportionate. The third group of qualities can never be verified by average consumers (Darby and Karni 1973). Quality of education is a typical example for a credence quality. Conditional on which qualities are dominant, goods are often classified as being either search, experience or credence goods, although this classification is rarely distinct and most goods combine several types of qualities with different intensities.

In general, consumers experience a "fit"-cost equivalent to their loss of utility when they obtain a product that is not a perfect match to their requirements (Bakos 1997). The easier the evaluation of the product, the lower the effort to avoid this cost component. The internet enables consumers to evaluate certain product characteristics more easily. The use of aggregators or agents makes it easy to obtain and to compare non-sensory search qualities in electronic channels. Furthermore, the distinction between search and experience qualities begins to blur in electronic channels (Kiang et al. 2011). The availability of consumer reviews enables customers to evaluate the quality of a product by learning from other consumers' experiences (Trenz and Berger 2013). Nevertheless, sensory attributes such as the feel of a product are more difficult to assess online (Degeratu et al. 2000), although modern technologies such as virtual showrooms have slightly reduced the intensity of this drawback.

The increased product transparency also reduces opportunities for fraud with experience and credence goods. Accordingly, price premium due to lack of transparency might be eroding. Such premiums are paid for inferior brands in situations where customers try to reduce their risk of buying (Sinha 2000). Therefore, the influence of brands for products with lots of non-sensory attributes is decreased (Degeratu et al. 2000), because these attributes can be summarized and compared easily. Since products with sensory attributes are more difficult to analyze in an automatic manner, brands are still a valuable proxy for missing information for these products (Smith 2002). Nevertheless, product transparency overall facilitates rational shopping (Sinha 2000), since search attributes are easily obtainable and therefore play a more prominent role in the decision process (Häubl and Murray 2003).

In the same way as product information is more accessible online, consumers can also inform themselves about the vendors in a more convenient way. Before the online channel was available, consumers depended on their acquaintances, who may or may not have experience with the seller, to ascertain the qualities of a certain physical store. On the internet however, specialized platforms such as shopzilla.com or resellerratings.com provide a feedback channel for consumers and aggregate consumer reviews on the quality of previous interactions and transactions with a vendor. The most prominent feedback mechanism is used by ebay.com, where sellers are evaluated after each transaction. The online reputation has been shown to have significant impact on consumer decisions and transaction prices in this context (Melnik and Alm 2002; Resnick et al. 2006).

Surprisingly, online consumers do not search as much for product, price and vendor information as one might expect (Su 2008). A possible explanation could be the distinction between physical and cognitive search costs (Johnson et al. 2003). Physical search costs are characterized by the time needed to find information. In contrast, cognitive search costs are the costs for evaluating information and information sources. While the internet largely reduces physical search costs, the large amounts of information available increase cognitive search costs, possibly leading to an information overload (Nachmias and Gilad 2002). Therefore, consumers might not fully exploit their search opportunities although the online channel theoretically allows them to gather much more information about prices, products and vendors.

Information transparency on the internet is not a one-way phenomenon. In contrast, the use of electronic transactions brings along a loss of privacy. Although loyalty programs and bonus cards motivate many consumers to trade-in their privacy in physical stores as well, transactions in stores could be anonymous. Every online transaction however urges the consumer to transmit at least name, shipping address and some payment information like credit card details. But consumer transparency on the internet goes much further. Information about search terms, visited product pages and previous purchases is tracked and stored. Besides, consumers can easily be identified and their browsing and purchase history can be processed automatically. This data provides deep insights into consumers' preferences, behavior and their willingness to pay. Learning from customer behavior facilitates price discrimination. Thereby, targeting individuals is more beneficial than targeting some more or less homogeneous consumer groups by geographic or demographic data (Odlyzko 2003). The electronic channel enables sellers not only to identify buyers, but also to display different prices to different customers. The changes regarding price setting therefore are not limited to dynamic pricing over time (e.g., seasonal pricing in a store), but furthermore facilitate individual price discrimination (Bailey 1998). In the extreme case, this can lead to automatized individual offers and prices as tested by Amazon in 2000. The attempt to charge different prices for DVDs to different consumers led to a huge consumer outcry (Kannan and Kopalle 2001) and Amazon had to promise never to employ this technique again. Since consumers can react very dramatically if they discover price discrimination that they perceive to be unfair (Feinberg et al. 2002), such approaches need to be carefully evaluated. Nevertheless, price discrimination today is not limited to individualized vouchers and discounts but is also applied based on browsing history, time and device of the consumer. For instance, different prices are displayed to consumers arriving from a price search engine or using Apple products (Mattioli 2012; The Economist 2012).

2.2.2 Interactions

The interactions in physical and electronic channel differ in terms of the relationships between buyers and sellers, the communication model, the role of intermediaries and their spatial limitations. The relationship is altered by the physical distance between buyer and seller and the technological capabilities of digital communication. The lack of personal contact makes it more difficult to establish trust, defined as the confidence, that another person or organization will act in one's best interest (Gefen 2000). Trust is necessary to mitigate either transaction-specific or system-dependent online uncertainties (Grabner-Kräuter and Kaluscha 2003). Transaction-specific uncertainties can occur in every type of transaction when consumers perceive uncertainty about the successful completion of the transaction. However, they are more pronounced for online transactions for two major reasons: first, as discussed in the previous section, the quality of physical goods can be hard

to discern. Second, there is a temporal and physical separation between transaction (and often the payment) and gratification, compared to the instant gratification of the purchase in a store. System-dependent uncertainties refer to the use of the technology for transmitting private and sensitive information (e.g., payment information, address). These uncertainties of online transactions mainly comprise of the fear of security gaps and errors in the shop system (Grabner-Kräuter and Kaluscha 2003). Overcoming these uncertainties and building trust is an important challenge for retailers, since trust increases purchase intentions (Bhattacherjee 2002; Kim et al. 2008; Yoon 2002), perceived value of an offer (Brynjolfsson and Smith 2000; Grewal et al. 2003) and loyalty (Shankar et al. 2002). Thereby, it has the potential to increase sales, willingness to pay and the long term success of a retailer. In summary, trust plays a more important role in online transactions than in offline transactions but it is also, as described in the following, more difficult to establish in electronic channels.

Trust consists of the ability, benevolence and the integrity of the other party (Mayer et al. 1995). Kim et al. (2008) summarize previous literature on the factors influencing online trust into four clusters: experience based (familiarity), cognition based (information quality, perceived privacy protection, perceived security protection), affect-based (positive reputation) and personally-oriented (consumer disposition to trust). Trust in the retailing context can either refer to the salesperson or to the vendor (e.g., Doney and Cannon 1997). Due to the absence of personal contact, trust in the organization and technology rather than a specific salesperson dominates internet selling (Shankar et al. 2002). Seller evaluations are generally established based on delivery performance and experience after several purchases (Doney and Cannon 1997). Without prior experiences, intermediaries and other mechanisms such as signals may also allow trust building (Ba and Pavlou 2002). Signals can be classified as being either first-party information (provided by the firm), second-party information (provided by other customers) or third-party information (provided by independent firms) (Özpolat et al. 2013). Regarding the technological aspects, the assurance of the appropriate technical measures such as encryption for transactions, firewalls and authentication mechanisms for privacy can help reducing system-dependent uncertainties (Pavlou 2003). With regards to the relationship, a broad set of intermediaries has emerged to help building a trust-based connection to the customer (Özpolat et al. 2013). One often suggested signal provided by an intermediary are trust seals that approve the quality of the seller (third-party information). These seals have been found to increase the proportion of visits that lead to a purchase (conversion rate) from 2.90 to 5.33 % (Özpolat et al. 2013). Surprisingly, their effect on trust was not empirically confirmed (Kim et al. 2008; Lee and Turban 2001). Other intermediaries such as review platforms can increase trust by monitoring the sellers' behavior and decrease opportunities for opportunistic behavior by providing a transparent feedback channel (second-party information) (Chen and Xie 2008). Another type of intermediary is payment providers that ensure secure payment transactions (Bakos 1998). Further ways to build trust online are brands, especially in high involvement situations (Bart et al. 2005) or money back guarantees (Lee et al. 2005). Overall, the importance

of trust is increased in electronic transactions due to the intensified uncertainty which has to be mastered by new approaches to build trust without interpersonal relationships.

Besides the altered relationship between buyer and seller, the communication model is fundamentally changed online. While communication was traditionally organized in a one-to-many model, where the firm communicated to a large number of customers, electronic communication takes place in a more sophisticated asynchronous many-to-many communication model, where customers interactively share information with others (Hoffman and Novak 1996). The information transparency resulting from platforms for product information (e.g. Epinions.com) and seller reviews (e.g. Resellerratings.com) as well as specialized platforms such as Amazon (books), Tripadvisor (travel) or Bizrate.com (consumer electronics) has been discussed before. The interaction in communities and social networks enables consumers to transform their private knowledge into publicly available information and thereby influence others' purchase decisions (Forman et al. 2008; Tirunillai and Tellis 2012). Thus, interactions in electronic channels differ widely from physical channels because the generation and distribution of information is shifted from the control of companies to a network of consumers and its diffusion is accelerated tremendously. The freedom to publish freely within these communities without further control mechanisms creates a risk of review manipulations and produces a series of biases (Trenz and Berger 2013) that are described briefly in the following.

Biases in electronic word-of-mouth that have been empirically identified include the underreporting-, purchase-, customer-type-, or price-bias. The underreporting bias is a self-selection bias that describes the lack of average reviews since customers who think that the product is of extraordinary high or very low quality are more likely to share these experiences with others (Hu et al. 2009; Koh et al. 2010). The purchase-bias describes the imbalance between positive and negative reviews, since consumers are unlikely to criticize their own purchase decisions and people with an a priori negative product evaluation are unlikely to purchase the product in the first place (Hu et al. 2009). The customer-type bias explains the declining review ratings during a product lifecycle (Duan et al. 2008; Hu et al. 2011; Li and Hitt 2008; Zhu and Zhang 2010). Li and Hitt (2008) describe the structural differences in the preferences of early adopters and later purchasers which can lead to an overly positive rating after the release of a new product. Lastly, prices change over time and influence the average review rating since the rating is formed by a comparison between expectations and price. However, the price that a purchaser paid at the time the review was composed is normally hidden from the reader (Li and Hitt 2010).

Firms also need to incorporate the risk of review manipulations. Due to the large effects of online reviews on sales (Chevalier and Mayzlin 2006), it seems obvious that they are subject to manipulation (Dellarocas 2006). This manipulation is enabled by the easy and cheap change of identities online (Friedman and Resnick 2001). Mayzlin et al. (2014) show that the number of manipulated

reviews on platforms that do not require a purchase or booking verification depends on the competitive situation of the hotels and thereby highlight the extent to which manipulated reviews are common today. Accordingly, both bias and manipulation of review information are important new factors that need to be incorporated into firms' online strategies. A possible way to accomplish this are targeted incentives for customers to share their experiences, reducing negative biases and the impact of manipulated reviews.

Besides this customer-to-customer communication in communities, direct interaction between seller and buyer is facilitated by information technology (Bakos and Brynjolfsson 1993). As described before, customers can be addressed individually (Bailey 1998) to increase the seller's profits in many situations (Khan and Jain 2005; Varian 1989). Such individual targeting enables retailers to test reactions to price changes (Baker et al. 2001) at low cost and small scale and therefore allows online vendors to understand their customers better and make more informed pricing decisions. Besides price discriminating techniques, individual interaction can also be used to increase revenues by suggesting better fitting products, letting consumers individualize their (otherwise mass produced) products, such as t-shirts or even muesli or gathering ideas about new products, e.g., Dell IdeaStorm. The diffusion of niche products (Brynjolfsson et al. 2006) fitting the individual customers preferences leads to the long tail effect (Anderson 2008), where more and more different products are sold in smaller units. Thereby, the individual interactions on the internet transform customers to participants in the development and production process (Anderson 2008). Overall, the online channel increases possibilities for producers to directly connect with their customers without intermediate agents (Quelch and Klein 1996). Due to this shift, the channel length, defined as the number of firms through which products move from producer to customer, can be reduced in electronic channels (Sarkar et al. 1998) while a number of other intermediaries such as payment providers and information brokers become more important (Bakos 1998; Sarkar et al. 1998).

Lastly, online interactions and transactions are detached from the location of buyers and sellers. Accordingly, the placement of the product and the physical availability at certain locations are less relevant. Therefore, the scope of competition expands from a local level, to a national or even international level. The international scope depends on international trade restrictions. If possible without massive legal restrictions, international trade imposes a threat on international price discrimination that is common place today. One example are books that are sold for much lower prices in developing countries. When they can be bought from abroad via internet, the national prices will no longer be enforceable (Bailey 1998). The location independent interaction makes every product available to everybody participating in the electronic marketplace (Anderson 2008) and is thereby leading to a larger consideration set. Overall, the location independent interactions make markets more competitive (Bakos 1998; Brown and Goolsbee 2002) and thereby put pressure on prices and product offerings.

2.2.3 Cost Structures

Besides information transparency and changed ways of interaction, physical and electronic channels also imply different cost structures that influence transactions in these channels. The major differences occur in the areas of operation costs, shipping costs, and price setting costs.

Operating costs refer to the costs of maintaining a physical store, including rent and personnel costs. Both costs are lower online (Bakos 1998; Brown and Goolsbee 2002), leading to different pricing opportunities and giving a possible explanation for the lower prices on the internet described before (e.g., Ancarani and Shankar 2004; Brynjolfsson and Smith 2000; Lee and Gosain 2002). Because of the lower investment in the storefront, these lower costs also reduce entrance barriers (Brynjolfsson and Smith 2000) and thereby possibly increase competition online.

These lower costs for infrastructure and personnel on the seller side lead to an additional cost for online transactions that is added to the total price of the products: shipping costs. The structuration of these costs is a difficult decision since shipping costs, as part of the price, play an important role in purchase decisions (Smith and Brynjolfsson 2001). Shipping costs can be used to influence consumer decisions, e.g., by motivating additional purchases with lower shipping costs for every additional good or with free shipping above a certain threshold such as $30 at Amazon.com. Higher shipping costs can be used as a cross-subvention for offering lower product prices, while lower shipping costs can be exploited as a mean to attract customers. Shipping flat rates such as Amazon Prime (Amazon 2005) can furthermore be used as a method to tie consumers to a certain seller and eliminate this purchase barrier by convincing consumers to make a yearly investment for shipping. Overall, this cost is an important structural difference that needs to be incorporated when making channel decisions, especially because handling and shipping fees often nullify the advantages of lower online prices (Ancarani and Shankar 2004).

Prices in physical stores are set by changing a price tag at a certain time at a certain place. Changing a price triggers a processing cost named menu cost. These costs have been estimated to be $0.52 per price change, adding up to 0.7 % of the stores' revenues and 35.2 % of the net margins (Levy et al. 1997). Obviously that can lead to a reluctant changing policy and some kind of price stickiness, if the gain for a firm from a specific price change is smaller than the occurring menu costs (e.g., Ball and Romer 1990). Thereby, sellers are unable to react on small changes in demand and supply. In contrast, online prices can be changed at very low marginal costs. They can even be triggered automatically based on certain threshold values in stock, demand, the competitive situation or based on customer characteristics. In fact, prices are changed more often on the internet (Bailey 1998) and the mean price changes are smaller (Brynjolfsson and Smith 2000). These frequent adjustments have consequences for buyers and for competition. While they increase the complexity of evaluations and decisions (Oh and Lucas 2006), the ability to react on price changes also enforces competition and, in combination with information transparency, price coordination.

In summary, this section has described the fundamental differences between online and offline channels. The classification of these differences into information transparency, interactions and cost structures facilitates the understanding of the phenomena described in the following.

2.3 Choices Between Online and Offline Commerce

To gain a full overview of previously generated insights on consumer behavior between online and offline channels, a structured literature review was conducted. Details on the methodology of the literature review are given in Appendix A. The results are used to analyze the causes, motivations and consequences of consumers' channel choice, multichannel shoppers and channel switching behavior.

2.3.1 Channel Choice

The structured literature review revealed 25 studies that have investigated determinants of the trade-off between electronic and physical channels. Channel choice has been studied in surveys (e.g., Gupta et al. 2004a; Konuş et al. 2008; Verhagen and van Dolen 2009), using secondary data (Avery et al. 2012; Chintagunta et al. 2012; Forman et al. 2009; Janakiraman and Niraj 2011; Yang et al. 2013) or using experiments (Keen et al. 2004). To structure the knowledge about consumers' channel choice, the plentitude of factors is classified into four groups that emerged from the analysis: channel determinants, purchase specifics, external influences and individual differences.

While earlier research covered questions of online channel adoption (e.g., Datta 2011; Pavlou and Fygenson 2006), the research scope widened to identify factors to explain and predict the choice between mature channels (e.g., Gensler et al. 2012; Verhoef et al. 2007). Due to the complexity of consumer channel decisions (Balasubramanian et al. 2005), most papers identify influence or contingency factors of channel choice instead of being able to develop an all-encompassing model that explains preferences for certain channels. Balasubramanian et al. (2005) analyze the issue on a higher level and differentiate between product utility and process utility as major drivers of the channel evaluation process. Their influential conceptual model describes the comparison between the utility of different channels that finally leads to a channel decision. However, the economic value of the transaction is only one of several factors that can drive the channel utility.

A wide range of factors has been identified as channel determinants. Channel determinants describe variables that are based on characteristics or the configuration of the channels. Similar to choices between vendors, prices (e.g., Goolsbee 2001) and perceived service quality (e.g., Montoya-Weiss et al. 2003) are found to be important drivers of decisions to purchase online or offline. Unfortunately,

evidence is ambiguous with other studies not finding any impact of service on channel choice (Verhagen and van Dolen 2009). Further studies focused on general positive or negative channel characteristics that influence the choice. For instance, ease of use, purchase effort, and convenience determine channel choice mostly towards online channels (e.g., Chiang et al. 2006; Frambach et al. 2007), while risk, privacy, and security considerations are potential inhibitors of online channel usage (e.g., Pavlou and Fygenson 2006). Assortment can play an important role when people develop expectations of which products that can or cannot be found in offline or online channels (e.g., Verhagen and van Dolen 2009). The ways how products can be evaluated in different channels has been discussed in the previous section. Empirical studies support the thesis that product diagnosticity largely influences channel choices (e.g., Levin et al. 2005; Lim et al. 2012). Beyond that, single studies investigated the impact of payment options (Chiang et al. 2006), possibilities to negotiate (Verhoef et al. 2007), the enjoyment of the transactions (Verhoef et al. 2007), and the importance of personal contact (Chiang et al. 2006). In the context of this study, two channel determinants shall be emphasized: speed of purchase and post-purchase services. First, three studies find that the speed of the purchase is a major driver towards offline channels (Chiang et al. 2006; Noble et al. 2005; Verhoef et al. 2007). This negative characteristic of online channels may potentially be influenced by an immediate pickup multichannel integration service that is studied later. Second, the availability of post-purchase services is generally determined by the channel choice. Differences in these potentially demanded service offerings are influential for the channel preference (Chiang et al. 2006; Verhoef et al. 2007). Multichannel integration services such as "purchase online with service in store" can loosen this tie to one channel after the purchase phase and thereby influence the characteristics of the transaction channel.

Purchase specifics refer to differences between purchase situations. This includes types of purchases and the product characteristics. With regards to the first category, Chintagunta et al. (2012) find that the online transaction costs are relatively lower when the basket of purchased products is large and vice versa, saying the online channel is preferred for certain types of purchases. Regarding product categories, some papers simply test differences between different product types (Chiang et al. 2006; Levin et al. 2005) while others choose a level of abstraction such as high or low touch requirements (Levin et al. 2003) or size and perishability of the product (Chintagunta et al. 2012).

External influences can either stem from the marketing communication of the firm or from peers of the consumer. Three studies find an influence on marketing communication on channel choice and thereby confirm that channel choice is also prone to the effects of marketing (Ansari et al. 2008; Chintagunta et al. 2012; Valentini et al. 2011). The social influence was studied in terms of the three processes of attitude changes (compliance, identification or internalization) (Datta 2011), social contagion effects due to geographical proximity (Janakiraman and Niraj 2011) or social norms (Johnson 2008; Keen et al. 2004; Verhoef et al. 2007).

Individual differences incorporate demographics, geographic differences, and experiences and skills of the consumer. It is surprising that very little support has been found for the influence of demographics on channel choice. Single studies point towards the fact that males (Bendoly et al. 2005) and younger people (Ansari et al. 2008) might have a preference for online channels. In contrast, other studies explicitly state that demographics are irrelevant for the channel choice decision (Konuş et al. 2008). Several studies find an influence of the geographic proximity to a store to drive offline channel choice (Chintagunta et al. 2012; Forman et al. 2009; Janakiraman and Niraj 2011). Lastly, it is unquestioned that previous experiences with certain channels (Ansari et al. 2008; Valentini et al. 2011) as well as internet or IT skills (e.g., Frambach et al. 2007) make a difference for channel outcomes.

It is interesting that most of these studies focus on empirical insights without building upon specific theories to explain these effects (few exceptions are brand extension theory and expectation-confirmation theory (Yang et al. 2013) and theory of planned behavior (Pavlou and Fygenson 2006)) or use a mixture of many different theoretical perspectives (Lim et al. 2012). Accordingly, there seems to be a lack of theoretical lenses to understand consumers' channel choice. While different many factors have been empirically validated, the explanations for these findings are barely grounded on previously established coherences and theories. A full overview on the determinants of customer's purchase channel choice is given in Table 2.2.

2.3.2 Multichannel Shoppers

Moving away from single purchase decisions, a second research stream investigates channel decisions on an aggregate level. Thereby, these papers examine a specific type of consumer: multichannel shoppers, i.e., consumers that use different channels for different purchases. Two major research questions have been addressed with regards to multichannel shoppers: who are the consumers that use different types of channels and how do they differ in terms of their shopping behavior apart from channel choice.

Several attempts have been made to classify shopper types. Keen et al. (2004) find one group of purchasers that have a very strong preference for a specific channel, while other types of buyers are driven by product, price, or experience and thereby would move between channels. Dholakia et al. (2005) study a multichannel retailer and find that the channel of entry influences multichannel shopping behavior since most multichannel shoppers were acquired via the online channel. Konuş et al. (2008) identify that customers who are enthusiastic multichannel shoppers are characterized by innovativeness, shopping enjoyment, and price consciousness. Unfortunately, they do not find stable clusters; instead the characteristics differ widely between product categories (Konuş et al. 2008). Due to the many influence factors that have been identified for channel choice, it is not surprising that there is no simple classification for multichannel shoppers either.

Table 2.2 General determinants of customer's purchase channel choice

	Variables	References
Channel determinants	Price	Chiang et al. (2006), Forman et al. (2009), Goolsbee (2001), Keen et al. (2004), Verhoef et al. (2007)
	Service quality	Chiang et al. (2006), Kollmann et al. (2012), Montoya-Weiss et al. (2003), Verhoef et al. (2007), Yang et al. (2013)
	Ease of use, purchase effort, convenience	Chiang et al. (2006), Frambach et al. (2007), Gensler et al. (2012), Gupta et al. (2004a), Keen et al. (2004), Kollmann et al. (2012), Montoya-Weiss et al. (2003), Pavlou and Fygenson (2006), Verhoef et al. (2007)
	Product diagnosticity	Chiang et al. (2006), Gupta et al. (2004a), Levin et al. (2005), Lim et al. (2012), Pavlou and Fygenson (2006)
	Assortment	Chiang et al. (2006), Verhagen and van Dolen (2009), Verhoef et al. (2007)
	Enjoyment	Verhoef et al. (2007)
	Risk/privacy/security	Gensler et al. (2012), Gupta et al. (2004a), Kollmann et al. (2012), Lim et al. (2012) Montoya-Weiss et al. (2003), Pavlou and Fygenson (2006), Verhoef et al. (2007)
	Payment options	Chiang et al. (2006)
	Speed of transaction	Chiang et al. (2006), Noble et al. (2005), Verhoef et al. (2007)
	Negotiation	Verhoef et al. (2007)
	Social experience	Chiang et al. (2006)
	Post-purchase services	Chiang et al. (2006), Verhoef et al. (2007)
Purchase specifics	Product categories	Chiang et al. (2006), Chintagunta et al. (2012), Levin et al. (2003, 2005)
	Purchase size	Chintagunta et al. (2012)
External influences	Social influence/ subjective norm	Datta (2011), Janakiraman and Niraj (2011), Johnson (2008), Keen et al. (2004), Verhoef et al. (2007)
	Marketing communication	Ansari et al. (2008), Chintagunta et al. (2012), Valentini et al. (2011)
Individual differences	Demographics	Ansari et al. (2008), Bendoly et al. (2005)
	Geographics	Chintagunta et al. (2012), Forman et al. (2009), Janakiraman and Niraj (2011)
	IT and Internet use/ skills	Frambach et al. (2007), Johnson (2008), Levin et al. (2005), Montoya-Weiss et al. (2003), Pavlou and Fygenson (2006)
	Previous experience	Ansari et al. (2008), Valentini et al. (2011)

With regards to the value of multichannel shoppers, early empirical studies suggest that multichannel shoppers are generally more valuable than consumers that stick to one channel in terms of revenue (Kumar and Venkatesan 2005; Venkatesan et al. 2007) and retention (Venkatesan et al. 2007). A recent study by Kushwaha and Shankar (2013) challenges this general belief and shows that multichannel shoppers are the most valuable customer segment only for products with hedonic properties while consumer segments that are focused on only one channel create more revenue in all other cases.

2.3.3 Channel Switching

While the studies on multichannel shoppers investigate the switching between channels for different purchases, customers can also use different channels within one purchase. Often information is searched in one channel while another one is used for the actual purchase, a behavioral pattern referred to as the research shopper phenomenon (Verhoef et al. 2007). Customers that use several channels of one vendor during the purchase are characterized by higher satisfaction and higher loyalty (Wallace et al. 2004). This view is supported by Pauwels et al. (2011) who find that online information can increase purchases in the physical store of the same vendor. However, the switch between channels often also includes a switch of the vendor. This behavior is called cross-channel free riding (Chiu et al. 2011). It has severe consequences for the firm that provides the information since consumers use their services but generate no revenues. Chiu et al. (2011) identify multichannel efficacy and the within-firm lock-in as major drivers and inhibitors of this behavior. Therefore, customers that are used to moving between channels may exhibit this behavior to a greater extent. Verhoef et al. (2007) identify three mechanisms that drive research shopping: attribute-based decision making, cross-channel synergies and lack of channel lock-in. The attribute based decision making refers to channel attributes that lead to advantages of one or the other channel (cp. Sect. 2.3.1 for attributes wrt. channel choice). Since consumers' requirements and preferences differ widely between the information and the purchase stage, it is not unlikely that different channels' attributes are preferred for different steps of the purchase (Frambach et al. 2007). Cross-channel synergies occur if searching in one channel improves the purchase in the other channel. For instance, an effective search in one channel may enable better decisions in the other. Lock-in refers to issues that occur with a channel switch. For instance, a product that was found online might be difficult to locate in a store, thereby inhibiting the channel switch (Verhoef et al. 2007). Without calling it lock-in, other studies provide support for these spillover effects between the different stages of the purchase (Gensler et al. 2012; Pavlou and Fygenson 2006). Whether a channel switch occurs is also conditional on the type of information retrieved online. Finding more price information online decreases the probability of a channel switch while the retrieval of product information increases the probability of switching to an offline vendor (Kuruzovich et al. 2008).

To conclude, there is a multitude of factors that have been found to be influential for within and between purchase channel choices. As anticipated by Balasubramanian et al. (2005), it is difficult or impossible to develop an integrated model of all the different influence factors of these complex decisions. However, the structured analysis of previous knowledge about consumer behavior between online and offline channels offers an important overview that will be used over the course of this study.

2.4 Multichannel Integration

The transformation of classical retailers into multichannel retailers involves a lot of opportunities and challenges in integrating the different channels. Three types of multichannel integration can be distinguished: coordination, information and services. As elucidated in the following, these activities build upon each other. The first group of activities includes organizational and supply chain issues with regards to coordination. These integration activities focus on dealing with the increased complexity of managing several channels, trying to increase the efficiency of the operations and to exploit synergies between the two channels. While this type of multichannel integration efforts is invisible to the customer, the other two classes of integration efforts are visible to the customer or directly affect the customer's interaction with the firm. The second group of activities enables or coordinates the flow of information between the different channels, the firm and the consumers. The third group enhances the purchase experience of the customer by adding benefits of the offline channel to an online transaction and vice versa. Accordingly, the experience of one channel is integrated with the features of another channel. The three types of multichannel integration activities are depicted in Fig. 2.1 and described in detail in the subsequent paragraphs. As mentioned before, the type of integration with the highest active customer involvement, multichannel integration services, is of primary interest for this study.

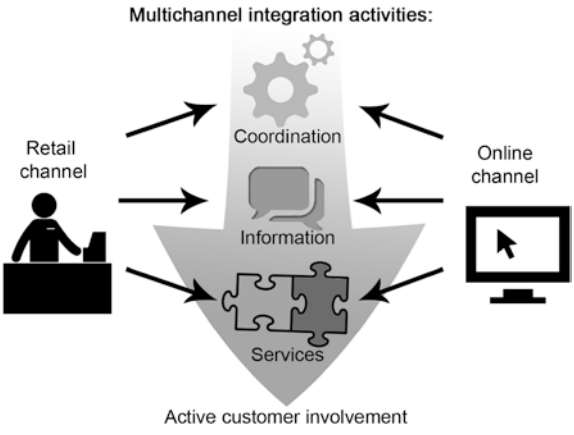


Fig. 2.1 A classification of multichannel integration activities

While a certain level of coordination is necessary to realize information and service integration, these coordination efforts are hidden from the consumer. Major issues in this area relate to inventory systems, warehousing, marketing and pricing. Keeping track of the inventory is a major challenge even for single channel retailers, where inventory inaccuracy is a ubiquitous phenomenon (DeHoratius and Raman 2008). However, when different channels try to make use of the same warehouse or even rely on the inventories of the other channel (for instance for pickup services), the complexity and importance of these activities increases even further. Stock-outs in retail stores have been shown to produce serious costs (Anderson et al. 2006; Fitzsimons 2000), but must not occur in an uncontrolled way when multichannel information or services are offered. While the coordination between a manufacturer's direct online presence and the traditional retail channel have been investigated by a series of studies (Lee et al. 2013; Yan and Pei 2011), this issue has not been addressed for multichannel retailers. Accordingly, a reliable estimation of the cost of these integration activities is missing.

More research has been done with regards to multichannel marketing and customer management, where a series of approaches were developed to address these issues (Kumar 2010; Thomas and Sullivan 2005; Venkatesan and Kumar 2004). All of these approaches require firms to integrate their customer data to be able to analyze it jointly and address the right customers through the right communication channel. Very little research has been done on multichannel pricing. While early studies indicate that multichannel retailers are pricing uniformly between channels (Ancarani and Shankar 2004; Pan et al. 2002a; Tang and Xing 2001), a more recent study by Wolk and Ebling (2010) finds that some multichannel retailers apply price differentiation. This indicates that retailers are experimenting with price discrimination opportunities between channels, but the question whether prices should be different or need to be identical between channels has not been resolved yet.

When trying to estimate the burden of these additional efforts, one has to consider that integration of the channels on a coordination level can also help to generate synergies in terms of labor, for instance through centralized administration or inventory (Steinfield et al. 2002), and more effective communication with the customer (Thomas and Sullivan 2005). However, the main advantages of multichannel integration should lie in the opportunity to offer an advanced experience to the customer.

A series of studies has addressed the information flow between channels, that can either be controlled by the company or not. One research stream investigates spillover effects that occur when multiple channels are maintained simultaneously. The transfer of information and perceptions from the offline to the online channel has been studied for trust (Badrinarayanan et al. 2012; Bock et al. 2012; Doong et al. 2011), satisfaction (van Birgelen et al. 2006) and brand image (Kwon and Lennon 2009; Verhagen and van Dolen 2009). There is strong evidence that trust is transferred from the offline to the online channel, especially when product uncertainty is high (Bock et al. 2012). Others assert that this only holds for certain cultural settings (Badrinarayanan et al. 2012). Doong et al. (2011) add that offline

brand loyalty also influences online trust. Opposite effects have been identified by Falk et al. (2007) in the banking industry who show that high satisfaction with the offline channel can also lead to dissynergies with the online channel in terms of reduced usefulness and increased risk perceptions. Moving away from unidirectional influences, van Birgelen et al. (2006) identify interaction effects between the performance satisfaction levels of traditional and technology-enabled channels. Bidirectional effects have also been identified for the brand image, where previous brand image of one channel shapes the brand image of the other (Kwon and Lennon 2009). While it is important to be aware how perceptions of one channel can shape attitudes towards the other, these information flows can hardly be influenced by the multichannel retailers.

Other researchers have addressed the flow of information between channels that is enabled by the firm (Bendoly et al. 2005). This information-based integration includes the sharing of promotion, product, price and transaction information between channels (Oh and Teo 2010). For instance, the local stores can advertise their websites and have employees that are knowledgeable about the online offering. On the other hand, online stores can advertise the physical stores, offer non-product information such as driving directions and opening hours, make lists of products offered at specific stores available or provide information on in-store product availability on their websites. Information integration was shown to be helpful in cases of stockouts, because it significantly reduces the likelihood of switching to an alternative firm (Bendoly et al. 2005). Information integration was the first step of multichannel integration and very popular in early stages of this trend (Steinfield et al. 2005).

Besides the information integration, Bendoly et al. (2005) also discuss types of multichannel integration services. These can either be online services that enhance transactions initiated in store or offline services for online transactions. Stores can be enhanced by web kiosks where interested consumers can make online purchases. This integrated service is again especially interesting in the case of stockouts to prevent the loss of a customer (Bendoly et al. 2005). Manifold options exist to offer offline services for online transactions. These services include the service offerings in store (Oh and Teo 2010) as well as pickup and return in store (Bendoly et al. 2005).

Many researchers have emphasized the importance of such integrated services. Prasarnphanich and Gillen (2003) provide a long list of opportunities that may maximize the value for businesses and customers through an integration of online and offline capabilities. Sousa and Voss (2006) argue that a re-conceptualization of service quality is necessary when studying multichannel retailing. Thereby, they differentiate between virtual, physical, and integration quality. They emphasize the importance of integration quality which includes the possibility to choose between alternative channels to accomplish certain tasks and the consistency of content and processes across channels. Others conceptualize that multichannel integration services may add value for customers (Saeed et al. 2003), however, determining actual valuations of these services is a major challenge (Berry et al. 2010).

Few researchers have studied outcomes of multichannel integration services (Table 2.3). Three studies have investigated several integrated services at once

Table 2.3 Previous studies investigating outcomes of multichannel integration services

Authors	Type and implementation of MC integration services	Findings with regards to multichannel integration services
Bendoly et al. (2005)	Perceptions of possibilities of returns and pickup in store	Awareness of integration has no influence on within-retailer channel choice
Oh and Teo (2010)	Perceptions of integrated order fulfillment and integrated customer service	Perception of integration increases general service convenience and eventually the value of purchasing at this firm
Oh et al. (2012)	Retail channel integration capabilities index	Integration capabilities are related to higher exploitative and explorative competencies and eventually firm performance
Swaid and Wigand (2012)	Pickup in store	Integrated pickup is an important determinant of overall service quality

(Bendoly et al. 2005; Oh et al. 2012; Oh and Teo 2010), while one study focuses on pickup in store (Swaid and Wigand 2012). Bendoly et al. (2005) were the first to empirically address outcomes of multichannel integration services. In their study, they ask customers of three multichannel retailers about their perceptions of the level of integration that is offered by the retailer. Using this measure of awareness of channel integration, they try to explain previous channel choices of these customers. Unfortunately, all customers are evaluating the same service offering. Therefore, the variance in the evaluation must be attributed to the interest or the informedness of the customers about the service integration offering and not the service integration levels itself. Consequently, the study cannot assess whether the customers used, valued or even recognized the multichannel integration services during their past purchase. This major limitation could be overcome by an experimental or quasi experimental study. Their empirical setting furthermore did not allow the authors to differentiate between specific service options. Instead, they employ generic measures of information integration and physical integration. The paper makes an important contribution in its differentiation of types of multichannel integration. However, the limitations described above make it difficult to attribute the insignificant relationship between the perceptions of multichannel integration service and previous channel choice to the service offerings.

Oh and Teo (2010) investigate the impact of four types of information integration and two types of service integration. They find that those integration activities either influence information quality or service convenience, which finally lead to a higher value of purchasing at the firm. Similar to the study of Bendoly et al. (2005), they measure perceived integration and thereby face the same limitations that have been outlined before. Furthermore, the study does not differentiate between the directions of the integration. Instead, formative constructs that do not refer to specific services or channels are constructed. For instance, the integration concept of "integrated order fulfillment" is measured by the questions "The gift coupons issued by the store can be redeemed either on-line or off-line." (Oh and Teo 2010, p. 47) and "The physical store allows me to self-collect my on-line purchase" (Oh and Teo 2010, p. 47). This mixture of outcomes makes it

difficult to attribute any effects to specific integration activities. Lastly, information quality, service convenience or purchase value do not refer to any specific channel. This imprecision in the conceptualization and measurement of both, the integration services and the outcome variables, makes it challenging to derive meaning from the empirical results of the study.

In another study, Oh et al. (2012) use a survey among companies to study the impact of multichannel integration on explorative and exploitative competencies and eventually firm performance. An adjusted version of the six formative constructs (Oh and Teo 2010) is combined to an overall index of retail channel integration capabilities. Therefore, the authors do not attempt to study the influence of individual integration services, but instead investigate the outcomes of the overall integration capabilities on a firm level. Their finding that an integration of the online and the offline channel increases firm performance should motivate other researchers to dig deeper into the behavioral consequences of individual integration services.

Finally, Swaid and Wigand (2012) extend the service quality model (Parasuraman et al. 1988) by the dimension of in-store pickups and find that a pickup option can be an important component of service quality.

Summing up, research on the outcomes of multichannel integration services is in its early stages. Five major limitations or gaps stand out and should be addressed to gain a more sophisticated understanding of the issue: First, previous studies measure perceived integration instead of actual differences between channel setups. These measures make it difficult (or impossible) to attribute effects to the actual integration services. Second, the conceptualization of multichannel integration services in the empirical studies varies widely from their actual design. Different types of service integration have been studied on an aggregated level without being specific about their properties, their differences or even their reference frame. Third, the understanding of the impact of integration services on important outcome variables such as choices or willingness to pay is underdeveloped, since no study investigates the causal relationship between integration services and these variables. Fourth, no explanation for the impact of different types of service integration has been given. However, such an understanding of the reasons why customers value certain types of integrated services is crucial for advancing the integration of online and offline channels. Fifth, previous research gives no indication about either individual or purchase specific influences on the appeal of multichannel integration services. However, the identification of such covariates is important to be able to channel efforts and investments.

To enhance the theoretical insights with today's best practices, the largest multichannel retailers in the US and in Germany were investigated with regards to their current multichannel service integration offerings. While early studies suggest, that multichannel service integration was rather limited (Steinfield et al. 2005), there is a broad diversity of multichannel integration service implementations among these retailers. An overview on these service offerings is given in Table 2.4.

Although the increased implementation of multichannel integration services emphasizes the pressure that multichannel retailer feel to differentiate themselves and make use of their infrastructure, the inconsistent implementation indicates

Table 2.4 Multichannel integration services offered by the largest multichannel retailers in the United States and in Germany

Retailer	Country	Internet retailing company share 2013	Immediate pickup	Delayed pickup	Service in store	Returns in store
Walmart	US	2.6	X[a]			X
BestBuy	US	1.7		X	X	X
Macy's	US	1.6		X		X
Target	US	1.3	X[a]			(X)[b, e]
Sears	US	1.0	X[a]		(X)[f]	X
Otto	DE	7.5				(X)[d]
Notebooksbilliger	DE	2.0		X	X	(X)[d]
Conrad	DE	1.9	X[a]		X	X
Cyberport	DE	1.9		X	X	X
Weltbild	DE	1.5		(X)[c]		
Bonprix	DE	1.5				(X)[d]
C&A	DE	1.1		X		(X)[d]
Mediamarkt	DE	1.0	X[a]		X	X

Source Own research as of August 2014; revenues from the Passport Internet Retailing reports (Euromonitor International 2014a, b)
Note Selection criteria: Internet retailing share of at least 1 %. Direct channels of manufacturers have been excluded (e.g., Apple, Dell, Tchibo)
[a]For selected products available in store
[b]Selected items
[c]Free shipping to store
[d]Store ships return
[e]Online registration of the return necessary
[f]Service via phone, then service appointment (same as for in-store purchases)

that the effectiveness of the different types of multichannel integration services is not fully understood by today's major multichannel retailers. Thus, the practical lack of established insights corresponds to the very limited body of knowledge on this topic that exists in academic research. Based on this analysis of theory and practice, the subsequent studies focus on the analysis of the integration of offline capabilities with online transactions, since these services aim at facilitating the competition with pure online retailers. More specifically, the investigated integration services include immediate and delayed pickup, service in store, and returns in store as derived from the practical and theoretical review.

2.5 Summary

This chapter provided a comprehensive overview of previous literature on offline, online and multichannel commerce. Three major outcomes shall be highlighted. First, offline and online channel differ structurally for a large amount of reasons

that can be classified into the categories information transparency, interactions and cost structures. Second, these differences led to series of studies on cross-channel consumer behavior. These studies result in a huge amount of influence factors that have been identified to drive the preference for one or the other channel and that shape multichannel behavior. Third, previous studies have focused on studying multichannel issues as two competing alternatives instead of investigating the possible interplay between the two. Major limitations of previous studies on multichannel integration services have been identified that call for further investigations.

Chapter 3
Perception and Valuation of Multichannel Integration Services

3.1 Introduction

Pure online retailers put pressure on multichannel retailers by offering lower prices. Multichannel retailers can hardly match these prices due to their liabilities of expensive infrastructures, personnel and complex processes. However, this infrastructure could offer a unique possibility to multichannel retailers to differentiate themselves from pure online competitors by extending their online business by multichannel integration services. As outlined in the previous chapter, the appeal and the consequences of multichannel integration services are not well understood by researchers and practice. Therefore, this chapter addresses two questions:

- Which types of multichannel integration services influence consumers' channel preferences and their willingness to pay?
- How can the differences in preferences for multichannel integration services be explained?

Accordingly, the first part of this chapter entails a theoretical discussion of the different types of multichannel integration services and builds upon established frameworks and coherences from other contexts to derive hypotheses on the perception of each individual multichannel integration service. These perceptions are used to explain differences in consumer behavior in the context of multichannel integration services. Subsequently, a discussion on the valuation of multichannel integration services highlights why consumers may be willing to pay for these additional service levels. The second part of the chapter challenges these hypotheses using a sample of 348 online users in four experimental conditions. The design and execution of the empirical study are rigorously documented. Then, the results are analyzed using structural equation modeling and group comparisons. Finally, the findings are critically reflected in the light of previous research including a discussion of methodological limitations and further research opportunities.

M. Trenz, *Multichannel Commerce*, Progress in IS,
DOI 10.1007/978-3-319-16115-0_3

3.2 Theoretical Foundations

This section describes the theoretical foundations necessary to understand the perception and valuation of multichannel integration services. In the first part, the different types of multichannel integration services are structurally analyzed to identify their impact on consumer perceptions. Then, the influence of these perceptions on consumer choices is motivated from previous research. The second part addresses the question whether multichannel integration services create additional value to consumers that is expressed in a higher willingness to pay.

3.2.1 Perception of Multichannel Integration Services

The purchase process can be divided into three generic stages: pre-purchase, purchase and post-purchase phase (Gensler et al. 2012). In the pre-purchase stage, customers inform themselves about the product. The actual economic transaction takes place in the purchase stage. The post-purchase stage covers after-sales activities such as assistance with the product, service and repairs as well as product returns. As described before, consumers switch between channels during these stages (Verhoef et al. 2007). For instance, a consumer might inform himself about a product on the internet and visit a store to make the actual purchase, or vice versa. This switching between channels often also involves a switch to a different vendor (Chiu et al. 2011), since the pre-purchase stage entails no obligations. However, the choice of vendor and channel in the post-purchase phase is restricted by the decision made in the purchase stage. Post-purchase activities take place with the vendor that was used for the transaction. Whether different channels can be used for these activities depends on the level of multichannel integration that vendor offers. Therefore, preferences for the purchase and the post-purchase stage are both expressed in the decision for the vendor in the purchase stage. Accordingly, it is sufficient to study choices at the purchase phase when investigating multichannel integration services that alter the purchase and the post-purchase stage experience. An overview on the general purchase process is given in Fig. 3.1.

The valuation of different service options can be explained through varied convenience and risk perceptions (Keh and Pang 2010). These two classes of perceptions reflect customers' positive and negative reactions to a specific alternative

Fig. 3.1 The general purchase process

and will be used to categorize perceptions induced by multichannel integration services.

Service convenience is defined as the customers' time and effort in buying or using a service (Seiders et al. 2007). Berry et al. (2002) conceptualize service convenience as a five dimensional construct consisting of decision convenience, access convenience, benefit convenience, transaction convenience and post-benefit convenience. *Decision convenience* refers to the customers' time and effort required to decide which supplier to use and what specific product or service to buy (Berry et al. 2002). While being more relevant for pure services where consumers can decide to purchase or self-perform (Berry et al. 2002), decision convenience for purchases can be increased in electronic channels, where information about the different vendors and products is readily available (e.g., Trenz and Berger 2013). *Access convenience* is defined as the time and effort to initiate the channel use. It refers to the store's location and the product's location in the store (Berry et al. 2002). While it can be more time consuming and challenging for some customers to navigate through an online store, others might find the effort to drive to a store more demanding. *Benefit convenience* is characterized by the time and effort of experiencing the core benefits of the offer (Seiders et al. 2007). Possible differences in benefit convenience between the channels might lie in the possibilities to touch the product in store (Ofek et al. 2011) or in the opportunities to rely on consumer reviews online (Trenz and Berger 2013). *Transaction convenience* refers to the time and effort of finalizing the transaction (Seiders et al. 2007). This type of convenience is formed when consumers have made the decision to purchase and have reached the site (Berry et al. 2002). It describes the time and effort required before customers can experience the good they want to purchase. An opportunity to pickup the product immediately would reduce the time until the transaction is completed and the purchase can be consumed. *Post-benefit convenience* refers to the time and effort costs associated with reestablishing subsequent contact with the firm (Seiders et al. 2007). This type of convenience refers to the possible need for product repairs, maintenance or returns (Berry et al. 2002). Depending on the type of the inquiry, different paths to resolve possible issues (e.g., points of contact) can be more or less convenient for the customer.

It becomes apparent, that decision, access and benefit convenience refer to the steps that precede the actual purchase and therefore relate to the pre-purchase stage. Transaction convenience is evaluated during the purchase stage, while post-benefit convenience is influenced by the offerings in the post-purchase stage. Since multichannel integration services only influence the purchase and the post-purchase stage (as explained before), transaction and post-benefit convenience are the two dimensions of convenience that can be potentially influenced by variances in the level of integration.

The perception of risk can be described as a function of adverse consequences and uncertainty (Bauer 1960). Adverse consequences can thereby be described as "the costs […] involved in attempting to achieve a particular set of buying goals" (Cox and Rich 1964, p. 33) or as the "importance of loss" (Taylor 1974, p. 57). Uncertainty describes the consumers' assessment of the probability of the adverse

consequences (Dowling 1986). Many different conceptualizations of perceived risk have been used in previous studies in electronic commerce (Crespo et al. 2009; Featherman and Pavlou 2003; Glover and Benbasat 2011; Spiekermann and Paraschiv 2002). In the context of this study, a distinction is made between performance risk and psychological risk (Keh and Pang 2010) as key components of perceived risk (Mitchell and Greatorex 1993; Stone and Grønhaug 1993). *Performance risk* is related to whether the shop can perform as expected and thus satisfy customer needs (Keh and Pang 2010). The notion of performance risk is in line with the notion of the "failure to gain product benefit risk" in e-commerce research (Glover and Benbasat 2011). *Psychological risk* refers to the possible loss of psychological well-being due to transacting with this shop (Keh and Pang 2010). In summary, performance risk refers to the uncertainty that something goes wrong with the transaction, meaning that an actual loss occurs, while psychological risk can be described by "not feeling good", e.g., because of potential trouble when making the transaction with a certain retailer in a certain channel. Psychological risk and performance risk can refer to the purchase phase (e.g., delivery) as well as the post-purchase phase (e.g., services, returns).

An overview on the relationships between the different convenience and risk perceptions is given in Fig. 3.2.

If multichannel integration services are important to consumers, they should alter the perception of the transaction in a positive way. In the following, the three multichannel integration characteristics, namely the opportunity to pick up in store, immediacy of the pickup option as well as service and returns in store are analyzed with respect to their role in increasing the conveniences or reducing the risks of online transactions.

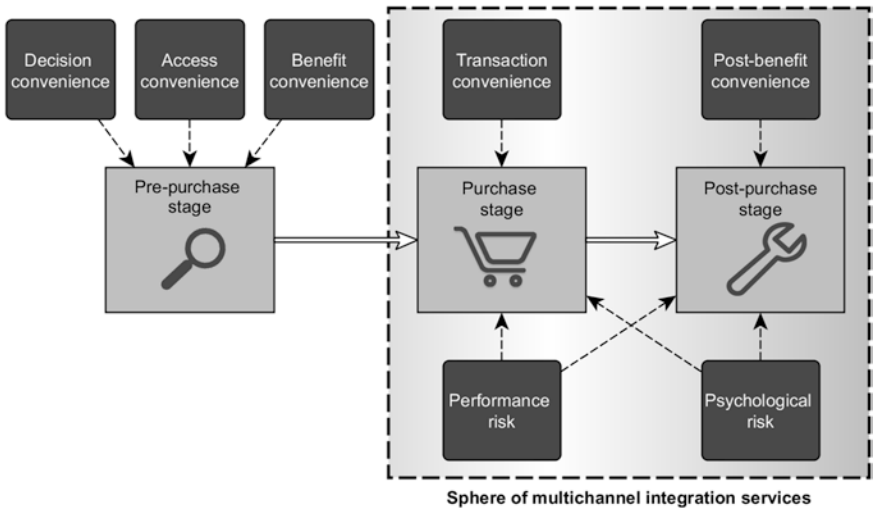


Fig. 3.2 The relationship between the purchase process and consumer perceptions

The temporal and physical separation between purchase and gratification is a major issue for online retailers. The most frequently cited countermeasure to the perceived risk of dealing with a virtual counterpart is building trust (Bhattacherjee 2002; Kim et al. 2008; Yoon 2002). However, building trust is challenging. Possible ways to build online trust include intermediaries (Bakos 1998), money back guarantees (Lee et al. 2005) or well-established brands (Bart et al. 2005). A very effective mean to mitigate uncertainties in transactions is personal contact (Grabner-Kräuter and Kaluscha 2003). While personal contact is not provided in pure online transactions, the opportunity to pick the product up in store in person instead of having it delivered holds out the prospect of a contact person. In this encounter, consumers can make sure that they receive the product and everything works as planned (performance risk). The availability of a pickup option furthermore sends a positive signal to the consumer (Pavlou et al. 2007) and should thereby reduce the worries or bad feelings when transacting with the vendor (psychological risk). Therefore, it is suggested that:

H1a Having an option to pick up in store decreases customers' performance risk online.

H1b Having an option to pick up in store decreases customers' psychological risk online.

If the pickup is offered immediately, it has obvious implications on transaction convenience. Since consumers do not have to wait for the delivery, the time between the transaction and the consumption of the product is reduced. Accordingly, it can be deduced that:

H2 Having an option for immediate pickup increases customers' perceived transaction convenience for an online transaction.

While the pickup option refers to the purchase stage, service and returns in store influence the post-purchase stage. In the same way as the pickup in store option does during the purchase stage, the option to receive service and returns in store offers an option for personal contact which can reduce the consumers' uncertainty (Grabner-Kräuter and Kaluscha 2003). Therefore, many worries can be reduced when a social person is present (Gefen and Straub 2004). Beyond that, consumers receive or expect to receive reassurances at the store that reduce their risk perception (Mitchell and Boustani 1994) (psychological risk). This includes that questions can be resolved in a dialogue with the product at hand (instead of via phone). Repairs can be commissioned or even executed with the issue being understood by the vendor (instead of written descriptions). Returns can be handled directly with an immediate assurance that it will be accepted (instead of sending it in). Since issues can be discussed and an individual is personally accessible for this case, the perceived likelihood of failure in the post-purchase phase is reduced through these multichannel integration services (performance risk). Furthermore, in a personal exchange with the vendor, possible problems with the product can be identified immediately and possible resolved without delays. Additionally, returns can be processed immediately, without having to wait for the shipping and

processing of the order (post-benefit convenience). These considerations lead to the hypotheses that:

H3a Having an option to complete service and returns in store increases customers' perceived post-benefit convenience for an online transaction.
H3b Having an option to complete service and returns in store decreases customers' performance risk online.
H3c Having an option to complete service and returns in store decreases customers' psychological risk online.

For consumer perceptions to be relevant for businesses, they should have an influence on consumer decision making. The impact of convenience on important market outcomes such as customers' evaluation and purchase behavior has been confirmed in a series of studies, including the intentions to transact (Seiders et al. 2005, 2007; Szymanski and Hise 2000), store choice (Messinger and Narasimhan 1997) and switching between providers (Keaveney 1995). Therefore, in line with this strong empirical evidence, it is postulated that:

H4a Online transaction convenience increases the probability of choosing the channel for the purchase.
H4b Online post-benefit convenience increases the probability of choosing the channel for the purchase.

Perceived risk has been identified early as a major inhibitor of transactions (Cox and Rich 1964). As uncertain or ambiguous situations are perceived as threatening, consumers try to avoid such situations (Hofstede 1980). This is in line with the concept of perceived behavioral control described in the theory of planned behavior (Ajzen 1985, 1991) that can be exploited to develop a different perspective on why perceived risk influences behavioral intentions (Pavlou 2003). Consumers are more likely to transact, if their uncertainties are reduced, since they gain control. Several studies provide empirical evidence for this negative relationship between perceived risk and the intention to transact (Jarvenpaa et al. 2000; Pavlou 2003) in the context of online retailing. Accordingly, it is hypothesized that:

H4c Online performance risk decreases the probability of choosing the channel for the purchase.
H4d Online psychological risk decreases the probability of choosing the channel for the purchase.

An illustration of the hypothesized relationships is given in Fig. 3.3.

3.2.2 Valuation of Multichannel Integration Services

By influencing choices, multichannel integration services already create a competitive advantage for these retailers. If more consumers choose to transact with

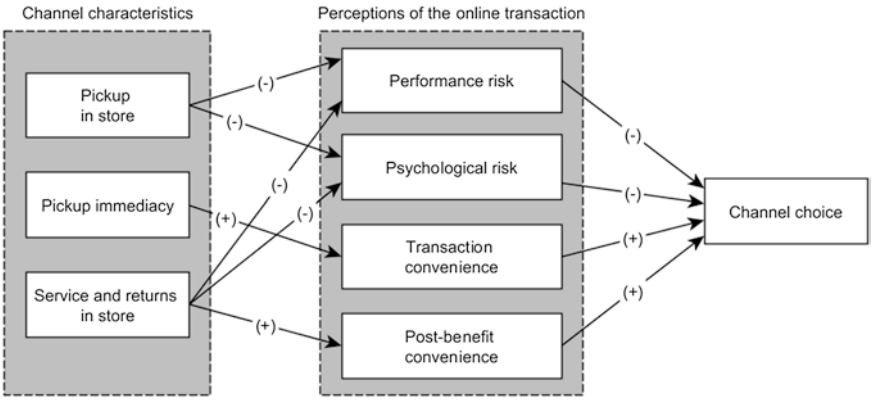


Fig. 3.3 Illustration of the conceptual model

the retailer, their overall revenues increase. However, as described before, the issues of multichannel retailers go further than that. Their costly infrastructure prevents them from being able to compete via price. Therefore, some postulate the hypothesis that it might be possible to leverage these assets by offering multichannel integration services which pure play retailers cannot match. If services such as in-store pickup or in-store services and returns are valued by the customer, they might offer an opportunity for multichannel retailers to escape the online price pressure. According to utility theory, a higher utility should lead to an increased value of the good or transaction. This is in line with findings that a higher service level of multichannel retailers increases the prices charged (Pan et al. 2002a) and with previous studies on retail formats that find that consumers pay higher prices for services (Messinger and Narasimhan 1997). Furthermore, preventing potential losses represents a large value to the customers that they are willing to pay for (Kahneman and Tversky 1979).

Besides utility and risk considerations, multichannel integration services increase the similarity between the transactions online and offline because they comprise more comparable service levels. Accordingly, offline prices are more likely to be used as a reference point for the online channel's offerings (Kahneman et al. 1986). Furthermore, the services differentiate the multichannel retailer's offer from the one by pure play retailers, making their online price a less useful reference point. The services furthermore imply additional costs for the company that would justify a higher price. According to dual entitlement theory, both effects lead to an increased reference price being used by the customer to evaluate the offer. Consequently, the need to compete via price is reduced and the chance to realize a price premium is increased.

Based on the previous studies on channel choice, service valuations and price perceptions, it is suggested that multichannel integration creates additional utility for consumers and therefore:

H5 An increased level of channel integration realized by adding (a) pickup, (b) pickup immediacy, (c) service and returns in store increases the consumers' willingness to pay compared to a purchase without these service options.

In the following, these hypotheses are empirically tested in an experimental study.

3.3 Empirical Study

In this section, the empirical test of the proposed relationships is presented. A quantitative study with four experimental groups was designed to assess the theoretical coherences. This section begins with a description of the measurement instrument development. Then, the data collection process is depicted. Subsequently, the data evaluation methods are discussed and the results of the study are presented, followed by a discussion of the findings and a reflection of the boundaries of the study.

3.3.1 Measurement Instrument Development

The development of the measurement instrument is divided into three parts. First, the reasons for the product selection and the design of the manipulation are described. Second, the development process of the measurement scales is presented. The last part then gives an overview of the resulting measurement instrument.

3.3.1.1 Product Selection and Manipulation

The requirements for the product selection were manifold to make the study as powerful as possible. First, the purchase should be a planned (versus impulsive) purchase. Many influences on impulsive purchase behavior such as norms (Rook and Fisher 1995), culture (Kacen and Lee 2002), gender (Coley and Burgess 2003) and resources (Vohs and Faber 2007) have been identified. However, the aim of this study is to measure differences in the perception of different channel options. While impulsive purchase decisions are characterized as yes/no decisions (Vohs and Faber 2007), a study of channel perceptions requires participants to compare certain characteristics of the channel cognitively. Consumers are more likely to exhibit this behavior for planned purchases that are of higher importance to them. Therefore, a product outside of the lowest price range with rather long operating life was selected. Second, most multichannel integration services require consumers to move the product in a certain way. An extremely large product would

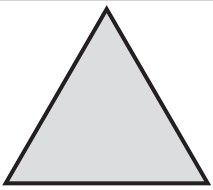
be difficult to move for some participants (e.g., cyclists, elderly…) and therefore interfere with the channel preferences in a way that is hardly controllable. Therefore, the package of the product must have a size that can be carried by anyone (in contrast to for instance a flat screen TV). Third, it was important that the product was of potential interest for every demographic group to ensure involvement with the task. Fourth, it was crucial that the product uncertainty was not strongly correlated with the IT and internet skills of the participants. For instance, a consumer with a low product uncertainty (for e.g. a router) could have less need for support and services. At the same time, her or his internet skills would also generally increase the likelihood of this consumer to purchase online. If this relationship is systematically induced by the product selection, the correlation could affect the results of the study. After a series of in-depth interviews and discussions with colleagues and other consumers, a shortlist of product candidates was generated. This set of three products was then used in a pretest to check whether they fulfill the criteria. Based on this, a fully automated coffee machine was selected as the product to be used in this study.

Four different scenarios were developed for the experimental manipulation. All scenarios started with the description of a purchase at a local vendor of their choice. This made the purchase situation more familiar and reduced the bias induced by forcing them to buy at a certain brand or even introducing an imaginary vendor. Furthermore, participants had a general propensity to transact with this retailer. Therefore, the retailer was well suited to study channel preferences. Subsequently, they were introduced to the online store of this retailer that could have four different configurations. The manipulation was designed between subjects. Accordingly, every participant faced only one of the four, more or less integrated, online offerings. Level zero serves as the baseline scenario. It represents a retailer that separates its online and offline business and does not offer any integration services. The levels one to three represent a gradually increased depth of integration. Level one adds an option to pick the product up in store with a delay of 2 days. This delay equals the delivery time of the delivery via mail. Level two adds the opportunity for immediate gratification since this retailer offers the option to pick the product up immediately. However, service and return inquiries cannot be executed in store. This option is added in level three where both channels are fully integrated and can be used for delivery and services. The four levels of integration are depicted in Table 3.1. As an example, the presentation of integration level two is illustrated in Fig. 3.4. It also shows the control questions that were asked at this point to ensure full processing and understanding of the situation.

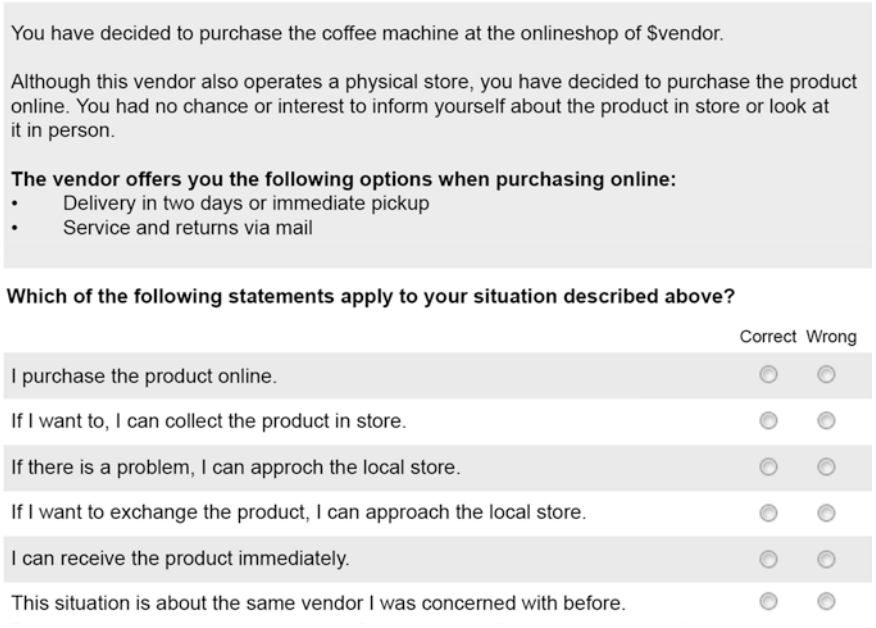
3.3.1.2 Measurement Scales

Besides the experimental manipulation, a variety of additional variables are measured in the survey. Seven of these are latent constructs measured on a seven-point Likert scale by three or more indicators. We follow the steps suggested by MacKenzie et al. (2011) to develop and validate the measurement scales for

Table 3.1 Four levels of multichannel integration

Levels of integration	Delivery	Service and returns	Depth of integration
Level 0: Non-integration	Postal (2 days)	Postal	
Level 1: Slow semi-integration	**+Pickup (2 days)**	Postal	
Level 2: Fast semi-integration	+Pickup **(immediately)**	Postal	
Level 3: Full integration	+Pickup (immediately)	Postal **or in store**	

Note Additional integration services of higher levels are highlighted in bold


You have decided to purchase the coffee machine at the onlineshop of $vendor.

Although this vendor also operates a physical store, you have decided to purchase the product online. You had no chance or interest to inform yourself about the product in store or look at it in person.

The vendor offers you the following options when purchasing online:
- Delivery in two days or immediate pickup
- Service and returns via mail

Which of the following statements apply to your situation described above?

	Correct	Wrong
I purchase the product online.	○	○
If I want to, I can collect the product in store.	○	○
If there is a problem, I can approch the local store.	○	○
If I want to exchange the product, I can approach the local store.	○	○
I can receive the product immediately.	○	○
This situation is about the same vendor I was concerned with before.	○	○

Fig. 3.4 Online/multichannel purchase scenario (integration level 2)

these constructs. First, the conceptual definition of each latent variable was made explicit. In cases where no definition was given by the original source, a precise conceptual definition of the construct was developed. Such a definition is necessary to be precise in "what the construct does and does not refer to" (MacKenzie et al. 2011, p. 295). An overview of these definitions is given in Table 3.2.

Most of the original items stem from peer reviewed journal articles in English language. Since respondents from our panel are Germans, two colleagues independently translated the measurement items to German (Benlian et al. 2011). The

Table 3.2 Conceptual definitions of the latent constructs

Construct	Conceptual definition	Source
Transaction convenience	The perceived time and effort costs associated with finalizing the transaction at a certain retailer	Seiders et al. (2007)
Post-benefit convenience	The perceived time and effort costs associated with reestablishing subsequent contact with the firm	Seiders et al. (2007)
Psychological risk	Pertains to the possible loss of psychological well-being due to transacting with this shop	Keh and Pang (2010)
Performance risk	Whether the shop can perform as expected and thus satisfy customer needs	Keh and Pang (2010)
Product uncertainty	Buyer's difficulty in evaluating the product and predicting how it will perform in the future	Dimoka et al. (2012)
Online shopping experience	The practical knowledge or skills derived from participation in online shopping activities	Frambach et al. (2007), Murray and Schlacter (1990)
Product involvement	The importance of the product category to the consumer on the basis of his or her inherent needs, values, and interests	Seiders et al. (2007)
Offline purchase share	The percentage of purchases made offline within the last year	(Own)
Choice probability	The likelihood of choosing the offered channel configuration over a physical store	(Own)

translations were consolidated by a third colleague. Subsequently, a fourth person translated the items back to English to verify that the items had not lost their original meaning through the translation process. The translations of few items were refined based on this process.

Due to the translation and since some of the authors report somewhat low reliabilities for their constructs, the latent variables were validated in a qualitative pretest as suggested by MacKenzie et al. (2011). Six coders were used to sort the individual items into classes and define these classes (Moore and Benbasat 1991). Thereby, content validity was assured. Furthermore, the sorting offered a first assessment of discriminant validity. Since some of the constructs have not been tested jointly, it was necessary to rule out any possibility of construct overlap. Furthermore, the qualitative feedback of the reviewers was used to perform minor improvements in the wording of a few items to eliminate all doubt about the unambiguity of the wording.

In the following, a formal quantitative pretest using 36 participants was run to check the attributes of the measurement model. The measurement models were assessed using the well-established tests of internal consistency reliability, convergent validity, indicator reliability and discriminant validity (see Sect. 3.3.3.2 for details). The quantitative pretest allowed scale purification to keep the final survey as short as possible. Therefore, items that were not necessary for the conceptual domain and furthermore did not meet the threshold of one of the tests were carefully eliminated. While the pretest results for the measures of the latent variables were promising, the quantitative pretest helped to reveal potential issues regarding the complex method used to estimate participant's willingness to pay. These issues and the implemented alterations are described in the following paragraph.

The pretest included a measure of willingness to pay using the two-step procedure introduced by Franke et al. (2009). While many different measures for willingness to pay were proposed in literature (e.g., Wertenbroch and Skiera 2002), the comparison by Miller et al. (2011) led to the decision to implement the open-ended question format in our study, because it supports the hypothetical design and yet leads to correct pricing decisions (Miller et al. 2011). Furthermore, this procedure fits the research goal exceptionally well since it relates the willingness to pay for two stimuli (in this case offline and online purchases) to each other. Franke et al. (2009) successfully apply the method to measure willingness to pay for an individualized newspaper using the willingness to pay for the standardized newspaper as an anchor. The goal in the case of this study was to obtain an effective measurement of the willingness to pay at a more or less integrated online shop (between subjects, see Sect. 3.3.1.1) whereby the offline willingness to pay could serve as an anchoring stimulus. To establish this anchor, participants are first asked about their willingness to pay offline. Using a bracketing technique (Casey and Delquié 1995) should increase the validity of this estimate (Franke et al. 2009). Accordingly, participants then face a price that is 10 % higher price than their initially stated willingness to pay and are asked whether they would also be content to pay this slightly higher price. If they agree, an even higher follow-up price with the same question ensues. The surplus increases exponentially, calculated as the sum of previous increments, until their maximum willingness to pay is finally reached. As soon as participants disagree to pay the price shown to them, they can use a slider bar to fine tune their willingness to pay between the last price they accepted and the price they rejected. The willingness to pay for the *online* purchase is then estimated using a slider bar with an individual default value equivalent to their willingness to pay offline.

Although this elaborate procedure is suggested in the literature to obtain reliable measures of consumers' willingness to pay (Casey and Delquié 1995; Franke et al. 2009), the results of the pretest draw a different picture. The offline valuation ranged from 50 € to 900 € with a standard deviation of 230 € and a mean of 396 €. It seems that customers had no clear idea about an appropriate price for the product. This is in line with previous studies indicating that people have problems assessing the prices of products without any reference point (Monroe and Lee 1999; Vanhuele and Drèze 2002). Accordingly, it may be necessary to provide participants with a realistic reference point. Since the goal of the measurement was

to compare the valuation of different online channel configurations, the procedure was adjusted to use a fixed offline price as reference for the evaluation of more or less integrated online options. 400 € was used as the offline price level, since this price corresponds to the market price level of the product and matches the average willingness to pay in the pretest. The online price was then estimated using the slider as described before with the default price of 400 €. This alteration does not only reduce the variability of the estimations, it also reduces the mental burden of the participants and makes the questionnaire more realistic.

Two different scales are used to measure the decision between the offline store and the manipulated alternative. The first item measures the preference by a differential scale between the two alternatives. Besides this and in the light of the variability of purchase intention scales (Wright and MacRae 2007), a probability scale was added. On this scale, participants had to state the likelihood of choosing one or the other channel option. These scales should provide a reliable measure of the participants' choice preference.

The final measurement instrument consists of 29 items for nine latent variables. All measurement models define first-order reflective latent variables. The items and the original sources are listed in Table 3.3. The original German version of the questionnaire is depicted in Appendix B.

Table 3.3 Measurement models for latent variables (English version)

(Offline/online) Transaction convenience (Seiders et al. 2007)
OTRC1 [ITRC1]: The store [online-shop] makes it easy for me to conclude my transaction
OTRC2 [ITRC2]: It is effortful to complete this purchase at the store [online-shop]. [reversed]
OTRC3 [ITRC3]: I am able to complete my purchase quickly at the store [online-shop]
(Offline/online) Post-benefit convenience (Seiders et al. 2007)
OPBC1 [IPBC1]: The retailer takes care of product exchanges and returns promptly
OPBC2 [IPBC2]: Any after-purchase problems I experience are quickly resolved at the retailer
OPBC3 [IPBC3]: The exchange or return of goods at the retailer can cause problems. [reversed]
OPBC4 [IPBC4]: It can be complicated to return or exchange products at this retailer. [reversed]
(Offline/online) Psychological risk (Keh and Pang 2010)
OPSR1 [IPSR1]: The thought of using this store [online-shop] makes me feel psychologically uncomfortable
OPSR2 [IPSR2]: The thought of using this store [online-shop] gives me a feeling of unwanted anxiety
OPSR3 [IPSR3]: The thought of using this store [online-shop] causes me to experience unnecessary tension
OPSR4 [IPSR4]: I would worry a lot when buying this store [online-shop]
(Offline/online) Performance risk (Keh and Pang 2010)
OPER1 [IPER1]: There is a high chance that something goes wrong when buying at this store [online-shop]
OPER2 [IPER2]: There was a high chance that I would suffer some loss when transacting with this store [online-shop]
OPER3 [IPER3]: The risk of purchasing at this store [online-shop] is low. [reversed]

(continued)

Table 3.3 (continued)

Product uncertainty (Dimoka et al. 2012)
PUN1: I feel that purchasing this coffee machine involves a high degree of uncertainty about the machine's actual quality. [reversed]
PUN2: I feel certain that I can fully understand everything I need to know about this coffee machine
PUN3: I am certain that this coffee machine will perform as I expect it to perform
Online shopping experience (Frambach et al. 2007; Murray and Schlacter 1990)
OEX1: I have a great deal of experience with the online retailing
OEX2: I am familiar with the different possibilities to use the internet for purchasing
OEX3: I am very confident in using the internet for purchases
Product involvement (Seiders et al. 2007)
PIN1: I have a strong personal interest in coffee machines
PIN2: Coffee machines are very important to me
PIN3: Products like coffee machines are of high importance to me
PIN4: Coffee machines are irrelevant to me. [reversed]
Offline purchase share (own)
OPS1: What percentage of your purchases of books have you done in a physical store? [last year][a]
OPS2: What percentage of your purchases of gadgets have you done in a physical store? [last year][a]
Choice probability (own)
CPR1: How likely is it that you purchase the product at the described retailer?[b]
CPR2: If prices were the same, I would prefer to purchase the product at [offline store … $describedonline-shop][c]

Note Unless indicated otherwise, all items were measured on a seven-point Likert scale from strongly disagree to strongly agree

[a]100 % had to be distributed between physical and online store types

[b]100 % had to be distributed between the offline alternative and the described online-shop with or without certain multichannel integration services

[c]A differential scale was used to measure the strength of choice probability between the offline alternative and the described online-shop

3.3.1.3 Questionnaire Overview

The final questionnaire consisted of 12 parts. An overview on the questionnaire is given in Fig. 3.5. At the start, the participants were welcomed and got a brief introduction to the alleged purpose of the study. The aim of the introduction was to make participants comfortable and to create a realistic expectation of the subsequent steps without creating any awareness of an experimental manipulation. The introduction included an estimate of the duration of the questionnaire (15 min) and rough description of the structure of the survey. Anonymity was guaranteed to reduce social desirability in the answers of the participants (Podsakoff et al. 2003). In the next step, the coffee machine was presented to the participants. Participants were asked to state their involvement and their knowledge about the product including their coffee consumption. This page also included the instructional manipulation check described

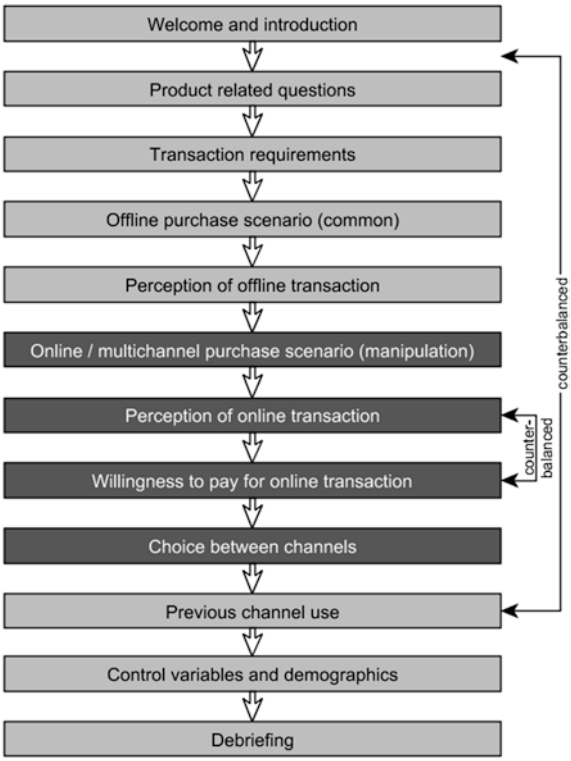


Fig. 3.5 Flow chart of the questionnaire

in Sect. 3.3.2. In step three, participants were asked about their requirements for a purchase of the product. Subsequently, the offline purchase scenario including the offline price was presented. The next section contained questions about the perception of this purchase at the offline vendor. Afterwards, the participants were randomly assigned to one of the four online scenarios described in Sect. 3.3.1.1 and a description of the scenario was given. Questions at the bottom of this page made sure that the participants had read and fully understood the offering of the vendor. The next two sections contain the measurements for the perception of this purchase and the willingness to pay at the respective vendor. The order of these sections was counterbalanced between participants to prevent any systematic influence of order effects. No differences were found between the groups. Afterwards, participants made their choice between the offline option and their respective online option. Subsequently, they were asked to state their previous choices between different channel options across three product categories. This section was presented as step two of the survey for 50 % of the participants to prohibit a systematic influence of the question order on the participants' answers. No differences were found between the groups. Finally, some control questions including online purchasing experiences and participants' price consciousness as well as demographics were requested. At the end of the questionnaire, participants were debriefed and thanked for their participation.

3.3.2 Data Collection

Data was collected between October and November 2013. When conducting experimental studies, one has to decide on whether to rely on student samples or whether a more heterogeneous sample would be preferable. Student samples have several advantages since they are easily accessible and the homogeneity of such a sample potentially increases the internal validity of the study, because some confounding factors can be ruled out (Compeau et al. 2012). However, previous studies find demographics to be potential determinators of the choice between online and offline channels (cp. Table 2.2 on page 20). Therefore, limiting the study to a student sample might restrict the ability to derive more general conclusions from the study. Furthermore, empirical evidence suggests that the use of students in stated preference studies may lead to an inflation of the stated willingness to pay (Murphy et al. 2005). Using a more heterogeneous sample however increases the standard deviation of the outcome variables and thereby might obscure the relationships between the variables by inducing additional error (Shadish et al. 2002). If one finds support for the hypotheses although there is greater heterogeneity in the experimental setting, the study provides more confidence that the findings are valid beyond the sample itself. Therefore, a heterogeneous group of participants was chosen for this study. The panelists were provided using a professional market research firm. Running the experiment on the internet automatically restricted the sampling frame to internet users. This sampling frame is well suited for the question in study because it represents the subgroup of the population that contains potential buyers in the online channel. In contrast, consumers who still have no internet connection are not affected by multichannel integration and cannot be questioned to this issue. In the end, the answers of 348 internet users enable the analysis of the hypotheses. The participants are distributed almost evenly across the four scenarios (85 for level 0, 86 for level 1, 89 for level 2 and 90 for level 4). Details on the descriptive statistics of the sample are given in Sect. 3.3.3.1.

One important issue of data collections using questionnaire is satisficing. The term was originally introduced by the famous economist Herbert Simon (1957). Satisficing in general can be described as follows: if it is "required to process a demanding amount of information, some people only invest enough energy to make a satisfactory decision rather than one that optimizes benefits from the decision" (Barge and Gehlbach 2012, p. 184). When answering a survey question, participants need to go through four different steps (Krosnick 1991):

1. Interpret the meaning of the question
2. Search and retrieve information from memory
3. Integrate information to form judgment
4. Report those summaries precisely

All these steps require some mental effort. Satisficing can take place "when optimally answering a survey question would require substantial cognitive effort, [but] […] respondents simply provide a satisfactory answer instead" (Krosnick 1991,

p. 1). This mental shortcut can lead to behaviors such as choosing the first reasonable answer, non-differentiation in using the rating scales, indicating "don't know" or in the worst case, mental coin flipping (Krosnick 1991). Such strategies can have severe consequences for the results of a survey, single-item results can be biased, reliability of the scales can be reduced or inflated, and the associations between scales can be increased. All these sources are a threat to the validity of the results, leading to lower statistical power and potentially erroneous conclusions (Barge and Gehlbach 2012; Chen 2011). Therefore, it is of very high importance to implement appropriate measures to *detect* or preferably *prevent* these behaviors.

Four measures to prevent satisficing have been implemented. First, the importance of their individual response was described in the introduction of the study to increase the involvement of the participants. Second, the survey was designed as comprehensive and interesting as possible. Survey length facilitates faster, shorter and more uniform answering behavior and more non-options (Galesic and Bosnjak 2009). Therefore, the insights from the pretest were used to shorten the questionnaire wherever possible. Third, the participants were given a financial incentive of €1.50. This amount was added to their personal account that is managed by the professional researching firm. Their financial incentive was only paid-out if they reached the threshold amount of €20 without giving any indication of misconduct. Therefore, the financial incentive gave participants a strong incentive to put the required effort into the processing of the questionnaire. The fourth and probably most powerful active measure to prevent satisficing behavior is the instructional manipulation check (IMC) by Oppenheimer et al. (2009). The IMC was developed to increase the statistical power of experimental studies. An implementation of the IMC includes a specific exercise (e.g., clicking somewhere) hidden within the instructions of the study. Thus, participants who do not read the instructions can be identified because they do not perform this exercise. In the original paper, the authors try to replicate the well-established effects of Thaler's Transaction Utility Theory (Thaler 1985). In their experiment, Oppenheimer et al. (2009) were not able to reproduce the results. However, after removing participants who failed the IMC, Thaler's effects were reproduced almost perfectly. Since extensive elimination of replies can introduce a bias to an empirical study and reduce its external validity (Chen 2011), a different application of the IMC is much more appealing. If participants receive immediate feedback that they need to read the instruction carefully and get another chance to do so, their satisficing behavior in the following is reduced so heavily that their answering behavior is indistinguishable from other participants' (Oppenheimer et al. 2009). The message was formulated in a positive way and included a reminder of the agreement participants made on the previous page to encourage their further participation. An overview of the implementation of the instructional manipulation check is given in Fig. 3.6. These four measures to prevent satisficing reduced the need for excessive elimination of inattentive participants and should be helpful to increase the statistical power of this experiment without introducing a bias to this study.

Beyond these means to prevent satisficing, it was important to also detect extreme satisficers to be able to eliminate participants who did not contribute

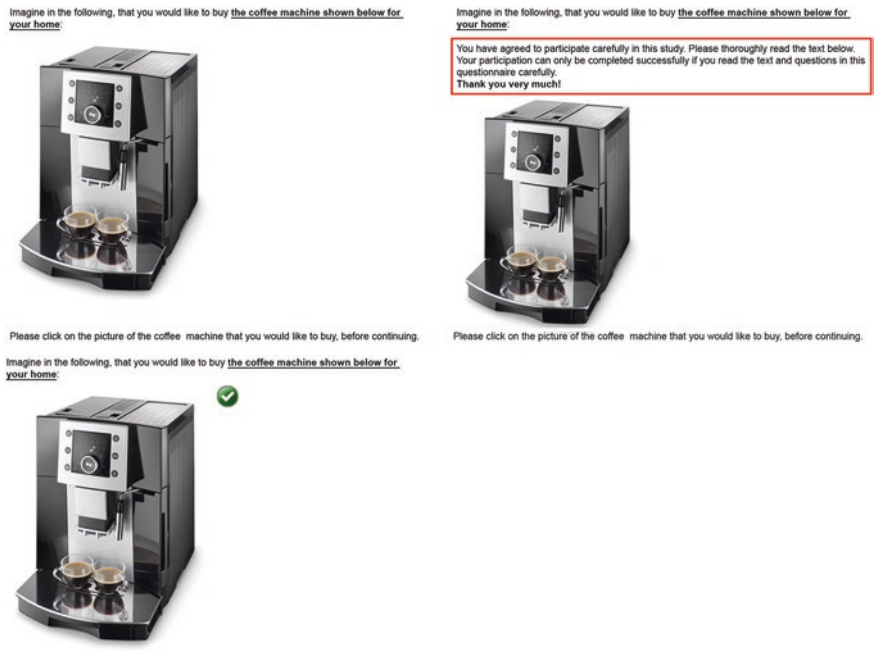


Fig. 3.6 Instructional manipulation check, *Upper left* the IMC question, embedded into a normal page of questions following below, *Upper right* IMC test failed: message with reminder to read carefully appears, *Lower left* IMC test successful: prompt to click disappears and check icon indicates success

any valuable information. Several measures to identify satisficers have been combined to ensure that only extreme satisficers were removed to prevent possible systematic errors from participant elimination (Chen 2011). These measures include the number of times the instructional manipulation check was failed (more three times), overly extreme stated prices (smaller than 40 % or larger than 160 % of reference value) and the answers on four duplicate questions. Beyond this, control questions were included to make sure that the participants had read and understood the scenario presented to them. These control questions also acted as manipulation check for the experimental manipulation as described in Sect. 3.3.1.1.

Lastly, it was necessary to test whether a non-response bias may have occurred. Non-response bias describes a situation where people that reply to the invitation of participating in the study are systematically different to people that do not participate. Since no information about non-participants is available, one can assume that late respondents are similar to non-respondents and compare responses among early and late respondents (Armstrong and Overton 1977). Since no significant differences were identified, it can be concluded that non-response bias did not influence the results.

3.3.3 Results

In this section, the results of the data analysis are presented. Partial least squares structural equation modelling (PLS-SEM) was used evaluate the data with regards to hypotheses 1–4. Compared to other methods like multiple regression or path modeling, structural equation modeling (SEM) has the advantage to simultaneously evaluate the structural and the measurement model (Chin 1998). Therefore, it has long been described as the second generation of multivariate analysis (Fornell 1987). Generally, two approaches to SEM can be distinguished: covariance-based (CB-SEM, for instance implemented in LISREL or AMOS) and component-based SEM (PLS-SEM, for instance implemented in SmartPLS or PLS Graph). The two approaches differ in their assumptions, their underlying philosophy and their objectives (Gefen et al. 2011). The major objective of CB-SEM is to determine how well the research model accounts for the covariances among the measurement items. Therefore, the algorithm tries to generate a covariance matrix from the model that is not significantly different from the covariance matrix in the data. In doing so, it explicitly incorporates a measurement error on the item level (Chin 1998). In contrast, PLS-SEM has the goal to maximize the explained variance of the endogenous variables when estimating the relationships between the latent variables (Hair et al. 2013). These differences in the estimation goals have led the notion that CB-SEM is well suited for confirmatory studies, while PLS-SEM is preferred for exploratory research (e.g., Gefen et al. 2011).

During the last years, an intense debate has arisen in the information systems discipline (Goodhue et al. 2012; Marcoulides et al. 2012) and in other research areas (Henseler et al. 2014; McIntosh et al. 2014; Rönkkö and Evermann 2013) that challenges the established conceptions of the advantages and disadvantages of PLS-SEM and CB-SEM. The often cited advantages of PLS-SEM are the more reliable analysis of small sample sizes or data with non-normal distributions (an comprehensive review is provided by Rönkkö and Evermann 2013). However, Goodhue et al. (2012) show in their Monte Carlo simulation, that LISREL has similar robustness against moderate departures from normality and that the accuracy of studies using PLS also suffers when used with small sample sizes. Although their argument that the differences between the techniques are smaller than expected is heavily criticized (Marcoulides et al. 2012), researchers should no longer rely blindly on rules of thumb when comparing the methods. Instead, the purpose of the study should determine the choice of the method (Henseler et al. 2014) while having specifics of the study and their implications for PLS-SEM or CB-SEM in mind.

In the case of this study, the choice for PLS-SEM is driven by the specifics of the study. First, the exogenous variables arise from the experimental manipulation and are consequently dummy-coded. While such variables can easily be incorporated in PLS-SEM (Henseler and Fassott 2010), the applicability in CB-SEM is at least questionable (Gefen et al. 2011). Second, the goal of the study is to explore the impact of certain channel characteristics on consumers' perceptions

and choices. Accordingly, "[…] if one is […] concerned more with identifying potential relationships than the magnitude of those relationships, then regression or PLS would be appropriate" (Goodhue et al. 2012, p. 999). Thus, PLS-SEM is used to evaluate the hypotheses regarding the perception of multichannel integration services.

3.3.3.1 Descriptive Statistics

In the following, the demographic characteristics of the dataset are described. It is desirable to have a diversified sample in order to increase the external validity of the study. Compared to a homogenous sample, the statistical power of the experiment is decreased (Shadish et al. 2002), meaning that significant results in this sample would tend to be even more significant in a homogenous sample.

As Table 3.4 illustrates, the sample contains participants from all parts of society. No demographic group was neglected. Participants have an average age of 37 years. The gender distribution is nearly balanced. The majority of participants is working with the most frequent income range being 1501–2500 €. More than half of the participants have either a completed vocational training or a university degree. Overall, there is a slight tendency towards younger participants. Furthermore, as expected, extremely high income ranges are underrepresented in the sample. However, the sample contains a very broad cross-section of the population. This provides a strong indication that results derived using this group of participants hold far beyond the set of questioned customers.

Table 3.4 Demographics of the sample

Age group					
14–19	20–29	30–39	40–49	50–59	60+
23 (6.6 %)	70 (27.9 %)	82 (23.6 %)	78 (22.4 %)	49 (14.1 %)	20 (5.7 %)

Gender		Occupation		
Female	Male	In training	Working	Unemployed or retired
179 (51.4 %)	169 (48.6 %)	74 (21.3 %)	220 (63.2 %)	54 (15.5 %)

Household net income					
<500 €	501–1500 €	1501–2500 €	2501–3500 €	>3500 €	Not specified
14 (4.0 %)	87 (25.0 %)	89 (25.5 %)	62 (17.8 %)	39 (11.2 %)	57 (16.4 %)

Highest education level						
No education	Secondary school	Higher education	Completed vocational training	University degree	Doctorate degree	Not specified
1 (0.3 %)	72 (20.7 %)	75 (21.6 %)	97 (27.9 %)	96 (27.6 %)	4 (1.1 %)	3 (.9 %)

3.3.3.2 Measurement Model Validation

Three basic types of non-hierarchical measurement models can be distinguished: formative, reflective and dummy coded measurement models where the latent variable and the indicator are identical (Henseler and Fassott 2010). The three experimental variables result in measurement models of the third type. They were dummy coded to be one, if the attribute is present for the channel configuration (i.e., pickup in store option is available (PIC); immediate pickup is possible (IMM); service and return in store are offered (SRS)) and zero otherwise. All other measurement models in this study are reflective on the basis of their definitions, since their indicators are consequences of the latent variable that they measure (Jarvis et al. 2003).

The reliability and validity of the reflective measurement models are evaluated in PLS-SEM based on three criteria (Henseler et al. 2009): internal consistency reliability, convergent validity and discriminant validity. Since Henseler and Sarstedt (2013) provide convincing evidence against the use of goodness of fit indices for PLS, the focus of the model evaluation is on the well-established reliability statistics such as composite reliability (CR) and average variance extracted (AVE). Internal consistency reliability is assessed using the composite reliability score. The CR of all measurement models exceeds the suggested threshold of 0.7 (Nunnally and Bernstein 1994). Convergent validity is checked by investigating indicator reliability and the average variance extracted (Henseler et al. 2009). On the item level, all but two factor loadings are above 0.708, suggesting that the items share more than 50 % of their variance with the latent variable. Two items (OTRC3 0.65 and OPER3 0.62) do not meet this threshold. Although this phenomenon became evident in the thorough pretest, a decision was made not to alter the two indicators for reasons of comparability. The measurement models for the offline perceptions contain identical replication of the items used to measure the perceptions regarding the online transactions (ITRC and IPER). Since these constructs are used to control for the general perceptions towards the offline purchase and the factor loadings of the online counterparts were very good, the minor deviation from optimal threshold values in one statistic is less important than the comparability of the measures. Due to the small deviation and since the overall measure of AVE meets the threshold of 0.5 for these and all other latent variables, it is reasonable to conclude that the convergent reliability of the measurement models is very good. An overview on these statistics is given in Table 3.5. Two tests are used to assess discriminant validity. First, the Fornell-Larcker criterion is tested. According to the rule, the square root of the each variable's AVE must be larger than its correlation with any other latent variable (Fornell and Larcker 1981). This was fulfilled for all latent variables. Second, the factor loading on the intended latent variable must be higher than any cross-loading on other latent variables, saying that the indicator shares more variance with its latent variable than with any other variable. This criterion was also fulfilled with no indicator sharing more than 50 % of its variance with a second latent variable. Details on the latent variable correlations and the cross-loadings are given in Appendix C and Appendix D. Descriptive statistics on the other variables are depicted in Table 3.6.

Table 3.5 Statistics of latent variables

Constructs	Variable name	Factor loadings	Items per construct	CR	Mean	Standard deviation	AVE
Choice probability	CPR1 CPR2	0.92 0.87	2	0.89	5.81	3.40	0.81
Online transaction convenience	ITRC1 ITRC2 ITRC3	0.90 0.77 0.83	3	0.87	5.66	1.07	0.69
Online post-benefit convenience	IPBC1 IPBC2 IPBC3 IPBC4	0.85 0.88 0.86 0.87	4	0.92	4.17	1.36	0.75
Online psychological risk	IPSR1 IPSR2 IPSR3 IPSR4	0.90 0.89 0.90 0.87	4	0.94	2.83	1.48	0.79
Online performance risk	IPER1 IPER2 IPER3	0.84 0.80 0.80	3	0.85	3.19	1.25	0.66
Offline transaction convenience	OTRC1 OTRC2 OTRC3	0.78 0.89 0.65	3	0.82	5.73	0.99	0.61
Offline post-benefit convenience	OPBC1 OPBC2 OPBC3 OPBC4	0.85 0.77 0.80 0.84	4	0.88	5.25	1.14	0.67
Offline psychological risk	OPSR1 OPSR2 OPSR3 OPSR4	0.87 0.84 0.86 0.86	4	0.92	1.9	1.06	0.73
Offline performance risk	OPER1 OPER2 OPER3	0.86 0.78 0.62	3	0.8	3.19	1.25	0.58
Product uncertainty	PUN1 PUN2 PUN3	0.79 0.77 0.81	3	0.83	4.74	1.10	0.63
Online shopping experience	OEX1 OEX2 OEX3	0.94 0.87 0.93	3	0.94	5.70	1.30	0.83
Product involvement	PIN1 PIN2 PIN3 PIN4	0.94 0.94 0.95 0.91	4	0.96	4.25	1.82	0.87
Offline purchase share	OPS1 OPS2	0.80 0.85	2	0.81	46.62	25.70	0.68

Note AVE average variance extracted; *CR* composite reliability

Table 3.6 Statistics of other variables

Constructs	Variable name	Mean
Pickup in store	PIC	0.76
Pickup immediacy	IMM	0.51
Service and return in store	SRS	0.26
Age	AGE	37.19
Gender	GEN	1.49
Distance	DIS	3.84
Willingness to pay	WTP	354.35

Note PIC, IMM, SRS are dummy coded based on availability of the feature; GEN coded as 1 = female/2 = male; DIS in minutes

Because data for each respondent was partly obtained using a single measurement method, procedural and statistical remedies to minimize and control for common method bias (CMB) were applied (Podsakoff et al. 2003). First, different measurement methods were employed to prevent the emergence common method variance in the first place. The exogenous or independent variables were not measured at all, but created through the experimental manipulation that was hidden to the participant. The between-subjects design should prevent CMB caused by consistency motifs or implicit theories (Podsakoff et al. 2003). Second, the dependent variables choice probability and willingness to pay were measured with different scale types that reduce vulnerability to method effects (Sharma et al. 2009). Third, the questions were checked during the qualitative pretest for possible questions that could trigger a social desirability bias. Additionally, respondents' were guaranteed anonymity to further reduce the potential of this bias (Podsakoff et al. 2003). Fourth, psychological separation between the measurement of the dependent and the independent variables was ensured to reduce remaining consistency tendencies. Fifth, as discussed, the questionnaire was carefully developed to reduce satisficing behavior.

Beyond these remedies to minimize common method variance, two methods were applied to control for its effects in the dataset: Harman's single factor and the marker variable technique (Lindell and Whitney 2001). Harman's single factor test (Podsakoff et al. 2003) was conducted by a principal components factor analysis on the Likert scaled variables in SPSS. The analysis of the revealed nine factors with eigenvalues above one which accounted for 71.75 % of the variance. The largest single factor accounted for 21.34 % of the variance. Since no single factor emerged or accounted for the majority of the variance, Harman's singe factor test indicates that CMB did not influence the results (Malhotra et al. 2006). The marker variable technique was applied in a post hoc manner by using the lowest correlation in the correlation matrix as a proxy for the magnitude of CMB (Malhotra et al. 2006). In this case, the correlation between product involvement and online psychological risk, which can be assumed to be theoretically unrelated, was used. This correlation was partialled out of the correlation matrix. However, significances remained unchanged, signifying that CMB did not alter the results (Lindell and Whitney 2001). The corrected and uncorrected correlation matrices

are depicted in Appendix E. Overall, the procedural remedies and the statistical tests give strong indication that CMB did not bias the results of the study.

3.3.3.3 Perception of Multichannel Integration Services

After having provided detailed evidence that the measurement model is reliable and valid, the structural model can be evaluated. Since collinearity could be a cause of biased path coefficients when using the PLS algorithm, it must be ensured that there is no collinearity between the explanatory variables of each endogenous variable. To do so, the latent variable scores for each variable were estimated and used in SPSS to run a linear regression on each of the endogenous variables. From these regressions, the variance inflation factor (VIF) was estimated (Mooi and Sarstedt 2011). The VIF indicates the magnitude of multicollinearity by describing how much the variance of the regression coefficient is inflated due to collinearity. The VIF for all explanatory variables was far below the suggested threshold of 5 (even below 3), suggesting that multicollinearity did not bias the path estimates.

Subsequently, the path coefficients were estimated. The significance of the path coefficients was assessed using 5000 bootstrapping samples with 348 cases each.

The impact of the pickup in store option on psychological risk is significantly negative, supporting hypothesis 1b ($p < 0.05$). The data also provides evidence for hypothesis 2, claiming that pickup immediacy increased transaction convenience ($p < 0.05$). Partial support was found for the influence of service and return in store on channel perceptions. This service option positively influences consumers post-benefit convenience (H3a, $p < 0.001$), but the hypothesized negative impact on psychological risk is not significant (H3c, $p = 0.18$).

Support was found for the impact of three channel perceptions on channel choice probability. As hypothesized, online transaction convenience (H4a, $p < 0.001$) and online post-benefit convenience (H4b, $p < 0.001$) significantly increased the probability of choosing the online channel, while online psychological risk (H4c, $p < 0.01$) had a significantly negative impact.

Interestingly, no support was found for the hypothesized role of online performance risk. It is not decreased by pickup in store (H1a, $p = 0.24$) or service and return in store (H3b, $p = 0.11$). Lastly, online performance risk furthermore does not influence choice probability (H4d, $p = 0.30$).

Moreover, a series of control variables was used to reduce the unexplained variance and control for alternative explanations. While these controls would not be necessary for the effects of the experimental manipulation, the hypotheses describe several relationships between other variables that could be affected by purchase specific variables (product uncertainty, product involvement), environmental variables (distance to store), experiential variables (online shopping experience), previous choices (offline purchase share) or demographics (age, gender). It is useful to control for their impact on channel perceptions and channel choice probabilities to be sure not to draw wrong conclusions because important variables are omitted. For the choice probability, it is also important to incorporate the role

of the alternative channel (Montoya-Weiss et al. 2003). For instance, a consumer might (not) choose the online channel because he perceives this offline alternative as being extremely unattractive (attractive). Therefore, the perceptions of the offline channel are incorporated in the model.

The effects reported above are confirmed over and above the impact of the control variables. Although not hypothesized, the significant paths from the control variables shall be reported. First, the perception of the offline store has an important influence on the choice of the online channel. The higher the perceived offline transaction convenience ($p < 0.05$) and offline post-benefit convenience ($p < 0.001$) and the lower the psychological risk ($p < 0.05$) of purchasing offline, the lower the probability of choosing the online channel. Also, the closer the physical store, the less likely the online purchase ($p < 0.001$). Product uncertainty furthermore increases both online psychological ($p < 0.01$) and online performance risk ($p < 0.001$). Interesting relationships were also revealed for previous online shopping experiences, since they increase the online transaction convenience ($p < 0.001$) and decrease the online psychological risk ($p < 0.01$) and performance risk ($p < 0.01$). Not surprisingly, consumers who make a higher share of their purchases in physical stores perceive lower online post-benefit convenience ($p < 0.01$), higher psychological risk ($p < 0.001$), higher performance risk ($p < 0.001$) and are overall less likely to choose the online channel ($p < 0.001$). Lastly, perceptions also differ between demographic groups. After controlling for previous choices and preferences, the results indicate that older consumers perceive a higher online transaction convenience ($p < 0.001$) and a lower online psychological ($p < 0.01$) and performance risk ($p < 0.001$). Finally, gender has a significant effect on perceptions on the internet, where woman seem to perceive a higher psychological risk and a lower transaction convenience than men ($p < 0.05$).

The model explained 19.2 % of the variance of online transaction convenience, 17.0 % of the variance of online post-benefit convenience, 22.1 % of the variance of online psychological risk and 20.5 % of the variance of online performance risk. The model moreover accounts for 40.2 % of the variance in channel choice probability. The effect sizes f^2 of the manipulation on the four different perceptions was medium for the online post-benefit convenience ($f^2(\text{IPBC}) = 0.158$) and small for the others ($f^2(\text{ITRC}) = 0.020$; $f^2(\text{IPSR}) = 0.020$; $f^2(\text{IPER}) = 0.013$). Considering the large number of control variables, these effect sizes were to be expected. An overview on structural model evaluation is given in Table 3.7.

The bootstrapping test by Zhao et al. (2010) was used to test the mediation effects from the independent variables to channel choice via the consumer perceptions. The bootstrapping test was selected as a more powerful alternative to the Sobel test (Preacher and Hayes 2004). The original Sobel z is based on an indirect effect calculated as the product of two parameters. Therefore, a positive indirect path leads to a non-normal, positively skewed sampling distribution. This can be overcome by using a bootstrapping test on an empirical sampling distribution of the indirect path (Zhao et al. 2010). The results indicate an *indirect-only mediation* for the paths from pickup immediacy via online transaction convenience to choice

Table 3.7 Structural results of PLS model

	ITRC	IPBC	IPSR	IPER	CPR
R^2 (%)	**19.2**	**17.0**	**22.1**	**20.5**	**40.2**
Hypothesized relationships					
Multichannel characteristics					
Pickup in store			**−0.1***	**−0.04**	
Pickup immediacy	**0.14***				
Service and return in store		**0.32*****	**−0.05**	**−0.07**	
Online channel perceptions					
Online transaction convenience (ITRC)					**0.21*****
Online post-benefit convenience (IPBC)					**0.23*****
Online psychological risk (IPSR)					**−0.18****
Online performance risk (IPER)					**0.04**
Controls and covariates					
Pickup in store	0.00	0.02			−0.03
Pickup immediacy		0.05	0.01	−0.01	0.01
Service and return in store	−0.02				0.08
Offline transaction convenience					−0.12*
Offline post-benefit convenience					−0.20*
Offline psychological risk					0.11*
Offline performance risk					0.00
Product involvement					0.08
Distance to store					0.14***
Product uncertainty			−0.14**	−0.2***	0.05
Online shopping experience	0.37***	0.06	−0.2**	−0.18**	−0.07
Offline purchase share	−0.09	−0.13**	0.24***	0.23***	−0.24***
Age	0.17***	0.06	−0.16**	−0.2***	0.07
Gender	−0.12**	0.02	−0.11**	0.01	−0.03

Note Table shows standardized path coefficients for hypothesized relationships (*shown in bold*) and control paths (*not in bold*)
R^2 total variance explained; *CPR* choice probability
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, not significant otherwise

probability and for service in store via online post-benefit convenience to choice probability. Indirect-only mediation gives the strongest indication of all possible mediation types that the relationship is consistent with hypothesized theoretical framework (Zhao et al. 2010). The path from pickup in store via online psychological risk to choice probability turned out to be a *non-mediation* path. The results of the test are depicted in Table 3.8. A full overview on the mediation analysis can be found in Appendix F.

Table 3.8 Mediation analysis for significant paths

Independent variable	Mediator	Dependent variable	95 % CI indirect effect	Significant direct effect?	Effect consistent?	Type of mediation (Zhao et al. 2010)
Pickup in store	Online psychological risk	Choice probability	[−0.0018, 0.0539]	NO	YES	Non mediation
Pickup immediacy	Online transaction convenience	Choice probability	[0.0003, 0.0646]*	NO	YES	Indirect-only mediation
Service and return in store	Online post-benefit convenience	Choice probability	[0.0373, 0.1449]**	NO	YES	Indirect-only mediation

Note *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, not significant otherwise

3.3.3.4 Valuation of Multichannel Integration Services

The goal of the evaluation of the valuation of multichannel integration services was to identify differences in the willingness to pay for a pure online purchase (level 0) compared to three different types of online purchases with multichannel integration services (compare Table 3.1 in Sect. 3.3.1.1):

- online purchase with pickup option in 2 days (level 1)
- online purchase with immediate pickup option (level 2)
- online purchase with immediate pickup option and services/returns in store (level 3)

The measurement of willingness to pay online revealed a price span between 201 € and 429 € with a mean of 354.35 € and standard deviation of 46.23 €. The average willingness to pay for level 0 was 345.65 €, for level 1 353.35 €, for level 2 355.43 € and for level 3 362.48 €.

Since the manipulation was implemented in a between-subjects design, this first choice for testing whether the willingness to pay in the three groups differed from the baseline group (pure online) would be the analysis of variance (ANOVA) and Dunnett's test. Levene's test was not significant ($F = 0.174$; $p = 0.913$), indicating equality of variances between the four groups. It is important to note that the normality assumption of ANOVA is not met for the dependent variable willingness to pay. There is a theoretical argument that violation of the normality assumption can lead to false positives, although several simulation studies have shown that the rate of false positives is not increased by much (Glass et al. 1972; Harwell et al. 1992; Lix et al. 1996). While the researcher might use the argument that these studies have shown that ANOVA is fairly robust against this violation, an analysis of the reasons why willingness to pay is not normally distributed sheds light on the fact why ANOVA should not be used in this case. The aim of this assessment is whether willingness to pay differs between four groups. Willingness

to pay is generally dispersed (e.g., Raghu et al. 2009). There are some customers that just have a very low willingness to pay in electronic channels, because they strongly prefer other options (Frambach et al. 2007). Such outliers can, in a statistical sense, seriously affect the results of the ANOVA and heavily decrease its statistical power (e.g., Osborne and Overbay 2004). One general suggestion to identify and carefully remove such outliers is not reasonable in our case since it would directly alter our results. Channel integration features might be the major reason for the extreme reactions that some participants show when expressing their willingness to pay. Thus, the elaborate measurement procedure for willingness to pay may have just unveiled the true differences in consumers' willingness to pay. While this is interesting, it hinders the test of the hypotheses using ANOVA. Therefore, a test that is less prone to outliers and has lower distributional requirements was selected. The Kruskal-Wallis H-test is well suited in this case, since it allows the comparison of more than two groups only requiring at least ordinal level scales and independence of observations (Ho 2013). The Kruskal-Wallis H test showed that there was a statistically significant difference in willingness to pay between the four different channel configurations, $\chi^2(3) = 8.347$, $p = 0.039$, with a mean rank willingness to pay score of 152.38 for pure online (level 0), 169.09 for the online channel with delayed pickup in store (level 1), 180.60 for the online channel with immediate pickup in store (level 2) and 194.66 for the fully integrated online store offering immediate pickup as well as service and return in store (level 3).

After the Kruskal-Wallis H-test has indicated that a statistical difference exists between the groups, contrasts are used to determine which groups differ from each other. A series of Mann-Whitney U-tests can be applied to answer this question (Mann and Whitney 1947). However, performing several non-orthogonal tests on the same dataset can lead to Type 1 error inflation. This would mean that the test indicates a significant relationship when there is none in the population. To prevent this error inflation, the alpha level for the contrast tests has to be adjusted. The Bonferroni correction (Dunn 1961) is applied to calculate the adjusted alpha level:

$$\alpha_B = \alpha / k$$

Since four groups are compared, the adjusted alpha level for significant findings in the contrast comparisons is $\frac{0.05}{4} = 0.0125$. It shall be emphasized, that this is a very conservative adjustment. One could argue that this adjustment is not necessary since the tested hypotheses have been theoretically derived and not formed during the data analysis. As shown in the following, the results are not changed by this adjustment. However, it is reassuring that the results are robust against criticism regarding the multiple testing problem. The results of the group comparisons and their statistical values are depicted in Table 3.9.

Overall, the results indicate partial support for hypothesis 5. First, general differences in the willingness to pay between the different integration levels have been empirically confirmed. Accordingly, multichannel integration services make a difference for the willingness to pay. However, these differences

Table 3.9 Results of the group comparisons with regards to willingness to pay

Group comparison	Mann-Whitney U statistic	Rank sum difference	Significance
No integration versus delayed pickup in store	−1.192	6925 – 7781 = −856	0.233
No integration versus immediate pickup in store	−1.874	6742 – 8136 = −1394	0.061
No integration versus immediate pickup and service/return in store	−2.652	6595.5 – 8804.5 = −2209	0.008*

Note $*p < \alpha_B = 0.0125$

are only statistically significant for the highest level of integration. Therefore, H5c ($z = -2.652$, $p = 0.008$) is accepted while the null hypothesis of no difference cannot be rejected for hypotheses H5a ($z = -1.192$, $p = 0.061$) and H5b ($z = -1.874$, $p = 0.233$).

3.3.3.5 Limitations

The study focused only on one specific product to analyze the perception and the impact of multichannel integration services. Although the product was chosen using an elaborate set of requirements (see Sect. 3.3.1.1) that make it an appropriate candidate for studying the phenomenon, product attributes must be taken into account before applying the results to product categories that differ significantly.

Service and return in stores have been studied simultaneously in the empirical study. Their structural similarities as well as the constraints of a compact study led to the decision to group these services. This is realistic since they both are strongly connected to each other. Issues with the product can lead to returns and a return can be prevented by explaining the product better or resolving issues. Although theoretically unlikely, the dataset does not rule out the possibility that there are differences in the effect of these services. Therefore, they will be studied independently in the next empirical investigation.

The measurement of the willingness to pay makes it difficult to attribute differences in the valuation to individual integration services. Other methods such as a conjoint analysis would allow a more precise allocation of these values. However, the main purpose of this study was to identify differences in the perception and outcomes of multichannel integration services. Therefore, the primary goal was to establish causality using an experimental between-subjects manipulation. As discussed, the elaborate procedure to measure willingness to pay is well suited in this setting and allows to the identification of a monetary valuation of multichannel integration services in general, even though it lacks a precise attribution of the differences to particular services.

3.3.4 Discussion

The results generally support the proposition, that multichannel integration services influence consumers' decision-making. Channels that offer multichannel integration services can lead to different outcomes than pure online channels by influencing valuation and channel choice. Instead of closing with such a general statement about the impact of multichannel integration services, the results allow a much more differentiated analysis of the matter by describing and explaining the effects of different types of integration services.

The study differentiates between different convenience and risk perceptions that may influence the selection of a specific service or channel (Keh and Pang 2010; Seiders et al. 2007). The general influence of such perceptions on channel choice has been established in previous studies (e.g., Frambach et al. 2007; Pavlou et al. 2007). The imputed relationships to multichannel integration services however make it important to re-validate their effect on choice in this study. The results indicate that convenience perceptions have a large influence on channel choice. This finding is in line with previous studies that find that convenience drives the decisions between channels (e.g., Frambach et al. 2007; Gensler et al. 2012; Verhoef et al. 2007). The reduced time and effort related to a purchase is incorporated into consumers' decision making. Convenience can either be perceived in the purchase or in the post-purchase phase. Since the services available at the post-purchase phase are determined by a choice for a specific vendor at the purchase phase, support is provided that both types of convenience are important explanatory variables for consumers' channel selection. With regards to risk perceptions, a strong impact of psychological risk on channel choice was identified. This implies that consumers' worries also play an important role for channel choice. Surprisingly, no support is found for the role of performance risk with regards to channel choice. Previous studies in the e-commerce context found indications for the impact of performance risk on channel choice (Gensler et al. 2012) or aggregated risk (Gupta et al. 2004a). While psychological risk is related to worries of potential trouble when making the transaction with at a certain retailer in a certain channel, performance risk refers to the uncertainty of suffering an actual loss. Studies in other contexts have found that psychological risk is a much stronger determinator of overall risk than performance risk (Stone and Grønhaug 1993). This offers a possible explanation for this finding, saying that consumers are not really worried that a transaction actually fails and they lose their money. They are rather concerned with the unpleased activities that they have to do if something goes wrong, such as complaining, discussing and providing evidence. Studies that only include performance risk but ignore the other important dimension of risk may not find this effect (Gensler et al. 2012). However, the results provide strong evidence that it is the psychological burden and not the actual risk of losing money that drives consumers channel decisions from a risk perspective.

These perceptions of convenience and risk are influenced by different integration services. A pickup option reduces the psychological risk of the online

purchase. Having a standard delivery can evoke a lot of effort if the product does not arrive or if it is damaged. In contrast, offering the pickup option sends a positive signal to the consumer (Pavlou et al. 2007) and enables him to complete the transaction without having to worry about such uncertain events. The pickup in store allows the consumer to make sure that he receives the product and that it is fully functional without the necessity for unpleasant subsequent interactions. However, a delayed pickup does not decrease performance risk. Performance risk occurs if consumers are worried that a failure to deliver would lead to an actual financial loss. Consumers seem to be convinced that the obligation to produce proof established in German law provides them with enough certainty that their purchases are well protected, independent of their possibility to interact in person (Grabner-Kräuter and Kaluscha 2003). Therefore, delayed pickup decreases their psychological risk, but not their performance risk. Offering immediacy of the pickup increases the convenience of the transaction. While the immediacy does not lead to additional risk reduction, it reduces the time until the purchase process is completed and thereby offers an additional advantage in terms of convenience.

The service and return in store service influences the convenience perception of the purchase, but not its risk. Consumers perceive the possibility to receive service or perform returns in store as less time consuming and effortful. However, this does not imply that that the uncertainty of these procedures is reduced. The risk of incurring a loss because problems with the product cannot be resolved, repairs are not accepted or returns are declined remains the same (performance risk). Therefore, service and return in store also do not reduce the psychological worries with regards to these processes. However, having these services in store decreases the time and effort necessary to fulfill consumer goals in the post-purchase phase. Problems with the use or the functionality of the product can be identified much easier with personal interactions and possibly resolved immediately. The same is true for returns that can be processed immediately without having to wait for the delivery and processing of the shipment, making the process more convenient (Mattila and Wirtz 2004).

The results indicate that the differentiation between different types of multichannel integration services, as proposed in Chap. 2, is important since they differ widely in their effects and appeal. This finding provides additional evidence that studying multichannel integration services at an aggregate level (Bendoly et al. 2005; Oh and Teo 2010) may not be sufficient. Regarding the overall effects of the multichannel services on channel choice, the impact of pickup immediacy on the choice is fully mediated by transaction convenience (Baron and Kenny 1986; also described as “indirect-only” mediation by Zhao et al. 2010). This implies that pickup immediacy has a significant effect on channel choice that can be explained by the increase in transaction convenience. The same type of relationship occurs between service and returns in store and channel choice. Such post-transaction services have been found to influence choices between offline and online channels (Chiang et al. 2006). The results indicate that they are impactful independent of the transaction channel itself. Post-benefit convenience is able to explain the significant relationship between this integration service and consumer choice. In

contrast, offering a general pickup does not influence consumers' choices significantly. This is unfortunate since this type of multichannel integration service is the easiest to implement.

The second outcome variable investigated is willingness to pay. The results indicate that multichannel integration services do not only have the potential to shift choices between channel options but also influence consumers' willingness to pay for a transaction. However, only the fully integrated channel with immediate pickup and service and returns in store enables a significant price premium, while offering pickup or immediate pickup alone is not sufficient. While this is in line with the findings of analysis of channel choice where services and returns in store have the most influence on channel decisions, the results should not discourage vendors' implementation of pickup services. The descriptive statistics indicate an increasing willingness to pay for an increased service level, as predicted in previous studies (Pan et al. 2002a). However, the inter-individual differences in willingness to pay vary too strongly to be able to conclude that these differences are non-random. Therefore, the effects of multichannel integration services on the valuation are cross-validated in the subsequent study using a different method that allows assigning values to each individual integration service. In any case, the changed perceptions may deliver additional indirect benefits to the firms that deserve attention even though no direct revenue is generated.

Beyond the understanding of the perceptions and outcomes of multichannel integration services, the study also offers additional evidence on influence factors for channel decisions, complementing previous research on channel choice. First, no significant influence of demographics on channel choice is identified. This is in line with previous studies suggesting that psychographics instead of demographics are most important variables to explain consumers' multichannel behavior (Konuş et al. 2008). However, this result contradicts other studies' findings that males (Bendoly et al. 2005) and younger people (Ansari et al. 2008) might have a general inclination for online channels. Second, additional support for the influence of the distance to the physical on channel choice is provided (Chintagunta et al. 2012; Forman et al. 2009). A shorter travel time to the shop makes a purchase in store more likely. Third, we find no significant effect of the online shopping experience on channel choice after controlling for the actual share of purchases that consumers do in the different channels. The relationship between online shopping experience and channel choice has been explained through learning effects (Valentini et al. 2011). However, the results suggest that it may be that consumers with higher experience are just individually different as expressed through their channel preferences.

3.4 Summary

This study investigated the impact of three types of multichannel integration services on channel choice and willingness to pay. The study explains the differences in choice probability of different types of multichannel integration services

through a set of convenience and risk perceptions that are influenced by these services. It becomes apparent that the mechanisms that drive channel choice and their outcomes vary between the different multichannel integration services. Therefore, it is necessary to differentiate between these types instead of studying their impact on an aggregate level as done in previous studies. The results indicate that a delayed pickup reduces the psychological risk of the transaction, while immediacy of the pickup increases the convenience of the transaction. The post-transaction integration with service and returns in store increases the post-benefit convenience and thereby improves the perception of an offer at the purchase stage.

An overall influence of pickup immediacy and service/return in store on channel choice is identified and explained. However, only a fully integrated online store significantly increases consumers' willingness to pay. The results draw a very negative picture for delayed pickup, one of the most frequently implemented multichannel integration services. While it reduces the psychological risk of the transaction, its impact on choice and willingness to pay is negligible. Therefore, it may be necessary to reconsider the offering of such services or to dig deeper into individual or purchase specific differences that may unveil specific groups of consumers that still value this channel characteristic.

Chapter 4
Purchase Specific and Individual Differences

4.1 Introduction

The previous chapter established the general valuation of multichannel integration services and the perceptual mechanisms that drive this valuation. In order to fully understand these services and to make informed decisions about their implementation, it is important to comprehend under which conditions the value of the different integration efforts is increased or decreased. Therefore, this chapter analyzes the impact of two important contingency factors on the valuation of different types of multichannel integration services.

Besides the channel characteristics itself, three major groups of channel choice determinants have been identified in the extensive literature analysis in Sect. 2.3.1: purchase specific differences, individual differences, and external influences (e.g., Chintagunta et al. 2012; Inman et al. 2004; Pavlou and Fygenson 2006). External influences can stem from marketing communication of the firm or from peers of the consumer. These influences should impact the value of multichannel integration services in the same way as it has been established for other channel choice decisions (Ansari et al. 2008; Chintagunta et al. 2012; Datta 2011; Johnson 2008; Valentini et al. 2011). Accordingly, effective communication and positive references from the consumers' environment increase the valuation for specific alternatives. The significance of confirming their impact in another context is limited. Therefore, this study focuses on purchase specific and individual differences as determinants of the valuation of different multichannel integration services. Studying how the value of multichannel integration services varies between purchase specific and individual differences leads to a better understanding in which cases consumers have a higher likelihood of choosing the integrated channel or paying a higher price for this channel option. Hence, the following research question is addressed in this chapter:

How and why does the valuation for multichannel integration services vary between purchase situations and individuals' characteristics?

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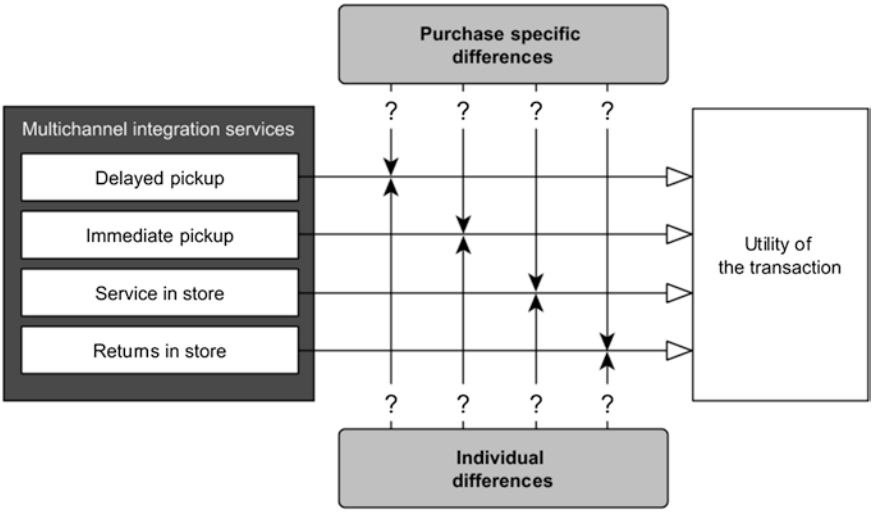

Fig. 4.1 Contingency framework for multichannel integration services

The contingency framework depicted in Fig. 4.1 illustrates how individual and purchase specific differences moderate the influence of the availability of multichannel integration services on the overall utility[1] of the channel option.

The remainder of this chapter is structured as follows. First, the theoretical perceptive that is used to explain purchase specific and individual differences is introduced and then applied to the research phenomenon. Regulatory focus theory is suggested as a novel perspective to understand dynamic multichannel preferences. The second part contains a large scale empirical study using a sample of 698 online users representing the German online user population. The design and execution of the empirical study are described in detail. Then, the estimation of the model and the comparison between groups of customers are depicted. The findings are critically reflected in the light of previous research including a discussion of possible limitations. Finally, two post hoc analyses are presented to gain insights that go beyond the original scope of the study.

4.2 Theoretical Background

How can differences in the evaluation of multichannel integration services be explained? Previous studies on such phenomena hardly offer theoretical explanations (cp. Sect. 2.3), it is necessary to introduce a new theoretical perspective on

[1] Utility in this chapter does not refer to the term from economic theory where it is used to describe optimal choices. Instead, utility refers to the perceived value of an option or attribute expressed in and derived from a series of choices.

the issue. This study relies on regulatory focus theory (Higgins 1997) to explain, why individual and purchase specific differences influence the preference for multichannel integration services. Thereby, the characteristics of the different service alternatives are related to the individual and purchase specific differences to conceptualize the direction of their influence for each individual service alternative. Regulatory focus theory is preferable over popular alternatives such as expected utility theory (Schoemaker 1982), since utility theory fails to explain two important facets of this investigation. First, multichannel integration services are not inherently about uncertainty. As the previous study has shown, different types of multichannel integration services are perceived as either convenience-increasing or risk-reducing. The concept of risk aversion is often used to account for differences in the utility in situations with uncertainty (Arrow 1971), however differences in the perception of certain positive outcomes are not covered by this concept. Second, although different levels of risk aversion can be induced (Cox et al. 2006), it is unclear how purchase specific differences (beyond price) should influence consumers' risk aversion. Regulatory focus theory can account for these facets and is therefore a richer theory in the case of the phenomenon under investigation.

In the next section, regulatory focus theory is introduced, before it is applied to the research problem to derive testable hypotheses.

4.2.1 Regulatory Focus Theory

Self-regulation refers to the process through which consumers analyze their situation, assess progress towards their goals and choose strategies to achieve them (Carver and Scheier 2001). Regulatory focus theory suggests that different types of self-regulation must be distinguished: promotion and prevention (Higgins 1997). Consumers with a promotion focus aim at achieving positive outcomes while the main concern of consumers with a prevention focus is to prevent negative outcomes. Promotion is associated with advancement, achievement, and aspirations. In contrast, prevention refers to safety, security, and responsibilities (Higgins 1997).

For each consumer, their actions have certain outcomes, independent of their regulatory orientation or the manner in which they pursue their goals. However, promotion focused and prevention focused self-regulation differ in their strategic inclination (Higgins et al. 1994). Depending on the ways of approaching the desired end-states, consumers perceive additional utility from a regulatory fit. Regulatory fit occurs "when the manner of peoples' engagement in an activity sustains their current goal orientation" (Avnet and Higgins 2006, p. 1). Therefore, if the process of achieving the goal matches the consumers' regulatory orientation, they perceive a higher value. Accordingly, consumers choose alternatives that are consistent with their regulatory orientation, because a higher regulatory fit increases the perceived monetary value of a choice alternative (Avnet and Higgins 2006).

Consumers' regulatory orientation (promotion or prevention focus) can be chronic or induced temporary by a certain situation (Higgins 1997). The chronic

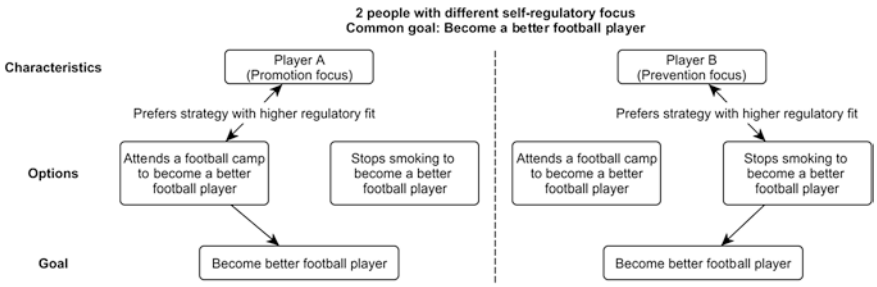

Fig. 4.2 Example for an application of regulatory focus theory

orientation is expressed in the general manner in which they fulfill a broad range of tasks, e.g., how they interact with their friends (Higgins et al. 1994) or whether they choose certain transaction channels (Kushwaha and Shankar 2013). The temporal regulatory focus can be induced by considering certain situations referring to gains or losses (Avnet and Higgins 2006) or being confronted with different contexts, e.g., different consumption goals (Zhang et al. 2010b). Applications of regulatory focus theory in business are manifold, including investment decisions (Florack and Hartmann 2007), impulsive choices (Sengupta and Zhou 2007), advertisement (Aaker and Lee 2001; Kim and Sung 2013), word-of-mouth (Zhang et al. 2010b), customer value (Kushwaha and Shankar 2013), organizational commitment (Johnson et al. 2010) and IT compliance (Liang et al. 2013). However, this is the first study to apply it to different service configurations in retailing.

A simple example is provided to illustrate the mechanisms explained by regulatory focus theory. Two people try to achieve a common goal: to become a better football player (adapted from Pham and Chang 2010). However, player A has a promotion focus while player B has a prevention focus. In accordance with his promotion focus, player A perceives a higher regulatory fit with strategies that are approach-oriented. In contrast, the prevention focus of player B draws him towards avoidance-oriented strategies (Pham and Chang 2010). Although both strategies are available to both players, they derive additional utility from strategies that are compatible with their regulatory focus (Chernev 2004). Accordingly, player A chooses to attend a football camp to become a better player, while player B attempts to eliminate the negative impact of smoking on his performance to become a better player. Figure 4.2 illustrates the example.

4.2.2 Contingency Factors on the Utility of MC Integration Services

Purchase specific differences mostly depend on the purchase situation and the product type. The purchase situation is characterized by the motive of the purchase and dynamic situational differences such as its urgency. While urgency generally

drives customers towards offline channels due to their immediate gratification, multichannel integration services (except immediate pickup) cannot eliminate this general requirement of urgent purchases. On the other hand, the value of immediate pickup as an enabler of urgent online transactions is self-evident. Therefore, urgency is of secondary interest with regards to multichannel integration services. Regarding to shopping motives, a general distinction can be made between utilitarian and hedonic purchases (Hirschman and Holbrook 1982). Utilitarian purchases are related to functionality, practicality and instrumental orientation. In contrast, hedonic purchases are characterized by experiential benefits, affect, enjoyment and intrinsic motivation (Wertenbroch and Dhar 2000). Previous studies asserted that the motivation for shopping decisions includes both utilitarian and hedonic consumptions (Babin et al. 1994). Accordingly, a series of studies have attempted to classify different product types as being dominant on utilitarian or hedonic attributes (Batra and Ahtola 1991; Kushwaha and Shankar 2013; Voss et al. 2003). Typical examples for products that are dominant on utilitarian attributes are automotive accessories or computing equipment. Products with salient hedonic attributes are cosmetics, toys, apparel or jewelry (Kushwaha and Shankar 2013). Consequently, exemplary products from these classes of transactions dominated by either utilitarian or hedonic dimensions can be analyzed and the findings can be reassigned to the product groups within these classes (Kushwaha and Shankar 2013). However, even shopping for the same product can be either perceived as utilitarian or as hedonic, depending on the design of the task (Childers et al. 2001). Purchases are especially dominant on utilitarian dimensions if they are perceived as work (Babin et al. 1994), while emotional involvement emphasizes the hedonic dimensions (Hirschman and Holbrook 1982). Accordingly, every purchase situation can be classified as being either utilitarian or hedonic based on purchase specific differences in terms of the product and/or the motive behind the shopping. Thus, the concept of utilitarian and hedonic purchases is used in this study to analyze purchase specific differences.

Individual differences are manifold. As illustrated in Chap. 2, many individual factors have been discussed in the channel choice literature. These individual factors include demographics, skills and experiences (e.g., Ansari et al. 2008; Frambach et al. 2007; Pavlou and Fygenson 2006). However, it is often difficult to derive meaningful conclusions from these individual factors. Frequently, they raise the question, whether another added factor would have altered the results. Therefore, this study builds upon previous studies on channel choice and utilizes a meta factor that is the outcome of these individual factors. The offline purchase share is determined by all types of individual differences (e.g., Chintagunta et al. 2012; Pavlou and Fygenson 2006). It is an aggregate over a series of individual purchases and therefore independent of situational or product specific differences. Thus, it is used as an aggregated measure of individual differences with regards to the valuation of multichannel integration services. Moreover, the offline channel share is, although it is dynamic over time, measurable at any point in time and therefore can be used to derive actionable recommendations.

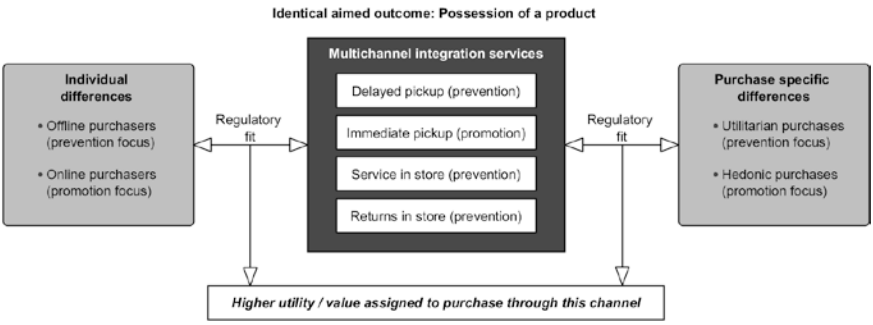

Fig. 4.3 Application of regulatory focus theory to the research phenomenon

The consequential application of the regulatory focus theory is straight forward. Customers have a chronic regulatory orientation that is expressed through their channel preference (Kushwaha and Shankar 2013) and a temporary regulatory orientation that is induced by the purchase situation (Chernev 2004; Zhang et al. 2010b). Consequently, consumers prefer or assign a higher value to transaction and interaction processes that match their regulatory focus (Avnet and Higgins 2006). The application of regulatory focus theory to the research problem is depicted in Fig. 4.3.

Based on the previous study, the different multichannel integration services can be classified as either facilitating promotion or prevention goals. Some integration services have been found to aim at risk reduction (delayed pickup) or the reduction in the time or effort in case of a negative event, in terms of an issue with the product (service in store) or a lack of product fit (returns in store). Therefore, these channel options focus on prevention. In contrast, the dominant property of the immediate pickup option is that it allows consumers to experience the products faster. This need for faster achievements is driven by a focus on the benefits achieved through the purchase (Wertenbroch and Dhar 2000). Although this channel option also encompasses the prevention oriented properties of the delayed pickup option, it is assumed that the immediacy characteristic is dominant in consumers' perception and this channel option therefore facilitates promotion.

Offline channels offer high levels of familiarity, safety, confidence and trust. Accordingly, customers who continuously choose to transact in this environment (high offline purchase share) are likely to appreciate these characteristics for their purchases and therefore can be classified as prevention focused customers (Kushwaha and Shankar 2013). In contrast, electronic channels offer higher levels of convenience at the cost of higher uncertainty about the environment and the other parties' behavior (Pavlou et al. 2007). Therefore, customers who prefer such an environment are likely to be focused on enjoyment and want to signal advancement. Online customers (low offline purchase share) can therefore be described as promotion focused (Kushwaha and Shankar 2013). Since customers are likely to

prefer those channel attributes that are consistent with their regulatory orientation (Avnet and Higgins 2006), the following hypotheses can be derived:

Hypothesis 6a Having service in store provides more utility for individuals with an offline focus.

Hypothesis 6b Having returns in store provides more utility for individuals with an offline focus.

Hypothesis 6c A delayed pickup in store provides more utility for individuals with an offline focus.

Hypothesis 6d An immediate pickup provides more utility for individuals with an online focus.

Utilitarian and hedonic purchases are directly connected to prevention and promotion focus (Chernev 2004). Purchases that are dominant on utilitarian characteristics can be described as functional and practical (Wertenbroch and Dhar 2000). They have an instrumental orientation and strive to fulfill a particular goal. Purchasing such goods can activate a work mentality (Hirschman and Holbrook 1982) and is then perceived as an obligation. Therefore, purchases dominant on utilitarian attributes relate to a prevention focus (Chernev 2004). In contrast, hedonic purchases are characterized by experiential benefits, intrinsic motivation and enjoyment (Wertenbroch and Dhar 2000). This is in line with a promotion orientation that strives for advancement and growth (Crowe and Higgins 1997). Therefore, hedonic purchases are in line with a promotion focus. Since customers' choice is driven by the regulatory fit between their orientation and the mean to fulfill the goal (Avnet and Higgins 2006) in terms of the channel attributes, it is hypothesized that:

Hypothesis 7a Having service in store provides more utility in utilitarian than in hedonic purchase situations.

Hypothesis 7b Having returns in store provides more utility in utilitarian than in hedonic purchase situations.

Hypothesis 7c A delayed pickup in store provides more utility in utilitarian than in hedonic purchase situations.

Hypothesis 7d An immediate pickup provides more utility in hedonic than in utilitarian purchase situations.

4.3 Empirical Study

In the following, the proposed relationships are tested in a large quantitative study using a survey with a block of conjoint questions. This section begins with a description of the measurement instrument development. Then, the data collection process is depicted, followed by a description of the estimation procedure to evaluate the conjoint study. Subsequently, the results of the study are presented, followed

by a discussion. At the end of this section, two post hoc analyses that make use of the empirical data are presented to shed additional light on advanced issues.

4.3.1 Measurement Instrument Development

The development of the measurement instrument is divided into four steps. First, the reasons for the product selection and the design of the manipulation are described. Second, the reasons for choosing the conjoint method and its design are discussed. Third, the development process of the measurement scales is presented. This section is concluded with an overview of the resulting questionnaire.

4.3.1.1 Product Selection and Manipulation

The requirements for the product selection were similar to the ones in the previous study except for two factors. First, the data collection method and the sample size allowed a relaxation of the requirement that technological skills were not strongly correlated with product uncertainty. This requirement was introduced in the experimental setting of study one to separate the effects of technological skills and product uncertainty on channel choice, which are not of primary interest in this study. Second, the product should serve different purposes and thereby enable the manipulation between utilitarian and hedonic purchases. The requirements of a planned (versus impulsive) purchase, size and the possibility of issues, failure and misfit were the same. Due to the incentive alignment of the study, it was even more important that participants would be potentially attracted to the product. After a series of discussion groups with people of different ages, the smartphone emerged from the shortlist of products as the most suitable product fulfilling the criteria described above.

As outlined before, the utilitarian or hedonic characteristics of a purchase can be defined on an attribute level rather than a product level (Wertenbroch and Dhar 2000). Therefore, it is possible to manipulate one characteristic of the purchase to shift the relative salience of the purchase towards the utilitarian or the hedonic characteristics. Since electronic goods such as smartphones in principal incorporate strong utilitarian and strong hedonic features (Kushwaha and Shankar 2013), they are well-suited to be used in this study. The perception of a purchase is largely influenced by its consumption goal (Zhang et al. 2010b). Therefore this consumption goal was manipulated in the study, while the product itself remained the same. Therefore, product or product class specific undesired differences can be ruled out. The purchase was framed to be either for personal purposes (“You want to buy a smartphone in order to stay connected to family and friends from everywhere and to perhaps retrieve messages and play games.”) or for work purposes (“You should buy a smartphone in order to be able to check your work email and your diary from everywhere.”).

Creating a purchase task that participants perceive as work-related increases the perception of the utilitarian dimension of the purchase (Childers et al. 2001). This

Fig. 4.4 Purchase scenario (for hedonic purchase, translated)

is in line with previous studies that find that the utilitarian dimension is stronger when the purchase relates to a task-related goal (Holbrook and Batra 1987). The purchase of the smartphone for work purposes has an instrumental orientation and focusses on functions, typical for utilitarian purchases (Wertenbroch and Dhar 2000). In contrast, when emotions play a major role, for instance in situations where friends and family are concerned, the utilitarian motives in choice are less prominent (Maslow 1962). Accordingly, the hedonic scenario aimed at satisfying emotional wants (Hirschman and Holbrook 1982) while being characterized by experiential benefits, enjoyment and intrinsic motivation, which are typical properties of hedonic purchases (Wertenbroch and Dhar 2000).

The manipulation was checked qualitatively and quantitatively during a pretest using the measures for utilitarian and hedonic attributes by Voss et al. (2003). The pretest clearly indicated that the hedonic purchase situation is perceived much stronger with regards to the hedonic attributes than the utilitarian purchase situation, which is much stronger on the utilitarian attributes. The formal procedure of the manipulation check for the final dataset is depicted in detail in Sect. 4.3.4.3. Figure 4.4 illustrates the description displayed in the questionnaire.

4.3.1.2 Conjoint Design

An incentive-aligned choice-based conjoint (CBC) experiment was designed to estimate the individuals' utilities from different characteristics of a transaction. In a CBC study, participants face a series of complete purchase alternatives (in this case: different retailer types and their offering) and choose their preferred option. By designing the sequence of choices wisely, the researchers can infer the utility of the different alternatives and attribute their utility to the attributes of the

alternatives. In the context of this study, the CBC method is superior to alternative conjoint methods for a variety of reasons. 98 % of all conjoint studies either use CBC, traditional conjoint analysis, or adaptive variants of these methods (Orme 2014). Adaptive variants of either traditional conjoint or CBC can be used if the number of different attributes of an object is too large to be judged at once. This is not the case for this study. Three major reasons led to the decision of CBC over the traditional conjoint method. First, empirical studies find evidence that choice-based conjoint studies are superior to traditional conjoint studies since they provide a higher number of correct predictions (Moore et al. 1998; Vriens et al. 1998), while only one study finds no differences in the prediction of shares in a holdout task (Elrod et al. 1992). Second, traditional conjoint methods do not allow the specification of alternative-specific designs which are required for this study (see below). Third, CBC studies have the huge advantage that they enable the indirect elicitation of consumer preferences and thereby model the actual purchase decision making process very closely (Duke 1994).

The main goal of the study was to measure the impact of channel integration services on consumers' purchase decision. Therefore, the different options for purchasing the product should be as realistic as possible. This was achieved by four design tweaks: First, consumers could not only choose between different types of online retailers but also had the option to select the purchase in a physical store. Second, a none-option was offered to allow participants to indicate that none of the displayed alternatives is of interest to them. Third, two typical criteria for selecting purchase outlets in general, price and vendor quality or reputation, were included in the study. Fourth, the study was incentive-aligned in order to motivate participants to be as deeply involved in the decision making as possible.

Studies without incentive alignment have often been criticized to suffer from a hypothetical bias (Camerer and Hogarth 1999). In their meta-study, Camerer and Hogarth (1999) show that consumers appear to be more generous and more risk taking when studies are not incentive-aligned, an effect also known as the hypothetical bias (Murphy et al. 2005). For conjoint studies, incentive alignment does significantly improve out of sample prediction of actual behavior and the estimates of consumer preference structures compared to hypothetical studies (Ding et al. 2005). The most important aspect of incentive alignment for conjoint studies is salience. To be salient, a reward must be directly related to the choices of the participants during the study (Ding et al. 2005). The incentive alignment mechanism that was implemented in this study fulfills this requirement (Dong et al. 2010). Participants were told that they can win a 50 % voucher for the purchase of this product from a retailer that has exactly the price level, quality and service offerings that were determined to be optimal for the participant based on his or her choices (Fig. 4.5). More than three-quarters of the participants chose the option that their data may be used for participation in the lottery at the end of the survey. This provides strong indication that the incentive-aligned design of the study was internalized by the participants.

The inclusion of a none-option does not only make the purchase situation more realistic, it also prohibits the forced choice of an unacceptable alternative and therefore increases the quality of the data (Johnson and Orme 2003). However, the

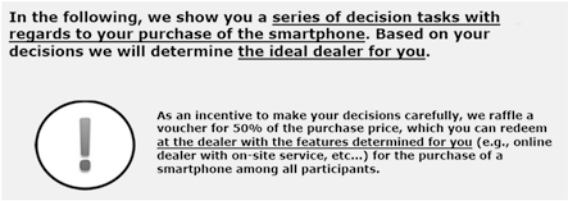

Fig. 4.5 Incentive alignment (translated)

inclusion of a none-option also increases the likelihood that participants use it as a shortcut from processing complex decisions. The choice of the none-option only contributes marginally to the estimation of the attributes and should therefore not be higher than 15 % (Johnson and Orme 2003). Given the average complexity the choice situations in this study and the advantages of the none-option, the none-option is included in the conjoint design.

To structure the study in this way, the conjoint study was created using an alternative-specific design. The service options were limited to online purchases. However, the service options for physical store purchases were displayed as "in store" to establish a consistent appearance of all options and prevent any bias in this regard. The design of the tasks was randomized between participants to reduce the impact of psychological context and order effects (Orme and Johnson 2013). The tasks were developed using a balanced overlap design. Compared to a fully orthogonal design that tries to minimize the number of equal levels in a choice task (e.g., two offers that both cost 260€) and therefore is statistically very efficient, this design allows for a certain level of overlap between the alternatives. Thereby, it prevents oversimplification in the processing of the alternatives (e.g., always choosing the immediate pickup without considering the other attributes). Even if a participant has a must-have requirement for the transaction, one can still infer the utilities of the other attributes and the interactions between them. Therefore, the balanced overlap forces participants to process the alternatives beyond their one or two major requirements. Besides its strength in evaluating interaction effects, experimental evidence suggests that this design method is also superior for estimating main effects since it increases the hit rate, prediction of holdout choices and reduces the mean average error (Orme 2009a).

The displayed price levels were generated using three steps: first, a pretest indicated that the expected price for the product is between €250 and €300. Second, price search engines confirmed that this price level was realistic for comparable products. Finally, it was important that the price differences are equal between the different levels and that the study is prone to irregularities in price responses due to certain price levels or threshold prices (Monroe 1990). As a result, the interval between 260€ and 290€ with 10€ intermediate steps in between was selected. An average and a high retailer rating were chosen to incorporate differences in the perceived quality of the vendors, because they are, in contrast to extremely low ranked vendors, possible members of the consideration set. An overview of the attributes and levels is given in Table 4.1. An exemplary choice task is depicted in Fig. 4.6.

Table 4.1 Conjoint attributes and levels

Attributes	*Levels*			
Purchase channel	Store		Internet	
Price	€260	€270	€280	€290
Retailer rating	3/5		5/5	
Delivery*	Shipping (2 days)	Pickup in store (2 days)	Pickup in store (immediately)	
Service*	Service in store		Online service	
Return*	Return by mail		Return in store	

* These attributes were only shown, if purchase channel was "internet". For store purchases, the levels of all three service types were shown as "in store"

Fig. 4.6 Exemplary choice task (translated)

Purchase channel	Store	Internet	Internet	
Price	€270	€270	€260	
Retailer rating	3/5	5/5	5/5	
Delivery	Pickup in store (immediately)	Pickup in store (2 days)	Standard mail delivery (2 days)	I would not choose any of these options.
Service	Service in store	Online service	Service in store	
Return option	Return in store	Return by mail	Return in store	
	○	○	○	○

The question of how many choice tasks to present to every participant is challenging. On the one hand, many choices are necessary to produce stable estimates. On the other hand, a fatigue participant would generate noise. As a general rule of thumb, each level (e.g., return in store) should be shown at least 500 or, according to newer sources, even 1000 times during the questionnaire (Orme 2014). This can be reached by either increasing the number of choices per participant or the number of participants overall. A reasonable number of fourteen choice tasks were designed for each participant. These tasks included two holdout tasks that were fixed across participants and would be used to test the predictive validity of the estimation. Each task consisted of three alternatives and the none-option. Excluding the holdout tasks, each participant thereby faced 36 different alternatives. The aim of 700 participants would therefore make each level of each attribute appear at least 6300 times.[2] If the first-level interactions are incorporated, each of those would still appear 2100 times.[3] These numbers easily allow for the evaluations of subgroups of participants while making the participation for each participant as short and entertaining as possible to reduce measurement error. The selected sample size also satisfies the recommendations for robust quantitative market research of 300 participants overall and more than 200 per group in subgroup analyses (Orme 2014).

2 $$\frac{700(participants)*12(choices)*3(alternatives)}{4(levels\ of\ price\ as\ the\ attribute\ with\ the\ most\ levels)} = 6300.$$

3 $$\frac{700(participants)*12(choices)*3(alternatives)}{4(levels\ of\ price\ as\ the\ attribute\ with\ the\ most\ levels)*3(levels\ of\ delivery)} = 2100.$$

4.3.1.3 Measurement Scales

Besides the estimates from the conjoint study, a variety of additional variables are measured in the survey. Six of these are latent constructs which are measured with multiple indicators. As described in the previous chapter the steps by MacKenzie et al. (2011) were followed to develop and validate the measurement scales for these constructs. A precise conceptual definition of the construct is given in Table 4.2 to make clear "what the construct does and does not refer to" (MacKenzie et al. 2011, p. 295).

The scale development process including the qualitative pretest was described at length in the previous chapter (cp. Sect. 3.3.1.2). All original items stem from peer reviewed journal articles in English language, except for the offline purchase share described in the previous study. The translation process followed the guidelines by Benlian et al. (2011) with four people validating the back and forth translation. Due to the extensive qualitative pretest on these items that were done for the previous study, it was not necessary to conduct this procedure again, since all variables have been included in this qualitative study. However, the screening of the questions revealed that the meaning of the reversed items of the perceived uncertainty construct may be different in the context of smartphones, since they may refer technological skills rather than uncertainty about the products performance. Therefore, a fourth item was adapted from Dimoka et al. (2012)'s definition of product uncertainty that covered the performance aspect of uncertainty and added to the questionnaire.

A formal quantitative pretest using 47 participants was run to check the attributes of the measurement model. The pretest confirmed the qualitative premonition about perceived uncertainty which consists of two different dimensions in the context of smartphones. Thus, quality uncertainty related items of the construct were kept for

Table 4.2 Conceptual definitions of the latent constructs

Construct	Conceptual definition	Source
Offline purchase share	The percentage of purchases made offline within the last year	(own)
Online shopping risk perception	The perceived exposure to the chance of a loss caused by the use of the online channel for shopping	Jarvenpaa et al. (2000)
Online shopping experience	The practical knowledge or skills derived from participation in online shopping activities	Frambach et al. (2007); Murray and Schlacter (1990)
Product uncertainty	Buyer's difficulty in evaluating the product and predicting how it will perform in the future	Dimoka et al. (2012)
Product involvement	The importance of the product category to the consumer on the basis of his/her inherent needs, values, and interests	Seiders et al. (2007)
Price consciousness	The degree to which a consumer has particularly high consciousness of sale prices and lower prices in general	Sproles and Sproles (1990); Sproles and Kendall (1986)

analysis, since they fit the definition of the focal construct Table 3.2. The other two items were only taken out for the data evaluation, but not from the measurement instrument to make sure that the experience of the survey remained unchanged. Since no further adjustments to the measurement model were necessary, these 47 participants were used in the final sample. The details on the evaluation of the measurement model are given in Sect. 4.3.4.2. The final measurement instrument consisted of 17 items for six latent variables. The items and the original sources are listed in Table 4.3. The original German version of the questionnaire including the control variables is depicted in Appendix G.

Table 4.3 Measurement models for latent variables (English version)

Offline purchase share (own)
OPS1: What percentage of your purchases of books have you done in a physical store? [last year][b]
OPS2: What percentage of your purchases of gadgets have you done in a physical store? [last year][b]
Online shopping risk perception (Jarvenpaa et al. 2000)
ORP1: I would feel safe completing commercial transactions over the Internet. [reverse]
ORP2: There is too much uncertainty associated with shopping on the Internet
ORP3: Compared with other ways of shopping, buying on the Internet would be more risky
Online shopping experience (Frambach et al. 2007; Murray and Schlacter 1990)
OEX1: I have a great deal of experience with the online retailing
OEX2: I am familiar with the different possibilities to use the internet for purchasing
OEX3: I am very confident in using the internet for purchases
Product uncertainty (Dimoka et al. 2012)
PUN1: I feel that purchasing this smartphone involves a high degree of uncertainty about the smartphone's actual quality
PUN2: I feel certain that I can fully understand everything I need to know about this smartphone. [reversed][a]
PUN3: I am certain that this smartphone will perform as I expect it to perform. [reversed][a]
PUN4: I have the feeling that the purchase involves much uncertainty about the quality of the smartphone
Product involvement (Seiders et al. 2007)
PIN1: I have a strong personal interest in smartphones
PIN2: Smartphones are very important to me
PIN3: Products like smartphones are of high importance to me
PIN4: Smartphones are irrelevant to me. [reversed]
*Price consciousness (*Sproles and Sproles 1990; Sproles and Kendall 1986)
PCN1: I buy as much as possible at sales prices
PCN2: The lowest price products are usually my choice
PCN3: I look carefully to find the best value for money

Note Unless indicated otherwise, all items were measured on a seven-point Likert scale from strongly disagree to strongly agree

[a]Items were dropped in the final measurement model

[b]100 % had to be distributed between physical and online store types

4.3.1.4 Questionnaire Overview

The final questionnaire consisted of 14 parts. An overview on the questionnaire is given in Fig. 4.7. Right at the start, the participants were welcomed and received a brief introduction to the study. The aim of the introduction was to make the participants comfortable and to create a realistic expectation of the subsequent steps. The introduction included an estimate of the length of the questionnaire (15 min) and a rough description of the structure of the survey. To reduce any kind of social desirability bias, it was emphasized that the answers were completely anonymous and that there were no right or wrong answers. In the next step, participants were introduced to the types of choices they had to make later on. An exemplary warm-up choice task served as an easy start into the questionnaire. It furthermore served the purpose of increasing the familiarity with the type of choice questions and of decreasing learning effects during the actual choice tasks. Participants were told that they had to make several of these choices in the following. Then, the purchase situation and the incentive (see Sects. 4.3.1.1 and 4.3.1.2) were described. Subsequently, participants had to make 14 choices between different offers of which 12 were generated based on the balanced overlap algorithm and two were

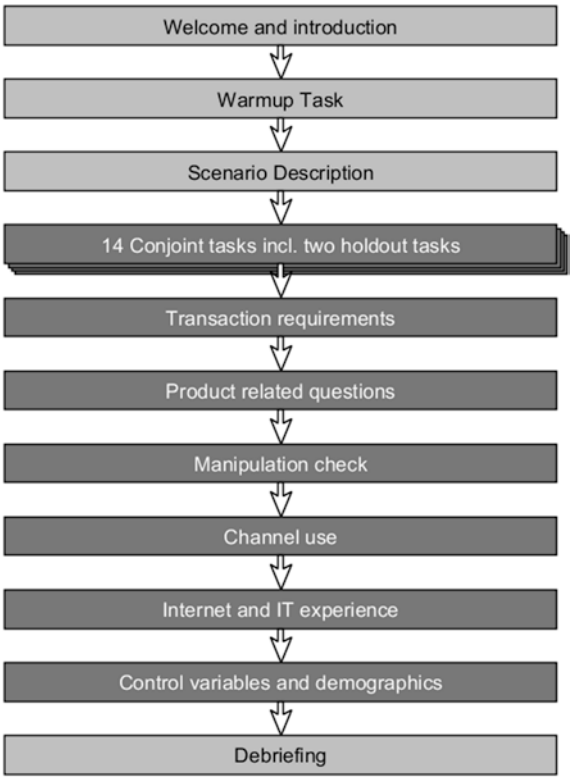

Fig. 4.7 Flow chart of the questionnaire

fixed holdout tasks that did not vary across respondents. After these choice tasks, participants were asked about their requirements for a purchase of the product. These requirements were asked after the choice task to prevent any bias during the choice situation from making possible requirements explicit.

The next pages contained questions about product knowledge and importance followed by questions to test the hedonic or utilitarian nature of the decision (manipulation check). The temporal separation between the scenario description and the manipulation check was important to make sure that participants internalized the scenario as intended. Then, participants faced a series of questions regarding their previous use of offline, online or multichannel retailers for different product groups as well as their use of multichannel integration services. Consequently, questions about IT, internet and online purchasing skills and experiences with online purchasing, multichannel integration services and participants' price consciousness were asked. Finally, some control questions as well as demographics were requested. At the end of the questionnaire, participants were debriefed and thanked for their participation.

4.3.2 Data Collection

Data was collected between March and April 2014 using a professional market research firm. Since one of the goals of the study is to generate results that are as reliable and generalizable as possible, the respondents were sampled to match the German internet population with regards to gender and age. Restricting the sampling frame to internet users is reasonable because they represent the subgroup of the population that is composed of all potential buyers in the online channel. Those who have no internet connection are not affected by multichannel integration services and therefore not in the scope of this study.

The potential issues of satisficing in surveys (Krosnick 1991) have been illustrated in-depth in the previous chapter. Again, measures to prevent and detect satisficing were applied in this study. Two additional measures to prevent satisficing shall be emphasized, that go beyond what was done in the previous study. First, an effective mean to prevent satisficing is to engage participants with the survey (Krosnick 1991). This was achieved by the incentive-aligned design of the study described in Sect. 4.3.1.2. The study design itself therefore served as a stimulus and motivated participants to answer the survey honestly, since their answers were used to determine their potential outcome. Second, the survey was designed to be as brief as possible, since longer surveys survey lead to faster, shorter and more uniform answering behavior (Galesic and Bosnjak 2009). Furthermore, the survey did not only rely on a series of Likert scaled questions. The mixture between choice tasks and ordinary Likert scales may have been unfamiliar to many participants, making the survey more interesting and leading to a higher level of motivation (Krosnick 1991).

Remaining extreme satisficing behavior was identified by the simple control question about their purchase scenario (compare Fig. 4.4). Furthermore,

few redundant questions were asked at the beginning and at the end of the survey. If the deviation between the first and the second answer on the same question was more than three points on a seven-point Likert scale, one could be certain that the respondent did not even read the questions and therefore could not contribute any meaningful information. Therefore, they were removed and a new participant from their demographics group was immediately recruited from the professional market research firm. There is no assessment whether satisficers are systematically different from non-satisficers, however, it may be possible that the elimination of participants introduces a bias to the study (Barge and Gehlbach 2012). Therefore, participants were only removed in extreme cases. Since these control questions moreover did not require any skills from the participants, one can be confident that the no systematic discrimination was executed. A study by Oppenheimer et al. (2009) provides additional evidence for this statement. They compared the answers of potential satisficers to those of non-satisficiers and found no systematic differences between them.

A recent study by the "Arbeitsgemeinschaft Online Forschung e.V." was used to derive the quotas for our sample (AGOF 2013). According to this study, the population of German internet users consists of 47.4 % female and 52.6 % male users (participants who are younger than 14 years were excluded from the study for organizational and ethical reasons). To match our sample to the German internet population, participants were initially screened with respect to gender and age and screened out if the quota for their demographic group was already full. Overall, 698 valid responses were generated. A comparison between the target population and the participant group is conducted in 4.3.4.

Lastly, a possible non-response bias was assessed. To do so, the answers of early and late respondents were compared. In accordance with previous studies, late respondents were used as a proxy for non-respondents, because no information about non-participants is available (Armstrong and Overton 1977). Since no significant differences were identified, it can be concluded that non-response bias did not influence the results.

4.3.3 Conjoint Estimation and Goodness of Fit

Before estimating the importance of the transaction components and its attributes, the choice counts for each level were investigated on an aggregate level. The counts were calculated by dividing the number of times a concept including that level was chosen by the number of times that level was displayed. Due to the prohibitions in the conjoint design, the counts for the restricted attributes may be biased. However, the relationships between the shares of the channel services can be investigated. According to the simple counting of choices, immediate pickup was the most popular method for receiving the product, followed by delivery in two days and pickup in two days. With regards to the service, service in store was selected more frequently than online service. The return option in store was

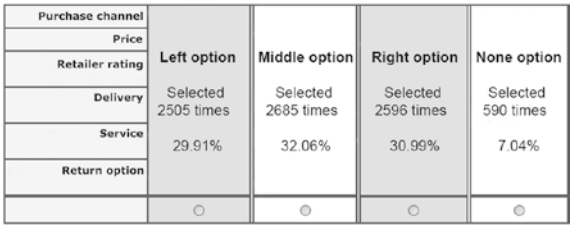

Fig. 4.8 Number of choices across response categories

also more popular than the return via mail. The within-attribute chi-square tests were significant at $p < 0.01$ for all attributes, indicating that the choice probability between the levels of each attribute are different from each other. An overview on the counts is given in Appendix H.

It is furthermore important to investigate the number of choices in each response category (left, middle, right, none). Since the design of the conjoint questionnaire was randomized, a bias towards one of the response categories would not introduce a systematic bias into our results. However, it would significantly increase the error in the estimation of the individual utilities. The overall 8376 choice tasks are evenly distributed across the three main response categories (cp. Fig. 4.8). In 7.04 % of the cases, participants decided to prefer not to purchase any of the three alternatives offered to them. This is far below the suggested maximum of 15 % none choices (Johnson and Orme 2003), giving indication that consumers invested the necessary resources required to evaluate the alternatives.

Hierarchical bayes (HB) estimation was used to estimate the model. The goal of the estimation is to determine the individual participants' part worths or utilities for the levels of each attribute. Other models for conjoint estimation such as logit or latent class only allow the estimation on an aggregated or a group level. However, this study assumes that people are different and cannot be described by a single set of utilities. The goal is therefore to compare individual differences, which is enabled by HB estimation (Allenby and Rossi 2003). The advantages of HB compared to alternative estimation methods include:

- HB allows estimation of individual parameters even if there are more parameters than individual observations (compared to aggregate logit and latent class).
- HB is not prone to the independence of irrelevant alternatives problem (compared to aggregate logit).
- HB can distinguish between differences among individuals (heterogeneity) and noise (error), leading to better average estimates (compared to aggregate logit and latent class) (e.g., Allenby and Ginter 1995; Lenk et al. 1996).
- HB can handle collinearity among the independent variables (compared to multiple regression).
- Fewer decisions are necessary to estimate individual's utilities (Lenk et al. 1996; Orme 2009b), preventing them from information overload.

The HB model is hierarchical because it has two levels: a lower level and a higher level. On the lower level, a logit model is assumed for each individual respondent.

However, since every participant only provides data from twelve choice tasks, it is difficult to estimate her/his preferences from this little amount of information. Therefore, HB uses a second level, the upper level, that describes the distribution of the individuals' parth worths as a multivariate normal distribution. By making use of the data of the other participants, HB is able to estimate more parameters than the individual's data would allow (Orme 2009b).

The estimation algorithm is very complex. Its principle can be illustrated as follows (Johnson 2000). The individual vectors of part worths or utilities β_i are drawn from a multivariate normal distribution with vector of mean values of the individuals' utilities α and the matrix D with variances and covariances across individuals:

$$\text{Upper level model} : \beta_i \sim \text{Normal}(\alpha, \text{D})$$

A logit model is estimated for every individual on the lower level. The individual utility of each alternative is calculated by the sum of the individual utilities presented in this alternative. The probability of choosing the k-th alternative is calculated by dividing the exponentiated utility of the alternative by the sum of exponentiated utilities presented in the choice situation:

$$\text{Lower level model} : p_k = \frac{\exp\left(x_k' \beta_i\right)}{\sum_j \exp(x_k' \beta_i)}$$

where x_j is the vector of values describing the j-th alternative of the choice task. The algorithm then iteratively estimates α, D and the β_i on the sets of other parameters (e.g., α is estimated based on D and the β_i's). Starting values for the β_i's, D and α are set to 0 as a conservative starting value. The utility vector β_i is estimated using a "Metropolis-Hastings" algorithm (Orme 2009b). This procedure allows HB to produce individual estimates for every respondent. If the choice data of an individual is inconsistent, the estimates for b depend more on the general population's estimates. Accordingly, b converges over the first several thousand iterations to fit the data and at the same time also follows the multinormal distribution. Afterwards, the parameters vary little but continue to bounce around. Therefore, it is important to select the average over a large number of late iterations as point estimates.

To be absolutely sure of convergence, 100,000 iterations were done before saving any results. Subsequently, another 100,000 iterations were done. The marginal changes in the estimates indicate that convergence was achieved (cp. Fig. 4.9). Point estimates for the parameters were derived by averaging the estimates of the last thousand iterations and saved for further analyses. Overall, it took 2:43 h to estimate the 19 parameters per respondent including main effects and important 2-way interactions. The utility parameters were normalized for further analysis (zero-centered diffs). Thereby, the sum between the best and the worst levels are constant and allow comparison between participants.

Three measures are used to assess the validity of the model and the estimation. First, percent certainty indicates likelihood according the logit rule that the

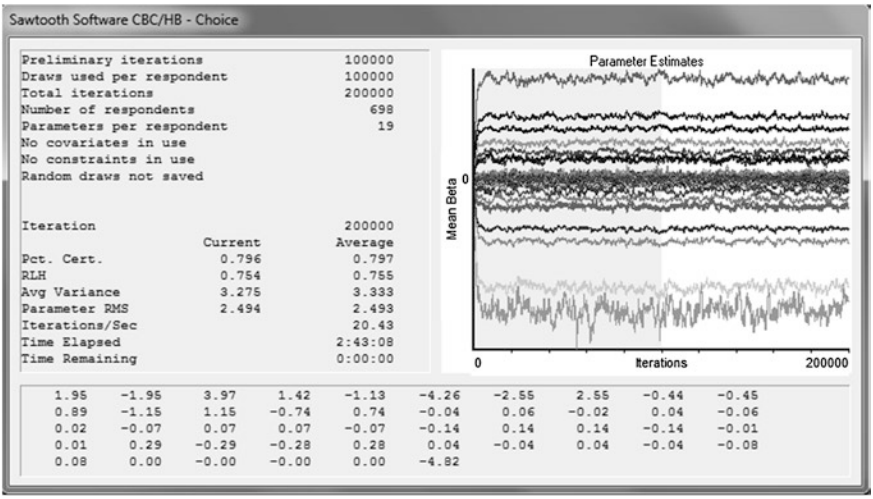

Fig. 4.9 Conjoint estimation

participants would choose the option they actually chose. The log likelihood for a perfect model would be 0, while the log likelihood of a naive model would be −1,1611.601569.[4] The log likelihood for the model was −2291.09, indicating that the likelihood that the model would predict the actual choice is 80 %. Although this very good value, the model could suffer from overfitting to the data that was used for the estimation. Therefore, two holdout fixed tasks were included in the questionnaire. These tasks were not used for the model estimation and can therefore be used to test the prediction validity of the model. The fixed tasks were distributed evenly throughout the conjoint task as suggested by Johnson and Orme (2010) to average out concentration and training effects and therefore positioned after the fourth and the eighth random choice task. Mean average error (MAE) and the hit rate typical measures evaluate prediction validity (Huber and Zwerina 1996; Moore et al. 1998). MAE describes the average difference between the predicted choice share of a task and the actual choice share of the participants. It tests prediction validity on an aggregate level. The average MAE across the 8 stimuli (2 tasks with 3 stimuli plus none option each) was 3.76 indicating an error of only 3.76 % for each option. The hit rate uses the individual utilities to estimate how many of the choices in the holdout tasks were predicted correctly. We would expect a hit rate of 25 % from a random choice model. The hit rate was 73.2 % for fixed task 1 and 73.1 % for fixed task 2, which are both very good values (e.g., Rossi and Allenby 1993).

[4] $\ln\left(\frac{1}{4(\textit{alternatives per choice task})}\right) * 12(\textit{tasks}) * 698(\textit{participants}) = -11,611.601569.$

4.3.4 Results

In this section, the results of the data analysis are presented. First, descriptive statistics are presented to analyze whether the sample has the desired distribution and to provide deeper insights on other demographics as well as shopping and internet experiences of the participants. Before the hypotheses can be analyzed, the validity and reliability of measurement model is assessed. Then, a formal test of the manipulation provides certainty that the design of the study was successful. Afterwards, the average utilities for the different channel options are presented, before the individual-level data is used to test the hypotheses. Lastly, potential limitations of the study are described and discussed.

4.3.4.1 Descriptive Statistics

To check whether our final sample fulfills the sampling criteria described above, the age and gender of the respondents is compared to the distribution in the German online population (AGOF 2013). Visual inspection (cp. Table 4.4) and chi^2-test ($\chi^2 = 0.21$ with 11 degrees of freedom, $p = 1.0$) indicate a match between the distributions.

In the following, the demographic characteristics of the dataset are described. As described above, age and gender represent the population of online users. Occupation, income and educational states are heterogeneous and in most cases similar to the German population (Statistisches Bundesamt (Destatis) 2012). However as expected for a research panel, extremely high incomes and people with doctorate degree are slightly underrepresented in the sample. While it is important

Table 4.4 Distribution of age and gender among respondents and German internet users

Demographics		Sample		German internet users	Difference (%)
Gender	Age	Number	Share (%)	Share (%)	
Female	14–19	32	4.6	4.4	+0.2
	20–29	64	9.2	8.9	+ 0.3
	30–39	57	8.2	8.4	−0.2
	40–49	73	10.5	10.5	±0
	50–59	58	8.3	8.3	±0
	60+	45	6.4	6.6	−0.2
Male	14–19	33	4.7	4.8	−0.1
	20–29	65	9.3	9.4	−0.1
	30–39	63	9.0	9.0	±0
	40–49	82	11.7	11.7	±0
	50–59	64	9.2	9.0	+0.2
	60+	62	8.9	8.9	±0
		698	100.0	100.0	

to mention this limitation that stems from the impossibility to do probability sampling from the German online population, the sample covers all demographic classes, does not exhibit a strong bias in terms of the demographics and is therefore well suited for the purpose of this study, since the goal of this study is not to make any descriptive statements about the population of German online users, but to investigate causal relationships between different purchase situations and consumer types which are all covered in the sample. An overview on the demographics of the sample is given in Table 4.5.

Beyond these demographics, data about the shopping behavior, online and multichannel experiences was collected to gain a deeper understanding of the background and preferences of the participants. The number of hours a consumer spends on the internet gives an indication of their fluency with digital media and the number of opportunities they have to purchase online. If a consumer is online all day, it is much more convenient for them to make purchases via the electronic channel. The average participant spends 4.2 h per day on the internet (median: 4 h). Almost all participants (96.1 %) use the internet for online purchases (median: 3 purchases/month). 16.6 % can be classified as heavy online shoppers with more than 5 purchases/month. Around one third of the participants have already gathered experiences with multichannel integration services. An overview on these statistics is given in Table 4.6.

Beyond the question of their channel experiences, participants were also asked about the retailer type that they use for their purchases in two different product groups: books and gadgets. These product groups were selected because books represent the typical objects in multichannel studies and gadgets rank among the highest sold products on the internet and are also investigated in this study.

Table 4.5 Demographics of the sample

Age group					
14–19	20–29	30–39	40–49	50–59	60+
65 (9.3 %)	129 (18.5 %)	120 (17.2 %)	155 (22.2 %)	122 (17.5 %)	107 (15.3 %)
Gender		*Occupation*			
Female	Male	In training	Working	Unemployed or retired	
329 (47.1%)	369 (52.9%)	127 (18.2%)	408 (58.5%)	163 (23.4%)	
Household net income					
<500€	501–1500€	1501–2500€	2501–3500€	>3500€	Not specified
39 (5.6%)	150 (21.5%)	177 (25.4%)	137 (19.6%)	100 (14.3%)	95 (13.6%)

Highest education level						
No education	Secondary school	Higher education	Completed vocational training	University degree	Doctorate degree	Not specified
7 (1 %)	205 (29.4 %)	138 (19.8 %)	179 (25.6 %)	156 (22.3 %)	9 (1.3 %)	4 (0.6 %)

Table 4.6 Internet and shopping experiences of the sample

Hours online (per day)										
1 or less	2	3	4	5	6	7	8	9	10	More than 10
61 (8.7%)	149 (21.3%)	137 (19.6%)	98 (14.0%)	115 (16.5%)	42 (6%)	12 (1.7%)	29 (4.2%)	5 (0.7%)	26 (3.7%)	24 (3.4%)

Internet purchases (per month)						
0 purchase	1 purchase	2 purchases	3 purchases	4 purchases	5 purchases	6 purchases
27 (3.9%)	171 (24.5%)	158 (22.6%)	123 (17.6%)	66 (9.5%)	37 (5.3%)	116 (16.6%)

Use of pickup option after online purchase			*Use of service in store after online purchase*		
Never	Once	More than once	Never	Once	More than once
473 (67.8%)	117 (16.8%)	108 (15.5%)	501 (71.8%)	119 (17.0%)	78 (11.2%)

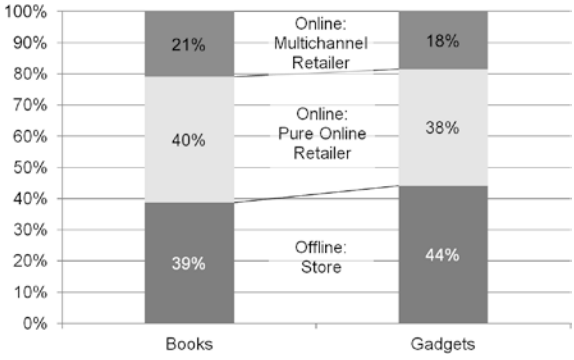

Fig. 4.10 Average channel choice distribution of past transactions

Based on the average purchase distribution between retailer types (cp. Fig. 4.10), it becomes apparent that the physical offline store is the most used channel for gadgets, while pure online retailers are most popular for books. The online stores of multichannel retailers play a minor role with around 18–21 %, while being more popular for gadgets than for books. However, past channel choice varies extensively between participants. While the median values of 30 % for books in physical stores (40 % for gadgets) and 33.5 % at pure online retailers (30 % for gadgets) reproduce the order of the average values, the median choice share for multichannel retailers' online stores is 0 % for both product groups. While many consumers do not use multichannel retailers' online shops at all, others use them almost exclusively. This interesting finding highlights the great variety of channel preferences between consumers and the importance to incorporate individual differences in models of channel choice, as implemented in this study.

4.3.4.2 Measurement Model Validation

The definitions of the five latent variables in the measurement model indicate that they are reflective, since their indicators are consequences of the latent variables that they measure (Jarvis et al. 2003). In the same manner as in the previous study, the reliability and validity of the reflective measurement models are evaluated on the basis of internal consistency reliability, convergent validity and discriminant validity. Internal consistency reliability is assessed using the composite reliability score. The CR of all measurement models exceeds the suggested threshold of 0.7 (Nunnally and Bernstein 1994), it even exceeds 0.8 for all constructs. Convergent validity is checked by two indicators: indicator reliability and average variance extracted (Henseler et al. 2009). On the item level, all but one factor loadings are above 0.708. Thereby, these items share more than 50 % of their variance with the latent variable. The only exception is PCN3 with a loading of 0.646. This is surprising since price consciousness is a well-established construct. However, since the loading undercuts the critically value just a little and as price consciousness is used as a control variable and all other indicators turn out fine, it is reasonable to conclude that the convergent reliability of this measurement models is still good. AVE for this and for all other constructs exceeds the critical value of 0.5. An overview on these statistics is given in Table 4.7.

Discriminant validity was assessed using the Fornell-Larcker criterion. The square root of each variable's AVE was larger than its correlation with any other latent variable, indicating that the constructs are not only theoretically, but also empirically different from each other (Fornell and Larcker 1981). Details on the latent variable correlations are depicted in Table 4.8.

Because data for each respondent was partly obtained using a single survey, procedural and statistical remedies to minimize and control for common method bias (CMB) were applied (Podsakoff et al. 2003). An effective method to reduce common method variance is not to use a single measurement method. Therefore, the utilities of the different channel facets of channel integration were derived from the choices participants made while other latent variables were measured using Likert scales. Especially the first type of scale should reduce vulnerability to method effects (Sharma et al. 2009). Second, the questions were checked during the qualitative pretest for social desirability bias. Beyond that, respondents' were guaranteed anonymity to further reduce the tendency of social desirability. Third, as described before, the questionnaire was carefully developed to reduce satisficing behavior.

These remedies are useful for reducing the likelihood of common method bias. Although it is already low in this study, two methods were applied to control for its effects in the dataset: Harman's single factor and the marker variable technique (Lindell and Whitney 2001). Harman's single factor test (Podsakoff et al. 2003) was conducted by a principal components factor analysis on the Likert scaled variables in SPSS. The analysis revealed five factors with eigenvalues above one which accumulatively accounted for 71.18 % of the variance. The largest single factor accounted for 29.59 % of the variance. No single factor emerged or accounted for the majority of the variance. Therefore, the Harman's singe factor

Table 4.7 Latent variable statistics

Constructs	Variable name	Factor loadings	Items per construct	CR	Mean	Standard deviation	AVE
Offline purchase share	OPS1	0.840	2	0.81	41.46	29.41	0.71
	OPS2	0.840					
Online shopping risk perception	OSR1	0.791	3	0.86	3.28	1.26	0.68
	OSR2	0.892					
	OSR3	0.776					
Online shopping experience	OEX1	0.926	**3**	0.95	5.66	1.23	0.87
	OEX2	0.937					
	OEX3	0.930					
Product uncertainty	PUN1	0.862	2	0.85	3.68	1.36	0.77
	PUN4	0.862					
Product involvement	PIN1	0.933	4	0.96	5.21	1.60	0.86
	PIN2	0.962					
	PIN3	0.935					
	PIN4	0.869					
Price consciousness	PCN1	0.836	3	0.81	5.35	1.83	0.59
	PCN2	0.809					
	PCN3	0.646					
Multichannel service experience	MEX	1	1	1	0.46	0.50	1
Age	AGE	1	1	1	41.24	15.22	1
Gender	GEN	1	1	1	1.53	0.50	1
Income	INC	1	1	1	4.80	2.21	1

Note AVE average variance extracted; *CR* composite reliability; *MSE* is dummy coded based; GEN coded as 1 = female/2 = male; *INC* refers to the income groups in Appendix G

Table 4.8 Correlation matrix

	OSR	OEX	PUN	PIN	PCN	OPS	MEX	AGE	GEN	INC
OSR	0.82									
OEX	-0.5^{**}	0.93								
PUN	0.28^{**}	-0.14^{**}	0.88							
PIN	-0.11^{**}	0.34^{**}	-0.13^{**}	0.93						
PCN	-0.12^{**}	0.2^{***}	0.04	0.11^{**}	0.76					
OPS	0.38^{**}	-0.36^{**}	0.08^{*}	-0.09^{*}	-0.08^{*}	0.84				
MEX	−0.05	0.11^{**}	−0.05	0.14^{**}	0.03	−0.05	1			
AGE	-0.12^{**}	-0.1^{**}	−0.06	-0.3^{**}	−0.07	−0.02	-0.13^{**}	1		
GEN	−0.06	0.03	−0.03	0.01	-0.09^{*}	-0.09^{*}	−0.02	0.05	1	
INC	-0.19^{**}	0.18^{**}	−0.07	0.1^{*}	-0.09^{*}	-0.11^{**}	0.08	0.25^{**}	0.1^{*}	1

Note $^{*}p < 0.05$, $^{**}p < 0.01$

Diagonal values represent the square root of AVE

test indicates, that CMB did not influence the results (Malhotra et al. 2006). As the second test, the marker variable technique was applied. It was used in a post hoc manner by using the lowest correlation of two variables in the survey as a proxy for the magnitude of CMB (Malhotra et al. 2006). Accordingly, the correlation matrix was adjusted by this value and significances of the correlations were compared. The details of this test including the corrected and uncorrected correlation matrices are depicted in Appendix I. Since the significance of the correlations did not change, this test also signifies that CMB did not alter the results (Lindell and Whitney 2001). Overall, the procedural remedies and the statistical tests give strong indication that CMB did not bias the results of the study.

4.3.4.3 Manipulation Check

Before differences between the manipulated groups can be tested, it is important to make sure that the manipulation was successful. In this study, this means that the purchase that was manipulated to be mainly utilitarian is perceived more utilitarian and less hedonic than the purchases of the second group which was manipulated to be hedonic.

Since Levene's test to assess the equality of variances (homoscedasticity; a prerequisite for an independent samples t-test) was significant for the hedonic score, Welch's t-test is used to derive an unbiased estimate of the t-value (Kohr and Games 1974). The results indicate that the manipulation between utilitarian purchases and hedonic purchases was successful since the utility-score of the utility group was statistically significantly higher (reverse coded utility) than in the hedonic group ($t(598.696) = 2.251$, $p = 0.025$) and the hedonic-score was statistically significantly higher for the hedonic group than for the utility group ($t(424.878) = 7.076$, $p < 0.001$). A more extended analysis can be found in Appendix J.

4.3.4.4 Average Utility and Importance Scores

The average utility scores were derived by averaging the individual estimates as described in paragraph 4.3.3. The average utilities are all statistically different from zero ($p < 0.01$) implying that the levels have a significant influence on the utility of the choice alternatives. Holding all other attributes constant, physical stores have a higher utility than the internet as a purchase channel. As expected, the utility of price is decreasing with a higher price level. The almost linear decrease in utility indicates that the choice of a realistic price range was successful, since none of the levels triggers extremely positive or negative choices that would indicate a price that was extraordinary cheap or unacceptable. The utilities of the vendor rating levels also followed the expected order. Regarding the three multichannel integration attributes in the center of attention, the utilities of the service and return levels both indicate that the in-store performance is valued higher

than its mail or online counterparts. The immediate pickup in store offers the highest average utility of the delivery options, followed by the standard shipping in two days. A delayed pickup in store however was the least popular option of the three. An overview on the average utility scores is depicted in Table 4.9.

Based on these average utilities, one can also determine the role of the attributes for the overall choice. The relative importance scores for each attributes, illustrated in Fig. 4.11, are calculated by dividing the range of the utility scores of the attribute under investigation by the sum of the ranges of all attributes' utility scores. It describes how much difference an attribute could make in the total utility of the choice alternative. All average importance scores are statistically different from zero ($p < 0.01$) indicating that all attributes had a significant influence on the total utilities and thereby on the participants' choices. The importance scores depend on the levels chosen for the investigation. For instance, if the price range would have been larger, the overall importance of the price attribute would have increased. The same is true for the vendor rating. Therefore, it makes more sense to investigate the attributes that are not based on design choices but instead fully cover the space of possible levels, i.e., the multichannel integration services.

4.3.4.5 Impact of Purchase Specific and Individual Differences

In this paragraph, the impact of purchase specific and individual differences on the utility of the different multichannel integration services is tested using linear regression. Four types of multichannel integration services are differentiated and tested separately: service in store, returns in store, delayed pickup and immediate pickup.

Table 4.9 Average utility scores of attribute levels

Attribute	Level	Average utility	Standard error
Channel	Store	45.48322	39.88384
	Internet	−45.48322	39.88384
Price	260€	98.33461	56.42250
	270€	34.96004	23.77649
	280€	−27.40251	22.52522
	290€	−105.89213	57.74138
Vendor rating	3/5	−61.74580	40.12393
	5/5	61.74580	40.12393
Delivery	Shipping (2 days)	−4.10142	29.33138
	Pickup in store (2 days)	−12.82534	17.69836
	Pickup in store (immediately)	16.92675	25.55326
Service	Online service	−24.44905	24.26239
	Service in store	24.44905	24.26239
Return	Return by mail	−17.36174	22.18591
	Return in store	17.36174	22.18591

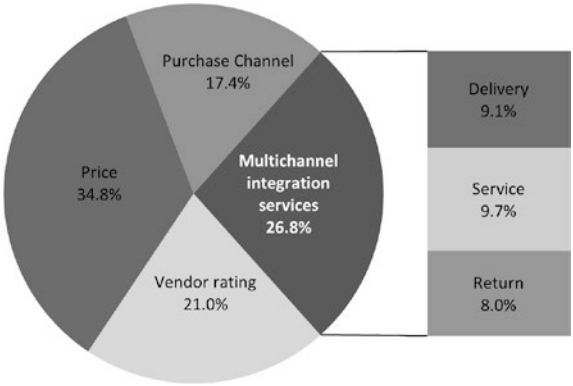

Fig. 4.11 Overall importance scores of consumer choice parameters

The experimental variable for the purchase situation was dummy coded, with 0 indicating a hedonic purchase and 1 indicating a utilitarian purchase. The factor score for the online purchase share was included as the individual factor based on the share of purchases within the last year that were pursued in a store. Besides these measures for the situational factors and the individual factors, a variety of control variables was included in the analysis. Incorporating additional indicators is important because it enables the identification of confounding effects that might result in misestimating certain parameters. While this is less critical for experimental settings (Shadish et al. 2002), as in the case of the purchase situation, we want to rule out other alternative explanations for the relationship between the offline purchase share and the dependent variables. Variables that have been influential in similar contexts are selected as controls.

First, online shopping risk perception is included using the standardized factor score from the confirmatory factor analysis. Risk perception can be an important driver of channel perceptions (Gupta et al. 2004b). Therefore, it is necessary to rule out the alternative explanation that risk perception and not the offline channel share are the reason for differences in the valuation of multichannel integration services. Second, previous experience with online shopping and multichannel services are added as control variables. Thus, one can control for the general uncertainty that people may perceive in channels that they have never used (Bart et al. 2005; Frambach et al. 2007) and for familiarity effects. Third, two product specific variables were included in the analysis: product uncertainty and product involvement. Although all participants investigate the same product with different shopping motives, their individual differences in knowledge and importance of the product itself may drive their valuation of integration services. By including these variables as controls, it should be ruled out that other product specific perceptions explain the effects that this study attributes to motive-related purchase specific differences. Fourth, price consciousness is included to control for possible effects that price-channel associations may have. Lastly, demographics are expected to influence peoples' predispositions to multichannel retailing (Kushwaha and Shankar 2013). Therefore, the most important demographics age, gender and

Table 4.10 Correlation matrix

Variables	U(Standard Shipping)	U(Pickup immediately)	U(Service in store)	U(Returns in store)	Purchase situation
U(Pickup immediately)	−0.80**	1			
U(Service in store)	−0.55*	0.31**	1		
U(Returns in store)	−0.43**	0.22**	0.68**	1	
Purchase situation	−0.04	−0.02	0.12**	0.10**	1
Offline purchases share	−0.25**	0.19**	0.28**	0.22**	0.03
Online shopping risk perception	−0.16**	0.11**	0.22**	0.17**	−0.04
Online shopping experience	0.13**	−0.07	−0.19**	−0.14**	0.03
Product uncertainty	−0.05	0.00	0.03	0.06	0.04
Product involvement	0.04	0.01	−0.08*	−0.05	−0.09*
Price consciousness	0.00	−0.01	−0.12**	−0.06	0.01
MC service experience	0.01	−0.02	−0.05	−0.05	−0.04
Age	−0.12**	0.07	0.12**	0.14**	0.04
Gender	0.01	0.02	−0.05	−0.06	0.04
Income	0.04	−0.00	−0.06	−0.04	0.00

Note $^{*}p < 0.05$; $^{**}p < 0.01$
U(x) utility of channel characteristic x, *MC* multichannel

income are included in the study. Table 4.10 shows the correlations between the utilities and the other variables in the analysis. The other correlations are depicted in Table 4.8.

Before continuing with the analysis of the delivery service options, the data was tested for non-linearity, heteroscedasticity, and non-normality. First, non-linearity was checked using a plot of the observed versus predicted values to see whether a transformation of the data was necessary. The plot indicated that the assumption of a linear relationship was appropriate. Second, heteroscedasticity was tested using a plot of residuals versus predicted value. There was no indication that the residuals vary conditional on the predicted value. Third, the normal probability plot of the residuals showed no indication of excessive skewness (non-symmetric, i.e. too many errors in one direction) or kurtosis (i.e., having too many or too few large errors in both directions). These tests were conducted for all four regressions.

The variance inflation factor (VIF) was inspected to test whether a high correlation between two (collinearity) or more (multicollinearity) independent variables may have influenced the stability of the estimates and potentially caused an inflation of the standard errors. Since all values of VIF are below the suggested threshold of 5 (cp. Tables 4.11, 4.12, 4.13 and 4.14), issues of collinearity can be ruled out. The models were evaluated in a two-step procedure where the first model includes only the hypothesized relationships while the second model included the large set of control variables.

Table 4.11 Regression on the utility of the service in store option

	Model 1			Model 2					
Predictor	B	SE	t	B	SE	β	t	CI	VIF
(Constant)	22.06	1.20	18.46***	18.01	4.10	–	4.39***	[9.95, 26.07]	–
Purchase situation	5.18	1.76	2.94**	5.50	1.75	0.11	3.15**	[2.07, 8.93]	1.02
Offline purchases share	6.77	0.88	7.71***	5.12	0.96	0.21	5.34***	[3.24, 7]	1.24
Online shopping risk perception				3.39	1.08	0.14	3.14**	[1.27, 5.51]	1.57
Internet purchase experience				−0.39	1.10	−0.02	−0.35	[−2.55, 1.77]	1.63
Product uncertainty				−0.42	0.91	−0.02	−0.46	[−2.21, 1.36]	1.11
Product involvement				0.54	0.98	0.02	0.55	[−1.38, 2.46]	1.29
Price consciousness				−1.92	0.90	−0.08	−2.15*	[−3.68, −0.16]	1.08
Multichannel experience				−0.13	1.77	0.00	−0.08	[−3.6, 3.33]	1.04
Age				0.23	0.06	0.14	3.62***	[0.1, 0.35]	1.24
Gender				−1.67	1.75	−0.03	−0.96	[−5.11, 1.76]	1.03
Income				−0.60	0.45	−0.05	−1.33	[−1.48, 0.29]	1.15

Note $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; purchase situation dummy coded (hedonic = 0; utilitarian = 1)

B unstandardized coefficient; *β* standardized coefficients; *SE* standard error; *t* t-statistic; *CI* confidence interval; *VIF* variance inflation factor

Table 4.12 Regression on the utility of the return in store option

	Model 1			Model 2					
Predictor	B	SE	t	B	SE	β	t	CI	VIF
(Constant)	15.42	1.11	13.86***	10.77	3.83	–	2.81**	[3.25, 18.3]	
Purchase situation	4.21	1.64	2.57*	4.39	1.63	0.10	2.69**	[1.19, 7.6]	1.02
Offline purchases share	4.85	0.82	5.94***	3.73	0.90	0.17	4.16***	[1.97, 5.49]	1.24
Online shopping risk perception				2.53	1.01	0.11	2.51*	[0.55, 4.51]	1.57
Internet purchase experience				−0.08	1.03	0.00	−0.08	[−2.1, 1.93]	1.63
Product uncertainty				0.55	0.85	0.02	0.65	[−1.12, 2.21]	1.11
Product involvement				1.19	0.91	0.05	1.30	[−0.6, 2.98]	1.29
Price consciousness				−0.73	0.84	−0.03	−0.87	[−2.37, 0.91]	1.08
Multichannel experience				−0.50	1.65	−0.01	−0.30	[−3.74, 2.74]	1.04
Age				0.25	0.06	0.17	4.29***	[0.14, 0.37]	1.24
Gender				−2.23	1.63	−0.05	−1.36	[−5.44, 0.98]	1.03
Income				−0.46	0.42	−0.04	−1.09	[−1.29, 0.37]	1.15

Note $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; purchase situation dummy coded (hedonic = 0; utilitarian = 1)

B unstandardized coefficient; *β* standardized coefficients; *SE* standard error; *t* t-statistic; *CI* confidence interval; *VIF* variance inflation factor

Table 4.13 Regression on the utility of the delayed pickup option

	Model 1			Model 2					
Predictor	B	SE	t	B	SE	β	t	CI	VIF
(Constant)	−14.25	0.90	−15.80***	−17.02	3.13	–	−5.43***	[−23.16, −10.87]	–
Purchase situation	3.08	1.33	2.32*	3.08	1.33	0.09	2.31*	[0.46, 5.7]	1.02
Offline purchases share	2.45	0.66	3.71***	1.83	0.73	0.10	2.50*	[0.39, 3.26]	1.24
Online shopping risk perception				1.01	0.82	0.06	1.23	[−0.61, 2.62]	1.57
Internet purchase experience				−0.42	0.84	−0.02	−0.50	[−2.07, 1.23]	1.63
Product uncertainty				0.90	0.69	0.05	1.30	[−0.46, 2.26]	1.11
Product involvement				0.09	0.75	0.01	0.12	[−1.37, 1.56]	1.29
Price consciousness				0.43	0.68	0.02	0.63	[−0.91, 1.77]	1.08
Multichannel experience				1.92	1.35	0.05	1.43	[−0.72, 4.56]	1.04
Age				0.15	0.05	0.13	3.10**	[0.05, 0.24]	1.24
Gender				−1.11	1.33	-0.03	−0.83	[−3.73, 1.51]	1.03
Income				−0.53	0.34	-0.06	−1.55	[−1.21, 0.14]	1.15

Note $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; purchase situation dummy coded (hedonic = 0; utilitarian = 1)

The same regression was also run with the DV standard shipping (2 days) since the utilities of the pickup in store and delayed pickup are not independent. Inverted results and significances match the results of this regression

B unstandardized coefficient; *β* standardized coefficients; *SE* standard error; *t* t-statistic; *CI* confidence interval; *VIF* variance inflation factor

First, the influence of individual and purchase specific differences on the utility of service in store was evaluated. The results indicate strong support for hypothesis H5a, postulating that individuals with an offline focus receive a higher utility from service in store than other consumers ($p < 0.001$). They furthermore show that service in store is significantly more valuable for utilitarian purchases than for hedonic purchases, confirming hypothesis 6a ($p < 0.01$). The results are outlined in Table 4.11.

Second, the return in store option was evaluated. The results indicate strong support for the hypothesis that offline customers receive a higher utility from return in store than online consumers. Therefore, hypothesis H5b was supported ($p < 0.001$). In the same manner, utilitarian purchases induce a higher utility for returns in store than hedonic purchases, providing confirmatory evidence for hypothesis H6b ($p < 0.01$). The full statistical results are depicted in Table 4.12.

Third, differences in utility of a delayed pickup option between purchase situations and individual differences were assessed. The results indicate that offline

Table 4.14 Regression on the utility of the immediate pickup option

	Model 1			Model 2					
Predictor	B	SE	t	B	SE	β	t	CI	VIF
(Constant)	17.59	1.30	13.57***	7.82	4.53	–	1.72	[−1.08, 16.72]	
Purchase situation	−1.44	1.91	−0.75	−1.38	1.93	−0.03	−0.72	[−5.17, 2.41]	1.02
Offline purchases share	4.75	0.95	4.99***	4.51	1.06	0.18	4.26***	[2.43, 6.59]	1.24
Online shopping risk perception				1.73	1.19	0.07	1.45	[−0.61, 4.07]	1.57
Internet purchase experience				0.31	1.21	0.01	0.25	[−2.07, 2.69]	1.63
Product uncertainty				−0.36	1.00	−0.01	−0.36	[−2.33, 1.61]	1.11
Product involvement				1.24	1.08	0.05	1.15	[−0.88, 3.37]	1.29
Price consciousness				0.48	0.99	0.02	0.49	[−1.46, 2.43]	1.08
Multichannel experience				−0.20	1.95	0.00	−0.10	[−4.03, 3.63]	1.04
Age				0.17	0.07	0.10	2.42*	[0.03, 0.31]	1.24
Gender				2.01	1.93	0.04	1.04	[−1.78, 5.81]	1.03
Income				-0.04	0.50	0.00	−0.08	[−1.02, 0.94]	1.15

Note $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; purchase situation dummy coded (hedonic = 0; utilitarian = 1)

B unstandardized coefficient; *β* standardized coefficients; *SE* standard error; *t*: t-statistic; *CI* confidence interval; *VIF* variance inflation factor

purchasers receive a higher utility from a delayed pickup option than online purchasers, as imputed by hypothesis 5c ($p < 0.05$). Hypothesis 6c claims that utilitarian purchase situations should increase the utility of a delayed pickup option, compared to hedonic purchase situations. The analysis supports this suggestion ($p < 0.05$). Table 4.13 provides details on the analysis.

Lastly, the impact of individual and purchase specific differences on the utility of an immediate pickup option was evaluated. While the influence of the individual differences in terms of the offline purchase share is significant ($p < 0.001$), its sign contradicts the effect described in hypothesis 5d. Therefore, no support for hypothesis 5d was found. While the sign points towards the hypothesized direction, the effect of the purchase situation on the utility of the immediate pickup was not significant ($p = 0.451$ for model 1 and $p = 0.474$ for model 2). The results of this analysis are shown in Table 4.14.

Overall, six of the eight hypotheses are supported. With regards to the control variables, we find that age significantly influences the utility of the different multichannel integration services. For all services, older consumers perceive a higher utility ($p < 0.001$ for service and returns, $p < 0.01$ for delayed pickup, $p < 0.05$ for immediate pickup). Furthermore, a slightly negative effect of price consciousness on the utility of service in store was identified ($p < 0.05$). Lastly, the perceived online purchase risk increases the attractivity of service in store and returns in store multichannel integration services (service $p < 0.01$, return $p < 0.05$).

4.3.4.6 Limitations

This is a cross-sectional study and as such it suffers from the usual limitations of such studies, since no evidence can be provided that the results will be stable over time. Consumer decision processes evolve over time (Valentini et al. 2011). Therefore it may be interesting to revalidate the results at a later point in time. Nevertheless, results represent valid estimates at this point, since no major outcry in the press led to a temporary bias. Furthermore, this study investigated different mechanisms instead of making claims about the population itself. Therefore, even a massive shift in (for instance) the popularity of the internet channel would not invalidate the results, because the results would likely still be valid for the different subgroups after parts of the population were shifted from one group to another.

The study focused only on one specific product to study the impact of multichannel integration services. Introducing several products would have made it difficult to compare the results between consumers or would have required a substantially larger sample. Although the product was chosen using an elaborate set of requirements (see Sect. 4.3.1.1), that make it an appropriate candidate for studying the phenomenon, one must be careful before applying the results to product categories that may differ significantly, such as fashion.

Surprisingly, this study does not confirm the good statistical properties of the construct product uncertainty. Being derived from the product performance uncertainty scale of Dimoka et al. (2012), the scale was successfully qualitatively and quantitatively tested in the previous empirical study. All items indicated good statistical properties. In the application for this study, where a more technological product was used compared to both the previous study and the original context of the items, the item statistics and the subsequent qualitative analysis indicate that it may be a multidimensional construct consisting of technological uncertainty and performance uncertainty. As a consequence, only two items could be used in the analysis for this construct. This is acceptable in many cases (e.g., Pavlou et al. 2007) and was of no relevance for this study, because it was only used as a non-influential control variable. However, the finding calls for a deeper investigation of this scale in different empirical contexts.

The sample of this study is recruited using a professional market research firm. The goal was to derive a sample that is a representative subset of the German online population. The perfect sample would consist of a random draw from the population of the German online users where every online user has same probability of being part of the sample (probability sampling) (Groves et al. 2009). However, this is not feasible in the case of this and most other studies. Non-probability samples are the standard in business research. Using a professionally recruited panel and including quotas for important demographic variables is the closest alternative to probability sampling available. The sample matches the population of German internet users with regards to age and gender and is, as discussed above, also nicely distributed concerning the other characteristics of the participants. Therefore, one can be confident that the sample presents a characteristic segment of the target population. However, it should be explicit

that the notion of representativeness in this case refers to "representative with regards to age and gender" and not representative in the narrow sense of probability sampling.

Furthermore, the application of the conjoint method leads to a methodological limitation. For delivery with having three different levels (immediate pickup, delayed pickup and standard shipping), the utility score is quantified in terms of the preference relative to the other levels within the same attribute. Thus, the resulting utility score for (e.g., immediate pickup) for a respondent depends on what other options (standard shipping, delayed pickup) are included within the same attribute. This is a design compromise that was taken into account for being able to compare three different channel options for delivery. Since all participants faced the same alternatives and the three alternatives are all realistic options, this should not influence the results of the study. In an extreme case, the interdependence may introduce unexplained noise due to individual extreme valuations for one or the other option. However, it would not bias the results of the study.

4.3.5 Discussion

Before discussing the purchase specific and individual differences in the valuation of multichannel integration services, some general findings are reviewed. The study confirms that channel attributes included in the study significantly influence consumers' choices. On an aggregate level, price is the most important determinant for choosing the transaction partner followed by the vendor rating and the transaction channel itself. Since the importance of these attributes has been derived from previous literature and led to the decision to include them in the study, it is not surprising that they are also influential in this setting. The examination object, multichannel integration services, contributes 26.8 % to the overall decision of the customers. This is the first study that provides a comparison of the importance of different service configurations in a multichannel environment. The results indicate that the way how services are implemented is the most important attribute, followed by the delivery method and the possibilities of returning the good. This extends the insights derived from the previous study where services and returns were studied jointly. The elaborated importance of post-purchase service on channel choice was also highlighted in previous studies on channel choice (Chiang et al. 2006). The results of this study provide evidence that the service aspect indeed is the slightly more important one of the two.

Looking at the different levels of the attributes, one can see that most integrated options provide more (average) utility than its pure online alternatives. Service in store has a higher utility than online service, returns in store are valued higher than returns via mail and an immediate pickup is perceived preferable to standard shipping. The only exception is the delayed pickup that is on average perceived to be less useful than standard shipping. This is in line with the previous study that also found no positive impact of the delayed pickup option on channel choice.

Consumers, who have to wait for two days before they are able to pick the product up, seem to prefer saving the effort of driving to the shop and receive the product within the same timeframe at home. Taken together, these findings provide strong evidence that an investment in a delayed pickup option does not increase the competitiveness of multichannel retailers.

The major goal of this study was to study differences between purchase situations and individual factors. Comparing hedonic and utilitarian purchase situations, the study indicates that multichannel services that address the post purchase phase (service in store, returns in store) are more valuable for utilitarian purchases than for hedonic purchases. This finding provides support for the hypothesis that utilitarian purchases shift consumers' focus towards possible issues that may reduce the functional effectiveness of the product in the future (Wertenbroch and Dhar 2000). In contrast, hedonic purchases are concerned with emotional wants (Hirschman and Holbrook 1982), thereby reducing the focus on future concerns and the valuation of service and return in store options. The same argument holds for the delayed pickup. Despite the overall unfavorable evaluation of this service option, the perceived utility is higher when it is offered for utilitarian purchases. As the previous study indicated, a pickup option reduces the psychological risk of a purchase. This risk reduction is less valuable for hedonic purchases that focus on experiential benefits, affect and enjoyment (Wertenbroch and Dhar 2000) compared to the practically focused utilitarian purchases. In contrast to the initial assumption, there is no support for the hypothesis that hedonic purchase situation lead to a higher valuation of immediate pickup. Although the effect points towards this direction, it is not significant. A possible explanation is the duality of the appeal of an immediate pickup. As discussed in Sect. 4.2.2, the immediate pickup incorporates the risk reducing characteristics of the delayed pickup but additionally offers the convenience of faster gratification, that should appeal to consumers making hedonic purchases (Hirschman and Holbrook 1982). The assumption that the immediacy characteristic is dominant in the perception of the consumers was not confirmed, therefore, there is no difference in the valuation of the immediate pickup option between purchase situations.

With regards to individual differences, the study results provide evidence that consumers that prefer the offline channel derive a much higher utility from multichannel integration services than online customers. These effects refer to particular differences between consumers that cannot be explained by different levels of online experience or online risk perceptions. Customers who continuously choose to transact in the offline environment that is characterized by familiarity, safety, confidence and trust, appreciate these characteristics for their purchases (Kushwaha and Shankar 2013). Therefore, they focus on the handling of possible future issues (service and returns in store) and risk reduction during the purchase (delayed pickup) and therefore have an increased valuation for multichannel integrated channels. With regards to the immediate pickup, again two effects compete with each other. On the one hand, immediacy should be more appealing to online customers who focus on gains and enjoyment (Kushwaha and Shankar 2013). On the other hand, it also includes the risk reducing features of the delayed pickup

that have been shown to please offline customers. In this case, the safety related characteristics are weighted more strongly than the potential gains. This is in line with prospect theory suggesting that losses hurt more than gains feel good (Kahneman and Tversky 1979). Consequently, pickup immediacy is also valued higher by customers who continuously prefer offline channels.

This strong tendency that multichannel services are valued more by offline customers has a series of implications. The major goal of multichannel integration services is to compete with pure online retailers. The results indicate that online consumers are not the ones who value these services most. Instead, they have their greatest appeal to customers who would otherwise prefer to purchase in physical outlets. Thereby, customers who would otherwise stay offline may be motivated to conduct online transactions using multichannel integration services. Getting accustomed to the online channel can have negative effects, since purchase volumes in physical stores are reduced after an online transaction (Ansari et al. 2008). The results furthermore suggest that this shift towards online channels would reduce the valuation of multichannel integration channels and thereby could diminish the advantage that retailers have for this customer type. Multichannel integration services may therefore be a gateway for offline-focused consumers to shift to the online channel instead of a chance to generate additional value in the competition for online customers.

Having discussed the results, one can conclude that regulatory focus theory is well suited to study the phenomenon. This novel perspective does not only allow the derivation of hypotheses in this unexplored area, but furthermore enables researchers to actually understand consumer preferences and choices in the multichannel environment. Six out of the eight hypotheses have been confirmed by the empirical study. As discussed, the two unconfirmed hypotheses were only weakly predicted by regulatory focus theory, because they included two reverse effects whose weighting is out of the range of the explanatory power of the theory.

Three other covariates have shown significant influences on the utility of one or several multichannel integration services. First, the perceived online risk has a positive impact on the valuation of service and return in store. Since personal contact is a very effective mean to mitigate uncertainty in transactions (Grabner-Kräuter and Kaluscha 2003), it is reasonable that consumers who perceive a higher online risk value this promise (Pavlou et al. 2007) of a personal interaction in case of an issue or a misfit of the purchase. Second, age was found to significantly positively influence all four manifestations of multichannel integration services. This finding supports previous studies that discovered that younger consumers prefer the characteristics of pure online channels (Ansari et al. 2008). Lastly, price consciousness has a positive impact on the utility derived from service in store, but no effect on all other types of multichannel integration services. It is challenging to make sense of this finding. One explanation could be that price conscious consumers want to make the most of their financial resources and therefore are anxious that an issue with the product or a failure may not be resolved, leading to a loss of their investment. However, this finding contradicts other studies that find price- and service-oriented customers to be distinct groups (e.g., Keen et al. 2004),

whereby price sensitive customers have no strong channel preference (Konuş et al. 2008). Further, it is difficult to justify why service in store should differ structurally from the other integration types in a way that price consciousness impacts this single integration service, but not the others. Overall, since there is no hypothesis and no post hoc theoretical explanation for this finding and in the light of a possible type 1 error, it would be useful to retest this relationship before drawing bold conclusions from this empirical finding.

The individual-level data estimated in the empirical study can be used to address questions beyond the focus of this work that shall be illustrated briefly in two post hoc analyses.

4.3.6 Post Hoc Analysis: Impact of MC Services on Channel Choice

One major hope that multichannel retailers have when competing online is that the multichannel integration services provide them with an advantage over pure online retailers. To test this thesis, two different scenarios were created: one where the prices of all three channels are equal and one where the online and offline channel of the multichannel retailer are more expensive due to their higher cost base. Based on the utility scores derived for each individual, the preference share for each alternative was calculated based on the maximum utility rule.[5] The preference share describes consumers' decisions and the predicted market share independent of other market variables such as the distribution of stores, awareness, loyalty, or inertia. For each scenario, three different market compositions where different types of retailers are present or absent were calculated to illustrate the effects of multichannel integrated channels:

(a) Choice between pure online and multichannel (MC) online
(b) Choice between pure online and offline
(c) Choice between pure online, MC online and offline

The channel configuration described as "MC online" includes service in store, returns in store and an immediate pickup.

The results for scenario 1 where all channel options are equally priced are depicted in Fig. 4.12.

The results of scenario 2 where offline and MC online are 10€ more expensive (280€) than the pure online channel (270€) are illustrated in Fig. 4.13.

Comparing the choice between pure online and MC online (a), one could get the impression that multichannel integration services offer a major advantage over unintegrated online channels. The preference share for the integrated channel

[5] This decision rule is well suited for high involvement products and not sensitive to the scale range on which utility is measured (Lilien et al. 2013).

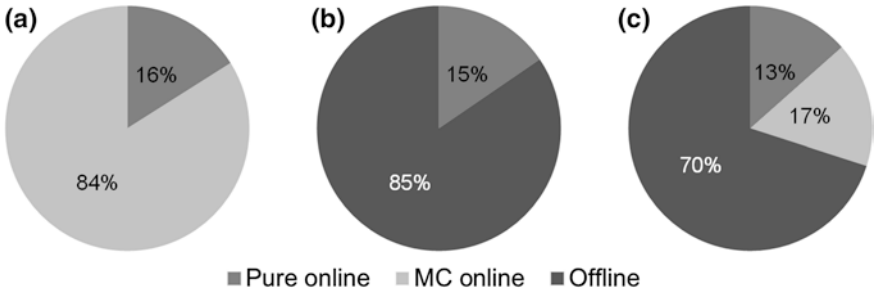

Fig. 4.12 Preference shares between different channel options (scenario 1). **a** Pure online versus MC online. **b** Pure online versus MC offline. **c** Pure online versus MC online versus offline

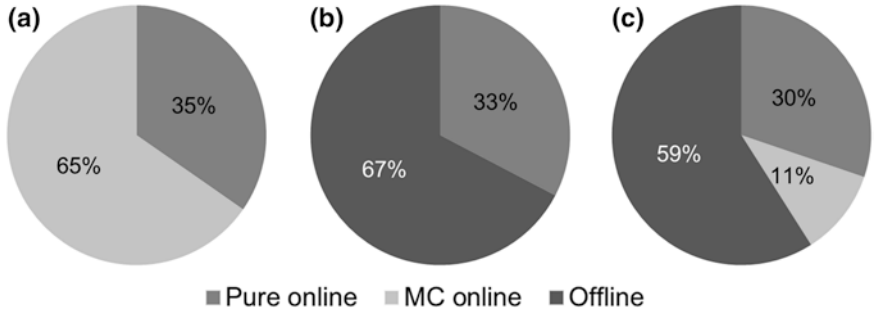

Fig. 4.13 Preference shares between different channel options (scenario 2). **a** Pure online versus MC online. **b** Pure online versus MC offline. **c** Pure online versus MC online versus offline

throughout the sample is more than five times as high as the share for the pure online channel at equal prices (scenario 1) and still more than two times as large when price discrimination is applied cautiously (scenario 2). However, the competition without multichannel retailers (b) reveals a very similar picture for pure online retailers. The overall effect of the introduction of multichannel integration services becomes visible, when all alternatives are available to the consumers. By comparing (b) and (c), one can see that pure online retailers only loose marginally to multichannel online retailers. However, most customers choosing multichannel online retailers are the ones that have been purchasing in store before. Therefore, multichannel retailers are cannibalizing themselves. This for itself is not an inherently bad thing since it prevents consumers from switching to pure online alternatives. However, offering consumers this slow transition to online retailing might educate and accustom them to the online channel. As their perception of the

online shopping convenience increases, their likelihood of online purchases also increases (Bhatnagar et al. 2000). According to the results of this work, this might lead to a decreased valuation for multichannel integration services and therefore over time convert them to possible pure online customers.

The effects of scenario 2 are similar to the ones in scenario 1, however it is important to note that even this marginal difference in price (3.7 %) leads to a major shift towards pure online retailers, who more than double their preference share in scenario 2. This furthermore indicates that the opportunities for price discrimination are limited, even if retailers offer multichannel integration services online.

One has to keep in mind that this is a very simplified model to compute preferences shares. Effects of brands, the number of vendors per channel class and competitive effects are not included. Including these factors is beyond the scope of the current dataset. However, to the author's best knowledge, this is the first study that gives an intuition about how channel preferences might evolve as different multichannel options become available.

4.3.7 Post Hoc Analysis: Estimating the Value of MC Services

Another quest for multichannel retailers is whether they can develop a price advantage over pure online retailers using multichannel integration services. In the second post hoc analysis, the value of different multichannel services is estimated based on the conjoint utilities. Thereby, the abstract utility scores are translated into monetary values that can be used to visualize the outcomes and develop pricing policies.

This monetary value of a specific consumer for a particular service option is determined by two different factors: the price sensitivity of the consumer and the individual valuation for the service option compared to its standard alternative. To achieve this, an individual measure for willingness to pay has to be estimated. Willingness to pay can be calculated from conjoint utilities using two basic methods (Miller et al. 2011): the linear approach and the piece-wise approach. Miller et al. (2011) find that the results between both approaches can differ. However, since Fig. 4.14 indicates that the price utility function is almost linear within our narrow price range, the results of a piece-wise approach and the linear approach would be nearly identical. The piece-wise approach can only be used to calculate the willingness to pay for full alternatives, since their utilities are compared to the utilities for the no-choice option (Jedidi and Jagpal 2009). Therefore, the comparison of the utilities of specific channel features is conducted using the linear approach.

No significant differences were found between the marginal utilities of the intervals 260€–270€ and 270€–280€ ($t = -0.238$, $p = 0.743$). Therefore, the range between 260€ and 280€ was suitable to interpolate the individual monetary value per additional utility, while omitting the extreme value for price. The price for a product is not only a disutility that consumers have to accept in order to

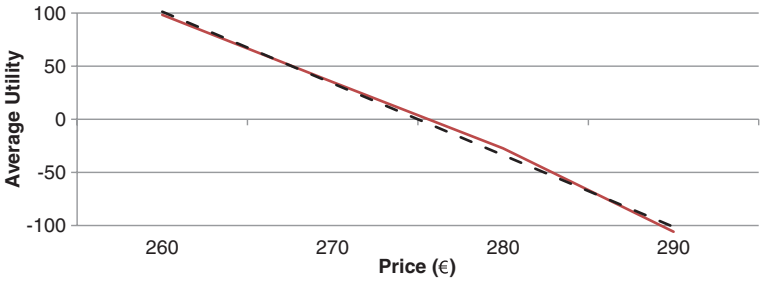

Fig. 4.14 Average price-utility function

receive the product or service. In some cases, high prices are interpreted as quality signals (Bagwell and Riordan 1991; Koku 1995; Milgrom and Roberts 1986). Therefore, some consumers may choose products with higher prices instead of cheaper alternatives, irrespective of their objective characteristics. As described above, the utility estimates were not restricted in any way and therefore, these interpretations of quality signals are also reflected in our utility estimates. In this study, 34 participants have increasing utilities for increasing prices. While these utilities may reflect reality, it is not feasible to include them into the willingness to pay evaluation since it would lead to positive willingness to pay for options that have a negative value for them. Therefore, these 4.9 % of the participants were omitted from the following calculations.

The resulting willingness to pay for each service was calculated for each consumer on the basis of the formula:

$$WTP(Service) = \frac{20€}{U(260) - U(280)} * (U(Service) - U(Pure\ online\ alternative))$$

The resulting monetary values are depicted in Fig. 4.15. The highest willingness to pay can be generated for service in store with a value of 7.92€. This corresponds to a price premium of 3.0 % (at a price of 260€). The average consumer is also willing to pay for return in store (5.78€ or 2.2 %). A significant, but already much smaller willingness to pay was estimated for the possibility to pick the product up immediately (3.83€ or 1.5 %). However, the delayed pickup presents no value for the average customer (−0.35€, not significantly different from 0 with $t(663) = -1{,}19$, $p = 235$).

Going further, the sample was split into two groups: those customers who use the physical retail stores as their primary channel for purchasing in the product group (N = 331) and those who have shown preference for the online channel during their purchases within the last year (N = 333).[6] The results indicate large dif-

[6] This differentiation could also be made between hedonic and utilitarian purchases. However, since the hedonic and utilitarian characteristics are, in contrast to the purchase share, relative values, the meaning of the derived monetary values would be limited.

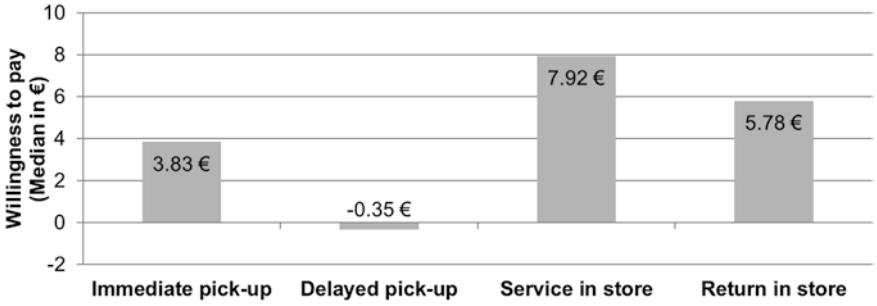

Fig. 4.15 Willingness to pay for multichannel integration services

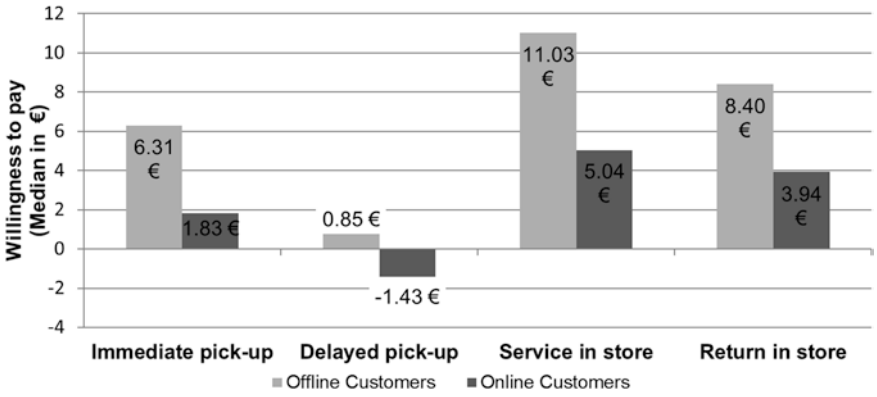

Fig. 4.16 Differences in willingness to pay between customer types

ferences in the willingness to pay between the groups (cp. Fig. 4.16), translating the previous findings, that the valuation of multichannel integration services varies widely between customers, into monetary values.

4.4 Summary

This study investigated the impact of purchase situations and individual factors on the valuation of different types of multichannel integration services. The study explains variations in the valuation using regulatory focus theory. The application of the theory to the research problem postulates that individual and situational differences lead to a regulatory focus that may or may not fit to the characteristics of the individual types of integration services. In case of a regulatory fit, a higher utility is derived.

It becomes apparent that the value of multichannel integration services varies between individual factors and purchase situations. Service and returns in store are valued much for utilitarian purchases than for hedonic purchases. The same is true for a delayed pickup while no differences between purchase situations were identified for an immediate pickup. With regards to individual differences, the results suggest that all types of multichannel integration services are valued higher by offline customers than by customers who conduct a significant share of their purchases online. The potential negative outcomes of this relationship are discussed. Overall, this study builds upon the findings of the previous study and enhances the understanding of multichannel integration services by contingency factors of valuation. The theoretical and practical reflections of these findings are described in the following chapter.

Chapter 5
Reflection

There are two ways to extend a business. Take inventory of what you're good at and extend out from your skills. Or determine what your customers need and work backward.
Jeff Bezos, Founder of Amazon.com (as cited by Tischler 2009).

5.1 Recapitulation

It is apparent that multichannel commerce is a topic of increasing importance. The magnitude of physical channels and the enormous growth of electronic channels have led to an environment in which both customers and firms engage in multiple channels. The question how multiple retail channels can be integrated to create customer value is crucial for the survival of multichannel retailers who struggle to compete with pure online retailers via price. The quest is theoretically thrilling because previous research has addressed customer-focused multichannel retailing as two distinct alternatives that customers must choose from. However, this simplification does not investigate how the characteristics of one channel can enhance the other. Thereby, a large set of additional opportunities that multichannel commerce offers was not well understood. The question is practically relevant because multichannel retailers have large liabilities in terms of their infrastructure. Since their market shares are decreasing, many retailers have decided to compete via price against pure online competitors that have a much lower cost base. Thereby, their margins are diminishing. A possibility of using their infrastructure as a distinguishing feature valued by consumers could enable them to escape the dwindling spiral of prices. This work has addressed the questions how different types of multichannel integration influence consumers' channel perceptions and how they eventually influence channel choice and willingness to pay. To gain deeper insights, contingency factors on the evaluation of multichannel integration services

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have been investigated. The study of product specific and individual differences creates an advanced understanding of the complex phenomenon of integrated channels.

As a first step to comprehend multichannel commerce, a thorough overview of previous literature on offline, online and multichannel commerce was assembled. The analysis of the structural differences between physical and electronic channels reveals why it not possible to simply transfer insights gained in offline channels to the online environment. The distinctions are grouped into the categories information transparency, interactions and cost structures. These differences give first indications that integrated channels might also differ from the established alternatives. Furthermore, the implications of these differences led to a series of studies on cross-channel consumer behavior. These studies result in a huge amount of influence factors that have been identified to drive the preference for one or the other channel. The analysis allows the identification of meta-factors influencing purchase channel choice. These include the characteristics of the channel itself, purchase specifics, external influences from marketing and the social environment and lastly, individual differences. Besides, research investigating channel switching between the different stages of a purchase and between purchases have been reviewed. These studies are used to inform the theory building in the subsequent chapters.

Little research has addressed issues of multichannel integration in terms of an actual change of the channel characteristics. Instead, previous studies have focused on studying multichannel environments as two competing alternatives instead of investigating the possible interplay between the two. Different levels of multichannel integration have been discussed to distinguish multichannel integration services precisely from other issues in multichannel integration research. The analysis reveals four different types of in-store services that can potentially enhance online transactions: service in store, returns in store, delayed pickup and immediate pickup. The detailed review of the four previous studies that address related issues with regards to multichannel integration services emphasizes the need for further investigations.

The first empirical study investigates the impact of these types of multichannel integration services on channel choice and willingness to pay. An experiment with 348 participants across four conditions was implemented to study this phenomenon. The study explains the differences in choices caused by different types of multichannel integration services through a framework of convenience and risk perceptions that are influenced by these services. It becomes apparent that the mechanisms that drive channel choice and their outcomes vary between the different multichannel integration services. Therefore, it is necessary to differentiate between these types instead of studying their impact on an aggregate level as done in previous studies. The results indicate that a delayed pickup reduces the psychological risk of the transaction, while immediacy of the pickup increases the convenience of the transaction. The post-transaction integration with service and returns in store increases the post-benefit convenience and thereby improves the perception of an offer at the purchase stage.

An overall influence of pickup immediacy and service/return in store on channel choice is identified and explained. However, only a fully integrated channel with immediate pickup and service and return in store significantly increases consumers' willingness to pay. The results draw a very negative picture for delayed pickup, the multichannel integration service that is the easiest to implement. While it reduces the psychological risk of the transaction, its overall impact on choice and willingness to pay is negligible.

The second empirical study digs deeper into individual or purchase specific differences in the valuation of multichannel integration services. Regulatory focus theory was introduced as a theoretical perspective to explain variations in consumers' valuation. The application of the theory to the research problem postulates that individual and situational differences lead to a regulatory focus that may or may not fit to the characteristics of the individual types of integration services. In case of a regulatory fit, a higher utility is derived. The hypotheses were tested using an incentive-aligned choice-based conjoint study on a sample of 698 online users that matches the general internet population with regards to age and gender. The results reveal that the value of multichannel integration services varies between individual factors and purchase situations. Service and returns in store are valued much more for utilitarian purchases than for hedonic purchases. The same is true for a delayed pickup while no differences between purchase situations were identified for an immediate pickup. With regards to individual differences, the results suggest that all types of multichannel integration services are valued higher by offline customers than by customers who conduct a significant share of their purchases online. This relationship can have negative consequences for multichannel retailers because integration services might educate customers towards the online channel whose valuation for these services then diminishes over time. Overall, the results of both empirical studies complement each other. The second study enhances the understanding of multichannel integration services by contingency factors of valuation.

In summary, the results compose an understanding of how and when which types of integration services change consumers' interactions in a multichannel environment. The theoretical and practical implications of these findings are discussed in the following.

5.2 Theoretical Contribution

There are two ways of making a theoretical contribution: theory building and theory testing (Colquitt and Zapata-Phelan 2007). Theory testing is especially important in business research where many reasonable theories find no support in empirical studies (Miner 1984, 2003). Therefore, it is important to attempt to falsify existing theories (Popper 1963). Theory building in a deductive sense aims at establishing the validity of the core propositions of the theory and then extending it by explanatory mediators or defining its boundaries by identifying moderators

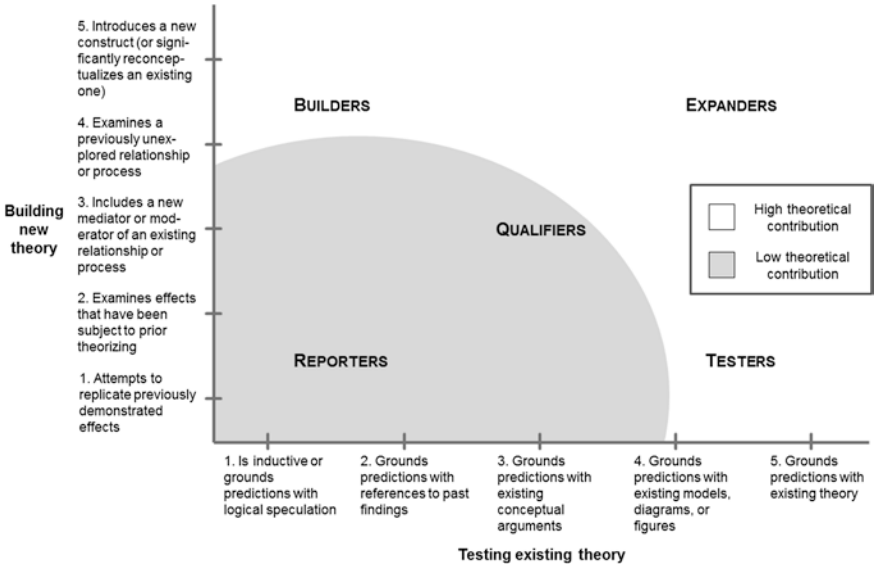

Fig. 5.1 Taxonomy of theoretical contributions for empirical research. Adapted from Colquitt and Zapata-Phelan (2007)

(Colquitt and Zapata-Phelan 2007). Bringing these two dimensions of theoretical contributions together, leads to the taxonomy of theoretical contributions for empirical research depicted in Fig. 5.1.

This work aims at making a theoretical contribution on three levels. First, the study reveals how the conceptualization of online and offline retailing applied in previous studies needs to be revised. Second, it creates an understanding of the virtue of different types of integration services between online and offline channels. Third, it contributes to the literature on consumer behavior and channel choice by identifying contingency factors that influence consumer preferences in multichannel environments. These three contributions are discussed in the following.

First, this research unveils a necessary reconceptualization of multichannel commerce. A large body of literature has investigated offline, online and multichannel retailing (cp. Chap. 2). Early studies investigated the differences between online and offline channels (Bakos 1997; Brynjolfsson and Smith 2000). Afterwards, factors that drive the choices between offline and online channels have been analyzed (e.g., Balasubramanian et al. 2005; Gupta et al. 2004a; Montoya-Weiss et al. 2003). Later, studies on multichannel consumer behavior incorporate the use of several channels. This encompasses the use of several channels within different phases of one purchase (e.g., Gensler et al. 2012; Verhoef et al. 2007) or the use of different channels for different purchases (e.g., Konuş et al. 2008; Venkatesan et al. 2007). However, all of these studies treat offline and online channels as two detached poles. The results of this study indicate that

multichannel integration services demolish this dichotomy that served as a basis for these studies. With the integration of online and offline channels, consumers no longer decide between one or the other channel. Instead, they have the option to select any degree of integration between the two that fits their preferences. In the same way, vendors' decisions are no longer limited to being online, being offline or being multichannel. Instead, a continuum of possible channel configurations between online and offline needs to be considered. This study provides empirical evidence that channels that offer a certain degree of integration on the consumer side differ widely from both, pure online or pure offline channels. Different levels of integrations lead to even more variety in the perceptions and valuations of customers. Previous conceptualizations of multichannel can therefore no longer fully encompass consumers' multichannel behavior since technological advancements have moved retailing beyond the two established types of channels. Instead, multichannel research must reflect this increased complexity of channel decisions and analyze its consequences for established relationships and models. The refined conceptualization of multichannel is depicted in the multichannel continuum in Fig. 5.2.

Second, this study contributes to the understanding of multichannel integration services by differentiating between types of integration services and studying them separately. Previous studies on integration services have used integration services as a meta-concept (Bendoly et al. 2005; Oh et al. 2012; Oh and Teo 2010) without distinguishing within the broad spectrum of possible integration activities. Thereby, these studies are unable to give an explanation for the

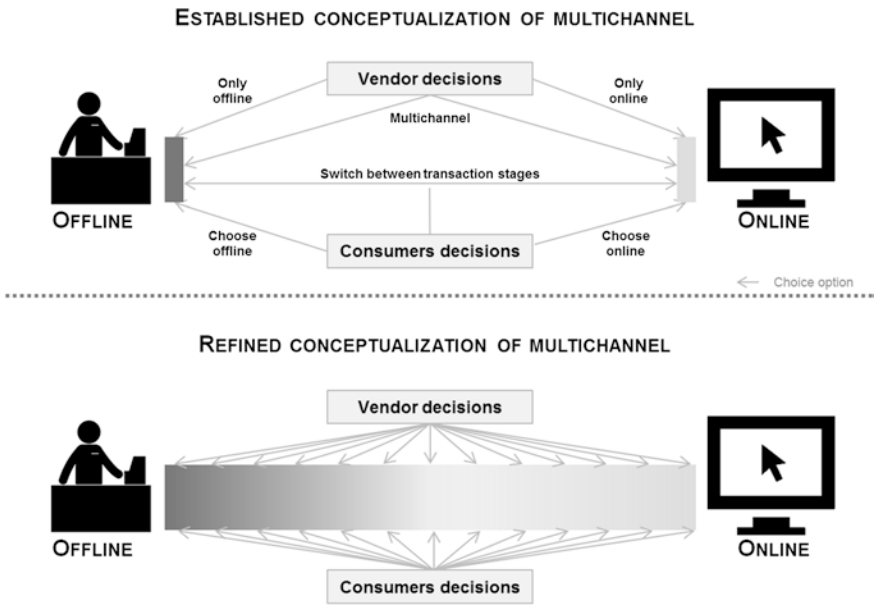

Fig. 5.2 The multichannel continuum

effects they identify. This is the first study to explicitly study different concrete types of integration. The results indicate that this differentiation is highly relevant since the integration types influence consumers' perceptions in dissimilar ways. Different types of integration services can either reduce consumers' risk perception or increase consumers' convenience at diverse stages of the transaction process. Attributing different perceptions to specific multichannel integration services adds to our understanding of multichannel commerce and enables researchers to explain phenomena they encounter on the multichannel continuum. By exploiting the perceptual differences between types of multichannel integration services, this study is able to explain the impact of types of integration on consumers' channel choices. Thereby, this study does not only introduce different multichannel integration services as a new object of study and establish its impact to channel outcomes; it also identifies the explanations for this effect and provides empirical evidence for their validity.

Third, the study contributes to previous research in consumer behavior and channel choice by identifying contingency factors on the valuation of multichannel integration services. By deriving predictions from regulatory focus theory, the study is able to explain the previously unexplored influence of purchase specific and individual differences on the value of different types of multichannel integration. These results complement previous studies that investigate consumers' channel preferences by extending the knowledge of purchase specific (Chiang et al. 2006; Chintagunta et al. 2012) and individual (Frambach et al. 2007; Pavlou and Fygenson 2006) differences to a more complex channel environment. The results indicate that the valuation for multichannel integration services is dynamic and these dynamics differ between types of integration services. The understanding of this interplay between differences in individually-shaped purchase situations and the characteristics of multichannel integration services enables researchers to enhance the body of knowledge on consumers' interactions with an environment characterized by channel convergence.

Having analyzed the theoretical contributions of this work, one can see that they can be classified into the groups 'expanders' or 'qualifiers' since they are unveiling new concepts and relationships using established concepts and theories (cp. Fig. 4.1). Colquitt and Zapata-Phelan (2007) find in their meta-study that these types of contributions are the most influential in terms of their academic impact.

5.3 Practical Contribution

From a practical point of view, the findings can help offline or multichannel retailers to identify which channel services they should invest in and for which product and customer types the services are suited best. In contrast to other differentiating factors such as service quality or brand that can be altered by management decisions or marketing campaigns, the availability or lack of multichannel services can present a persistent difference between pure and multichannel online retailers.

First, the results give a general overview on the hierarchy of multichannel integration services. They suggest that service in store is the multichannel integration service that consumers value the most. If service in store is implemented, it probably makes sense to also offer returns in store, since the mechanics of these services are both very related. In contrast to the current implementations of many retailers, the power of a delayed pickup is limited. If a pickup option is offered, it should be possible to receive the product immediately. An immediate pickup though requires a much tighter integration of infrastructure and processes and is therefore the most expensive and difficult integration service to implement.

Second, the results can guide retailers based on their assortment whether and for which product categories they should invest in multichannel services. Service and returns in store as well as the delayed pickup are valued higher for utilitarian purchases. Studying this general purchase property allows the mapping of the findings to established taxonomies of product categories. The hedonic and utilitarian scores for 22 product categories are depicted in Fig. 5.3. The more the products are positioned to the right and to the bottom of the graph, the more likely is a valuation for service and returns in store and the delayed pickup for these products. Accordingly, beauty and cosmetics should profit the least from these services while sellers of pet supplies and items should strongly consider their implementation. Be aware that product categories may also have other distinct characteristics that make integration services more or less attractive (e.g., size) and that purchase situations can influence the hedonic or utilitarian perception of a purchase. However, mapping the hedonic and utilitarian attributes allows first insights into

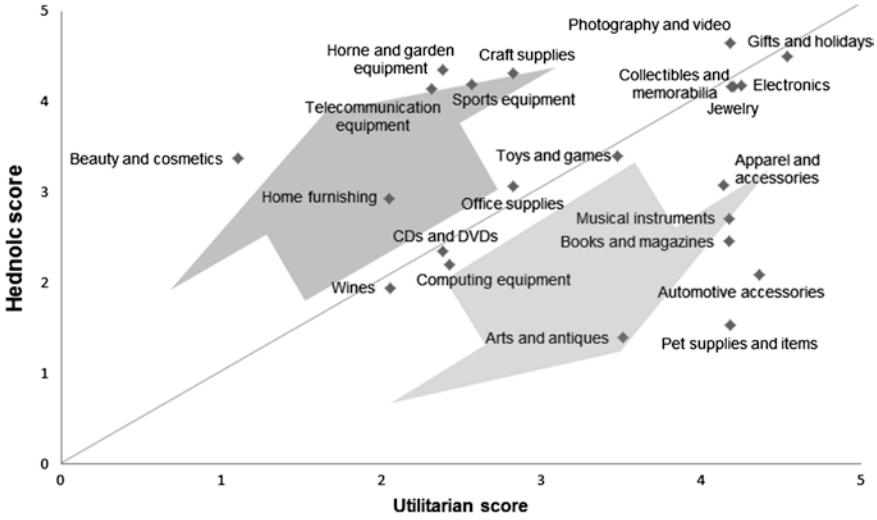

Fig. 5.3 Utilitarian and hedonic sores of different product categories. Based on data from Kushwaha and Shankar (2013)

the question whether or not multichannel integration services (besides immediate pickup) would be valued by your customers.

Third, retailers can analyze their customer base to find out whether multichannel integration services are attractive to them. All four types of multichannel integration services are more attractive to consumers who patronize offline channels. If firms want to serve those customers in their online shop, it would be more useful to offer integration services to them. The study furthermore offers first estimates of the monetary values that are attributed to these services by different customer groups. Retailers can use these values, the distribution of their customer base and the necessary investments to evaluate whether they could profit from such services. Conversely, the data also indicates that multichannel integration services could lose their value over time. While the major goal of multichannel integration services is to compete with pure online retailers, these services have their greatest appeal to customers who otherwise prefer transactions in stores. Thereby, customers who would probably stay offline may be inspired to conduct online transactions using multichannel integration services. Getting accustomed to the online channel has a negative effect on the purchase volumes in physical stores (Ansari et al. 2008). The results of this study furthermore suggest that a shift towards online channels would reduce their valuation of multichannel integration services and thereby could diminish the advantage that retailers have for this customer type. Retailers must therefore investigate the general switching rate of their customers (Kauffman et al. 2009) before making channel decisions. If the general switching rate is very low, multichannel integration services can be a gateway for offline-focused consumers to shift to the online channel instead of a chance to generate additional value in the competition for online customers.

5.4 Conclusion and Future Research

Overall, the studies presented in the previous chapters have shed light on the previously under-investigated but highly relevant topic of integration between online and offline channels. Taking a customer-centric view on the topic allowed creating an understanding of the perceptions of integration service types, their influence on customer decisions and valuation as well as contingency factors that impact their individual importance.

However, this work should be the beginning rather than the end of studies that incorporate the increased complexity of channel decisions induced by multichannel integration services. Three different perspectives present themselves as starting points for future research: revisiting previous research in the light of the new findings, extending the scope and the boundaries of this study, or looking further by analyzing the potential influences of future technological innovations in the area of multichannel commerce. An overview of these research opportunities is illustrated in Fig. 5.4 and described in the following.

Many studies have treated offline and online commerce as two detached poles. Studies taking a vendors perspective investigated whether a second channel should

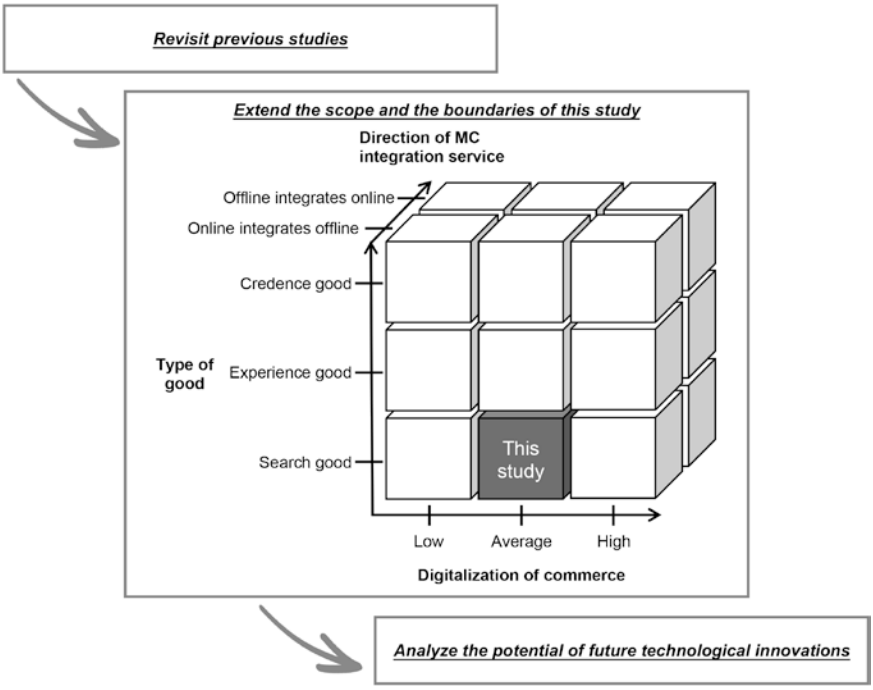

Fig. 5.4 Opportunities for future research

be added (e.g., Avery et al. 2012) and how the different vendors behave in physical and electronic channels (e.g., Brynjolfsson and Smith 2000). Studies applying a consumer perspective explored which of the two channel options is preferable depending on certain conditions (e.g., Gensler et al. 2012) and how consumers switch between the channels (e.g., Verhoef et al. 2007). The results of this work highlight that different degrees of channel integration influence channel preferences and perceptions in a way that has not been incorporated in their underlying conceptualization of multichannel commerce. Therefore, effects and models should be revisited and adapted to the dynamic, more complex environment where multichannel integration services blur the boundaries between online and offline channels.

Regarding the scope and the boundaries of the study, three dimensions of expansion shall be highlighted. First, this study investigates channel integration from a German perspective where online shopping is rather established but still shows steep growth rates (BHV 2014). It would be interesting to study how multichannel integration is perceived in countries with a much lower online penetration (e.g., Spain) and how the interplay between online and offline channels is altered if integration services are introduced earlier in the lifecycle of electronic commerce (Datta 2011). In the same manner, a longitudinal study or alternatively an investigation of countries with much higher online shares (e.g., Great Britain)

would deepen the understanding of the long term effects that were signified in this work. Besides these evolution-focused investigations of the digitalization of commerce, earlier studies on digital channels and services also suggest that cultural differences may be an interesting focus worth further investigation (e.g., Kim 2008; Sia et al. 2009). Cultural dimensions such as long-term orientation or uncertainty avoidance (Hofstede 1980) could be well suited to explain the effectiveness of multichannel integration services in different cultural settings. Second, this work focused on multichannel integration services for online transactions that are enhanced by services in a physical store. As discussed in Sect. 2.4, the opposite direction of multichannel integration services is also conceivable. However, previous studies and current practice are limited to providing web kiosks in stores for stockout situations (Bendoly et al. 2005). This study has indicated that physical services are not always preferred over their digital counterparts. In line with previous studies on the digitalization of services (Barth and Veit 2011; Overby 2008), it would therefore be important to study how physical transactions could be enhanced by digital service offerings. Third, this work focused on goods that are dominant on search qualities. As discussed in detail, these standardized tangible products are the most prominent candidates for multichannel integrations services. However, it remains unclear how multichannel integration service can alter markets for experience goods such as used goods (Dimoka et al. 2012) or credence goods that may even be intangible such as cloud storage services (Trenz et al. 2013). Obviously, not all types of multichannel integration services can be applied to each type of good, but since experience and credence goods are characterized by different types of uncertainty (Nelson 1974), the promise of a local contact person in case of issues may mitigate certain concerns.

Many incremental and disruptive innovations will change the retailing landscape in the future. One recent development shall be outlined as an example for technological progress that shapes multichannel commerce. While some multichannel integration services can hardly be copied by pure online retailers, the outcomes of some services can be approximated by other investments. For instance, Amazon invests heavily in same day delivery (Manjoo 2012). Thereby, they are trying to substitute some advantages of physical shops by alternative solutions that have similar outcomes for the consumer. By doing so, pure online retailers also contribute to the progression towards to the multichannel continuum (Fig. 5.2 on page 141). The investigation of the role of these and similar advancements and their comparison to the integration services offered by multichannel retailers is another avenue for future research on integrated multichannel commerce.

Appendix A
Methodology of the Structured Literature Review

A structured literature review was conducted to gain a full picture of previous literature on channel choice behavior of customers. The literature review was first undertaken in December 2011 and updated in January 2014 to include all papers published until the end of 2013.

The review was conducted along the eight-step guide for systematic literature reviews provided by Okoli and Schabram (2010) as well as the guide for literature reviews in the IS field by Webster and Watson (2002). Since the topic is multidisciplinary and potentially of interest to many research areas, such as information systems, marketing, computer science, operations, tourism and others, no restriction on particular set of journals was made. Instead, a key word search in the abstracts of peer reviewed journal articles was conducted using three main literature search services (EBSCO Host, ProQuest and ISI Web of Knowledge). The search string was carefully developed based on the pre-conception, terms used in known literature on the topic and the aim of the literature review. The string has been iteratively improved before the final search term was deployed to generate the results.

Search string[1]: "consumer OR customer" AND "internet OR on*line OR electronic OR multi*channel" AND "choice OR prefer* OR purchase OR switch* OR decision OR valu*".

Using a set of exclusion rules that were refined continually following Okoli and Schabram (2010), the abstract and, if necessary, the full text of each article was scanned for inclusion. Exclusion rules were applied if the study did not cover any electronic channel, did not focus on consumer behavior, did not study consumers' channel choices or preferences in any way, or was in any other way unrelated to the topic. So-called backward and forward searches were conducted to identify articles that the search string may have missed. *Backward search* was conducted

[1]The search string was adapted to the syntax of the respective search engine. Individual adaptations were made to search for the root word only and thereby include plurals as well as verbs and nouns.

M. Trenz, *Multichannel Commerce*, Progress in IS,
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by screening the references of the papers in the relevant set. *Forward search* was performed using the citations in the ISI web of knowledge database.

The analysis and synthesis of the literature was organized using a concept matrix which was steadily adjusted during the work (Webster and Watson 2002). The concepts were derived iteratively based on the reviewed papers. The matrix categorizes the research topic, methodology, context, data sources, product type, retailer types, dependent and independent variables. From this analysis, three main themes emerged: channel choice, channel switching and multichannel shoppers. The detailed findings on these matters are discussed and presented in the respective sections.

Appendix B
German Measurement Instrument (Chapter 3)

Measurement models for latent variables (German version)
(Offline/online) transaction convenience (Seiders et al. 2007)
OTRC1 (ITRC1): Im Geschäft (Onlineshop) ist es einfach, den Kauf durchzuführen
OTRC2 (ITRC2): Es ist aufwändig, den Einkauf im Geschäft (Onlineshop) abzuschließen. (reversed)
OTRC3 (ITRC3): Ich bin in der Lage, meinen Einkauf im Geschäft (Onlineshop]) schnell abzuschließen
(Offline/online) post-benefit convenience (Seiders et al. 2007)
OPBC1 (IPBC1): Bei diesem Händler werden Rückgabe und Umtausch schnell durchgeführt
OPBC2 (IPBC2): Jegliche Probleme nach dem Kauf können bei diesem Händler schnell gelöst werden
OPBC3 (IPBC3): Bei Rückgabe oder Umtausch bei diesem Händler können Probleme auftauchen. (reversed)
OPBC4 (IPBC4): Umtausch oder Rückgabe bei diesem Händler können kompliziert sein. (reversed)
(Offline/online) psychological risk (Keh and Pang 2010)
OPSR1 (IPSR1): Beim Gedanken daran, das Produkt im Geschäft (Onlineshop) zu kaufen, ist mir unwohl
OPSR2 (IPSR2): Der Gedanke, dieses Produkt im Geschäft (Onlineshop) zu kaufen, macht mich unruhig
OPSR3 (IPSR3): Beim Gedanken, das Produkt im Geschäft (Onlineshop) zu kaufen, empfinde ich unnötige Anspannung
OPSR4 (IPSR4): Der Kauf dieses Produktes im Geschäft (Onlineshop) würde mir Sorgen machen
(Offline/online) performance risk (Keh and Pang 2010)
OPER1 (IPER1): Das Risiko, dass beim Kauf des Produktes im Geschäft (Onlineshop) etwas schief geht, ist groß
OPER2 (IPER2): Es ist wahrscheinlich, dass ich beim Kauf im Geschäft (Onlineshop) einen Verlust oder Schaden erleide
OPER3 (IPER3): Das Risiko dieses Einkaufs im Geschäft (Onlineshop) ist gering. (reversed)

(continued)

M. Trenz, *Multichannel Commerce*, Progress in IS,
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(continued)

Measurement models for latent variables (German version)
Product uncertainty (Dimoka et al. 2012)
PUN1: Ich bin unsicher über die tatsächliche Qualität dieses Kaffeevollautomaten. (reversed]
PUN2: Ich bin sicher, dass ich alles was ich über den Kaffeevollautomaten wissen muss, verstehen kann
PUN3: Ich bin sicher, dass dieser Kaffeevollautomat die Leistung bringen wird, die ich erwarte
Online shopping experience (Frambach et al. 2007; Murray and Schlacter 1990)
OEX1: Ich habe viel Erfahrung mit dem Einkauf im Internet
OEX2: Ich bin mit den Möglichkeiten des Onlineeinkaufs vertraut
OEX3: Ich bin sehr souverän in der Nutzung von Onlineshops
Product involvement (Seiders et al. 2007)
PIN1: Ich habe großes Interesse an Kaffeemaschinen
PIN2: Kaffeemaschinen sind mir wichtig
PIN3: Produkte wie Kaffeemaschinen sind für mich von hoher Wichtigkeit
PIN4: Kaffeemaschinen sind mir gleichgültig. (reversed)
Offline purchase share (own)
OPS1: Wie viel Prozent Ihrer Einkäufe von Büchern haben Sie im letzten Jahr über in einem klassischen Geschäft getätigt?*
OPS2: Wie viel Prozent Ihrer Einkäufe von Elektronikartikeln haben Sie im letzten Jahr über in einem klassischen Geschäft getätigt?*
Choice probability (own)
CPR1: Wie wahrscheinlich ist es, dass Sie den Kaffeevollautomaten beim soeben beschriebenen Onlinehändler kaufen würden?**
CPR2: Bei gleichen Preisen würde ich den Kaffeevollautomaten lieber bei folgendem Händler kaufen: (Klassischer Händler vor Ort … $beschriebener Onlineshop)***
Distance
DIST: Wie viel Zeit benötigen Sie, um das Geschäft dieses Händlers zu erreichen? (in Minuten)
Age
AGE: Bitte geben Sie Ihr Alter an. (in Jahren)
Gender
GEN: Bitte geben Sie Ihr Geschlecht an. (1=weiblich, 2=männlich)

Note Unless indicated otherwise, all items were measured on a seven-point Likert scale from strongly disagree to strongly agree

* 100 % had to be distributed between physical and online store types

** 100 % had to be distributed between the offline alternative and the described online-shop with or without certain multichannel integration services

******* a differential scale was used to measure the strength of choice probability between the offline alternative and the described online-shop

Appendix C
Latent Variable Correlations and AVE (Chapter 3)

M. Trenz, *Multichannel Commerce*, Progress in IS,
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Latent variable correlations and AVE

	PIC	IMM	SRS	AGE	CPR	DIST	GEN	OEX	OPS	OPER	OPBC	OPSR	OTRC	PUN	IPER	IPBC	PIN	IPSR	ITRC
PIC	*1.00*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IMM	0.58	*1.00*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
SRS	0.34	0.58	*1.00*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
AGE	−0.04	−0.01	0.00	*1.00*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CPR	0.08	0.14	0.20	0.04	*0.90*	–	–	–	–	–	–	–	–	–	–	–	–	–	–
DIST	0.04	0.04	0.02	−0.01	0.12	*1.00*	–	–	–	–	–	–	–	–	–	–	–	–	–
GEN	−0.04	−0.02	−0.02	0.17	0.03	−0.12	*1.00*	–	–	–	–	–	–	–	–	–	–	–	–
OEX	0.01	0.04	0.08	−0.20	0.17	−0.03	0.03	*0.91*	–	–	–	–	–	–	–	–	–	–	–
OPS	0.00	−0.05	−0.04	0.00	−0.38	0.02	−0.15	−0.37	*0.82*	–	–	–	–	–	–	–	–	–	–
OPER	0.00	0.01	0.00	−0.26	0.13	0.07	0.08	−0.14	−0.10	*0.76*	–	–	–	–	–	–	–	–	–
OPBC	0.00	0.11	0.00	0.19	−0.20	0.01	−0.05	−0.06	0.13	−0.49	*0.82*	–	–	–	–	–	–	–	–
OPSR	−0.01	0.00	−0.05	−0.21	0.17	0.09	0.10	−0.05	−0.11	0.70	−0.38	*0.85*	–	–	–	–	–	–	–
OTRC	−0.01	0.02	−0.01	0.21	−0.16	−0.02	−0.01	0.04	0.08	−0.49	0.47	−0.54	*0.78*	–	–	–	–	–	–
PUN	0.03	0.05	0.04	0.15	0.07	−0.05	−0.02	0.09	0.03	−0.27	0.31	−0.23	0.28	*0.79*	–	–	–	–	–
IPER	−0.07	−0.10	−0.12	−0.19	−0.33	0.06	−0.05	−0.25	0.29	0.20	−0.04	0.18	−0.15	−0.24	*0.81*	–	–	–	–
IPBC	0.16	0.26	0.37	0.05	0.36	−0.04	0.04	0.13	−0.17	−0.12	0.23	−0.11	0.16	0.25	−0.48	*0.87*	–	–	–
PIN	0.00	−0.01	−0.05	0.03	0.06	−0.08	−0.09	0.04	0.04	−0.06	0.09	−0.06	0.10	0.25	−0.08	0.05	*0.93*	–	–
IPSR	−0.11	−0.10	−0.11	−0.15	−0.38	0.08	−0.17	−0.28	0.33	0.18	0.02	0.16	−0.11	−0.18	0.75	−0.45	−0.01	*0.89*	–
ITRC	0.08	0.15	0.09	0.07	0.31	−0.02	−0.07	0.37	−0.21	−0.27	0.15	−0.18	0.24	0.19	−0.43	0.32	0.05	−0.40	*0.83*

Note Diagonal values represent the square root of AVE

Appendix D
Cross-Loadings (Chapter 3)

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Cross-loadings																			
	CPR	ITRC	IPBC	IPSR	IPER	OTRC	OPBC	OPSR	OPER	PUN	OEX	PIN	OPS	PIC	IMM	SRS	DIS	AGE	GEN
CPR1	*0.88*	0.23	0.27	−0.26	−0.22	−0.15	−0.18	0.13	0.12	0.07	0.10	0.03	−0.28	0.07	0.13	0.18	0.13	0.08	0.00
CPR2	*0.92*	0.32	0.36	−0.41	−0.37	−0.14	−0.19	0.17	0.12	0.06	0.20	0.06	−0.40	0.08	0.12	0.17	0.09	0.01	0.05
ITRC1	0.28	*0.90*	0.27	−0.35	−0.41	0.15	0.11	−0.11	−0.22	0.17	0.38	0.05	−0.22	0.06	0.13	0.07	−0.04	0.03	−0.08
ITRC2	0.22	*0.77*	0.25	−0.39	−0.38	0.25	0.17	−0.27	−0.31	0.13	0.25	−0.04	−0.13	0.09	0.13	0.08	−0.04	0.11	−0.08
ITRC3	0.27	*0.83*	0.29	−0.26	−0.28	0.22	0.10	−0.09	−0.14	0.18	0.27	0.10	−0.16	0.03	0.11	0.09	0.03	0.04	−0.02
IPBC1	0.28	0.33	*0.85*	−0.37	−0.40	0.13	0.15	−0.08	−0.07	0.24	0.18	0.11	−0.16	0.16	0.25	0.33	−0.03	−0.04	0.06
IPBC2	0.33	0.32	*0.88*	−0.38	−0.43	0.16	0.18	−0.05	−0.06	0.25	0.13	0.06	−0.16	0.16	0.23	0.35	−0.06	0.02	0.04
IPBC3	0.31	0.22	*0.86*	−0.41	−0.44	0.15	0.24	−0.11	−0.14	0.21	0.07	0.01	−0.14	0.12	0.21	0.28	−0.06	0.12	0.02
IPBC4	0.31	0.24	*0.87*	−0.40	−0.39	0.11	0.23	−0.16	−0.16	0.17	0.06	0.01	−0.13	0.11	0.20	0.32	0.01	0.09	0.03
IPSR1	−0.33	−0.38	−0.44	*0.90*	0.69	−0.06	−0.01	0.13	0.15	−0.14	−0.25	−0.01	0.28	−0.10	−0.09	−0.11	0.09	−0.11	−0.15
IPSR2	−0.34	−0.33	−0.39	*0.89*	0.69	−0.12	0.00	0.20	0.21	−0.22	−0.24	−0.04	0.26	−0.15	−0.13	−0.10	0.07	−0.13	−0.13
IPSR3	−0.32	−0.37	−0.36	*0.90*	0.63	−0.10	0.04	0.14	0.16	−0.14	−0.29	0.05	0.29	−0.08	−0.07	−0.07	0.08	−0.17	−0.16
IPSR4	−0.35	−0.34	−0.41	*0.87*	0.67	−0.12	0.04	0.09	0.11	−0.14	−0.23	−0.03	0.34	−0.08	−0.08	−0.12	0.04	−0.13	−0.17
IPER1	−0.28	−0.39	−0.38	0.69	*0.84*	−0.11	−0.04	0.15	0.16	−0.20	−0.19	−0.06	0.25	−0.07	−0.10	−0.10	0.06	−0.12	−0.01
IPER2	−0.21	−0.35	−0.36	0.66	*0.80*	−0.22	−0.09	0.26	0.28	−0.20	−0.13	−0.03	0.20	−0.04	−0.04	−0.06	0.05	−0.23	−0.06
IPER3	−0.31	−0.32	−0.42	0.50	*0.80*	−0.05	0.02	0.04	0.08	−0.18	−0.27	−0.10	0.25	−0.07	−0.10	−0.13	0.05	−0.12	−0.06
OTRC1	−0.11	0.24	0.08	−0.03	−0.05	*0.78*	0.34	−0.37	−0.39	0.21	0.12	0.18	0.03	0.02	0.02	−0.03	0.03	0.16	0.01
OTRC2	−0.17	0.17	0.16	−0.15	−0.17	*0.89*	0.42	−0.52	−0.43	0.24	−0.04	0.00	0.09	−0.03	0.00	0.00	−0.03	0.19	−0.02
OTRC3	−0.03	0.23	0.16	−0.02	−0.10	*0.65*	0.36	−0.31	−0.34	0.25	0.10	0.14	0.05	0.04	0.10	0.06	−0.04	0.11	0.00
OPBC1	−0.17	0.17	0.22	0.03	−0.07	0.42	*0.85*	−0.28	−0.39	0.34	−0.02	0.13	0.11	0.01	0.12	0.04	0.04	0.15	−0.07
OPBC2	−0.14	0.16	0.18	0.03	−0.05	0.38	*0.77*	−0.23	−0.34	0.24	0.02	0.16	0.04	−0.03	0.09	−0.03	0.06	0.10	−0.05
OPBC3	−0.16	0.10	0.18	−0.03	−0.04	0.33	*0.80*	−0.34	−0.43	0.22	−0.11	−0.05	0.09	−0.03	0.06	0.00	−0.04	0.20	−0.01
OPBC4	−0.18	0.07	0.17	0.03	0.02	0.40	*0.84*	−0.37	−0.43	0.20	−0.10	0.06	0.16	0.03	0.07	−0.01	−0.04	0.17	−0.03
OPSR1	0.15	−0.15	−0.08	0.11	0.12	−0.47	−0.35	*0.87*	0.58	−0.21	−0.03	−0.03	−0.11	−0.02	0.01	−0.04	0.05	−0.12	0.09
OPSR2	0.10	−0.19	−0.08	0.14	0.16	−0.44	−0.30	*0.84*	0.56	−0.15	−0.01	−0.08	−0.12	0.02	0.00	−0.08	0.04	−0.19	0.12
OPSR3	0.17	−0.15	−0.10	0.12	0.15	−0.48	−0.31	*0.86*	0.61	−0.18	−0.07	0.00	−0.08	0.01	0.01	0.00	0.07	−0.19	0.06
OPSR4	0.14	−0.15	−0.13	0.18	0.18	−0.44	−0.33	*0.86*	0.65	−0.24	−0.04	−0.13	−0.08	−0.03	−0.02	−0.09	0.12	−0.24	0.09

(continued)

(continued)

Cross-loadings																			
	CPR	ITRC	IPBC	IPSR	IPER	OTRC	OPBC	OPSR	OPER	PUN	OEX	PIN	OPS	PIC	IMM	SRS	DIS	AGE	GEN
OPER1	0.13	−0.22	−0.08	0.21	0.17	−0.40	−0.41	0.65	*0.86*	−0.18	−0.08	−0.03	−0.05	−0.06	−0.01	0.02	0.07	−0.23	0.05
OPER2	0.08	−0.20	−0.11	0.15	0.18	−0.34	−0.39	0.57	*0.78*	−0.26	−0.05	−0.03	−0.13	0.07	0.09	0.02	0.09	−0.26	0.10
OPER3	0.08	−0.19	−0.09	0.01	0.11	−0.38	−0.30	0.34	0.62	−0.21	−0.21	−0.08	−0.07	0.00	−0.05	−0.04	−0.01	−0.10	0.05
PUN1	0.07	0.05	0.24	−0.16	−0.20	0.14	0.22	−0.17	−0.20	*0.79*	−0.02	0.14	0.08	0.01	0.04	0.05	−0.09	0.13	−0.04
PUN2	0.07	0.24	0.16	−0.16	−0.18	0.27	0.20	−0.16	−0.21	*0.78*	0.18	0.19	−0.02	0.04	0.06	0.03	−0.01	0.14	0.02
PUN3	0.01	0.19	0.20	−0.07	−0.17	0.27	0.33	−0.22	−0.25	*0.80*	0.06	0.29	0.02	0.02	0.02	0.00	0.00	0.07	−0.03
OEX1	0.21	0.35	0.13	−0.31	−0.26	0.00	−0.11	−0.02	−0.09	0.07	*0.94*	0.05	−0.40	−0.01	0.04	0.08	−0.05	−0.22	0.05
OEX2	0.11	0.30	0.13	−0.19	−0.18	0.07	0.01	−0.09	−0.18	0.10	*0.87*	0.02	−0.26	0.03	0.05	0.08	0.01	−0.17	−0.02
OEX3	0.12	0.35	0.08	−0.25	−0.22	0.05	−0.06	−0.04	−0.14	0.09	*0.93*	0.02	−0.34	0.02	0.04	0.07	−0.03	−0.16	0.04
PIN1	0.05	0.04	0.01	0.02	−0.05	0.07	0.04	−0.04	−0.03	0.23	0.02	*0.94*	0.02	0.01	0.00	−0.07	−0.08	0.05	−0.07
PIN2	0.03	0.02	0.07	0.02	−0.04	0.08	0.10	−0.06	−0.06	0.20	0.05	*0.94*	0.04	−0.04	−0.05	−0.07	−0.08	0.04	−0.08
PIN3	0.06	0.03	0.07	−0.02	−0.10	0.08	0.09	−0.04	−0.03	0.25	0.05	*0.95*	0.02	−0.03	−0.06	−0.07	−0.08	0.03	−0.08
PIN4	0.06	0.07	0.06	−0.03	−0.08	0.12	0.11	−0.10	−0.10	0.23	0.03	*0.91*	0.06	0.03	0.05	0.00	−0.08	0.01	−0.11
OPS1	−0.24	−0.19	−0.17	0.25	0.25	0.02	0.02	−0.02	−0.02	0.06	−0.31	0.01	*0.80*	0.02	0.00	−0.01	0.00	−0.04	−0.06
OPS2	−0.38	−0.15	−0.12	0.29	0.23	0.11	0.18	−0.16	−0.14	0.00	−0.30	0.05	*0.85*	−0.02	−0.07	−0.06	0.02	0.03	−0.18
PIC	0.08	0.08	0.16	−0.11	−0.07	−0.01	0.00	−0.01	0.00	0.03	0.01	0.00	0.00	*1.00*	0.58	0.34	0.04	−0.04	−0.04
IMM	0.14	0.15	0.26	−0.10	−0.10	0.02	0.11	0.00	0.01	0.05	0.04	−0.01	−0.05	0.58	*1.00*	0.58	0.04	−0.01	−0.02
SRS	0.20	0.09	0.37	−0.11	−0.12	−0.01	0.00	−0.05	0.00	0.04	0.08	−0.05	−0.04	0.34	0.58	*1.00*	0.02	0.00	−0.02
DIS	0.12	−0.02	−0.04	0.08	0.06	−0.02	0.01	0.09	0.07	−0.05	−0.03	−0.08	0.02	0.04	0.04	0.02	*1.00*	−0.01	−0.12
AGE	0.04	0.07	0.05	−0.15	−0.19	0.21	0.19	−0.21	−0.26	0.15	−0.20	0.03	0.00	−0.04	−0.01	0.00	−0.01	*1.00*	0.17
GEN	0.03	−0.07	0.04	−0.17	−0.05	−0.01	−0.05	0.10	0.08	−0.02	0.03	−0.09	−0.15	−0.04	−0.02	−0.02	−0.12	0.17	*1.00*

Appendix E
CMV Corrected Correlations Matrix (Chapter 3)

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Original correlations

	OEX	OPS	OPER	OPBC	OPSR	OTRC	PUN	IPER	IPBC	PIN	IPSR
OPS	−0.37**	–	–	–	–	–	–	–	–	–	–
OPER	−0.14**	−0.1	–	–	–	–	–	–	–	–	–
OPBC	−0.06	0.13*	−0.49**	–	–	–	–	–	–	–	–
OPSR	−0.05	−0.11*	0.7	−0.38**	–	–	–	–	–	–	–
OTRC	0.04	0.08	−0.49**	0.47**	−0.54**	–	–	–	–	–	–
PUN	0.09	0.03	−0.27**	0.31**	−0.23**	0.28**	–	–	–	–	–
IPER	−0.25**	0.29**	0.2**	−0.04	0.18**	−0.15**	−0.24**	–	–	–	–
IPBC	0.13*	−0.17**	−0.12*	0.23**	−0.11*	0.16**	0.25**	−0.48**	–	–	–
PIN	0.04	0.04	−0.06	0.09	−0.06	0.1	0.25**	−0.08	0.05	–	–
IPSR	−0.28**	0.33**	0.18**	0.02	0.16**	−0.11*	−0.18**	0.75**	−0.45**	−0.01	–
ITRC	0.37**	−0.21**	−0.27**	0.15**	−0.18**	0.24**	0.19**	−0.43**	0.32**	0.05	−0.4**

Note * $p < 0.05$, ** $p < 0.01$

CMV corrected correlations

	OEX	OPS	OPER	OPBC	OPSR	OTRC	PUN	IPER	IPBC	PIN	IPSR
OPS	−0.37**	–	–	–	–	–	–	–	–	–	–
OPER	−0.14**	−0.09	–	–	–	–	–	–	–	–	–
OPBC	−0.06	0.12*	−0.48**	–	–	–	–	–	–	–	–
OPSR	−0.04	−0.11*	0.7**	−0.37**	–	–	–	–	–	–	–
OTRC	0.03	0.07	−0.49**	0.46**	−0.53**	–	–	–	–	–	–
PUN	0.08	0.03	−0.27**	0.3**	−0.22**	0.27**	–	–	–	–	–
IPER	−0.24**	0.29**	0.2**	−0.03	0.17**	−0.14**	−0.23**	–	–	–	–
IPBC	0.12*	−0.16**	−0.11*	0.22**	−0.11*	0.15**	0.25**	−0.48**	–	–	–
PIN	0.03	0.03	−0.05	0.08	−0.06	0.09	0.24**	−0.07	0.05	–	–
IPSR	−0.27**	0.33**	0.17**	0.01	0.15**	−0.11*	−0.17**	0.75**	−0.45**	0	–
ITRC	0.36**	−0.2**	−0.26**	0.14**	−0.17**	0.24**	0.19**	−0.43**	0.32**	0.04	−0.39**

*Note** $p < 0.05$, ** $p < 0.01$

Appendix F
Mediation Analysis (Chapter 4)

Sample size 348; Level of Confidence for Confidence Intervals: 95; Number of Bootstrap Resamples: 5,000

1. **Independent Variable: Pickup in Store**

Dependent, Independent, and Proposed Mediator Variables:

DV = Choice

IVs = Pickup in store

MEDS = ITRC; IPBC; IPSR; IPER

Statistical Controls:

CONTROL= Pickup immediacy; Service and Return in store; Offline transaction convenience; Offline post-benefit convenience; Offline psychological risk; Offline performance risk; Product involvement; Distance to store; Product uncertainty; Online shopping experience; Offline purchase share; Age; Gender

Total effect of IV on DV (c path)				
	Coefficient	SE	t	p
Pickup	−0.0035	0.0581	−0.0610	0.9514
Direct effect of IV on DV (c' path)				
	Coefficient	SE	t	p
Pickup	−0275	0.0529	−5201	0.6033

BOOTSTRAP RESULTS FOR INDIRECT EFFECTS

Indirect effects of IV on DV through proposed mediators (ab paths)				
	Data	Boot	Bias	SE
Total	0.0240	0.0240	0.0000	0.0269
PerfRisk	−0.0012	−0.0014	−0.0002	0.0055
PostConv	0.0091	0.0092	0.0001	0.0126
PsyRisk	0.0158	0.0163	0.0005	0.0134
TransCon	0.0003	−0.0002	−0.0005	0.0135

M. Trenz, *Multichannel Commerce*, Progress in IS,
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Bias corrected confidence intervals		
	Lower	Upper
TOTAL	−0.0269	0.0799
PerfRisk	−0.0211	0.0048
PostConv	−0.0150	0.0351
PsyRisk	−0.0018	0.0539
TransCon	−0.0259	0.0279

2. **Independent Variable: Pickup Immediacy**

Dependent, Independent, and Proposed Mediator Variables:

DV = Choice

IVs = Pickup immediacy

MEDS = ITRC; IPBC; IPSR; IPER

Statistical Controls:

CONTROL= Pickup in store; Service and Return in store; Offline transaction convenience; Offline post-benefit convenience; Offline psychological risk; Offline performance risk; Product involvement; Distance to store; Product uncertainty; Online shopping experience; Offline purchase share; Age; Gender.

Total effect of IV on DV (c path)				
	Coefficient	SE	t	p
Immed	0.0396	0.0681	0.5815	0.5613
Direct effect of IV on DV (c' path)				
	Coefficient	SE	t	p
Immed	0.0099	0.0620	0.1604	0.8727

BOOTSTRAP RESULTS FOR INDIRECT EFFECTS

Indirect Effects of IV on DV through Proposed Mediators (ab paths)				
	Data	Boot	Bias	SE
Total	0.0296	0.0289	−0.0007	0.0316
PerfRisk	−0.0012	−0.0014	−0.0002	0.0063
PostConv	0.0000	−0.0005	−0.0005	0.0171
PsyRisk	0.0043	0.0045	0.0002	0.0137
TransCon	0.0265	0.0263	−0.0002	0.0160

Bias corrected confidence intervals		
	Lower	Upper
TOTAL	−0.0301	0.0943
PerfRisk	−0.0225	0.0065
PostConv	−0.0344	0.0342
PsyRisk	−0.0194	0.0369
TransCon	0.0003	0.0646

3. Independent Variable: Service and Return in store

Dependent, Independent, and Proposed Mediator Variables:

DV = Choice

IVs = Service and Return in store

MEDS = ITRC; IPBC; IPSR; IPER

Statistical Controls:

CONTROL= Pickup in store; Pickup immediacy; Offline transaction convenience; Offline post-benefit convenience; Offline psychological risk; Offline performance risk; Product involvement; Distance to store; Product uncertainty; Online shopping experience; Offline purchase share; Age; Gender

Total effect of IV on DV (c path)				
	Coefficient	SE	t	p
Service	0.1599	0.0586	2.7277	0.0067
Direct effect of IV on DV (c' path)				
	Coefficient	SE	t	p
Service	0.0793	0.0562	1.4108	0.1593

BOOTSTRAP RESULTS FOR INDIRECT EFFECTS

Indirect effects of IV on DV through proposed mediators (ab paths)				
	Data	Boot	Bias	SE
TOTAL	0.0806	0.0811	0.0005	0.0322
PerfRisk	−0.0024	−0.0019	0.0005	0.0061
PostConv	0.0789	0.0784	−0.0005	0.0265
PsyRisk	0.0066	0.0071	0.0005	0.0117
TransCon	−0.0025	−0.0025	0.0001	0.0122

Bias corrected confidence intervals		
	Lower	Upper
TOTAL	0.0215	0.1513
PerfRisk	−0.0243	0.0045
PostConv	0.0373	0.1449
PsyRisk	−0.0109	0.0373
TransCon	−0.0264	0.0227

Appendix G
German Measurement Instrument (Chapter 4)

Measurement Models for latent variables (German Version)
Offline purchase share
OPS1: Wie viel Prozent Ihrer Einkäufe von Büchern haben Sie im letzten Jahr über in einem klassischen Geschäft getätigt?
OPS2: Wie viel Prozent Ihrer Einkäufe von Elektronikartikeln haben Sie im letzten Jahr über in einem klassischen Geschäft getätigt?
Online shopping risk perception
ORP1: Ich fühle mich sicher, wenn ich Käufe über das Internet durchführe. (reverse)
ORP2: Onlineshopping ist mit zu vielen Unsicherheiten verbunden
ORP3: Im Vergleich zu anderen Alternativen ist Onlineshopping riskanter
Online shopping experience
OEX1: Ich habe viel Erfahrung mit dem Einkauf im Internet
OEX2: Ich bin mit den Möglichkeiten des Onlineeinkaufs vertraut
OEX3: Ich bin sehr souverän in der Nutzung von Onlineshops
Product uncertainty
PUN1: Ich bin unsicher über die tatsächliche Qualität dieses Smartphones
PUN2: Ich bin sicher, dass ich alles was ich über das Smartphone wissen muss, verstehen kann. (reversed)*
PUN3: Ich bin sicher, dass dieses Smartphone die Leistung bringen wird, die ich erwarte. (reversed)*
PUN4: Ich habe das Gefühl, dass der Kauf viel Unsicherheit über die Qualität des Smartphones birgt
Product involvement
PIN1: Ich habe großes Interesse an Smartphones
PIN2: Smartphones sind mir wichtig
PIN3: Produkte wie Smartphones sind für mich von hoher Wichtigkeit
PIN4: Smartphones sind mir gleichgültig. (reversed)
Price consciousness
PCN1: Ich kaufe so viel wie möglich zu reduzierten Preisen
PCN2: In der Regel wähle ich die günstigsten Produkte
PCN3: Ich suche sorgfältig nach dem besten Preis-Leistungs-Verhältnis

(continued)

M. Trenz, *Multichannel Commerce*, Progress in IS,
DOI 10.1007/978-3-319-16115-0

(continued)

Measurement Models for latent variables (German Version)
Multichannel service experience
MEX1: Haben Sie schon einmal ein Produkt im Internet gekauft gekauft und dann im Geschäft abgeholt?**
MEX2: Haben Sie schon einmal ein Produkt im Internet gekauft und dann im Geschäft Servicedienstleistungen in Anspruch genommen (z.B. Unterstützung, Reparatur, Rückgabe)?**
Age
AGE: Bitte geben Sie Ihr Alter an. (in Jahren)
Gender
GEN: Bitte geben Sie Ihr Geschlecht an. (1=weiblich, 2=männlich)
Income
INC: Bitte geben Sie Ihr monatliches Haushaltsnettoeinkommen an. (1 = unter 500€, 2 = 501–1,000€, 3 = 1,001–1,500€, 4 = 1,501–2,000€, 5 = 2,001–2,500€, 6 = 2,501–3,000€; 7 = 3,001–3,500€, 8 = über 3,501€)

Note Unless indicated otherwise, all items were measured on a seven-point Likert scale from strongly disagree to strongly agree
* items were dropped in the final measurement model
** variables are dummy coded, MEX was set to one if participant had any multichannel service experience (MEX1 or MEX2), 0 otherwise
*** 100 % had to be distributed between physical and online store types

Appendix H
Counts Analysis (Chapter 4)

All random tasks included

Purchase channel	
	Total
Total respondents	698
Store	0.447
Internet	0.224
Within Att. Chi-Square	870,624
D.F.	1
Significance	$p < 0.01$
Price	
	Total
Total respondents	698
260€	0.516
270€	0.361
280€	0.236
290€	0.127
Within Att. Chi-Square	1,566,808
D.F.	3
Significance	$p < 0.01$
Retailer rating	
	Total
Total Respondents	698
3/5	0.177
5/5	0.441
Within Att. Chi-Square	1,293,160
D.F.	1
Significance	$p < 0.01$

(continued)

M. Trenz, *Multichannel Commerce*, Progress in IS,
DOI 10.1007/978-3-319-16115-0

(continued)

Delivery	
	Total
Total respondents	698
Shipping (2 days)	0.224
Pickup in store (2 days)	0.201
Pickup in store (immediately)	0.248
Within Att. Chi-Square	23,087
D.F.	2
Significance	$p < 0.01$
Service	
	Total
Total respondents	698
Online service	0.187
Service in store	0.261
Within Att. Chi-Square	87,428
D.F.	1
Significance	$p < 0.01$
Return option	
	Total
Total respondents	698
Return by mail	0.203
Return in store	0.246
Within Att. Chi-Square	29,262
D.F.	1
Significance	$p < 0.01$
None	
	Total
Total respondents	698
None chosen	0.074

Appendix I
CMV Corrected Correlations Matrix (Chapter 4)

Original correlations				
	OSR	OEX	PUN	PIN
OEX	−0.5**	–	–	–
PUN	0.28**	−0.14**	–	–
PIN	−0.11**	0.34**	−0.13**	–
PCN	−0.12**	0.2**	0.04	0.11**

Note * $p < 0.05$, ** $p < 0.01$

CMV corrected correlations				
	OSR	OEX	PUN	PIN
OEX	−0.49**	–	–	–
PUN	0.27**	−0.13**	–	–
PIN	−0.1**	0.34**	−0.12**	–
PCN	−0.11**	0.19**	0.03	0.1**

Note The question "It is important to me that I can quickly and easily reach the store" was used as a CMB proxy because it is theoretically unrelated to the other variables. Its smallest correlation was related to OEX (.0115);
* $p < 0.05$, **$p < 0.01$

M. Trenz, *Multichannel Commerce*, Progress in IS,
DOI 10.1007/978-3-319-16115-0

Appendix J
Manipulation Check (Chapter 4)

The utilitarian and hedonic perceptions were measured using the semantic differentials by Voss et al. (2003). The order of the ten semantic differentials was randomized and items were randomly switched between the left and the right side of the semantic differential.

Measures of the manipulation check (German)	
Utilitarian attributes (Voss et al. 2003)	**Hedonic attributes** (Voss et al. 2003)
Zweckmäßig … Nicht zweckmäßig	Nicht spaßig … Spaßig
Praktisch … Unpraktisch	Langweilig … Spannend
Nützlich … Nicht nützlich	Nicht aufregend … Aufregend
Notwendig … Nicht notwendig	Nicht vergnüglich … Vergnüglich
Effektiv … Ineffektiv	Nicht reizvoll … Reizvoll

The different items for each attribute were combined to one factor each that was used to compare the group that pursued the utilitarian purchase to the group that pursued the hedonic purchase.

The independent samples t-test revealed the following results:

	Manipulation	N	Mean	STD	SE(Mean)
Utilarian Score: (lower = more utilarian)	Hedo	321	0.0858828	1.00279492	0.05597055
	Util	286	−0.0963929	0.98974338	0.05852475
HedonicScore (higher = more hedonic)	Hedo	297	0.2666579	0.84583912	0.04908056
	Util	230	−0.3443365	1.07743726	0.07104411

M. Trenz, *Multichannel Commerce*, Progress in IS,
DOI 10.1007/978-3-319-16115-0

Independent samples test								
	Levene's Test for Equality of Variances		t-test for Equality of Means					
	F	Sig.	t	df	Sig. (2-tailed)	Mean differences	Std. error differences	95 % CI of the differences
UtilarianScore (lower = more utilarian)	0.047	0.829	2.249	605	0.025	0.18	0.081	(0.023; 0.34)
HedonicScore (higher = more hedonic)	19.294	0.000	7.293	525	0.000	0.61	0.084	(0.45; 0.78)

Since Levene's test to assess the equality of variances was significant for the hedonic score, Welch's t-test was used to derive an unbiased estimate of the t-value:

Welch's t test

	t-test for Equality of Means					
	t	df	Sig. (2-tailed)	Mean differences	Std. error differences	95 % CI of the differences
UtilarianScore (lower = more utilarian)	2.251	598.696	0.025	0.18	0.081	(0.023; 0.34)
HedonicScore (higher = more hedonic)	7.076	424.878	0.000	0.61	0.086	(0.44; 0.78)

The results indicate strong support for a successful manipulation.

Some participants left the semantic differentials blank (91). Therefore, the test was repeated by mean-replacing the utilitarian and hedonic scores across participants. Since the mean replaced values are independent from the manipulation, this should decrease the differences between the groups. However, if the test still indicates significant differences between the groups, one can be confident that the differences hold for the entire population:

Welch's t test

	t-test for Equality of Means					
	t	df	Sig. (2-tailed)	Mean differences	Std. error differences	95% CI of the differences
UtilarianScore (lower = more utilarian)	2.316	675.857	0.021	0.18	0.075	(0.027; 0.32)
HedonicScore (higher = more hedonic)	7.676	634.739	0.000	0.57	0.074	(0.42; 0.71)

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