Discovering and profiling e-shopper segments by channel attribute importance and consumer characteristics for three specific e-channels

Brugmans, J.

Award date:
2013

DISCOVERING AND PROFILING E-SHOPPER SEGMENTS BY CHANNEL ATTRIBUTE IMPORTANCE AND CONSUMER CHARACTERISTICS FOR THREE SPECIFIC E-CHANNELS

By J. (Joost) Brugmans

Student ID: 0618795

Eindhoven, November 2013

In partial fulfilment of the requirements for the degree of
Master of Science in Innovation Management

Supervisors

Prof. dr. E.J. Nijssen (Eindhoven University of Technology)

Dr. A. de Jong (Eindhoven University of Technology)

Dhr. H. Nuyens (SEOshop Group B.V.)

TU/e School of Industrial Engineering & Innovation Sciences
Series Master Theses Innovation Management

Subject Headings: Multichannel Customer Management, Multichannel Customer Segmentation, E-Commerce, E-Channels, E-Shopping, Profiling.

ACKNOWLEDGEMENTS

Being definitely one of the most intensive months of my life, I would like to thank a few people for 'dragging' me through the exhaustive thesis writing process. First, I would like to thank my thesis supervisor Ed Nijssen, for he was the one who always cheered me up with his educational metaphors. Also, his knowledgeable insights of the marketing industry proved to be just that bit of extra to push me further into the subject-matter. Second, I would like to thank Ad de Jong for being my second supervisor and providing me some insights on specifically the statistical foundation. Then I would like to thank SEOshop for providing me the space of writing this thesis within their walls, and particularly my manager Hendrik Nuyens. Without them, I would have never dived so deep into the e-commerce scene, which eventually proved to be the industry at my very heart. I am looking forward to my continuation at this very cool—soon to be—multinational.

Then I would like to thank my parents for being so generous and supportive through my entire studies. They have always believed in me, which is an immense motivation. While am at it, I would like to thank Daniel for being a tremendous sparring partner and sharing his vision on some of my ill-grounded arguments. I believe we once called it 'intellectual ping-pong' ☺. Further, I would like to thank my friends, for the most awesome period in my life. Student-life is just amazing! And last, but certainly not least, I would like to thank Anne, for being my tower of strength, and supporting me even though I sometimes was a bit grumpy and occupied. Thanks to you all!

MANAGEMENT SUMMARY

Aiming to provide an accurate representation of how online shoppers (e-shoppers) move between different e-channels such as; an *e-marketplace* like Bol.com, an *e-mall* like Beslist.nl, or an *e-store* like Mediamarkt.nl, and identify the impact of e-commerce, this study extends the principle of 'multichannel customer segmentation' from research that considered online next to offline shopping (brick-mortar store), towards a situation in which online shopping matured, and consumers use multiple e-channels next to each other. Confirmed as a way to identify consumer behaviour in specific channels, explain channel preferences, and design effective multichannel strategies, research found that channel attributes and consumer characteristics (demographics and psychographics) influence channel choice, and relate to specific channel-based consumer segments. Following a similar approach, this study intends to identify and profile different e-shopper segments. The study expects that today many consumers exist that shop using multiple e-channels. The research questions are:

Regarding the three specific e-channels; e-marketplace, e-mall, and e-store, 1) to what extend do channel-based e-shopper segments exist, and 2) how can these online segments be profiled using channel attribute importance and consumer characteristics?

Theoretical Framework

Drawing on earlier findings and research models (appendix A), figure 1 presents a research framework to determine channel-based segments for the multichannel online industry, consisting of 1) the e-marketplace, a third party website leveraging a one-stop-shop solution; 2) the e-mall, a collection of webshops having their own entity under one URL (i.e., price-comparison engines), and 3) the e-storefront, a website representing a single online store. Single and multichannel e-shopper segments are anticipated, that will be profiled using channel attributes, demographics and psychographics. The framework is superior to other segmentation schemes as it is the first to examine alternative e-channels, and it incorporates measures to determine the underlying motivations for *why* certain e-channels are being used, and *who* are using single- or multiple e-channels.

Channel attributes included in the study are: information comparability, search convenience, search effort, aesthetics, service, risk/security, privacy, purchase effort, delivery time, assortment, price promotion, enjoyment, and after sales. Demographics that are included are age, gender, income, education, and number of years on the Internet. Psychographics include loyalty, time pressure, innovativeness, shopping enjoyment, price consciousness, and motivation to conform.

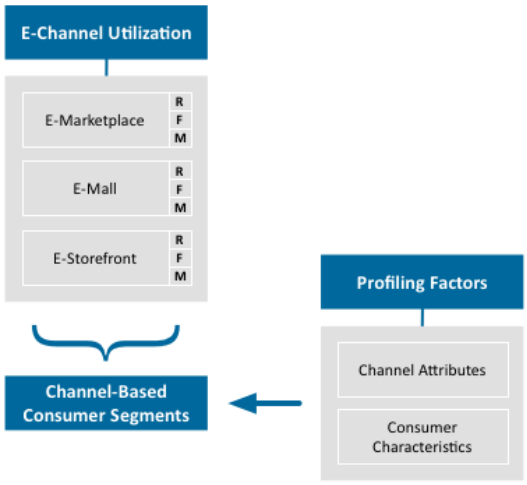

FIGURE 1 Research framework

Methodology & Results

The research employed a non-experimental, comparative design. Using an online survey distributed amongst six customer databases of online merchants from SEOshop, the study measured RFM (recency, frequency, and monetary value) purchase data, channel attribute importance, demographic and psychographic variables, and additional variables to control for discovered segments and gauge specific e-commerce-related behaviours, such as 'research shopping', 'showrooming', 'mobile/social commerce', and 'product returns'. This resulted in a final sample of 463 respondents (10% overall response rate).

All data were analysed using SPSS Statistics 21.0 and applying cluster analysis, factor analysis, and one-way ANOVA. Results showed three e-channel-based consumer segments: *1) single-channel e-shoppers* (convinced e-storefront); *2) dual-channel e-shoppers* (focused e-marketplace and e-storefront), and *3) multichannel e-shoppers* that differed significantly in channel attribute importance scores, consumer characteristics and several additional variables. The main results are summarized and reported in table 1.

TABLE 1 Summary of main results (significant findings)

Channel attributes	Segm. i	Segm. j	Mean diff. (i – j)	Sig.	Conclusion: Profile
Information Comparability	1	3	-.339	.044	Segment 3: comparative-prone
	2	3	-.470	.000	Segment 2 scores lowest here
Service	1	2	.360	.085	Segment 1: service-prone Segment 2 scores lowest here
Price Promotion	*1*	*3*	*-.290*	*.113*[a]	*Segment 3: price-promotion prone*
	2	*3*	*-.279*	*.114*[a]	
Capturing Personal Information	1	3	.620	.011	Segment 1: online privacy issue is important (highest diff. score)
Demographics	**Segm. i**	**Segm. j**	**Chi Square**	**Sig.**	**Conclusion**
Age	1 and 2	3	29.844	.000	Segment 1: older compared to other segments, especially seg. 3
Internet Experience	1 and 2	3	11.824	.019	Segment 3: has the highest Internet experience
Psychographics	**Segm. i**	**Segm. j**	**Mean diff. (i – j)**	**Sig.**	**Conclusion**
Motivation to Conform	2	3	-.288	.017	Segment 3: higher conformity-oriented; segment 2 lowest
Innovativeness	1	3	-.292	.025	Segment 3: more innovative than other two segments
	2	3	-.282	.009	
Shopping Enjoyment	1	3	-.272	.084	Segment 3: scores highest on shopping enjoyment
Price Consciousness	1	3	-.329	.002	Segment 3: more price-conscious than other two segments
	2	3	-.380	.000	

[a] Not significant at individual comparison, but was significant at general ANOVA.

Conclusions & Discussion

Answering research question 1, the *multichannel e-shopper segment (segment 3)* is substantial in size (45% of sample), and scores highest on frequency and monetary value, confirming that multichannel e-shoppers buy more often, spend more money and have a higher life-time value than single-channel e-shoppers. *Single-channel e-shoppers (segment 1)* mainly use the e-storefront, and account for 26% of the sample. They use that e-channel less often and spend less money compared to the other two segments. *Dual-channel e-shoppers (segment 2)* account for 29% of the sample and polarize towards two specific e-channels, the e-marketplace and e-storefront, and do not even slightly use the e-mall. Control variable

'change in behaviour' aligns with the identified segment scores, and indicated that the segments are intensifying.

Profiles of the three e-shopper segments were summarized in table 1, which answer research question 2. Key findings regarding these profiles are discussed below.

The *multichannel e-shopper segment* is highly price-conscious, but spends more money. Online price-dispersion, reduced-search cost, and price-search intentions provide an explanation for this particular finding. Further, information-seeking behaviour, as a practical shopping benefit and experiential value, has been outlined earlier as a motivation for multichannel shopping, and it appears multichannel e-shoppers value similarly.

The most interesting finding is the exposed paradox between motivation to conform and innovativeness for segment 3. Multichannel e-shoppers assign high value to 'Information comparability', therefore they search for reviews, judgements and other assessments online to evaluate their consideration set, and they care less for their online privacy—leading them to participate in online social communities (forums, blogs, feedback-tools, social media, etc.), and value community norms. As such, the peer-group is 'society as a whole'. Online conformity thus relates to exploration of evaluations, processed heuristically, which the Internet made possible on a global level due to new technologies.

Single-channel e-shoppers assign a significantly higher importance score to 'capturing personal information' and 'service'. Although it is generally found that higher service relates to higher purchase intentions, all discovered e-segments score relatively low on importance for service in online shopping. These aspects ask for further research. It further appeared that segment 1 is definitely more conservative; an older segment, lowest Internet experience, low innovative and low e-commerce-related-behaviour scores support this notion. Control variables indicated a slow-evolving segment.

Dual-channel e-shoppers do not engage in exploration and assign littlest value to self-expression, displaying the exact difference from multichannel segment 3. They probably stick to what works and what they know, and the utility gained (mostly convenience) is more important than expanding their horizon. The segment differences explain why multichannel e-shoppers use the e-mall, and the dual-channel e-shoppers do not—but do use the e-marketplace (a convenient one-stop-shopping place). This profitable segment further assigns little importance to service, questioning whether e-tailers should invest any resources to service.

Managerial Implications

The present research has some valuable implications for e-commerce managers. First, the existence of the multichannel e-shopper segment implies that managers should maintain multiple e-channels and try to find cross-channel synergies between their (and competitor's) e-channels, to engage this large, remunerative group of online shoppers. Second, based on channel attribute importance and consumer characteristic scores that differ per segment, the research suggests that online retailers (e-tailers) should enhance their e-channels in design, and develop specific strategies for each e-shopper segment, specifically for the

profitable multichannel e-shopper segment. For instance, high scores for the multichannel e-shopper segment on several psychographic traits provide some ideas for e-tailers, such as:

- High price-consciousness of the multichannel e-shopper segment indicates that low price-focused online retail strategies might be successful to satisfy their needs.
- Reviews and community norms are important to the multichannel e-shopper segment. The research suggests that actively collecting reviews and starting online communities could help in engaging and activating this segment.
- A higher score on shopping enjoyment of the multichannel e-shopper segment indicates that newly provided entertaining utilities could satisfy this segment more.

Several channel attributes scores per segment present ideas for e-commerce managers:

- The multichannel e-shopper segment scores higher on information comparability; they engage in information- and variety-seeking behaviour. Providing comparison possibilities in e-channels might satisfy (and attract) consumers of this segment.
- The single-channel e-shopper segment assigns higher importance to the online privacy issue. Better noticeable disclosures of cookie usage might be successful in attracting and converting this segment.

Additional scores on channel attributes showed that *e-shoppers in general* (total sample) attach greater value to risk/security issues, but also convenience and effort, as found by other studies. To satisfy online shoppers in general, some ideas include to: 1) emphasize certifications/labels for more trust; 2) provide choice in payment methods for preferences and convenience; 3) leverage clear navigation and checkout, and 4) communicate stock and delivery times clearly, to reduce the incentive to switch to other (e-)channels.

While the study defined three e-shopper segments that differ on channel attribute importance, consumer characteristics and other behaviours, e-tailers could also replicate the present study's survey to segment their own customers based on actual purchase data, or perhaps preference—which might yield different results.

Last, the single-channel e-shopper segment is mainly active in the e-storefront, though measures on search preference learned that these consumers possibly search e-malls. The research suggests that locking-in these consumers and thus converting them from Web searchers to Web buyers could be a rewarding activity. Several possible lock-in procedures are provided.

TABLE OF CONTENTS

LIST OF TABLES & FIGURES

Tables

Figures

LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
AVE	Average Variance Extracted
BCG	Boston Consulting Group
BIC	Schwarz's Bayesian Information Criterion
CA	Channel Attributes
CC	Consumer Characteristics
DG	Demographics
EC	Electronic Commerce
LL	Log-Likelihood
MCM	Multichannel Customer Management
PG	Psychographics
RFM	Recency – Frequency – Monetary value
SD	Standard Deviation
URL	Uniform Resource Locator

1. INTRODUCTION

Creating extensive challenges for researchers and practitioners alike, the recent proliferation of shopping channels stimulated consumer behavioural studies in the field of 'multichannel customer management' (Konus, Verhoef, & Neslin, 2008), defined as "*the design, deployment, coordination, and evaluation of channels through which firms and customers interact, with the goal of enhancing customer value through effective customer acquisition, retention, and development*" (Neslin et al., 2006, p. 96). As more consumers nowadays become multichannel shoppers; in that they turn to more than one channel for their regular shopping activities (Kumar & Venkatesan, 2005; Rangaswamy & Van Bruggen, 2005), maintaining multiple channels with consumers is deemed essential for a retailer's sustained growth (Bhatnagar & Ghose, 2004; Venkatesan, Kumar, & Ravishanker, 2007; Verhoef, Neslin, & Vroomen, 2007). Especially because research confirmed that multichannel shoppers buy more often, spend more money and have a higher life-time value compared to single-channel shoppers (Neslin et al., 2006; Neslin & Shankar, 2009; Venkatesan et al., 2007). Arguably one of the most important innovations in this particular field—mainly imputable to the growth of Internet technology (Bhatnagar & Ghose, 2004; Keen, Wetzels, de Ruyter, & Feinberg, 2004)—is e-commerce: "*the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, including the Internet*" (Turban et al., 2007, p. 4).

Over the past two decades, scholars have published an impressive body of literature on e-commerce and multichannel customer management. With the emergence of the Internet as a shopping channel, scholars have studied elements that influence online shopping or have compared online and offline shopping channels (Burke, 2002; Cha, 2011; Gupta et al., 2004). Though the Internet as a channel in general often came across within multichannel research, specific e-channels—well as insignificantly characterized—were never researched in light of multichannel phenomena such as channel selection, preference or segmentation. For instance, Neslin et al. (2006) stress that *multichannel customer segmentation* is a fundamental behaviour issue for crafting effective multichannel strategies (Konus et al., 2008). Several other papers have outlined channel-based consumer segments, explaining segment-differences or showing group similarities, though these publications focused on the brick-and-mortar store, the catalogue and the Internet (henceforth 'traditional' channels) (Keen et al., 2004; Konus et al., 2008; Mcgoldrick & Collins, 2007; Thomas & Sullivan, 2005).

E-commerce expanded and matured in the last decade, allowing online retailers to sell and consumers to buy through differentiable e-channels such as an *e-marketplace* like Bol.com, an *e-mall* like Beslist.nl or an *e-store* like Mediamarkt.nl (Bhatnagar & Ghose, 2004; Su, 2007; Lim, Grover, & Purvis, 2012; Wang & Chen, 2010). These formats vary by size, graphical interface, characteristics, and functionalities. *E-marketplaces* are defined as third party websites bringing together multiple sellers (and buyers) in a virtual surrounding, providing a general checkout over multiple sellers to leverage a one-stop-shopping solution (Bakos, 1997; Burke, 2002; Grieger, 2003). *E-malls* are a collection of webshops with their

own entity under one URL, also denoted as price-comparison engines, which render product, price and consumer information; they refer to affiliated webshops (indirect) or offer buying possibilities (direct) (Hoffman, Novak, & Chatterjee, 1995; Su, 2007; Rainer & Cegielski, 2010). *E-storefronts* are defined as websites representing a single online store, either an extension of a brick-and-mortar or catalogue retail format, or a pure-play Internet retailer[1] (Hoffman et al., 1995; Ancarani & Shankar, 2004; Rainer & Cegielski, 2010). Arguably, these different online channels present distinctive shopping experiences, even when similar products are being purchased (Wolfinbarger & Gilly, 2001).

According to a recent study by the Boston Consulting Group (2013)[2], 'easy growth' in e-commerce has ended, and mature markets, such as the Netherlands, are reaching saturation; the amount of shopping possibilities make it more difficult for retailers to stand out (Bhatnagar & Ghose, 2004; Lim et al., 2012). Moreover, the Web has made physical and geographical boundaries weak (Bhatnagar & Ghose, 2004), leading to unprecedented shopping possibilities for consumers, but retention-challenges for online retailers (e-tailers). Because switching costs and channel lock-in are much lower on the Internet than in offline retail formats (Ansari, Mela, & Neslin, 2008; Dholakia et al., 2005; Verhoef et al., 2007), consumers can easily switch between online channels. Gupta, Su & Walter (2004) stress that online shoppers are always just "*one click away from a better deal*" (p. 148), making it difficult to cultivate loyalty (cf. Ansari et al., 2008). While comprehending the e-commerce environment with its e-channels is fundamental for e-tailers, understanding online consumers' needs and their behaviour towards different e-channels is even more essential (Bhatnagar & Ghose, 2004; Keen et al., 2004), in order to craft a successful sales strategy, and leverage subsequent marketing actions to deal with these retention and loyalty issues (Neslin & Shankar, 2009).

Aiming to provide an accurate representation of how online consumers (e-shoppers) move between the three outlined e-channels, and identify the impact of e-commerce (Balasubramanian, Raghunathan, & Mahajan, 2005; Keen et al., 2004), this study extends the principle of 'multichannel customer segmentation' towards the online shopping environment to explain e-shoppers' behaviour (Konus et al., 2008). As channel-based consumer segments are differentially responsive to channels due to their needs (Neslin & Shankar, 2009), finding single-channel and multichannel e-shopper segments with their characteristics can provide actionable levers for e-commerce managers. Discovering and profiling single- and multichannel e-shopper segments thus is the challenge of this research.

1.1 Research Questions & Objectives

Confirmed as a way to identify consumer behaviour in specific channels, explain channel preferences, and design effective multichannel strategies, research found that channel

[1] Pure-play e-tailers are retailers that are only selling on the Internet and do not own a brick-and-mortar or catalogue operation (Ancarani & Shankar, 2004; Kwon & Jain, 2009).

[2] https://www.bcgperspectives.com/content/articles/center_consumer_customer_insight_consumer_products_breaking_through_barriers_online_growth/

attributes and consumer characteristics influence channel choice, and relate to specific channel-based segments (Bhatnagar & Ghose, 2004; Keen et al., 2004; Konus et al., 2008; Mcgoldrick & Collins, 2007; Neslin & Shankar, 2009; Zhang et al., 2010). Extending this notion in profiling *online segmentation schemes*, concentrating on specific attributes and characteristics may lead towards a better understanding of consumers' e-channel selection, and allows managers to better design their e-channels, deploy strategy and target e-shoppers. In contrast to previous studies that addressed multichannel shopping and segmentation in the Internet, catalogue and brick-and-mortar context, this study thus focuses on multiple e-channels that customers use and combine. The study is motivated by a maturation of the Internet and e-commerce (Wang & Chen, 2010), as well as the emergence of new online formulas such as e-malls that present distinctive shopping experiences (Wolfinbarger & Gilly, 2001). Given the above, the present study addresses the following two research questions:

Regarding the three specific e-channels; e-marketplace, e-mall, and e-store, 1) to what extend do channel-based e-shopper segments exist, and 2) how can these online segments be profiled using channel attribute importance and consumer characteristics?

The primary objective is to answer the above presented research questions. The first question is answered using hierarchical and non-hierarchical cluster analysis on three online shopping engagement measures 'recency', 'frequency' and 'monetary value' for each included e-channel. The second question is answered by examining one-way ANOVA outputs of the profiling characteristics between all identified segments. Accompanying the research questions, the study has the following goals: ***1)*** segmenting e-shoppers based on utilization of e-channels—accounting for the possibility that consumers use multiple e-channels too—to find single- versus multichannel oriented segments (for research question 1), and ***2)*** profiling channel-based e-shopper segments by a) importance of channel attributes, and b) demographics and psychographics (for research question 2), to determine *why* e-shoppers are using certain e-channels, and *who* are using single or multiple e-channels. A third research goal is included to satisfy the demands of SEOshop[3], the company that is involved in this study; ***3)*** providing recommendations for e-commerce managers in that they can better design their e-channels, and deploy marketing and sales strategy towards the identified e-shopper segments.

1.2 Scientific & Managerial Relevance

Several contributions are made to marketing literature. First, drawing on former multichannel theories that focused on multichannel customer segmentation and channel selection (Bhatnagar & Ghose, 2004; Keen et al., 2004; Konus et al., 2008; Verhoef et al., 2007), the research introduces and validates an operational framework that motivates the

[3] SEOshop is a Dutch Software-as-a-Service company, delivering off-the-shelve e-commerce solutions to well over 3,500 online merchants.

existence of single- and multichannel e-shopper segments. Earlier segments have been found (Bhatnagar & Ghose, 2004; Keen et al., 2004; Konus et al., 2008), but not specifically for the online environment.

Second, profiling the segments by drivers of channel choice—channel attributes and consumer characteristics—provides a rich description for explaining the behaviours and finally developing actionable implications per e-shopper segment. To the author's knowledge, this is the first study to consider specific e-channels with respect to segmentation, and incorporate these covariates.

Third, as McGoldrick & Collins (2007) state that *"it is more difficult to pinpoint a group that is less characterized by extremes of preferences and behaviour, more by a blend of several traits"* (p. 151), finding a multichannel e-shopper segment including particular characteristics expands our multichannel view (theoretical knowledge), but also helps in determining strategy for online merchants (managerial implications).

Fourth, according to Lim et al. (2012), the domain of e-channel selection has been studied from three different perspectives: 1) the choice among individual websites; 2) the choice of accepting the Internet as a purchasing channel; and 3) the choice between online and offline channels; to which the present research adds a fourth; 4) the choice between multiple online channels. The study therefore builds on previous research, and adds fresh knowledge to fill a gap in literature.

The research also has important managerial implications. The outcomes allow firms to better design their channels, define sales strategy and target their marketing practises to online consumer segments. The study illustrates that there is a difference in importance for specific attributes and in the personal traits of consumers buying from single or multiple e-channels. Moreover, discovered channel-based segments provide a more informed idea of which e-channel(s) retailers need to include in their sales or marketing strategy according to consumer profiles.

In addition, due to the attribute-based view on consumers, firms can alter specific features to design their online stores for an optimal experience. Consequently, e-tailers have not only the opportunity to target e-shopper segments more precisely; they can also cater better for the varying need states of each shopper. Customers then might be "right-channelled" to encourage, or even forced to use certain channels (Knox, 2006; Neslin & Shankar, 2009).

1.3 Thesis Outline

The remainder of the study reads as follows. Section two provides the literature review. Section three presents the theoretical framework. Section four outlines the methodology of the empirical study, and addresses issues of sampling, measures and analysis. Section five presents the results. Section six presents a number of conclusions, provides managerial implications, and discusses some limitations as well as a number of possible directions for future research.

2. LITERATURE REVIEW

The present literature review focuses on multichannel shopping employing an extensive analysis of existing literature on two domains: 1) e-commerce channels (e-channels) and 2) multichannel customer segmentation. First, e-commerce literature is reviewed to identify differentiable e-channels. Second, multichannel literature is reviewed to understand former efforts on channel-based segmentation.

Publications were identified by searching the ABI/INFORM/ProQuest, IEEE Xplore, ScienceDirect, and Google Scholar databases. Keywords that were employed for the first domain included "e-commerce", "classification", "online channels", "e-channel(s)", "internet shopping", "e-business", and "e-commerce mechanisms"; and for the second domain "multichannel customer management", "multichannel customer segmentation", "(multi)channel choice", "channel adoption", "(multi)channel preference", "(multi)channel determinants", "(multi)channel drivers", "multichannel shopping", and "multichannel retailing". The search was limited to peer-reviewed scholarly journals with a significant impact factor (above 1.0[4]), and on all relevant findings the *snowball* technique was applied to find other useful papers, but also academic books.

Next, abstracts of the identified publications were examined. It helped to eliminate those publications that were not related to the topic. This procedure left 18 publications for full review (see table 2). These publications were then employed to comprehend the main research domains, particularly as a basis for developing a research framework to discover and profile e-shopper segments for specific e-channels, based on customer segmentation by e-channel (discussed in section 3).

TABLE 2 Publications on research domains for full review

E-Commerce Channels	Multichannel Customer Segmentation
Alba et al. (1997)	Bhatnager & Ghose (2004)
Chaudhury et al. (2001)	*Blattberg et al. (2006)*
Grieger (2003)	Keen et al. (2004)
Hoffman et al. (1995)	Konus et al. (2008)
Laudon & Traver (2007)	McGoldrick & Collins (2007)
Palmer & Lindemann (2003)	Neslin et al. (2006)
Rainer & Cegielsky (1997)	Neslin et al. (2009)
Su et al. (2007)	Verhoef et al. (2007)
Turban et al. (2007)	Zhang et al. (2010)

Printed in *italics* are academic books

2.1 Classifying E-Commerce Channels

The first objective of the literature review is to list the e-channels that have been identified in scholarly research. Due to a 'jargon jungle' (Grieger, 2003) and dissimilar nomenclatures, this proved to be a difficult task. For instance, literature denotes 'commercial webpages', 'Internet market mechanisms', 'web-channels', 'online (sales) channels', 'Internet retail sites', and 'online engines', which all seem to indicate or support a similar outlet: the e-channel. Furthermore, not all definitions are mutually exclusive, which makes understanding

[4] As far as can be derived from the ISI Web of Knowledge website

e-channels even more difficult. Last, several articles are out-dated or at least less suited for the current, mature online situation. Building on the notion that e-channels are in need of a classification (Hoffman, Novak, & Chatterjee, 1995; Spiller & Lohse, 1997), this section reviews e-commerce literature with the goal of reaching some consensus in the e-channel taxonomy.

2.1.1 Review of Literature on E-Channels

Only until the Internet became commercialized, and users began participating in the wonderful domain called the World Wide Web in the early 1990s, e-commerce was born (Turban et al., 2007). Ngai & Wat (2002) believe that 1993 was the start of e-commerce, since it was then that a popular web browser was introduced that interlinked people with businesses. The industry can thus be labelled as juvenile, but it has already experienced both 'bust' and 'boom' periods (e.g., the dot.com bubble) (Dwivedi, Kiang, Lal, & Williams, 2008). As the Internet diffused in the last decades, online shopping gradually increased to a 'predicted' percentage of 8% of total retail sales in 2013 (U.S.) (Bhatnagar & Ghose, 2004; Lim et al., 2012). In the beginning, online stores had difficulties while confronting the consumer—e.g., slow load times, inability to locate items, incomplete information, credit card/privacy issues, lack of human interaction, and missed or late deliveries (Forsythe & Shi, 2003; Kaufman-Scarborough & Lindquist, 2002)—though now e-commerce has matured (Wang & Chen, 2010). Concomitant to this maturity, many different online shopping experiences appeared on the Web, and as such, firms and consumers can buy and sell through a vast amount of distinguishable e-channels (Hoffman et al., 1995; Palmer & Lindemann, 2003; Rainer & Cegielski, 2010; Spiller & Lohse, 1997).

The study by Hoffman, Novak & Chatterjee (1995) is one of the first papers that addresses online retail format classification. They defined three categories on six functional building blocks for 'commercial websites' (i.e., e-channels), which can be considered an element in the context of e-commerce on the highest possible level 1) online storefronts, 2) content sites, and 3) web-traffic control sites (Hoffman et al., 1995; Spiller & Lohse, 1997). Online storefronts are described as websites that offer direct sales through the e-channel (Hoffman et al., 1995). Content sites are either fee-based (pay for content, information brokering (cf. Palmer & Lindemann, 2003)) or sponsored (advertisements) and provide access to information. Web-traffic control sites are divided into three subcategories, including online malls, incentive sites and search agents (Ibid.). Online malls are a collection of online storefronts. They charge rent or fees for the store's virtual place on the site, and they also accept advertising. The incentive site tries to pull a customer to a specific storefront with specific advertisements, much like the mall does. Search agents try the same through keywords (for example Google.com).

Spiller & Lohse (1997) built on the study of Hoffman et al. (1995) and classified 137 Internet retail sites (cf. e-channels) on 35 observable website attributes into five significant groups: 1) super stores; 2) promotional stores; 3) plain sales stores; 4) one page stores, and 5) product listings. They identified that these categories mainly differ on three dimensions:

size, service offerings, and interface quality. For instance, super stores and plain sales stores provide a relative large product offering, and quite good navigation capabilities (Ibid.). They mentioned that, depending on the e-tailers intention, online stores can focus on pure selling, providing information, or marketplace awareness, or a mixture of all.

Chaudhury, Mallick & Rao (2001) discussed e-channel type in a different setting. They described an e-channel in terms of a path that the product or service undertakes from source to destination (cf. supply chain). Thereby they differentiated between three types of e-channels, 1) advertising channels; 2) order processing channels, and 3) customer support channels (Chaudhury et al., 2001). As an *advertising channel*, the website can either advertise its own products, or use it as a portal for advertising other companies' products, whereas an *order processing channel* specifically refers to a website where purchasing the good is central; either the e-channel is complementary to a physical storefront or the e-channel is used by suppliers as direct online sales channel (i.e., pure-play e-tailing). The *customer support channel* adds value to the product by leveraging services and support, e.g., providing virtual communities to assist customers (Chaudhury et al., 2001). They thus view the e-channel in a holistic nature, and focus on functions in the supply chain to maximize business value and e-channel potential.

Palmer & Lindemann (2003) found that three 'Internet market mechanisms' support e-channels: 1) direct-search; 2) broker, and 3) dealer business models (Palmer & Lindemann, 2003). These market structures help in characterizing different e-channels, as they allow the commercial transactions, and position the Web as a platform for commercial activity (e-commerce). With the 'direct-search' mechanism, the e-channel provides an overview of e-tailers, but does not provide any price or availability guarantees (Ibid.). In the 'broker' mechanism, the e-channel does not keep own stock, but earns a commission or fee from the supplier when an order is received through the website (Palmer & Lindemann, 2003). Payment goes through the broker; consumers can thus buy directly on this e-channel. In a 'dealer' market structure, the dealer on the e-channel interacts directly with the customer and keeps its own stocks (Ibid.). Online marketplaces operate this kind of business model, where sellers are directly engaged with buyers on an online platform.

Online marketplaces (or e-marketplaces) have been heavily discussed in publications (Bakos; 1997; Grieger, 2003), and appear to be a separate kind of e-channel. In the last decade, developments have shown interesting transitions regarding this type of e-channel. For instance, Amazon.com, Inc., which started as a small online bookstore, has grown to be the largest e-commerce company in the world, located into almost a dozen countries (Laudon & Traver, 2007). Other global Internet giants as eBay.com, and in the Benelux Bol.com have matured to dominate their share in the market (Dholakia, Zhao, & Dholakia, 2005; Laudon & Traver, 2007). Originated as pure-play e-tailers or auction platforms, these shopping places have expanded their product offerings by accepting external parties to sell on their platform, providing even more products and services to their customers. They have become one-stop-shopping e-marketplaces. Although Burke (Burke, 2002) proposed that using a similar interface for selling different kind of products in different categories would

likely result in a poor online shopping experience, his suggestion could not have been more wrong. These one-stop-shop formats have changed the e-commerce landscape enormously, by not being sole shopping websites anymore, yet being all-providing platforms. Their revenue numbers outreach all other e-channels, and their popularity gains by the day, being the reason for many e-tailers to offer products on these e-channels (Laudon & Traver, 2007). Rainer & Cegielski (2010) classified B2C e-commerce into two specific e-channels; 1) the e-storefront, and 2) the e-mall. The e-storefront is a website that represents a single store on the Internet. An e-mall is considered an assembly of distinct storefronts, represented by a single Internet address (Rainer & Cegielski, 2010); e-malls were also introduced by Alba et al. (1997) and Lynch & Ariely (2000). Other publications refer to the latter e-channel type as price-comparison engines (Frambach, Roest, & Krishnan, 2007; Su, 2007), which are discussed next.

Recent research has began studying 'online-comparative shopping platforms', which are internet-based services that render product and price information of various contending e-tailers (Su, 2007). They thus act sort of mall-wise, by enchanting different Internet shops under one roof—or in the online case, one uniform resource locator (URL). They create and organize matrices of attribute information about products and services to stimulate prompt and precise alternative comparisons (Frambach, Roest, & Krishnan, 2007). They collect and display information on a variety of products and services to rank retailers, mostly on price, which provides an extra service to consumers. Though, these e-channels have enlarged their functions and now offer information of almost every aspect such as delivery times, but also depict customer reviews to show retailer credibility (Su, 2007). This allows for ranking on other aspects as well, e.g., quality, which attracts different types of consumers. As these e-channels concentrate multiple shops on one platform and provide traffic towards the affiliated webshops, they have expanded their business models from direct search only towards the identified broker models (Palmer & Lindemann, 2003), to gain fees on product sales or website redirects.

2.2 Multichannel Customer Segmentation

This section reviews the multichannel customer segmentation literature. Multichannel retailers need to understand why consumers engage in multichannel shopping and what drives consumers to utilize certain channels over others (Mcgoldrick & Collins, 2007). Neslin et al. (2009) have outlined that multichannel customer segmentation is a key issue in understanding multichannel consumers for driving multichannel strategy and design. Consumers might behave homogeneously towards different channels, which obviously indicates mass marketing strategies. Though, more likely, specific segments exist and these might align better with specific channels. Then, understanding particular shopper-segment attributes and characteristics is necessary to design and deploy a firm's strategy (Konus et al., 2008). This section reviews on prior literature, but first touches upon the overall encompassing context of multichannel customer management.

2.2.1 Multichannel Customer Management

Researchers engaged into the customer-centric field of multichannel customer management (MCM) in an attempt to manage the proliferation of channels and the accompanying consumer behaviour issue of multichannel shopping (Konus et al., 2008; Neslin et al., 2006). MCM is defined as "*the design, deployment, coordination, and evaluation of channels through which firms and customers interact, with the goal of enhancing customer value through effective customer acquisition, retention, and development*" (Neslin et al., 2006, p. 96). One of the first research efforts in this field—and possibly the most heavily researched area of MCM (Neslin et al., 2006, p. 101)—was to understand what drives channel choice among consumers (Blattberg, Kim, & Neslin, 2008; Devaraj, Fan, & Kohli, 2006; Frambach et al., 2007; Forsythe & Shi, 2003; Montoya-Weiss, Voss, & Grewal, 2003; Neslin & Shankar, 2009; Rangaswamy & Van Bruggen, 2005; Schoenbachler & Gordon, 2002; Sousa & Voss, 2012). For instance, one of the pioneering publications of Schoenbachler and Gordon (2002) claims that comprehending channel choice was needed to simplify our understanding of multichannel shopping. Several other studies have addressed topics within MCM, which brought to light some new consumer behavioural challenges such as 'free-riding' issues (Van Baal & Dach, 2005; Wu, Ray, Geng, & Whinston, 2004) (e.g. 'showrooming'[5] (Mehra et al., 2013)), and the 'research shopper' phenomenon[6] (Verhoef et al., 2007). Understanding the multichannel shopper and channel selection in a multichannel environment is needed for design, marketing and strategic practises. How to sustain customers to your current business channels, and how to capture new clients makes up for an interesting research area (Neslin & Shankar, 2009).

Researchers have segmented the market by channel, and found that the multichannel shopper segment is growing (Konus et al., 2008; Zhang et al., 2010). Rangaswamy & Van Bruggen (2005) refer to the multichannel shopper as customers who "*use more than one channel to interact with firms*" (p. 5). Multichannel shoppers utilize multiple channels, because distinctive channels can be differentially effective at satisfying their shopping needs (Zhang et al., 2010), or as Schoenbachler & Gordon (2002) state 'a consumer who wants anything, anytime, any place, and on his or her terms'. Further, it has been widely accepted that multichannel shoppers spend more, buy more often and have a higher life-time value than single-channel shoppers (Dholakia et al., 2005; Kumar & Venkatesan, 2005; Neslin & Shankar, 2009; Venkatesan et al., 2007), indicating its value for retailing business. Next sections reviews on multichannel segmentation literature.

2.2.2 Review of Literature on Channel-Based Customer Segmentation

Researchers have used different segmentation strategies, including multiple criteria such as demographics, geographics, psychographics, benefits or behaviour (Kotler & Keller, 2008),

[5] Showrooming is the act of evaluating the product in a physical store, before buying the product online (Mehra, Kumar, & Raju, 2013; Van Baal & Dach, 2005).

[6] Research shopping is the tendency to research the product in one channel (e.g., the Internet), without the intention of buying it in that similar channel, though through another (e.g., the physical store). This occurs most from the Internet → physical store (Verhoef et al., 2007).

but also by channel, optionally combined with previous criteria. Segments should be measurable, accessible, differentiable, actionable, and substantial (Ibid.). Neslin & Shankar (2009) indicate that channel-based customer segmentation possesses these characteristics (p. 71), and conclude that within a multichannel environment, segmenting a market by channel may be advisable.

In a study by Keen et al. (2004), four segments were acknowledged using hierarchical and non-hierarchical clustering on importance scores for different attributes. Several clusters within the data sample gave a higher importance score to specific channel attributes, and were named after that factor accordingly: 'Generalists' who scored high on all attributes; 'Formatters' who scored high on specific channels (by preference); 'Price sensitives' who choose channels according to prices, and 'Experiencers' who use the same channel as the previous time (Keen et al., 2004). The study found that 'the format' is the most important factor in the structure of the retail decision process, suggesting that the consumer's choice of where to shop occurs first and is independent of attributes and information (Ibid.). They also found that there seems to exist an identifiable segment of consumers that prefer the Internet channel over alternative channels (Ibid.). With the current offering in the Internet market, and new consumer experiences, their conclusion on channel choice might be impeached due to the changing retail landscape—something also already expected and pronounced by the researchers (p. 693)—as multichannel shoppers choose a channel for satisfying best at their different shopping needs (Zhang et al., 2010). Segments might therefore be formed on the format, while using attributes to explain consumers' choice according to their shopping requirements.

Bhatnager & Ghose (2004) executed a benefit segmentation of online shoppers; zooming in on the general Internet channel only. They believe that next to the traditional demographic-based profiling studies, it is vital to understand the needs of consumers when they are involved in the Internet channel. Using a latent class modelling approach within different product categories, they found a three-segment solution where segment 1 buys products in higher prized categories at online stores; segment 2 dislikes buying anything online, and segment 3 buys standardized, low prized products online (Bhatnagar & Ghose, 2004)[7]. After finding the segments, they profiled them using demographic variables such as age, gender and Internet experience. They found, unsurprisingly, that consumers with the least experience on the Internet abhor the idea of buying anything online, and belong to segment 2. Consumers with the most experience, and confident with buying more expensive products, were mostly located in segment 1 (Bhatnagar & Ghose, 2004). Last, focusing on eleven attributes such as ease of placing orders, customer service, after sales support, and security of sensitive information, the researchers produced three perceptual maps showing attribute importance (vertical axis) and Web performance perception (horizontal axis), indicating consumer's channel evaluations and attractiveness (cf. Verhoef et al., 2007). For example, while customer service and after sales support were portrayed on the lower end of

[7] Bhatnager & Ghose (2004) focus on seven product categories, and three are split along price dimension to find segments on low/high priced products.

the Web performance axis by all three segments, segment 2 solely indicated a high importance score, displaying a huge opportunity for online stores (i.e., focus on service and after sales).

With respect to the three traditional channels, brick-and-mortar store, catalogue, and the Internet, Konus et al. (2008) have discovered three channel-based consumer segments for both search and purchase—1) multichannel enthusiasts; 2) uninvolved shoppers, and 3) store-focused consumers—along with their covariates based on demographic and psychographic variables. They claimed is it the first research that considered psychographics as covariates of multichannel behaviour (Ibid.). These psychographics—price consciousness, shopping enjoyment, time pressure, motivation to conform, and innovativeness—determine consumer segments based on multichannel orientations, and indirectly govern the consumer shopping process. Interesting outcomes are that multichannel enthusiasts have positive attitudes toward all channels, while store-focused consumers tend to search and buy more from physical stores, and the uninvolved segment prefers less for any channel, or even shopping in general. They therefore found that "*different consumer segments vary in their attitudes toward different channels in a multichannel setting*" (Konus et al., 2008, p. 410). Their study also revealed that psychographics are associated with segment membership. For example, multichannel enthusiasts tend to be more innovative and enjoy shopping, whereas store-focused consumers are more loyal. Although they mentioned that it was conform prior research, it is questioned that they did not found any relationships with socio-demographics with respect to differences between search and purchase. Forsythe and Shi (2003) namely found that older consumers are more likely to be shoppers, whereas younger users are more likely to be browsers. They also did not include Internet experience as variable, as Bhatnager & Ghose (2004) did, which could have provided interesting results.

McGoldrick & Collins (2007) performed a similar study as Konus et al., in trying to identify a multichannel segment, though focused on 'using' a channel (not searching or purchasing). They found a four-segment solution; one segment for each channel—brick-and-mortar, catalogues, and Internet, and one multichannel segment. Using the multi-attribute attitude model developed by Fishbein (1967)—measuring channel attribute importance and attribute evaluations—they found that channel attributes are the underlying structure of why consumers prefer certain channels (Mcgoldrick & Collins, 2007), which is in line with Verhoef et al. in that consumers evaluate the benefits and costs of each channel by channel attributes (Verhoef et al., 2007). For example, the store-prone cluster was unequivocal in its liking of attributes for the brick store against any other channel. Interesting was that the multichannel segment rated store attribute importance even higher, but it also rated Internet and catalogue attribute importance high, which aligns with Schoenbachler & Gordon's (2002) finding of a multichannel shopper wanting 'anything, anytime, any place, and on his or her terms'.

Above review of segmentation literature confirm the existence of clearly defined channel segments (as mentioned by Neslin et al., 2006; Neslin & Shankar, 2009), though

researchers have not settled on a single segmentation scheme (Zhang et al., 2010); several segmentation strategies were used and combined in previous studies. Keen et al. (2004) found that segments assign importance to specific attributes, and choose channels accordingly. It is known that multichannel shoppers use multiple channels to satisfy their extensive shopping needs (Zhang et al., 2010). Specific channel attributes fulfil those needs by providing certain benefits and costs (Bhatnagar & Ghose, 2004; Mcgoldrick & Collins, 2007; Verhoef et al., 2007). In addition, Bhatnager & Ghose (2004) and Konus et al. (2008) found that shoppers differ on various demographic and psychographic characteristics respectively, depending on channel-segment membership. Research also illustrated that online consumer segments are heterogeneous, and as a consequence have different requirements according to their traits (cf. Sousa & Voss, 2012; Zhang et al., 2010). Neslin & Shankar (2009) argue that these findings enable us to "*paint a more informed picture of the Internet consumer or the multichannel consumer*" (p. 71).

2.3 Conclusion

The changing retail landscape—particularly online experiences—calls for deeper research (Rangaswamy & Van Bruggen, 2005), to examine whether specific channel-based segments exist for the multichannel online environment, for example to e-channels as reviewed in section 2.1. In request to the call for more research, the following section proposes a research framework to fill a gap in literature. Table 3 illustrates the articles that guided the present research, and presents their key purpose, comprised channels and incorporated profiling factors. While it is evident that the included studies have contributed to our understanding of channel choice and multichannel customer segmentation, no research yet has studied specific e-channel segmentation, and incorporated 'channel attributes', and consumer characteristics 'demographics' and 'psychographics' as explanatory covariates.

TABLE 3 Prior research overview

Paper	Purpose	SM	Channels					Profiling factors			
			S	C	Internet			CA	CC		Other
					1	2	3		D	P	
Keen et al. (2004)	Finding consumer intentions and trade-offs through retail alternatives and cluster shoppers.	✓	✓	✓		✓		–	✓	–	✓
Bhatnagar et al. (2004)	Find segmentation of e-shoppers by demographics and benefit attributes.	✓	–	–		✓		–	✓	–	✓
Verhoef et al. (2007)	Examine the effect of search in one channel on purchases in another channel by attribute-based motives.	–	✓	✓		✓		✓	✓	–	✓
McGoldrick & Collins (2007)	Identifying relative utilization and preference clusters (attitudes) towards stores, catalogues, and Internet.	✓	✓	✓		✓		✓	✓	–	✓
Konus et al. (2008)	Segment (multichannel) consumers on demographics/ psychographics in multiple phases.	✓	✓	✓		✓		–	✓	✓	–
This paper	Discovering and profiling e-shopper segments by channel attribute importance and consumer characteristics for three specific e-channels.	✓	–	–	✓	✓	✓	✓	✓	✓	✓

SM = Segmentation; S = Store; C = Catalogue; CA= Channel Attributes; CC = Consumer Characteristics; D – Demographics; P = Psychographics

3. RESEARCH FRAMEWORK

Drawing on earlier findings and research models (appendix A) of Bhatnager & Ghose (2004), Keen et al. (2004), Konus et al. (2008), McGolddrick & Collins (2007), and Verhoef et al. (2007), this section presents a research framework (figure 1) to determine channel-based segments for the multichannel online industry. The e-channels that are incorporated in the present study are 1) the e-marketplace, 2) the e-mall, and 3) the e-storefront, which are described in depth in section 3.1. The framework allows researchers to profile anticipated single versus multichannel e-shopper segments with specific channel attributes (discussed in section 3.2) and consumer characteristics (discussed in section 3.3).

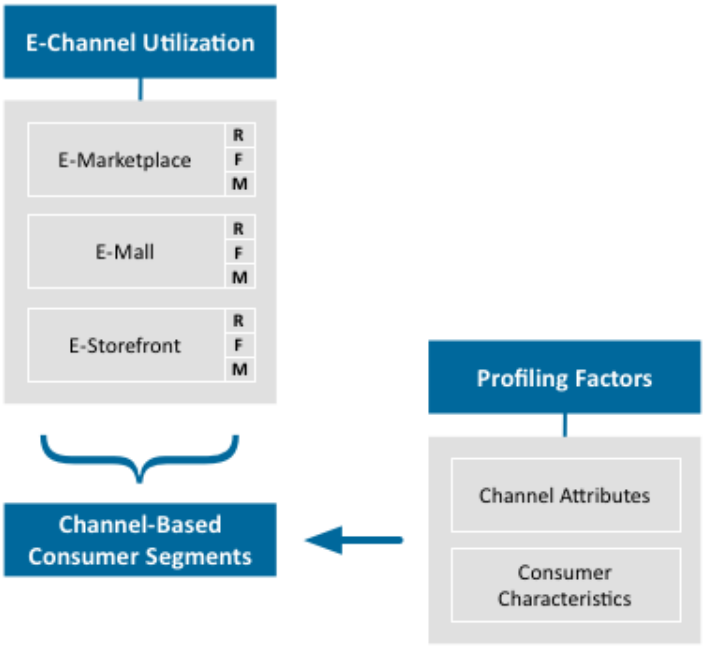

FIGURE 1 Research framework

The research framework is superior to other segmentation schemes as it is the first to examine e-channels, and it incorporates measures to determine the underlying motivations for *why* certain e-channels are being used, and *who* are using single- or multiple e-channels. The research is especially interested in the multichannel e-shopper segment (Konus et al., 2008), as research indicated that these multichannel shoppers are an attractive market; buying more often, spending more money and having a higher life-time value (Neslin & Shankar, 2009). The framework (fig. 1) is therefore helpful as it identifies, 1) which e-shoppers buy from one or multiple e-channels; 2) which channel attributes are important for e-shoppers buying from different kind of e-channels, and 3) how psychographic and demographic characteristics relate to these e-shopper segments, in that firms can action these variables.

Channel-based customer segments are formed based on channel utilization, particularly purchase data (Neslin & Shankar, 2009). Although Neslin & Shankar (2009) argue that other measures (e.g., preference or responsiveness) might be a better fundamental

indicator for channel-based segmentation, channel usage still is the most quantifiable, feasible and executed solution for explaining consumer behaviour (Konus et al., 2008). Further, Neslin et al. (2006) state that for managers to pursue a segmentation-based multichannel strategy, variables need to be included which managers can action on segment-level. Channel attributes and consumer characteristics are appropriate variables, since managers can tailor to specific attributes, or target to uncovered consumer profiles. Consequently, e-commerce practitioners can then better cater to these channel-based segments.

Besides selecting and describing comprised e-channels, the study must identify 1) which channel attributes to include; 2) which demographics to enter, and 3) which psychographic variables to consider. First, attributes that are included are: information comparability, search convenience, search effort, aesthetics, service, risk/security, privacy, purchase effort, delivery time, assortment, price promotion, enjoyment, and after sales (Alba et al., 1997; Baker, Parasuraman, Grewal, & Voss, 2002; Bhatnagar & Ghose, 2004; Burke, 2002; Childers, Carr, Peck, & Carson, 2002; Forsythe & Shi, 2003; Gupta et al., 2004; Hoque & Lohse, 1999; Jiang & Rosenbloom, 2005; Keen et al., 2004; Lynch & Ariely, 2000; Mathwick, Malhotra, & Rigdon, 2001; Mcgoldrick & Collins, 2007; Montoya-Weiss et al., 2003; Schoenbachler & Gordon, 2002; Torkzadeh & Dhillon, 2002; Verhoef et al., 2007). Second, demographics that are included are age, gender, income, education, and number of years on the Internet (Bhatnagar & Ghose, 2004). Third, psychographics include loyalty, time pressure, innovativeness, shopping enjoyment, price consciousness, and motivation to conform (Konus et al., 2008). The study can then presume how channel attributes and consumer characteristics relate to channel-based e-shopper segments conform prior literature and own interpretations.

3.1 Three Specific E-Channels

Although the beginning of e-commerce did not show much differentiation between internet channels, and Burke (2002) mentioned that the electronic shopping is simply a degraded model of conventional shopping, literature showed that a few distinguishable e-channels do exist. Amid the need to challenge a simplified concept of the online environment to research multichannel behaviour, for this research the online shopping market is classified into three specific e-channels: 1) the e-marketplace; 2) the e-mall, and 3) the e-storefront. The classification is based on publications as discussed in the first part of the literature review. Table 4 outlines the most important aspects of each e-channel.

TABLE 4 E-channel characteristics

	e-Marketplace	e-Mall	e-Storefront
	Product in Store	*Store in Store*	*Store*
Check-Out	General	Individual or General	Individual
Amount of Retailers	Multiple	Multipcle	Single
Anonymity	High	Medium	Low
One-stop shop	High	Medium	Low
Product/Price Comparison	Medium	High	Low
Business model	Dealer	Direct-search/Broker	Dealer

Based on multiple studies: Burke, 2002; Frambach et al., 2007; Palmer & Lindemann, 2003; Su, 2007; Wolfinbarger & Gilly, 2009

3.1.1 E-Marketplace

Historically, a marketplace is a gathering of buyers and suppliers at a distinct place at a certain time to unfurl buying and selling intentions, leading to a possible exchange of monetary value and goods. The aligned function still holds today for general marketplaces, but due to the evolution of media and cyberspace, though, time and space restrictions have blurred in the online environment (Grieger, 2003). E-marketplaces leverage the unique possibility of providing consumers a *general checkout* over multiple sellers using a personal account, which remembers previous orders, delivery addresses and credit numbers (Verhoef et al., 2007). This dealer-type of business mechanism has also been identified by Palmer & Lindemann (2003), and it aligns nicely with the super store identified by Spiller and Lohse (1997). So e-marketplaces host the online presence of multiple sellers, and provide a convenient one-stop shop solution for online shoppers (Ginn, 2010).

Though, e-marketplaces increase anonymity (Wolfinbarger & Gilly, 2001), as the purchaser does not know exactly where the products are coming from; the supplier sells through the e-marketplace, but has on this platform no real identity (e.g., redirects to stores or websites are not allowed (Ibid.)). All *processes and functions* that make up for the shopping experience, such as product listings, search, payments and sometimes even distribution are offered by the platform, providing the consumer all the needed services (Ginn, 2010). Most of the time these online marketplaces provide customer and retailer fraud protection, over all of the billions of transactions that are processed every year (Ibid.). Providing all these functions associates with Chaudhury et al.'s (2001) view of having different type of channel functions (i.e., advertising, order-processing, and customer support).

The largest global e-marketplaces are eBay and Amazon. With revenues of $14.1 and $61.1 billion in 2012[8] respectively, these money machines definitely lead the e-commerce scene. Other e-marketplaces are Alibaba (China), Bol.com (Netherlands), and—recently—Zalando (Germany)[9]. These companies have received a major status in their country's e-commerce environment, providing most of the online revenues in their nation, and some due to international expansions, beyond.

3.1.2 E-Mall

While regular brick-and-mortar malls are shopping places with a collection of individual retail formats under one roof, an e-mall has a similar character. Earlier studies referred to this e-channel type using different expressions, though they were all talking about a similar entity: Hoffman et al. (1995) mention the online mall type under a web-traffic control site, by being a collection of multiple online storefronts, and it was identified as either direct-search or broker business models in the paper of Palmer & Lindemann (2003). But mainly, Su (2007) identifies them as price-comparison engines; internet-based services rendering product and price information of various webshops (or e-tailers) under one URL. Finally, Alba

[8] Businessweek.com (Bloomberg)

[9] http://www.e-commercefacts.com/news/2011/08/zalando-is-becoming-a-mar/

et al. (1997), Lynch & Ariely (2000) and Rainer & Cegielski (2010) classified them as electronic malls, or simply e-malls.

Rainer & Cegielski (2010) add that e-malls may include thousand of vendors, providing all together over millions of products. Two types of e-malls are identified: 1) the referral mall, where you are transferred from the mall website towards the linked e-tailer for further action (direct-search model), and 2) the purchase mall, where you can actually buy on the mall's website using a shopping cart. This leverages a sort of one-stop shopping experience, as discussed earlier, and the mall receives a percentage of the bought goods (broker model) (Palmer & Lindemann, 2003; Rainer & Cegielski, 2010).

Price comparison engines, such as TripAdvisor, Skyscanner, Vergelijk.nl, Beslist.nl, Cheaptickets.nl, and Kieskeurig.nl, are e-malls (Alba et al., 1997; Palmer & Lindemann, 2003; Rainer & Cegielski, 2010). These intermediary websites allow for price comparisons, quality comparisons, customer feedback and more, to guide the consumer through the shopping process. It is thus way more advanced than offline retail mall structures, again due to the possibilities of the Web. It is an intermediary platform which usually holds for a certain amount of advertising value, which is explained by Chaudhury et al. (2001) by using the e-mall as a portal for other products, or even whole companies. In that sense, it serves as a communications vehicle, as well as a sales channel (Neslin & Shankar, 2009).

3.1.3 E-Storefront

Simple and sound electronic retailing started with an online format of a physical store, enabling consumers to buy 24 hours a day, 7 days a week. The e-storefront can be defined as a website that represents a single store (Rainer & Cegielski, 2010), where buyers can place orders, any day, anytime. Some storefronts are extensions of brick-and-mortar stores, e.g., 'Dixons', 'V&D', or 'de Bijenkorf'; in that case literature termed it as a 'bricks-and-clicks'[10] (Ancarani & Shankar, 2004). Another type is titled the 'pure-play e-tailer', where the only retailing operation by that firm is e-commerce (Ibid.). Examples of such websites are Wehkamp, Otto, or Coolblue.

Indicated in the paper of Spiller and Lohse (1997), there exist multiple types of online stores; super stores, promotional stores, plain sales stores and so forth. These categories align with retail formats similar in the offline sector, yet now are located online. For example a department store (V&D.nl), brand stores (H&M.com, TommyHilfiger.com) or specialty stores (e.g. Runnersworld.nl). So within the online environment, similar retail formats exist and they all have their own URL to serve customers with pure information or branding (advertising channel), services (customer support channel), and products (order processing channel), or a mixture of all (Chaudhury et al., 2001).

[10] Retailers that operate multiple channels (multichannel retailers) are referred to as 'bricks-and-clicks' or 'flips-and-clicks' (Ancarani & Shankar, 2004; Kwon & Jain, 2009).

3.2 Channel Attributes

Channels have channel-specific functions, or attributes, affecting a consumer's usability of that particular channel, and these attributes influence the customer's channel choice. Channel attributes thus determine the attractiveness of each channel and have been identified as drivers of channel choice (Blattberg et al., 2008; Mcgoldrick & Collins, 2007; Neslin et al., 2006; Verhoef et al., 2007). As mentioned, channels are differentially effective at satisfying consumers shopping needs (Neslin & Shankar, 2009; Zhang et al., 2010), which is mainly imputable to these attributes. The attributes relate to certain benefits or costs consumers attain when using certain channels (Verhoef et al., 2007). With respect to the traditional view of online versus offline shopping, Burke (2002) indicated that consumers liked the convenience, ease of comparison, and lower price of online shopping, but preferred service, security and privacy of offline shopping. For specific e-channels, this is not yet clear. Appendix B provides a comprehensive overview of channel attributes as researched in previous studies on multichannel consumer behaviour and channel choice, whereas table 5 presents the attributes included in the present research, together with definitions and presumed effects.

TABLE 5 Channel Attributes

Attribute	Definition	Presumed effect
Information comparability	How easy it is to compare products and their prices.	- Higher in segment with e-mall
Search convenience	The ease and convenience in collecting information.	- Higher in segment with e-mall
Search effort	The time and effort it takes to search for information.	- Higher in segment with e-mall
Aesthetics	The visual elements of the retail environment and the entertaining aspects of the service performance itself.	- No direct effect
Service	Availability of personal advice and excellent service during purchase	- Higher in segment with e-storefront
Risk/Security	Receiving the actual order, vendor reliability and possible issues with payments.	- Higher in segment with e-storefront - High in all segments
Privacy	The user's ability to control the terms by which his personal information is collected and used.	- Higher in segment with e-storefront
Purchase effort	The effort required to purchase a product.	- Higher in segment with e-marketplace
Delivery time	How fast a product can be obtained after purchase.	- Higher in segment with e-mall
Assortment	Whether the channel has available products, new products, large assortment and good quality products.	- Higher in multichannel segment
Price promotion	The availability of low prices and attractive offers.	- Higher in segment with e-mall
Enjoyment	The fun, entertaining and comfortable way to shop.	- Higher in segment with e-marketplace - Higher in multichannel segment
After sales	The provided service after the purchase: delivery assistance but also product returns.	- Higher in segment with e-storefront

Measuring the importance for channel attributes thus indicates why consumers are using certain e-channels (single or multiple). For example, since price-comparison engines (i.e., e-malls) render product and price information clearly, and provide extensive consumer reviews (Su, 2007), people preferring quality information and comparability might use the e-mall more. And as delivery times are also communicated per store on e-malls, people

assigning importance to quickly obtaining the product are expected to be in a segment comprising the e-mall.

Further, since the e-store is more personal being a sole entity, importance for service, after sales and assistance is expected to be higher, thus people that are service-prone are assumed to be more present in a segment involving the e-store. Moreover, some consumers attribute greater credibility to well-known retailers (Su, 2007), which is in favour of 'familiar' e-stores: consumers assigning great importance to reliability of the vendor and security of payment data (risk/security) are thus expected in an e-store segment. Similar holds for the privacy attribute, as e-marketplaces and e-malls are more anonymous, privacy-oriented consumers might prefer known retailers. Further, risk issues have been rated important for online shopping in general (Burke, 2002; Forsythe & Shi, 2003), thus it is expected the risk/security attribute scores high in all discovered segments.

In addition, since e-marketplaces leverage a one-stop-shop solution (Burke, 2002) with a personal account (Verhoef et al., 2007), purchase effort is considered low. Therefore, consumers assigning a high importance score to purchase effort are expected to be more present in a segment including the e-marketplace. Moreover, Wolfinbarger & Gilly (2001) mention that there are online buyers shopping for fun, engaging in hobby type interests and looking for bargains. These shoppers typically shop at online marketplaces (Wolfinbarger & Gilly, 2001). Enjoyment-, assortment-, and to some extent price/promotion-shoppers are thus probable to be found in a segment comprising the e-marketplace.

Last, as Schoenbachler & Gordon (2002) call the multichannel consumer a consumer with exceptional power who wants anything, anytime, any place, and on his or her terms, it is believed that in general these consumers value most of these channel attributes on a higher importance-level. That is, they utilize multiple channels because each channel is differentially effective at satisfying a specific need (Zhang et al., 2010), fulfilled by a channel attribute (e.g., service, price, convenience, or assortment). Thus multichannel shoppers have—in addition to the specific attributes identified—higher importance scores on all channel attributes.

3.3 Consumer Characteristics

By including consumer characteristics, the present research can profile the users of anticipated segments of single- and multiple e-channels. The present study includes both demographics and psychographics for this purpose, as these have been identified to explain behaviour and affect channel choice (Konus et al., 2008; Lohse, Bellman, & Johnson, 2000; Shankar, Inman, Mantrala, Kelley, & Rizley, 2011; Venkatesan et al., 2007).

3.3.1 Demographics

As for demographics, most of the studies that are reviewed on channel choice have included demographical data. Though, the outcomes of the effect on channel behaviour are mixed. Most studies reveal ample evidence of demographic relationships, for example, Burke (2002) found, surprisingly, that younger and older consumers did not differ significantly in

their interest for online shopping. Furthermore, Konus et al. (2008) do also not find significant differences in consumer behaviour with socio-demographics. They also indicated that in this sense, demographics might be less important for segmentation than attitudes or beliefs. Moreover, according to Bhatnager & Ghose (2004), demographics do not seem to produce noticeable difference between different internet segments, except for one variable: Internet experience. Lohse et al. (2000) also find that the longer a consumer is using the Internet, the more likely he or she is to make an online purchase. As Forsythe & Shi (2003) also indicated that little has been published on the relationship between Internet experience and the likelihood of buying online, that variable is included in the research.

As the present research is the first to outline segments towards multiple online channels, there might exist more significant demographic differences between the segments. One could for example ponder that the older generation is not aware of all new developments online and therefore sticks to what they know; utilization of e-channels might therefore be different. For example, Burke (2002) found that younger adults were significantly more interested in using newer technologies, such as engines to search for product information to compare and evaluate alternatives (i.e., e-malls). Further, women might use online channels differently; a recent study showed that women use price comparison engines more often[11]. In addition, more experienced Internet users might be more acquainted with online buying behaviour (Burke, 2002; Shankar, Smith, & Rangaswamy, 2003), thereby amplifying multichannel e-shopping (Mcgoldrick & Collins, 2007).

3.3.2 Psychographics

Psychographics have an influence on specific channel usage, but also whether or not people use multiple channels (multichannel shoppers). Konus et al. (2008) are the first to study psychographics as covariates of channel choice, therefore the framework borrows from that research to present six psychographic variables suggested to have an influence on buying behaviour (where Konus et al. borrowed from Ailawadi et al. (2001)). They are related to specific economic or hedonic benefits, such as savings, entertainment, exploration, self-expression, switching and searching. For example, if consumers possess the psychographic characteristic of loyalty, switching might mean a cost to them leading towards single-channel proneness, while price-conscious consumers focus on price savings leading them to use multiple channels in their pursuit of finding the right product (Konus et al., 2008). In table 6 the considered psychographics, their definitions (including costs and benefits) and presumed effects are presented.

Consumers select channels to attain a certain benefit, for example price savings, which relates to the psychographic price consciousness (Ailawadi et al., 2001; Konus et al., 2008). Since the e-mall is equivalent to a price comparison engine which consumers mainly use to get the best product for the best price (Su, 2007), the present study expects that

[11] http://www.comscoredatamine.com/2013/07/comparison-shopping-sites-are-popular-amongst-dutch-women/

consumers having that particular psychographic use the e-mall, and thus belong to a segment including the e-mall as a preferred channel. Further, even though Kwon & Jain (2009) found that price consciousness is not a predictor of multichannel shopping, it could be that online multichannel consumers use multiple e-channels to search for the best price due to the ease of online comparisons and information availability, and eventually buy it through a random e-channel, presuming price-conscious consumers belong to a possible multichannel e-shopper segment (Konus et al., 2008).

TABLE 6 Psychographics

Psychographic	Definition	Presumed effect
Loyalty	The degree to which the consumer is loyal to brands or channels; it relates to economic benefit 'switching'	- Higher in segment with e-marketplace - Lower in multichannel segment
Time pressure	The degree to which consumers have a predisposition to consider time a scares resource and plan it use carefully: it relates to economic/hedonic benefit 'search'	- Higher in segment with e-mall - Higher in segment with e-marketplace
Innovativeness	The degree to which a person prefers to try new and different products and seek out new experiences: it relates to hedonic benefit 'exploration'	- Higher in segment with e-mall - Higher in multichannel segment
Price consciousness	The degree to which consumers focus on paying low prices: it relates to economic benefit 'savings'	- Higher in segment with e-mall - Higher in multichannel segment
Shopping enjoyment	The degree to which consumers focus on the entertaining and emotional feeling when shopping: it relates to hedonic benefit 'entertainment'	- Higher in multichannel segment
Motivation to conform	The degree to which consumers need approval from people around them and reference groups: relates to hedonic benefit 'self-expression'	- No direct correlation

With respect to loyalty, multichannel shopping stands to the idea of using multiple channels to buy *similar* of *dissimilar* products, though loyal consumers tend to repeat purchase similar products, conceivably through similar channels (Srinivasan, Anderson, & Ponnavolu, 2002). Further, Ansari et al. (2008) found that on the Internet, loyalty is scarce. Therefore, we do not expect loyal customers to belong to a possible multichannel e-shopper segment. Gupta et al. (2004) highlight that online shoppers are always just "*one click away from a better deal*" (p. 148), therefore it is difficult to cultivate loyalty to a particular store. Though, consumers might be more loyal to any single e-channel. Most presumably this would be the e-marketplace, since this e-channel offers an abundant amount of products in different categories. Once consumers are aquainted with the e-channel and created a personal shopping account, they can buy anything so a better channel lock-in is provided (Verhoef et al., 2007).

In this sense, the remaining psychographics might relate to single- or multichannel online shopping behaviour. Innovative people are probably more inclined to use new technologies, such as price engines (e-malls). Moreover, since innovativeness relates to the hedonic benefit 'exploration' (Ailawadi et al., 2001; Konus et al., 2008), these consumers are most definitely using multiple channels to expand their horizon.

Shopping enjoyment relates to entertaining and emotional benefits (Konus et al., 2008); people who enjoy shopping probably take their time and explore entire assortments

over multiple channels. The study thus expects that people scoring higher on this trait use more channels, as the more is the merrier. Most definitively, these consumers are dual- or multichannel e-shoppers.

Time pressured people might want a quick overview of the best shopping possibilities, therefore it is assumed they use the e-mall as preferred channel. Moreover, due to similar reasons as loyalty (i.e., personal account and amount of products), it is expected time-pressured e-shoppers use the e-marketplace. Although Konus et al. (2008) proposed that consumers pressed with time do not engage in multichannel shopping, this study does propose e-shoppers use multiple online channels because a primary motivation for online shopping is time-saving (Jiang & Rosenbloom, 2005).

As for motivation to conform, Keen (2004) identified that subjective norm is an important determinant of channel choice, and since multichannel behaviour continues to grow more common (Neslin et al., 2006), consumers scoring high on motivation to conform might be multichannel-oriented. Though, Konus et al. (2008) also outlines that if the consumer's reference group is single-channel oriented, conformers might behave accordingly. Behaviour thus depends on the reference group, either 'society as a whole' or a peer group such as friends and relatives (Konus et al., 2008). Therefore, no direct correlation with any possible segment is expected, though the outcomes are anticipated as highly interesting.

4. METHODOLOGY

Aiming to explore consumers' underlying motivations of channel utilization for 1) the e-marketplace; 2) the e-mall, and 3) the e-storefront, the research employed a non-experimental, comparative design. Using an online survey distributed amongst six customer databases of online merchants, the study measured RFM purchase data (recency, frequency & monetary value), channel attribute importance, demographic and psychographic variables, and several additional variables to control for the discovered segments and gauge specific 'e-commerce-related behaviours', such as showrooming (Mehra et al., 2013), research-shopping (Verhoef et al., 2007), and product returns (Petersen & Kumar, 2009).

Cluster analysis, factor analysis and one-way ANOVA were finally employed to interpret the outcomes of this course of action. In the following subsections, in sequence the data collection procedure & sample, operationalization & measurement, and data analysis is discussed.

4.1 Data Collection & Sample

Data were collected using an online survey, where the respondents were retrieved through the merchant-database of SEOshop; a SaaS webshop provider[12]. Six successful online merchants were asked to distribute a ten-minute survey amongst their opt-in customer base; they all agreed. Offering differentiable products through multiple online channels, these databases produced substantial variation in consumer responses across multiple product categories, which enhanced the external validity of the research. To exclude possible measurement errors and check the questionnaire's readability and wording, a test survey was executed amongst friends and relatives (N=8) before the general rollout; the test-sample differed on demographic characteristics.

The final survey consisted of three sections; the first section examined online channel usage measured by RFM, a marketing technique used to segment consumers and develop marketing strategies (McCarty & Hastak, 2007). It provides insights into channel behaviour of consumers from three aspects, involving; 1) *recency* of their purchases; 2) *frequency* of their purchases, and 3) *monetary value*; the amount of money spent on purchases. The second section questioned on demographics, and the third section asked on the importance of channel attributes, statements for assessing psychographics, and measures e-commerce-related behaviours. For sake of clarity, the included e-channels were described before the research, before every associated question, and specific examples were clearly provided. As for the instrument, the survey program SurveyMonkey was used. To boost response rate, a monetary incentive was provided; amongst all respondents, two times a coupon of €50,- was raffled (Armstrong, 1975; Deutskens, de Ruyter, Wetzels, & Oosterveld, 2004). For an in-depth view on the actual survey, please refer to http://www.seoshop.nl/survey-channel-usage.pdf.

[12] SEOshop is a Dutch Software-as-a-Service company, delivering off-the-shelve e-commerce solutions to well over 3,500 online merchants.

The customer bases of the participating online merchants differed significantly in size; therefore table 7 provides individual information on total respondents, non-respondents and response-rates. Customers were able to indicate if they did not wish to participate in the present study, including a reason, which was captured under non-respondents. All together, 6,891 consumers were approached to fill in the survey, of which 588 did and 99 denoted 'I wish not to participate'. This yielded an overall response rate of 10.0%[13]. Of the returned surveys, 123 responses were deleted because the respondents did not complete the total questionnaire, revealing an abandon-rate of 20.9%. Two respondents indicated not to buy from any e-channel, thus these were also excluded from the dataset, yielding a final sample of 463 respondents.

TABLE 7 Sample response

#	Online merchant	Customer base	Respondents	Non-Respondents	Response-rate (total)
1	Audiobooks	3,358	259	35	8.8%
2	Party clothing	818	66	11	9.4%
3	Fitness products	719	59	8	9.3%
4	Furniture & Living	1,218	111	-[a]	9.1%
5	Water sports	588	38	40	13.3%
6	Baby products	190	55	5	31.6%
	Total	**6,891**	**588**	**99**	**10.0%**

[a] Non-respondents were not measured in this dataset

Regarding response-rate, two remarks need to be made though. First, four customer sets (#2, #3, #5, and #6) were approached using an individual e-mail as indicated in Appendix C. Six days after the initial mailing, these customers received a reminder. The remaining two customer sets (#1 and #4) were approached in the weekly newsletter of the online merchant, to which sadly no reminder was approved. Second, to customers of dataset #4, the link for indicating 'I wish not to participate' was not included, therefore non-respondents were not measured. These remarks give reason to believe that the actual response rate may have been even higher than the current percentages.

Sample characteristics are reported in table 8. Noteworthy is that 69.8% of the respondents were female. McGoldrick & Collins (2007) state that higher co-operation rates in surveys by the female gender have been noted in earlier research. Further, the sample mainly consists of people with higher Internet experience (66.5%) and lower income (44.5%), though regarding the latter, 53.2% of the population in the Netherlands (2012) has an income of less than €30.000[14], therefore the sample is minimally biased—it consists more of people with a higher income compared to the population.

[13] While this is a response-rate considered low to moderate, the actual response was expected to be even lower. An incentive was provided that deemed persuadable, though not extremely due to the questionnaire's length—also indicated by a high abandon-rate (cf. Deutskens et al., 2004), and the respondents' view on the survey's utility—as proven by non-respondent's given 'reasons'.

[14] http://www.cbs.nl/nl-NL/menu/themas/inkomen-bestedingen/cijfers/extra/inkomensverdeling.htm

TABLE 8 Sample characteristics (N=463)

Gender	Frequency	Percentage
Male	140	30.2%
Female	323	69.8%

Age	Frequency	Percentage
<18 years	5	1.1%
18 - 35 years	130	28.1%
36 - 45 years	137	29.6%
46 - 55 years	85	18.4%
>55 years	106	22.9%

Education	Frequency	Percentage
High school (low)	14	3.0%
High school (high)	34	7.3%
MBO	130	28.1%
HBO	172	37.1%
University	113	24.1%

Income	Frequency	Percentage
<€30,000	206	44.5%
€30,000 - €50,000	173	37.4%
>€50,000	84	18.1%

Internet Exp.	Frequency	Percentage
<5 years	20	4.3%
5 – 10 years	135	29.2%
>10 years	308	66.5%

4.2 Operationalization & Measurement

To examine utilization of e-channels, past channel experience was measured through self-reported RFM scores. As mentioned, three indicators were measured: recency, frequency and monetary value. Earlier studies identified that clustering based on RFM measures provides more behavioural knowledge of customers' actual marketing levels than other variables (Birant, 2011). For this kind of RFM-analysis, usually past customer data is used comprising the most recent purchase date, the total number of purchases and the total sum of monetary value. Since this study does not have access to this data, it measured usage through survey questions much like Forsythe & Shi (2003) have done (e.g., how often have you purchased in this e-channel, and what is the total amount you spent on purchases through this e-channel during the past six month?).

In order to find a measurement scale for recency and frequency that was fitting and adequate, the researcher pulled on a time-frame being equal to everyone: last week (=1), last month (=2), within last 3 months (=3), within last 6 months (=4), within a year (=5) and weekly (=1), monthly (=2), every 3 months (=3), every 6 months (=4), yearly (=5) respectively. A remark to these scales is that the data output was finally inversed for interpretation purposes—in that a higher recency/frequency corresponded with a higher score. For monetary value, the researcher observed average data (e.g., the average amount spent per consumer per year) from online research monitors published by branch organizations[15] (Thuiswinkel Markt Monitor, 2012), but finally build upon a CBS scale: <€50 (=1), €50-€100 (=2), €100-€500 (=3), €500-€1,000 (=4), >€1,000 (=5) (Central Bureau of Statistics, 2013)[16]. For respondents that indicated not to use either one or two of the included e-channels, after inversion, a zero (=0) was denoted for each RFM score.

In determining an attribute-based motive for choosing between multiple e-channels, respondents evaluated how important certain channel attributes are when purchasing online. The measurements were drawn from former research; the items are presented in

[15] http://www.jbomedia.nl/userfiles/files/thuiswinkel-markt-monitor-2012.pdf (average spent €543)
[16] http://www.cbs.nl/nl-NL/menu/themas/vrije-tijd-cultuur/publicaties/artikelen/archief/2013/2013-3850-wm.htm

appendix D. The items were rated on a seven-point Likert scale— which was changed from five to seven after the test survey results showed high importance scores—ranging from not at all important (=1) to very important (=7), as drawn from Burke (2002).

Further, consumers evaluated particular statements to bring out their psychographic attitudes. Measurement items were drawn from former research (Konus et al., 2008), and are presented in appendix E. The items were rated on a five-point Likert scale ranging from strongly disagree (=1) to strongly agree (=5). Demographics were collected through questions focusing on the consumer's demographic details, i.e., asking to define themselves in categories of age, gender, income, education and Internet experience.

To test for segment robustness and check for other e-commerce behaviours, some additional variables (control variables and e-commerce-related behaviours) were included in the research using similar measurement items and scales as before mentioned; for example the survey measured how utilization has changed between now and two years ago, providing information on a possible transition or consistency. Scales were five-point Likert, ranging from much lower (-- =–2) to much higher (++ =2). Further added control variables were measures on e-channel preference for search and e-channel preference for purchase, to outline 'search and buy' differences in e-channels, as many researchers within the traditional multichannel environment did (Konus et al., 2008; Verhoef et al., 2007). It further identified whether buying preferences correspond to utilization patterns (Neslin & Shankar, 2009). Last, the survey asked on particular e-commerce-related behaviours such as 'research shopping' (Verhoef et al., 2007), 'showrooming' (Mehra et al., 2013), 'mobile commerce' (Wu & Wang, 2005), 'social commerce' (Stephen & Toubia, 2010), and 'product returns' (Petersen & Kumar, 2009) by several statements (measurement items are presented in appendix F), and rated on a five-point Likert scale ranging from strongly disagree (=1) to strongly agree (=5).

4.3 Data Analysis

To identify channel-based consumer segments based on self-reported utilization, this study employed the concept of cluster analysis. Cluster analysis has been identified as an appropriate way to identify customer segments; by grouping objects into relatively homogeneous clusters in that the objects within a cluster are more similar to one another than are objects in other clusters (Hair, Black, Babin, & Anderson, 2010). The present study extracted the clusters upon RFM scores (continuous variables) provided for each channel. On that given set of nine variables—three for recency, three for frequency, and three for monetary value—the clusters (or segments) were identified.

The study used a combination of algorithms; the Two-Step method (based on the hierarchical method) to determine the optimal number of segments, and a non-hierarchical method (K-Means) to validate and 'fine-tune' more accurate results (Hair et al., 2010; Keen et al., 2004). The Two-Step analysis was considered appropriate because the dataset is substantial in size (N=463), the algorithm forms clusters rapidly and automatically, and the method is especially praised for customer segmentation (Johnson et al., 2006; Norusis,

2012). Moreover, the research was only interested in an ideal number of clusters in order to 'optimize' cluster solutions with a non-hierarchical method. Using the log-likelihood (LL) estimation process for calculating the clusters (maximize LL), the optimal number of clusters was defined by Schwarz's Bayesian Information Criterion (BIC), as this has been identified more effective for detecting correct models than other criteria (e.g., Akaike) (Schwarz, 1978; Zhang, 2004).

Subsequently, using the non-hierarchical K-means clustering procedure with Euclidean distance measures, the definite amount of clusters was determined. K-means is a non-hierarchical clustering method minimizing the distance of within cluster observations, and maximizing the distance between cluster observations by reassigning observations and iterating the process (Hair et al., 2010).

In addition, as the profiling characteristics were measured using multiple items, they needed to be grouped into constructs that can be used for profiling purposes. In order to group these single measurement items into latent constructs, the study used both confirmatory as well as exploratory factor analysis. Factor analysis' primary purpose is to define the underlying structure among variables in the analysis (Hair et al., 2010). The present study ran three factor analyses; on survey items of 1) channel attributes; 2) psychographic variables, and 3) e-commerce-related behaviours, to define constructs for further analysis and profiling the identified segments.

Once the segments and factors were identified, tests were performed on various 'profiling' constructs to identify what the defining characteristics in the segments are (Keen et al., 2004). Using one-way ANOVA (Field, 2009), it was acknowledged that segments differ statistically significantly in certain means of attribute importance, psychographic characteristics, demographic profiles and more. First the mean scores of all constructs were computed. Second, explorative examination found a few specific significant indicators that were then subjected to post-hoc tests to learn about the exact segment-differences.

5. RESULTS

All data were imported in SPSS Statistics 21.0 for exploratory and confirmatory examination. Before the outputs of cluster analysis, factor analyses, and one-way ANOVA tests were examined and interpreted, the general data assumptions were inspected for violations. First a three-cluster model was identified, after which three factor models proved to be at place. The segments were then profiled with channel attributes and consumer characteristics, after which additional variables were researched. Below sections report the results per analysis and provide basic interpretations, before deeper discussion in section 6.

5.1 Estimated Cluster-Model: Three E-Shopper Segments

Cluster analysis has strong mathematical properties by quantifying the structural characteristics of a set of observations, but contains no statistical foundations (Hair et al., 2010). Requirements as normality, linearity and homoscedasticity as such have little bearing compared to other multivariate techniques. Consequently, there are no general required assumptions regarding the data for cluster analysis, though researchers need to focus on another critical issue: population representativeness of the sample (Hair et al., 2010). Considering the size of the final sample (N=463), and the different data sources leveraging variation in response, it is assumed this issue was satisfied.

Applying the Two-Step cluster method to nine variables of the dataset, the model estimated an optimum fit for a three-cluster solution; the ratio of distance measures was maximized (2.434). Examining the BIC statistic, table 9 identifies that the change in BIC after the three-cluster solution is small compared to adjacent clusters (big jump between 3-cluster ($BIC_3 - BIC_2$) = -289.99, *R(k)* = .589 compared to 4-Cluster ($BIC_4 - BIC_3$) = -54.03, *R(k)* = .110, table 9), providing an excellent decision point (Norusis, 2012). Moreover, it appeared that this cluster solution is easier to interpret than other models, and has higher and better-distributed cluster sizes (N), which benefits the external validity.

TABLE 9 Two-Step statistics for cluster model selection

Number of Clusters	Schwarz's Bayesian Criterion (BIC)	BIC Change ($BIC_k - BIC_{k-1}$)[a]	Ratio of BIC Changes (*R(k)*)[b]	Ratio of Distance Measures[c]
1	2,994.32	-	-	-
2	2,501.73	-492.59	1	1.506
3	**2,211.74**	**-289.99**	**.589**	**2.434**
4	2,157.71	-54.03	.110	1.147
5	2,124.81	-32.91	.067	1.086
6	2,103.20	-21.61	.044	1.869

[a] The changes are from the previous number of clusters in the table.
[b] The ratios of changes are relative to the change for the two-cluster solution.
[c] The ratios of distance measures are based on the current number of clusters against the previous number of clusters.

After the three clusters (or segments) were chosen as final model, the superior non-hierarchical K-Means cluster procedure was run to optimize and interpret the results[17]. All

[17] Although the findings of the Two-Step procedure were not analyzed in detail, it must be noted that these results indicated similar outcomes.

463 observations were included in the model; segment 1 covers 25.92% of all cases (N=120), while segment 2 comprises 28.94% of all cases (N=134), and segment 3 includes 45.14% of the cases (N=209). The findings indicate a clear split among consumer segments based on their e-channel orientation. In order to label these segments, the researcher examined the variable means statistics (see table 10).

Segment 1 indicates relative high orientations towards the e-storefront channel, while the other two e-channels gain significantly lower scores. Consumers in this segment are predictably single-channel oriented, buying mostly from the e-storefront. Contrarily, segment 3 shows relative high scores towards all e-channels, which is likely to indicate an online multichannel segment. An interesting finding is that this group contains the largest part of the sample (N=209). Last, segment 2 has relatively high RFM scores for the e-storefront and the e-marketplace, though scores extremely low on the e-mall channel. This segment is thus likely to have a specific preference (or aversion) to certain e-channels.

To assure that each cluster variable score was significantly different for each segment, one-way ANOVA was conducted; the RFM scores for each of the e-channels served as dependent variable while cluster membership functioned as independent variable (Hair et al., 2010; Keen et al., 2004). The results conclude that there exist statistically significant differences between the three segments based on the scores of each cluster variable ($\forall\ p < .05$, table 10).

TABLE 10 K-Means statistics of final segments

Cluster variables	Segments			One-Way ANOVA	
	1 (N=120)	2 (N=134)	3 (N=209)	F-value	*p*-value
Recency E-Marketplace	0.88	**4.14**	**4.05**	494.16	.00
Frequency E-Marketplace	0.81	**3.46**	**3.48**	420.95	.00
Monetary Value E-Marketplace	0.80	**2.93**	**2.86**	198.19	.00
Recency E-Mall	1.03	0.16	**3.10**	386.26	.00
Frequency E-Mall	0.79	0.15	**2.35**	320.90	.00
Monetary Value E-Mall	1.23	0.20	**2.77**	263.30	.00
Recency E-Storefront	**3.09**	**3.92**	**4.01**	22.11	.00
Frequency E-Storefront	**2.57**	**3.31**	**3.48**	25.19	.00
Monetary Value E-Storefront	**2.58**	**2.86**	**3.00**	5.48	.00

Interpreting these findings, the segments can be labelled as 1) single-channel e-shoppers (convinced e-storefront); 2) dual-channel e-shoppers (focused e-marketplace and e-storefront), and 3) multichannel e-shoppers. Although segment 1 significantly favours the e-storefront, both segment 2 and segment 3 score higher on this e-channel on recency, frequency and monetary value. Nevertheless, segment 1 is less involved with other e-channels, and it might even be with e-commerce in general. Furthermore, segment 3 scores highest on monetary value (overall), and has the highest frequency scores—aligning nicely with the finding that multichannel shoppers spend more and buy more often (Kumar & Venkatesan, 2005). Interestingly, segment two polarizes towards two specific channels—the e-marketplace and the e-storefront—while not even slightly operating the e-mall. For these consumers, finding specific attributes, characteristics or other factors relating to segment membership could be indicating what causes this particular proneness, or aversion. Last, the results suggest that there exist a substantial segment of genuinely online multichannel

shoppers, demonstrating that different Internet channels can be mutually re-enforcing e-commerce activities, instead of forming threats to each other's existence (Mcgoldrick & Collins, 2007).

5.2 Factorial Structures of Profiling Characteristics

As preparation for profiling purposes in section 5.3 (refer back to 4.3 for explanation), the three sets of variables 1) channel attributes; 2) psychographics, and 3) e-commerce-related behaviours were tested for their appropriateness of factor analysis. Even though the critical assumptions underlying factor analysis are more conceptual than statistical, several test measures were needed. Bartlett's tests of Sphericity all turned out significant ($\chi^2(496)$ = 10,183.304, $p < .000$), ($\chi^2(120)$ = 3,270.764, $p < .000$), and ($\chi^2(66)$ = 2,115.324, $p < .000$) respectively, while Kaiser's Measures of Sampling Adequacy were .914, .717, and .672 respectively, and all three Determinants of the covariance matrices were well above .00001, indicating no collinearity—rendering the data appropriate for factor analysis.

Most items and scales employed in the present study were derived from earlier, peer-reviewed publications in the field (except for the additional variables), strengthening the author in his belief construct reliability and validity were justified. Though, scale reliability, discriminant validity and convergent validity were nonetheless tested for their vindication per individual analysis.

5.2.1 Channel Attributes

Using principal component analysis with promax rotation[18] to organize 36 measurement items into a more manageable and interpretable number of factors, extraction based on Eigenvalue proved difficult due to high factor loadings on multiple factors[19]. Consequently, the researcher switched to confirmatory factor analysis aiming to find the predefined 13 constructs (Rust et al., 2004; cf. Verhoef et al., 2007). Explaining 83.6% of the variance, with the first factor explaining 37.3% variation, the breakdown retained 13 factors that fitted adequately and were easily interpretable for further analysis.

Chin & Todd (1995) advise to examine individual factor and cross-loadings to improve the final factor model by eliminating poor indicators (refer to Appendix D for actual item wording). First, '*assortment 3* and *4*' were deleted due to high cross-loadings (>.400) (Hair et al., 2010), and no significant loading on any factor respectively. The reason that '*assortment 4*' did not load on the intended factor can be attributed to the fact that it was not borrowed as an item from any study, but was thought to be an important attribute (conceptually). Next, '*risk/security 4*' was deleted from the final factor model, as it did not

[18] Oblique (non-orthogonal) rotations are the preferred method for obtaining theoretical meaningful constructs due to realistic assumptions of correlation (Hair et al., 2010).

[19] Eigenvalue cut-off approach (>1.00) (see Kaiser, 1960) found 7 components, explaining 68.1% of the variance. These factors were not easy to interpret and bearing in mind the goal of this research—examining on mean scores for cluster profiling—'psychological meaningfulness' was considered the most important decision point for choosing the number of factors (cf. Rust, Lemon, & Zeithaml, 2004; Verhoef et al., 2007).

load significantly on any factor, probably due to misunderstanding the item. Last, '*after sales 1'* had high cross-loadings on multiple factors too, and was therefore removed from the final factor model (Appendix G, table 1).

The findings conclude that the '*after sales*' and '*privacy*' indicators were most critique. For both, several indicators loaded significantly high on the *risk/security* construct. As for '*privacy 2*', multiple earlier studies included privacy items into the risk/security issue (Forsythe & Shi, 2003; Torkzadeh & Dhillon, 2002; Verhoef et al., 2007), though Verhoef et al. (2007) suggested after component analysis that it appeared to be a separate factor. The present research acted accordingly, though the items were highly correlated. As for '*privacy 1*', it appeared that capturing and using personal information by cookies (tracking) is different from security of privacy data. Tracking information has been identified as a potential threat to consumer privacy, and it affects behaviour; it is therefore phrased as 'online privacy' for this research (Miyazaki, 2008). As for '*after sales 2*', while it concerns an after sale activity (possible troubleshoot after purchase), it also deals with the possible risk of product failure— i.e., product risk (Bhatnagar, Misra, & Rao, 2000). Note that after sales items were not taken into account for factor analysis in Verhoef et al.'s study, because they were supposed to cause problems due to differences per product category. Last, '*after sales 3*' was borrowed from Bhatnager & Ghose (2004), but 'ease of cancelling the order' appeared to be a separate construct instead of an item of 'after sales'.

Scale reliability was assessed by inspecting all factor-items' Cronbach's α (Appendix G, table 2). All items of constructs—except for '*delivery time*'—have high internal consistency as the reliability coefficients are well above the suggested >.70 cut-off point. Because '*delivery time 1*' had a low loading on the '*delivery time*' construct, it has been decided to split both measures for further analysis into '*delivery time*' and '*delivery delay*', as these items seem to indicate different constructs. All others are—as reported—incorporated into the final analysis.

Convergent and discriminate validity seem not at stake. To be sure, Average Variance Extracted (AVE) scores were checked (Appendix G, table 2) and these proved well above the .50 cut-off (Fornell & Larcker, 1981), supporting convergent validity. Further, the square root of AVE-scores were all higher than the construct correlations (Appendix G, table 3), upholding discriminant validity (Ibid.).

5.2.2 Psychographic Variables

To organize 17 psychographic indicators into a more manageable and interpretable number of constructs, promax rotated principal component analysis was run, though now extraction was based on the Eigenvalue cut-off approach (>1.00) (see Kaiser, 1960). Explaining 75.0% of the variance, with the first factor explaining 26.9% variation, the breakdown retained 6 underlying factors that fit adequately and were interpretable for further analysis. A scree-plot was advised to strengthen the findings, providing nothing else then affirmation. Since conceptual foundation is the most important criterion (Rust et al., 2004), the factors were compared to the predefined constructs, and this proved to be an exact fit.

To improve the final factor model (Appendix H, table 1), examination of communalities, individual factor and cross-loadings caused '*motivation to conform 4*' (for wording see Appendix E) to be eliminated, as it had a communality of .422—should exceed .500 according to Hair et al. (2010). The indicator further did not load significantly on the intended factor. In addition, only 1 noteworthy cross-loading exists, which can be logically explained, though the loading does not exceed the >.400 cut-off point (Hair et al., 2010), so the item was included in the final model.

Scale reliability was assessed by inspecting all factor-items' Cronbach's α (Appendix H, table 2). All items of constructs have high internal consistency as the reliability coefficient is above the suggested >.70 cut-off point—'*motivation to conform*' even increased after deleting item 4 (from .794 to .841). They were therefore incorporated into the final analysis.

Checking the Average Variance Extracted (AVE) scores (Appendix H, table 2), all showed to be well above the .50 cut-off (Fornell & Larcker, 1981), supporting convergent validity. Further, the square root of AVE-scores were all higher than the construct correlations (Appendix H, table 3), upholding discriminant validity (Ibid.).

5.2.3 E-Commerce-Related Behaviours

Exploratory promax rotated principle component analysis was run on 12 behavioural items, and although four constructs were retrieved using the Eigenvalue cut-off approach that explained 68.9% of the variance, based on the scree-test criterion another confirmatory analysis was run to establish the five predefined constructs—finally explaining 76.9% variation. In the first analysis '*mobile commerce 2*' (for actual wording, see Appendix F) deemed critical due to low communality (.457), but in the second run, communality exceeded .500 easily (.735). This time, '*mobile commerce 1*' had the lowest communality (.554), though that is considered still quite okay. In addition, the reliability scale of construct Mobile Commerce is >.70 including that particular item (and <.70 without), which denotes inclusion. Furthermore, the item is considered quite progressive for e-commerce (also indicated by a relatively higher SD), which yielded interesting results in the next section. Appendix I, table 1, illustrates the final factor model and the individual loadings.

All reliability coefficients exceed .70—except for 'research shopping' that had a Cronbach's α of .657—which was quite good considering the fact that measurement items were not directly borrowed from any peer-reviewed publication, but based on conceptual thinking (Appendix I, table 2).

Convergent validity was assessed by checking the Average Variance Extracted (AVE) scores (Appendix I, table 2) and these proved well above the .50 cut-off (Fornell & Larcker, 1981), supporting convergent validity. Further, the square root of AVE-scores were all higher than the construct correlations (Appendix I, table 3), upholding discriminant validity (Ibid.).

5.3 Profiling the E-Shopper Segments

Before the segments can be profiled, the assumptions underlying one-way ANOVA were inspected. Observations should be independent (sustained); measures need to be at least on an interval scale (sustained), and equality of covariance matrices in the different groups

needs to be justified (Field, 2009). As for the latter, homogeneity of variances for the profiling factors was tested with Levene's test. In terms of violations to the equality assumption, researchers have agreed that ANOVA is reasonably robust, meaning it will still be accurate even when assumptions are disturbed—especially for fairly large sample sizes (Field, 2009; Hair et al., 2010). Further, post-hoc tests specifically built for either 'equally variances assumed' (Tukey HSD) or 'equally variances not assumed' (Games-Howell), were used to discriminate between group findings; both were reported for validation purposes.

Levene's statistics show that most channel attributes have an insignificant measure—indicating mainly homogeneity of variances, except for two constructs: '*information comparability'* and '*ease of cancelling order*'; *F*(2, 460) = 5.110, *p* = .006, and *F*(2, 460) = 4.142, p = .044 respectively. Examining the psychographics, three constructs 'innovativeness' (*F*(2, 460) = 4.721, *p* = .009, 'loyalty' (*F*(2, 460) = 5.466, *p* = .005, and 'price consciousness' (*F*(2, 460) = 3.657, *p* = .027 seem to have significant statistics, indicating heterogeneity of variances. Square-root transformations (Field, 2009) did not yield any improvements—which is quite common—so eventually the measurements were included as they were. Further, Brown-Forsythe's and Welch's F tests provide robust ratios, even when homogeneity of variance has been violated (Field, 2009), yet for all, these tests did not illustrate any differences from the traditional ANOVA F-ratios (note: not reported in tables).

5.3.1 Segment Differences in Channel Attributes

One-way ANOVA revealed that there exist statistically significant differences between the groups for multiple channel attributes (table 11). '*Information comparability*' is highly significant (*F*(2, 460) = 7.771, *p* = .000), indicating a difference between the treatment groups. Furthermore, '*capturing personal information*' is also significant (*F*(2, 460) = 4.238, *p* = .015), implying that there are differences measured on the importance for that attribute between the segments. As for '*service*' *(F*(2, 460) = 2.537, *p* = .080) and '*price promotion*'*(F*(2, 460) = 2.901, *p* = .056), these appear to be significant at the .10 *p*-value level. They are too included for interpretation purposes.

TABLE 11 Examining mean differences of segments: Channel Attributes

Channel Attributes	Segments						One-Way ANOVA	
	1 (N=120)		2 (N=134)		3 (N=209)		F-value	*p*-value
	Mean	SD	Mean	SD	Mean	SD		
Risk/Security	6.457	.800	6.361	.960	6.418	.919	.364	.695
Aesthetics	5.053	1.374	5.162	1.253	5.227	1.209	.717	.489
Information Comparability	**5.372**	**1.320**	**5.241**	**1.102**	**5.711**	**1.049**	**7.771**	**.000**
Service	**4.736**	**1.283**	**4.376**	**1.437**	**4.453**	**1.325**	**2.537**	**.080**[a]
Enjoyment	4.229	1.793	4.377	1.763	4.589	1.581	1.829	.162
Purchase Effort	5.564	1.116	5.560	1.006	5.576	1.034	.011	.989
Search Effort	5.521	1.199	5.396	1.147	5.593	1.162	1.172	.311
Price Promotion	**5.256**	**1.305**	**5.266**	**1.319**	**5.546**	**1.203**	**2.901**	**.056**[a]
Assortment	5.221	1.275	5.198	1.378	5.359	1.197	.810	.446
Search Convenience	5.883	.974	5.966	.978	5.976	1.020	.359	.699
Delivery Time	5.833	1.103	5.910	1.153	6.048	1.143	1.490	.227
Delivery Delay	4.975	1.417	5.008	1.283	5.239	1.345	1.949	.144
Capturing Personal Information	**4.883**	**1.843**	**4.410**	**1.877**	**4.263**	**1.900**	**4.238**	**.015**
Ease of Cancelling Order	6.025	1.205	5.799	1.516	5.785	1.343	1.326	.267

[a] Significant at .10 *p*-value level

Tukey and Games-Howel post-hoc tests (see table 12) indicate '*information comparability*' is more important to consumers from segment 3 than from segment 1 or 2. This is indicated by statistically significant differences between segment 1 and 3 (-.339 ± .131 min, p = .044), and segment 2 and 3 (-.470 ± .126 min, p = .000). Multichannel shoppers are therefore comparative-prone and value information (e.g., product reviews). Further, there is a significant difference between group 1 and 3 regarding '*capturing personal information*' (-.620 ± .215 min, p = .011). It indicates that segment 1 attributes higher importance to capturing and using their personal information (by cookies). Further, '*service*' appears to be more important for segment 1, than to segment 2 and 3, though only the difference between segment 1 and 2 is significant at a .10 p-value level (.360 ± .171 min, p = .085). Single-channel consumers thus value higher importance to better service-levels. '*Price promotion*' appeared to be non-significant at individual comparison, though it must be noted that segment 3 assigns more importance to this particular attribute[20].

TABLE 12 Post-hoc tests pairwise comparisons Channel Attributes

Channel attributes	Test	Segm. i	Segm. j	Mean diff. (i – j)	St. Error	Sig.
Information Comparability	Tukey HSD	1	3	-.339	.131	.026
		2	3	-.470	.126	.001
	Games-Howell	**1**	**3**	**-.339**	**.131**	**.044**
		2	**3**	**-.470**	**.126**	**.000**
Service	**Tukey HSD**	**1**	**2**	**.360**	**.171**	**.085**[a]
	Games-Howell	1	2	.360	.171	.089[a]
Price Promotion	*Tukey HSD*	*1*	*3*	*-.290*	*.145*	*.113*[b]
		2	*3*	*-.279*	*.140*	*.114*[b]
	Games-Howell	*1*	*3*	*-.290*	*.145*	*.116*[b]
		2	*3*	*-.279*	*.140*	*.117*[b]
Capturing Personal Information	**Tukey HSD**	**1**	**3**	**.620**	**.215**	**.011**
	Games-Howell	1	3	.620	.215	.011

Leading test due to (un)equality of variance in **bold**

[a] Significant at .10 p-value level

[b] Not significant at individual comparison

Inspecting the bar chart (figure 2) directly shows that all segments score high on the '*risk/security*' attribute. This again displays that even though Internet purchasing has matured, consumers still attribute high importance to risk/security issues—as found by Burke (2002) and Forsythe & Shi (2002). The impact of non-secure or risky online shopping channels has therefore a major influence on e-commerce itself.

Further, multichannel e-shoppers (segment 3) score relatively high on most attributes, and although the differences are not all statistically significant, it does confirm what was already thought in that these consumers utilize multiple channels to satisfy all shopping needs. That is, these users evaluate the options per channel: they might use one channel because it is has a better assortment, and another because it is cheaper (explained as 'variety-seeking' behaviour (Kwon & Jain, 2009; Steenkamp & Baumgartner, 1992)).

[20] A LSD post-hoc test did reveal significant differences between segment 1 and 3 (p = .046) and segment 2 and 3 (p = .047). This test does not control for a Type I error though.

In addition, no significant differences were found between '*convenience*', '*effort*' and '*delivery time*' constructs for specific e-channels. Although online shopping places do differentiate between these levels by some functions (ease of search/check-out, faster delivery times, etc.), apparently not on e-channel level in that a clear cut is established. E-shopping in general is considered 'more easy' (Burke, 2002), and according to this research, it is also considered important in doing online purchases *in general*, especially search convenience (mean: 5.949) and delivery time (mean: 5.953). So, e-tailers should invest in these attributes on an individual level.

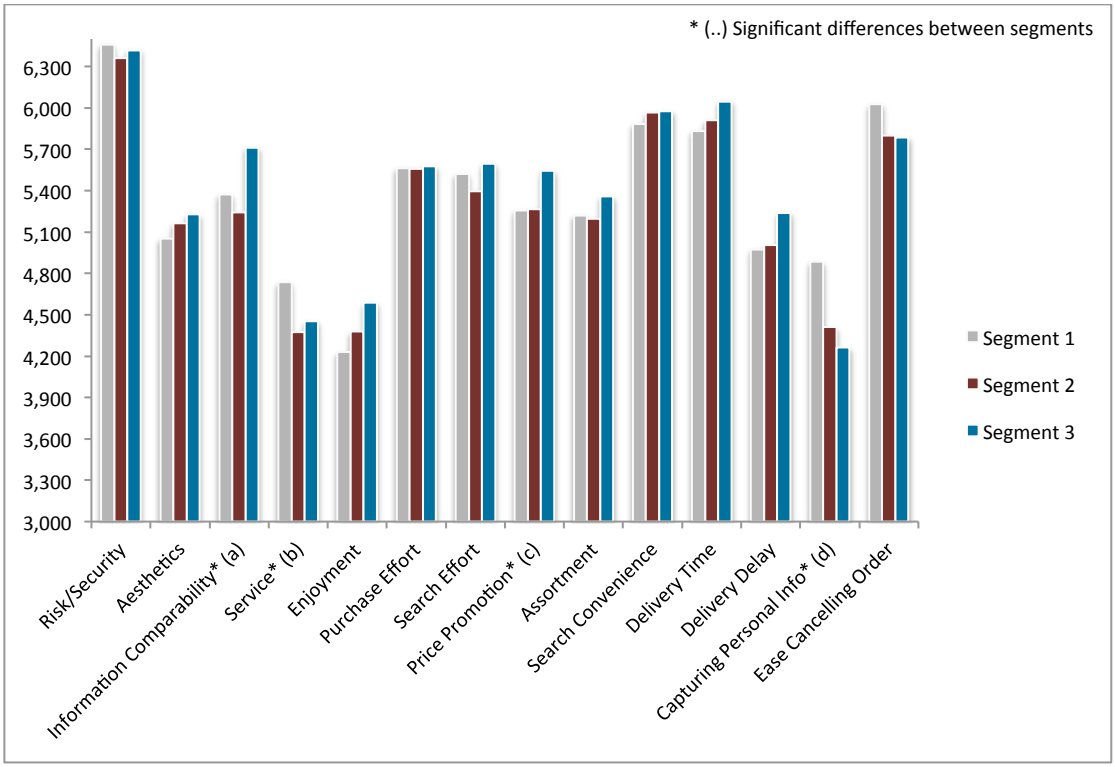

FIGURE 2 Chart: importance of Channel Attribute scores
[a]Sig. for segment 1 – 3 and 2 – 3; [b]Sig. for segment 1 – 2**;** [c]Sig. for segment 1 – 3 and 2 – 3; [d]Sig. for segment 1 – 3

5.3.2 Segment Differences in Demographics

A chi-square test indicated a significant association between the '*age*' of consumers and segment-membership ($\chi^2(8)$ 29.844, p = .000), as confirmed by a Fisher's Exact test (p = .000). It is evident from table 13 that consumers in segment 1 are older compared to the other two segments, especially segment 3. The multichannel e-shopper segment can therefore be profiled as younger, which provides levers for e-tailers.

Further, there is a statistically significant difference between '*Internet experience*' and the segments, as provided by both the chi-square test ($\chi^2(4)$ 11.824, p = .019) and Fisher's Exact test (p = .014). Segment 3 thus includes more experienced Internet users compared to both segment 1 and segment 2. Being longer active on the Internet thus indicates membership of an online multichannel segment.

Although not significant on a .05-level, it seems that '*gender*' provides some differences. Women tend to be more into segment 2, thus buying from the e-marketplace and e-storefront. Due to the over-representation of women in this study, this finding needs to be interpreted with caution.

TABLE 13 Chi-square test Demographics

Demographics	Segments[a]			Chi-square	Sig.	Fisher's Exact	Sig.
	1 (N=120)	2 (N=134)	3 (N=209)				
Gender				5.630	.060	5.668	.057
Male	36.70%	23.10%	31.10%				
Female	63.30%	**76.90%**	68.90%				
Age				**29.844**	**.000**	**28.973**	**.000**
<18 years	1.70%	1.50%	.50%				
18 - 35 years	**18.30%**	**32.10%**	**31.10%**				
36 - 45 years	25.80%	23.10%	35.90%				
46 - 55 years	17.50%	**24.60%**	14.80%				
>55 years	**36.70%**	**18.70%**	**17.70%**				
Income				3.260	.515	3.171	.529
<€30,000	50.00%	41.80%	43.10%				
€30,000 - €50,000	35.00%	41.00%	36.40%				
>€50,000	15.00%	17.20%	20.60%				
Education				9.979	.266	10.19	.243
High school (low)	3.30%	4.50%	1.90%				
High school (high)	7.50%	9.70%	5.70%				
MBO	30.00%	29.90%	25.80%				
HBO	41.70%	32.80%	37.30%				
University	17.50%	23.10%	29.20%				
Internet Experience				**11.824**	**.019**	**12.088**	**.014**
<5 years	5.00%	6.00%	2.90%				
5 – 10 years	**33.30%**	**35.80%**	**22.50%**				
>10 years	**61.70%**	**58.20%**	**74.60%**				

[a] Number indicate percentages within segment.

5.3.3 Segment Differences in Psychographics

There were statistically significant differences between the segments for psychographics as determined by one-way ANOVA (table 23). '*Motivation to conform*' ($F(2, 460) = 3.992$, $p = .019$), '*innovativeness*' ($F(2, 460) = 5.639$, $p = .004$), and '*price consciousness*' ($F(2, 460) = 10.882$, $p = .000$) are all highly statistically significant ($p < .05$ and $p < .01$). Further, there are differences between segments for the psychographic '*shopping enjoyment*' at the 0.10 *p*-level value ($F(2, 460) = 2.420$, $p = .090$). For '*loyalty*' and '*time pressure*', no significant differences were found.

TABLE 14 Examining mean differences of segments: Psychographics

Psychographics	Segments						One-Way ANOVA	
	1 (N=120)		2 (N=134)		3 (N=209)		F-value	*p*-value
	Mean	SD	Mean	SD	Mean	SD		
Motivation to Conform	**2.778**	**.947**	**2.664**	**1.047**	**2.952**	**.870**	**3.992**	**.019**
Loyalty	3.217	.895	3.375	.762	3.312	.732	1.299	.274
Innovativeness	**2.044**	**.988**	**2.052**	**.816**	**2.337**	**.938**	**5.639**	**.004**
Time Pressure	3.017	1.134	3.198	1.074	3.175	1.025	1.106	.332
Shopping Enjoyment	**3.108**	**1.199**	**3.220**	**1.120**	**3.380**	**1.056**	**2.420**	**.090**[a]
Price Consciousness	**3.846**	**.886**	**3.795**	**.899**	**4.175**	**.730**	**10.822**	**.000**

[a] Significant at .10 *p*-value level

A Tukey post-hoc test (see table 15) revealed that '*motivation to* conform' was statistically significantly lower in segment 2 compared to segment 3 (-.288 ± .104 min, p = .023). Multichannel e-shoppers thus need more approval from their fellow shoppers (for example by product reviews), and are then more inclined to buy the product then do dual-channel shoppers. As dual-channel shoppers are very clear in their channel choice, this finding corresponds.

Further, dissimilarities exist regarding '*innovativeness*' for segment 1 and 3 (-.292 ± .105 min, p = .025), and segment 2 and 3 (-.282 ± .102 min, p = .009), as indicated by a Games-Howell test. Multichannel e-shoppers are therefore more innovative, than consumers in the other two segments. This finding contradicts with the former finding, as innovators are usually no conformers, therefore a deeper discussion is provided in the final chapter.

Furthermore, segment 3 differs from both segment 1 and 2 regarding the '*price consciousness*' trait. The Games-Howell post-hoc test revealed a difference of -.329 ± .094 min, p = .002 and -.380 ± .091 min, p = .000, respectively, confirming that multichannel e-shoppers are more price conscious.

Last, although not at the .05 significance level, segment 3 differs from segment 1 regarding '*shopping enjoyment*' (-.272 ± .127 min, p = .084). It thus appears that multichannel e-shoppers are more focused on the entertaining and emotional function during shopping as compared to single-channel shoppers, which offers some implications for e-tailers.

TABLE 15 Post-hoc tests pairwise comparisons Psychographics

Psychographics	Test	Segm. i	Segm. j	Mean diff. (i – j)	St. Error	Sig.
Motivation to Conform	**Tukey HSD**	**2**	**3**	**-.288**	**.104**	**.017**
	Games-Howell	2	3	-.288	.104	.023
Innovativeness	Tukey HSD	1	3	-.292	.105	.016
		2	3	-.282	.102	.015
	Games-Howell	**1**	**3**	**-.292**	**.105**	**.025**
		2	**3**	**-.282**	**.102**	**.009**
Shopping Enjoyment	**Tukey HSD**	**1**	**3**	**-.272**	**.127**	**.084**[a]
	Games-Howell	1	3	-.272	.127	.099[a]
Price Consciousness	Tukey HSD	1	3	-.329	.094	.002
		2	3	-.380	.091	.000
	Games-Howell	**1**	**3**	**-.329**	**.094**	**.002**
		2	**3**	**-.380**	**.091**	**.000**

Leading test due to (un)equality of variance in **bold**

[a] Significant at .10 *p*-value level

The bar chart (figure 3) easily shows that within the e-commerce environment, consumers score highest on '*price consciousness*'. This aligns with other study's findings that online shoppers are somewhat driven by prices (Burke, 2002), even though Bhatnager & Ghose (2004) found that getting the lowest price does not seem to be the most important attribute. While Kwon & Jain (2009) found that price-consciousness did not predict multichannel shopping, this study does indicate that online multichannel shoppers are more price-conscious, aligning with Konus et al. (2008). Therewith, while the attribute '*price*

promotion' was more important for multichannel shoppers (although non-significant) and these shoppers are price conscious, multichannel consumers spend more money—as found in section 5.1—displaying the complexity but also potential of this particular matter. The final section discusses further on this finding.

Furthermore, an interesting result is that, in general, '*innovativeness'* scores rather low. This finding might be attributed to the fact that e-commerce has matured (Wang & Chen, 2010), therefore 'innovative' might not be the best word accompanying online shopping anymore. People do not need to be particularly innovative to shop online, though as indicated, there are differences between the identified segments.

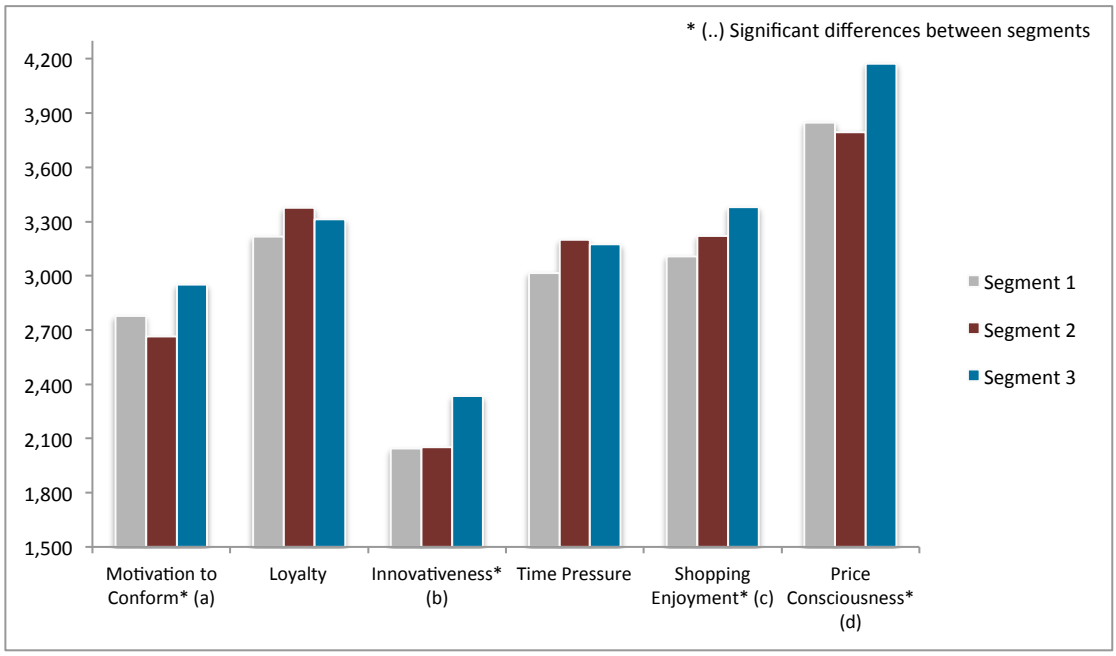

FIGURE 3 Chart: Psychographic scores
[a]Sig. for segment 2 – 3; [b]Sig. for segment 1 – 3 and 2 – 3; [c]Sig. for segment 1 - 3; [d]Sig. for segment 1 – 3 and 2 – 3

5.4 Examining Additional Variables on Segment Differences

While profiling led to significant and interesting results, some additional variables were incorporated in the analysis that complement findings towards the identified e-shopper segments. One-way ANOVA and a simple chi-square test exposed interesting differences between the discovered segments. For one-way ANOVA, data were checked for violations.

Inspecting e-commerce-related behaviours, only '*research shopping*' appears to have an unequal variation ($F(2, 460) = 4.624$, $p = .010$. Regarding change in behaviour, '*frequency*' and '*monetary value*' of both the e-marketplace as the e-mall are significant ($F(2, 460) = 10.663$, $p = .000$; $F(2, 460) = 8.525$, $p = .000$; $F(2, 460) = 127.598$, $p = .000$, and $F(2, 460) = 106.544$, $p = .000$ respectively, therefore equality of variances is not guaranteed. Transformations did not yield improvements, thus data were originally incorporated.

5.4.1 Segment Differences in E-Commerce-Related Behaviours

Examining one-way ANOVA values for differences in means of specific e-commerce related behaviour shows that there are significant differences between the segments for '*showrooming*' ($F(2, 460) = 3.334$, $p = .037$) and '*mobile commerce'* ($F(2, 460) = 6.949$, $p = .001$) (Appendix J, table 1).

Post-hoc tests revealed the true differences between segments (refer to Appendix J, table 2). For 'showrooming' there is a significant difference between segment 2 and segment 3 (-.263 ± .103 min, $p = .030$). Multichannel e-shoppers are more 'showroomers', indicating they check products offline, though prefer to buy them online. This segment is thus not only active on the Internet; it still values some aspects of physical shopping. On the other hand, users of segment 2 are significantly less involved in showrooming. Segment 1 is, on a non-significant difference level in between. This indicates that the e-marketplace might have less a connection with the physical store, than the e-storefront and the e-mall with the physical store.

Furthermore, a Tukey test shows that statistically significant differences exist between segment 1 and 2 and 1 and 3 for '*mobile commerce'*. Segment 2, but mainly segment 3 is more prone towards mobile commerce. While m-commerce adoption has been researched, it is still in its infancy (Wu & Wang, 2005), though at the moment it is a hot topic, so this finding has implications for multichannel e-tailers.

Although the scoring on the control variables is generally low, the tests have illustrated that some differences exist between the segments for '*showrooming'* and '*mobile commerce'*. Looking at broader perspective showed that '*research shopping'* overall scores highest (see figure 4), again substantiating that lots of e-shoppers search for product information online without the intention to buy there. Converting Web searchers into Web buyers still proves to be an issue, even though e-commerce is maturing (Verhoef et al., 2007).

Further, '*social commerce*' is a recent phenomenon and new business concept (Stephen & Toubia, 2010), and apparently consumers are generally still less interested in it—as indicated by very low scores—begging the question whether e-tailers currently should invest any time or resources to it. Stephen and Toubia (2010) outline its potential though, as it can generate economic value for sellers by increasing sales.

Finally, given that '*product returns'* have been identified as a hassle and pain stake (Petersen & Kumar, 2009), the scores were generally low and there were no differences between segments, indicating the problem seems controllable. Besides, Petersen et al. (2009) found that, up to a threshold, product return behaviour increase future customer purchase behaviour.

Last, examining the graph (figure 4) easily shows that—although not all significantly different—multichannel e-shoppers score highest on all e-commerce-related behaviours followed by dual-channel e-shoppers (except for showrooming) and then single-channel e-shoppers, which score lowest. This again displays that multichannel e-shoppers are highly involved in e-commerce, and value the endless possibilities.

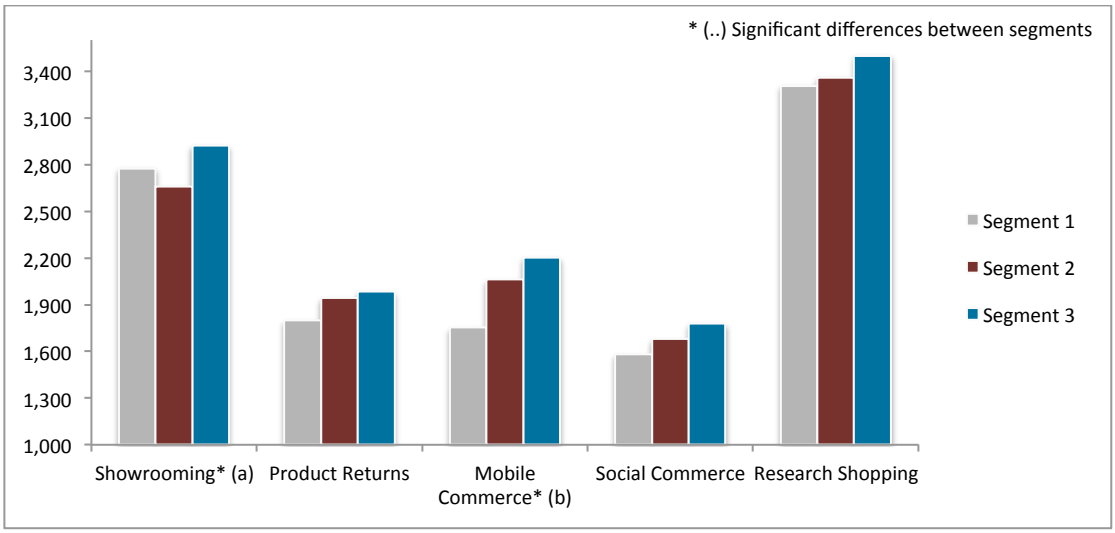

FIGURE 4 Chart: e-commerce-related behaviour scores
[a]Sig. for segment 2 – 3; [b]Sig. for segment 1 – 2 and 1 – 3

5.4.2 Segment Differences in Control Variables

Two control variables were included in the research to test for segment robustness: measures on change in e-channel usage and e-channel preference.

Exploring one-way ANOVA exposed that there are high statistically significant differences between the segments regarding change in channel use behaviour. All parameters have indicated a significance of $p < .05$ (Appendix K, table 1).

Post hoc tests (Appendix K, table 2) revealed exact differences between the treatments groups. Mainly segment differences exist between segment 1 and the other two segments in that growth is lower for single-channel e-shoppers. As the only significantly difference between segment 2 and 3 regards the e-mall, both segments are profit-technically interesting for e-marketplace and e-storefront retailers.

The chart (figure 5) exposes that the change in behaviour aligns nicely with the identified segment e-channel scores (sections 5.1), proving again the existence of the segments, and indicating that the discovered channel-based segments are intensifying.

Further, comparing the change in frequency and monetary value between segment 1 and the other two segments, it appeared there are major differences. Although segment 1 is single-channel oriented, there appeared to be consumers having used other e-channels too. Main point of interest is that e-marketplace behaviour diminished in this segment—compared to staying equal as in segment 2 behaviour towards the e-mall did. Apparently, the e-marketplace has lost some interest to e-shoppers from segment 1. This finding indicates that the single-channel oriented segment for now most probable remains this way, even though a minor positive change is seen towards the e-mall.

Next, while these shoppers from segment 1 are e-storefront prone, the other two segments experienced higher growth towards the e-storefront. This might indicate that segment 1 is a slow evolving segment—probably even more conservative—compared to the other two segments.

Last, the stories on the rising e-mall appear to be true (Su, 2007), but not as much as the other two e-channels; the rise in segment 3 is about two-third of the other two e-channels. The growth though demonstrates the e-mall potential.

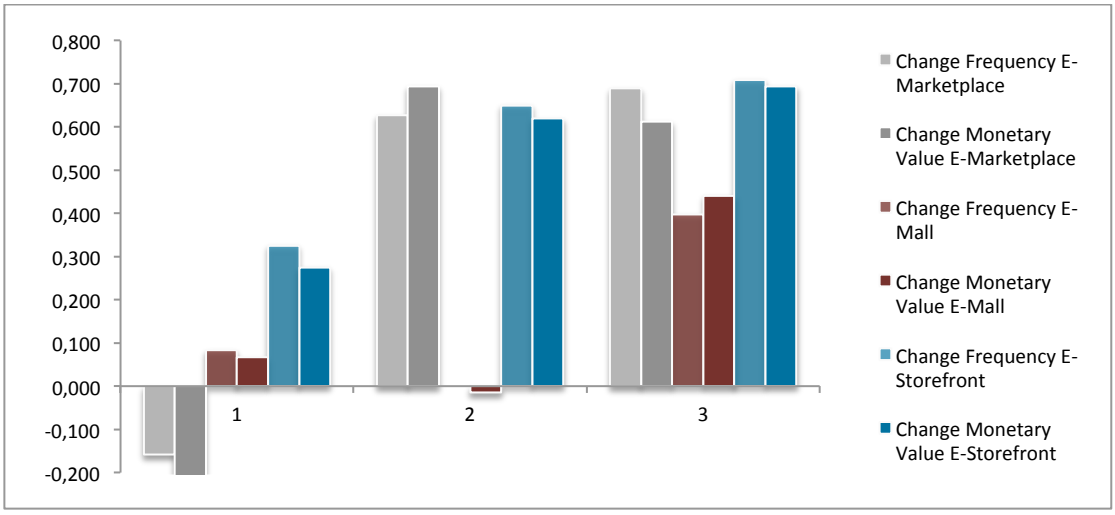

FIGURE 5 Chart: change in e-channel usage per segment
Only change in behaviour between segment 2 and 3 is *not significant* for the e-marketplace and e-storefront, other differences are significant.

As a final control variable, all respondents were to indicate which e-channel was preferred for searching information about products online and buying products online. The results (Appendix K, table 3) indicate that all segments prefer the e-storefront when purchasing online (67.5%, 68.7%, and 62.7%), demonstrating that preference does not align entirely with utilization. Apparently, using an e-channel for purchase has less to do with intrinsic preference but more with the utility gained from that course of action (e.g., short-term convenience). This finding has major implications for researchers and practitioners, as segmenting on intrinsic preference would lead to different results, and one could argue which is better from the perspective of gaining customers—as outlined by Neslin & Shankar (2009).

Further, while segment 2 scores highest on the e-storefront for search preference (37.3%), compared to the others, this segment also scores higher on the e-marketplace (15.7% against 1.7% and 5.7%), indicating an e-marketplace proneness. For searching, segment 1 scores high on the e-storefront as well (33.3%), but also prefers the e-mall (31.7%). As this segment is mainly active in the e-storefront channel with buying, this finding indicates that 'research shopping' might happen between online channels as well. This interpretation is strengthened by the results that segment 3 scores highest on the e-mall for searching, but prefers that channel the least for buying (see Appendix K, table 3).

6. CONCLUSIONS & DISCUSSION

The present study extended multichannel customer segmentation (Konus et al., 2008; Neslin et al., 2006; Neslin & Shankar, 2009)—generally comparing brick-and-mortar with online shopping—to the reality of multichannel online behaviour. Accounting for three specific e-channels; 1) the e-marketplace; 2) the e-mall, and 3) the e-storefront, and using a sample of 463 online shoppers, the research found three e-shopper segments.

1) Single-channel e-shoppers (convinced e-storefront)
2) Dual-channel e-shoppers (focused e-marketplace and e-storefront)
3) Multichannel e-shoppers

The segments were identified using hierarchical and non-hierarchical cluster analysis on online shopping engagement measures 'recency', 'frequency' and 'monetary value' for each e-channel (findings were reported in section 5.1, table 10,). Next, the three identified e-shopper segments were profiled using one-way ANOVA and segment-specific characteristics/behaviours were highlighted (as found in section 5.3, table 11-15). This section discusses the results against the backdrop of the presented research questions, to provide an answer for the research questions: 1) *to what extend do channel-based e-shopper segments exist* (discovering), and 2) *how can these online segments be profiled using channel attribute importance and consumer characteristics* (profiling). First, e-shopper segments are discussed in section 6.1 and, and second, the segment profiles are deeply discussed in subsections 6.1.1, 6.1.2, and 6.1.3. Subsection 6.1.4 touches upon the additional variables that were included in the research.

6.1 Channel-Based E-Shopper Segments

Answering *research question 1*: *to what extend do channel-based e-shopper segments exist,* the results suggest that three e-shopper segments exist. These segments are delineated in the following paragraphs. First, a *multichannel e-shopper segment* was identified. Multichannel e-shoppers (segment 3) utilize all incorporated e-channels, as illustrated by high scores on each RFM measure, and this segment is substantial since it is almost half of all sample cases (45%). Overall, this segment scores highest on frequency and monetary value, indicating how important this segment is for e-tailers. As multichannel research widely accepted that multichannel shoppers spend more, buy more often and have a higher life-time value than single-channel shoppers (Dholakia et al., 2005; Kumar & Venkatesan, 2005; Neslin & Shankar, 2009; Venkatesan et al., 2007), it now has been confirmed this applies to multichannel e-shoppers too, despite the fact that consumers divert to the Internet for lower prices (Burke, 2002; Gupta et al., 2004).

Second, a *single-channel e-shopper segment* was identified. Single-channel e-shoppers (segment 1) mainly use the e-storefront and are less involved in the other two e-channels, and maybe even e-commerce in general. It is the smallest segment, though it still

has a considerate size of about 26% of the sample. While this segment is single-channel oriented, consumers use that e-channel less often and spend less money compared to the other two segments, indicating that this segment is least attractive for (multichannel) e-tailers (Venkatesan et al., 2007).

Third, a *dual-channel e-shopper segment* was identified. Dual-channel e-shoppers (segment 2), which account for 29% of the sample, polarize towards two specific e-channels, the e-marketplace and the e-storefront, and not even slightly use the e-mall. These consumers are therefore very clear in their e-channel choice; they do not use the e-mall, only prefer it slightly for searching for products (15.7%), as indicated by a control variable on preference measures. Next, the profiles of the discovered segments are discussed to answer *research question 2: how can these online segments be profiled using channel attribute importance and consumer characteristics* (discussed per subsection).

6.1.1 Profile of Multichannel E-Shoppers (Segment 3)

Examining the profile of multichannel e-shoppers, regarding channel attributes, these consumers appear to be 'information-comparability' and 'price-promotion' prone (higher scores), and they attach little value to the 'capturing and sharing of their personal information' (dubbed 'online privacy' (Miyazaki, 2008)). Further, the multichannel e-shopper segment assigns generally higher scores to all attributes (even though not all are significantly different), which aligns with the finding that the new consumer wants anything, anytime, any place, and on his or her terms (Schoenbachler & Gordon, 2002), and the finding that multichannel shoppers use multiple channels to satisfy their extensive shopping needs, as fulfilled by channel attributes (Zhang et al., 2010; Verhoef et al., 2007). Regarding demographics, the segment is considerably younger and has more Internet experience. These e-shoppers are further highly 'price-conscious' and 'enjoy shopping' more. In addition, while scoring higher on the 'innovativeness' trait, multichannel e-shoppers are also more 'inclined to conform', displaying a paradox. Key findings regarding segment 3 are discussed further in the following paragraphs.

Information-seeking behaviour, as a practical shopping benefit and experiential value, has been outlined earlier as a motivation for multichannel shopping (Kwon & Jain, 2009), and it appears multichannel e-shoppers value similarly, implying why these shoppers use multiple e-channels. It could be argued that attracting customers from segment 3 to any e-channel thus requires Information to be readily available. It is further evident that multichannel e-shoppers are highly price-oriented, as indicated by the psychographic trait as well as the scoring on the likewise attribute. These price-shoppers therefore scan all available e-channels to buy at the best price, being a reason for using multiple e-channels. Low price-focused online retail strategies might thus be efficient in attracting and converting multichannel e-shoppers, and in satisfying their needs, unlike Kwon & Jain's (2009) implication towards general multichannel shoppers. While being price-conscious, as mentioned, the multichannel e-segment spends more money, which seems illogical. Online price-dispersion (Pan, Ratchford, & Shankar, 2004), reduced-search cost (Lynch & Ariely,

2000) and price-search intentions (Gupta et al., 2004) provide an explanation for this particular finding, as the Internet allows for quick evaluations of the price-consideration set; single-source instead of searching among less accessible traditional channels. It allows for quicker information-gathering and decision-making, thereby reducing search-costs, possibly leading to more individual purchases and more sales (see Bakos, 1997).

Further, the displayed paradox between motivation to conform and innovativeness requires an interpretation. While innovativeness in general scored relatively low, the multichannel segment scores significantly higher compared to the other two segments; it thus indicates a more progressive segment. Similarly, motivation to conform scores high in the multichannel e-consumer segment, signifying that these consumers need more approval from people around them during their shopping decisions (Ailawadi et al., 2001), though this is only significantly different towards dual-channel e-shoppers. Usually, innovators are no conformers, but within the online environment, conformity requires a different explanatory angle. As these multichannel e-consumers engage in information- and variety-seeking behaviour (exploration), as related to innovativeness (Ailawadi et al., 2001; Steenkamp & Baumgartner, 1992), they assign high value to product information (e.g., reviews and price info). These shoppers search for reviews, judgements and other assessments online to evaluate their consideration set (Zhu & Zhang, 2010), and care less for their online privacy—leading them to participate in online social communities (forums, blogs, feedback-tools, social media, etc.) (Forman, Ghose, & Wiesenfeld, 2008). As such, the peer-group is 'society as a whole'. They thus value the opinion, general attitudes and behaviours of other community members (the 'general mass'), explained by Forman et al. (2008) as community norms, and behave in ways that are consistent with those patterns. Online conformity thus relates to exploration of evaluations, processed heuristically (Forman et al., 2008), which the Internet made possible on a global level due to new technologies (Burke, 2002). Exploring the environment, while being price-conscious and open to using new shopping alternatives (Steenkamp & Baumgartner, 1992) is thus one of the reasons why the multichannel e-consumer segment increasingly uses the e-mall (i.e., price comparison engines), and the dual-channel consumer segment does not (further discussed in 6.1.3).

6.1.2 Profile of Single-Channel E-Shoppers (Segment 1)

Profiling single-channel e-shoppers demonstrated that this segment assigns high importance to 'capturing and sharing personal information' and 'service' for channel attribute importance, and regarding demographics is significantly older and has lesser Internet experience, indicating that single-channel e-shoppers are definitely more conservative (also indicated by less involvement in e-channels). As for psychographics, low 'innovativeness' scores (but also low involvement in mobile commerce) confirm this assumption. To that extent, it might be one of the reasons why these consumers avert buying from the e-marketplace and e-mall, as they have the characteristic of being more anonymous (Ginn, 2010) or high tech (Burke, 2002). This segment further 'enjoys online shopping' the least, indicating a possible reason of why these consumers are less involved in e-commerce in

general. Key findings regarding segment 1 are more deeply discussed in the following paragraphs.

Compared to the other two segments, segment 1 assigns considerably higher importance to the capturing and sharing of their personal information. This cookie-related issue allows firms to track and target e-shoppers with 'personalized' marketing communications (Bhatnagar & Ghose, 2004). Other studies have stressed consumers' concerns about the issue of online privacy and third-party cookies (e.g., Miyazaki, 2008), and it even has caught the attention of government entities. This study contributes to these findings that some e-shoppers attribute even more importance to the online privacy issue than others, which has implications for e-commerce managers, but also requires further research.

Interestingly, service has been discussed a lot in online shopping and multichannel literature towards customer buying behaviour (Baker et al., 2002; Mathwick et al., 2001; Montoya-Weiss et al., 2003; Sousa & Voss, 2012; van Birgelen, de Jong, & de Ruyter, 2006), and although it is generally found that higher service relates to higher purchase intentions, all discovered e-segments score relatively low on importance for service in online shopping. The single-channel e-shopper segment however assigns a significantly higher importance score to service, indicating that to please these shoppers, service-levels might need to be higher. This finding indicates that although service is a less important attribute for online shoppers (compared to other attributes), more conservative consumers might need that little bit of extra to convert them to being an online shopper (cf. Bhatnager & Ghose, 2004).

6.1.3 Profile of Dual-Channel E-Shoppers (Segment 2)

The profile of dual-channel e-shoppers shows interesting results. While it would be expected this segment scores in between the other two segments (due to e-channel-orientations), this is rather the 'exception than the rule' regarding significant findings. Regarding channel attribute importance, the segment scores lowest on 'information comparability' and 'service', compared to the other two segments. Demographic data show the segment is as young as segment 3, though has the least Internet experience. Regarding psychographics, it scores lowest on 'motivation to conform', and has similar low 'innovativeness' and 'price consciousness' levels as segment 1. An additional note is that the segment engages the least in 'showrooming' compared to the other two segments. The following paragraphs discuss the key findings regarding segment 2 in more depth.

Regarding attribute importance scores of consumers, segment 2 scores significantly lower on 'information comparability', and on an insignificant level search effort. While interpreting these findings asks for carefulness, it might be important reasons why dual-channel e-shoppers do not use the e-mall; these consumers simply do not care about comparing and searching information and engage less in information-seeking behaviour (Steenkamp & Baumgartner, 1992), as also indicated by a lower, but insignificant difference score on research shopping. More research is required on this particular matter. Further, the segment scored lowest on the 'service' attribute. As mentioned, although multichannel

research found that higher service-levels increase buying behaviour (Montoya-Weiss et al., 2003; van Birgelen et al., 2006), the finding that some e-consumer segments (particularly this dual-channel segment, but also the multichannel segment) assign a significantly lower importance to service indicates that not all online consumers are 'standing in line' for service. Interestingly, this holds for the most 'profitable' segments. As service has a price-tag, this finding questions whether e-tailers should invest any resources into service or should better distribute funds to other, more important attributes. Further research on this matter is recommended.

Remarkably, the dual-channel e-shopper segment scores lowest on motivation to conform, indicating the exact difference with the multichannel e-shopper segment. Dual-channel e-shoppers do not engage in exploration (indicated by low importance to information comparison, low innovativeness, low price consciousness and lower showrooming) and need less assistance (indicated by lower service scoring), and attach less value to self-expression or advice (Ailawadi et al., 2001), maybe only from a similar peer group. These e-shoppers probably stick to what works and what they know, and the utility gained (mostly convenience) is more important than expanding their horizon, which can also be explained by a higher, but non-significant loyalty score. This segment scored high on the e-marketplace channel, which suits them due to its convenient one-stop shopping characteristic (Burke, 2002; Ginn, 2010). They engage minimally in newer technologies (such as the e-mall), but would probably use new channels if it would benefit their utility (e.g., mobile or social commerce). Dual-channel e-shoppers are therefore 'focused pragmatists', also explained as convenient shoppers.

6.1.4 Additional Variables

Additional variables that were included in the research such as the e-commerce-related behaviours did also display interesting results. Multichannel e-shoppers (segment 3) score highest on all behaviours, for example mobile commerce and social commerce (latter is not-significantly different though). This proves again the innovative nature of that segment. While the multichannel e-shopper segment is highly active on the Internet, they also scored significantly higher on the showrooming phenomenon (compared to segment 2), indicating these consumers check for products offline, but prefer to buy them online. While this could be specified as some notion to 'chance of loss', being a less risk-taking consumer (Steenkamp & Baumgartner, 1992), this study attributes the finding to the price-consciousness trait and explorative nature of multichannel e-consumers; they explore and shop everywhere it convenes them. While McGoldrick & Collins (2007) mentioned that *"it is more difficult to pinpoint a group that is less characterized by extremes of preferences and behaviour, more by a blend of several traits"* (p. 151), the multichannel e-shopper has definitely a blend of several traits, though scores also extremely high on e-channel behaviours, which provides many levers for managers to pursue this segment.

Further, control variables such as measured change in behaviour showed that segment 1 is a slow-evolving segment; single-channel e-shoppers displayed half the growth

in frequency and monetary value as the other two segments. Catalysing this growth by targeted marketing campaigns—perhaps by e-commerce branch organizations—postulates a possibility to make this segment more profitable. In addition, while minimally buying from other e-channels, segment 1 does engage with other e-channels to *search* for information. Explicitly the e-mall came across, as one third of the consumers in this segment preferred the e-mall for search. A small but positive increase in change of channel usage towards this e-channel might indicate that this is the key to convert single-channel e-shoppers to become more remunerative dual-, or even multichannel e-shoppers. Converting these shoppers from Web searchers to Web buyers would thus be a challenging but rewarding operation (Verhoef et al., 2007).

As a final remark, the segment profiles are according to the researcher best portrayed as 'conservative' (single-channel e-shoppers) versus 'progressive' (multichannel e-shoppers), with a 'pragmatic' middle (dual-channel e-shoppers), even though that would be a quite radical description since it entails e-commerce, which generally involves more innovative consumers. Though as innovativeness in former studies appeared to be one of the covariates of multichannel shopping (Konus et al., 2008; Steenkamp & Baumgartner, 1992), it would be highly interesting to deeper research this finding. Moore's bell shaped innovation curve with its visionary early adopters (cf. multichannel e-shoppers), pragmatic early majority (cf. dual-channel e-shoppers) and conservative late majority (cf. single-channel e-shoppers) would provide an interesting analogous research framework (Moore, 2009). Nonetheless, by answering the research questions and therewith fulfilling the higher order goals; 1) single- and multichannel segments were identified; and 2) identified segments were profiled by channel attribute importance and consumer characteristics, and 3) implications for managers are provided next in section 6.2, this research added new insights to the scholarly area of multichannel customer management and e-commerce.

6.2 Managerial Implications

Based on above results and discussion, the present research has some valuable implications for e-commerce managers. First, the research identified a large segment of multichannel e-shoppers (45%) that is using multiple channels during their shopping. The existence of such a segment implies that managers should maintain multiple e-channels to engage this large, remunerative group of online shoppers. The researched e-channels provide different shopping experiences, so leveraging multiple e-channels provides 'something for everyone', or in other words, allows for better satisfying the extensive needs of this particular group of e-shoppers. This could increase purchases, but also repurchases, which cultivates loyalty. This substantial segment of genuinely multichannel e-shoppers demonstrates that different e-channels can be mutually re-enforcing e-commerce activities, instead of forming threats to each other's existence (Mcgoldrick & Collins, 2007). Instead of viewing the concept from a competitive angle, e-tailers should try to find cross-channel synergies between their (and competitors') e-channels (Verhoef et al., 2007).

Second, the research identified that the segments score differently on specific attributes and consumer characteristics, displaying that different consumers have different needs and priorities. Research outlined that different e-channels can fulfil those needs by different experiences (Wolfinbarger & Gilly, 2001; Zhang et al, 2010), therefore the research suggests that e-tailers should enhance their e-channels in design, and develop specific strategies for each e-shopper segment, but specifically for the profitable multichannel e-shopper segment, based on the identified profiling scores. In the following paragraphs, this study suggests a few ideas.

For instance, the multichannel e-shopper segment (segment 3) scores high on several psychographic traits such as price-consciousness, innovativeness, motivation to conform, and shopping enjoyment. Regarding the price-consciousness trait, retailers might be successful when pursuing low price-focused online retail strategies to satisfy the needs of the multichannel e-shopper segment. For example, targeted marketing campaigns on price could attract the multichannel e-shopper segment, possibly leading to more revenue generation. In addition, as the conformity discussion demonstrated, this progressive e-shopper segment is influenced by community norms and values reviews of the mass, so these reviews should be collected. Offering current customers to drop reviews, with an automatic e-mail reminder after every purchase, could be an instrument to attract the multichannel e-shopper segment to the preferred e-channel, which increases traffic and sales (Zhu & Zhang, 2010). Further, e-tailers could start social online communities in their e-channels, e.g. a blog-space or forum, to engage and activate the multichannel e-shopper segment (Forman et al., 2008). As for shopping enjoyment, the research indicated that the multichannel e-shopper segment is more focused on the entertaining and emotional function during online shopping as compared to the single-channel e-shopper segment. While Burke (2002) found that online shopping is just a degraded form of conventional shopping, new features improved e-commerce on this level. For instance, integrating new functions into the e-tailer's e-channels such as 'shopping with friends' (www.oonair.net) or 'virtual fitting rooms' (www.fits.me) might be successful in leveraging even more entertaining and emotional utilities, leading to better enjoyment, satisfaction and possibly more sales from the multichannel e-shopper segment.

Regarding channel attributes, the multichannel e-shopper segment attaches great value to information comparability. The segment engages in information- and variety-seeking behaviour (Steenkamp & Baumgartner, 1992). When designing e-channels, providing comparison possibilities on an e-commerce website, could be successful in attracting (and converting) this progressive e-shopper segment. Moreover, the e-mall was established on this notion (i.e., comparing product details and prices) (Su, 2007), thus multichannel oriented e-tailers might be successful when offering products on these intermediary platforms, which could lead to more selling to the multichannel e-shopper segment.

Additionally, while the Internet facilitates e-firms to precisely track and target e-shoppers with marketing messages by the use of technologies like 'cookies' (Bhatnagar &

Ghose, 2004), it appeared there is a major difference in consumer attitudes towards this so-called online privacy issue per e-shopper segment. The multichannel e-shopper segment cares less that their personal information is being tracked and used, while the single-channel segment attaches more value to the online privacy issue. Better noticeable disclosures of cookie usage, mentioning what information is tracked and what is used by e-tailers, might attract and convert more shoppers from segment 1, which leads to a possible increase in online purchases (see Miyazaki, 2008). Being more open about the cookie-related privacy matter might even be a successful tool in persuading single-channel users to become dual- or multichannel users. More research is needed on that particular matter though.

Additional scores on channel attributes showed that *e-shoppers in general* (total sample) attach greater value to risk/security issues, but also convenience and effort, as found by other studies (Burke, 2002; Verhoef et al., 2007). Several ideas can be derived which might satisfy e-shoppers more; e-tailers should a) emphasize the online store's certification or label in that consumers gain more trust (Gupta et al., 2004); b) provide consumers a choice in payment method (iDeal, creditcard, afterpay, etc.); every consumer differs on preference and it makes online shopping easy (Lee, Eze, & Ndubisi, 2011); c) leverage a clear navigation and checkout process in that the consumer can easily search and buy the product (Childers et al., 2002; Jiang & Rosenbloom, 2005), and d) communicate stock and delivery times clearly, and deliver as promised; it reduces the incentive to switch to other (e-)channels (Gupta et al., 2004; Jiang & Rosenbloom, 2005).

The study defined three e-shopper segments that differ on channel attribute importance, consumer characteristics and other behaviours. While this provides some general knowledge that allows e-tailers to form better strategy (as outlined above), managers could also replicate the survey to segment their own customers based on actual purchase data, and define their customers into the discovered segments, the attributes they assign value to, or the traits they possess. It should be noted though, as utilization and preference do not align entirely, segmenting on intrinsic preference could lead to different results, and one could argue which is better from the perspective of developing customers (as outlined by Neslin & Shankar (2009)). Utilization provides actual behaviour, which could be manipulated due to some forms of inertia or short-term convenience (Neslin & Shankar, 2009), while preference is the intrinsic value that could demonstrate even higher engagement levels, and thus increase sales when strategy is formed accordingly.

Last, while the study cannot predict how consumers can be 'transferred' from one segment to another, e.g. from least attractive segment 1 to the most rewarding segment 3, it did find a transition in behaviour. Segment 1 is mainly active in the e-storefront, though measures on search preference learned that this e-shopper segment possibly searches e-malls for product information. The research suggests that locking-in these consumers and thus converting them from Web searchers to Web buyers, could make them dual- or multichannel. Verhoef et al. (2007) provide several ways to lock-in shoppers, for example by remembering customer details (previous searches, orders, etc.) via a personal account. Leveraging the possibility to create an account on these e-malls to earn points (sort of

loyalty program-based) could also yield better e-channel lock-in. Loyalty programs have long been found successful in generating more revenue (Uncles, Dowling, & Hammond, 2003).

6.3 Limitations & Future Research

Despite the interesting results outlined above, the present study is limited in a number of ways. First of all, the study is not a cause-relation study using regression or structural equation modelling, though several 'predictive' conclusions and implications were provided that need to be interpreted accordingly. Further research using predictive models and analyses would provide more accurate conclusions on what predicts e-channel choice and what affects e-shoppers' behaviour.

Second, the present data might be troubled with certain response bias. The sample was acquired by contacting consumers through online merchants that have an online store, which implies a small bias towards the e-storefront. Even though most of these e-stores have integrations with e-malls or e-marketplaces, reducing the possible bias due to consumers' e-channel origin, still 96.8% of the sample purchased through e-stores, compared to 87.7% and 62.0% through e-marketplaces and e-malls respectively. While these numbers are supposed to be an accurate representation of the population, specifically due to a large dataset, over-representation of consumers buying through the e-store might have skewed the formation of segments. Though, the researcher believes the results are quite reliable, considering the well-interpretable findings.

Third, the research focused only on three deeply used e-channels, and although some measures on other electronic outlets were provided (mobile commerce and social commerce), utilization to these was not researched in depth. The outcomes though have opened eyes, and for further—channel-based—segmentation and profiling studies, these additional e-channels should be incorporated. M-commerce specifically, which is still in its infancy, already accounts for quite large amounts of revenue streams, indicating its huge potential (Wu & Wang, 2005).

A fourth limitation stems from the incorporated research covariates. While it is evident that interesting results were yielded, not differentiating on specific product categories (low involvement/high involvement) or shopping intentions (hedonic vs. utilitarian/search vs. buying) as 'reasons' to buy from specific or multiple e-channels constrains the research findings. 'Product category' and 'shopping goal' have long been found as a predictors of channel choice (Blattberg et al., 2008; Neslin et al., 2006; Wolfinbarger & Gilly, 2001), which could be extended to the online environment to find even more accurate results. Future research should focus on these antecedents as well.

Fifth, while the research could have performed a dozen more tests to inspect for online shopping differences, due to time-restrains and the scope of the research (focus on channel-based segments) these were not incorporated. Still, a quick one-way ANOVA test between demographics and e-commerce-related behaviours did indicate that significant differences exist. For example on gender and product returns; women tend to produce more product returns than do men ($F(2, 461) = 22.682$, $p = .000$). More research is needed on the

difference between demographics and/or psychographics with online shopping behaviours, as it provides relevant implications for e-commerce managers.

Last, several suggestions for further research came across during the discussion and were mentioned, though some explicit avenues for future research include: 1) to what extend do innovativeness, price consciousness and motivation to conform predict multichannel shopping and how is this moderated by information/variety-seeking behaviour? 2) Is showrooming an answer for the decline in physical retailing: using flagship stores with mobile technologies to convert more (multichannel) e-shoppers into buying in an 'offline-online' setting; 3) how can theories on the innovation adoption curve be used to transform single-channel e-shoppers into multichannel e-shoppers (e.g., a beach-head approach) (Moore, 2009), and last 4) how, and to what extend does e-service impact buying behaviour for single vs. dual/multichannel e-shoppers.

BIBLIOGRAPHY

Ailawadi, K. L., Neslin, S. A., & Gedenk, K. (2001). Pursuing the value-conscious consumer: store brands versus national brand promotions. *Journal of Marketing*, 71–89.

Alba, J., Lynch, J., Weitz, B., Janiszewski, C., Lutz, R., Sawyer, A., & Wood, S. (1997). Interactive home shopping: consumer, retailer, and manufacturer incentives to participate in electronic marketplaces. *Journal of Marketing*, 38–53.

Ancarani, F., & Shankar, V. (2004). Price Levels and Price Dispersion Within and Across Multiple Retailer Types: Further Evidence and Extension. *Journal of the Academy of Marketing Science*, *32*(2), 176–187.

Ansari, A., Mela, C. F., & Neslin, S. A. (2008). Customer channel migration. *Journal of Marketing Research*, *45*(1), 60–76.

Armstrong, J. S. (1975). Monetary incentives in mail surveys. *The Public Opinion Quarterly*, *39*(1), 111–116.

Baker, J., Parasuraman, A., Grewal, D., & Voss, G. B. (2002). The influence of multiple store environment cues on perceived merchandise value and patronage intentions. *Journal of Marketing*, 120–141.

Bakos, J. Y. (1997). Reducing buyer search costs: implications for electronic marketplaces. *Management science*, *43*(12), 1676–1692.

Balasubramanian, S., Raghunathan, R., & Mahajan, V. (2005). Consumers in a multichannel environment: Product utility, process utility, and channel choice. *Journal of Interactive Marketing*, *19*(2), 12–30.

Bhatnagar, A., & Ghose, S. (2004). A latent class segmentation analysis of e-shoppers. *Journal of Business Research*, *57*(7), 758–767.

Bhatnagar, A., Misra, S., & Rao, H. R. (2000). On risk, convenience, and Internet shopping behavior. *Communications of the ACM*, *43*(11), 98–105.

Birant, D. (2011). Data Mining Using RFM Analysis. *Knowledge-Oriented Applications in Data Mining*. 91-108. Retrieved at: http://www.intechopen.com/books/ knowledge-oriented-applications-in-data-mining/data-mining-using-rfm-analysis, on June 14th, 2013.

Blattberg, R. C., Kim, B.-D., & Neslin, S. A. (2008). *Database Marketing*. New York, NY: Springer Verlag.

Burke, R. R. (2002). Technology and the Customer Interface: What Consumers Want in the Physical and Virtual Store. *Journal of the Academy of Marketing Science*, *30*(4), 411–432.

Cha, J. (2011). Exploring the Internet as a Unique Shopping Channel to Sell both Real and Virtual Items: A Comparison of Factors Affecting Purchase Intention and Consumer Characteristics. *Journal of Electronic Commerce Research*, *12*(2), 115–132.

Chaudhury, A., Mallick, D., & Rao, H. R. (2001). Web Channels in E-Commerce. *Communications of the ACM*, *44*(1), 99–104.

Childers, T. L., Carr, C. L., Peck, J., & Carson, S. (2002). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing*, *77*(4), 511–535.

Chin, W. W., & Todd, P. A. (1995). On the use, usefulness, and ease of use of structural equation modeling in MIS research: a note of caution. *MIS quarterly*, 237–246.

Deutskens, E., de Ruyter, K., Wetzels, M., & Oosterveld, P. (2004). Response rate and response quality of internet-based surveys: an experimental study. *Marketing letters*, *15*(1), 21–36.

Devaraj, S., Fan, M., & Kohli, R. (2002). Antecedents of B2C channel satisfaction and preference: validating e-commerce metrics. *Information Systems Research*, *13*(3), 316–333.

Devaraj, S., Fan, M., & Kohli, R. (2006). Examination of online channel preference: Using the structure-conduct-outcome framework. *Decision Support Systems*, *42*(2), 1089–1103.

Dholakia, R. R., Zhao, M., & Dholakia, N. (2005). Multichannel retailing: a case study of early experiences. *Journal of Interactive Marketing*, *19*(2), 63–74.

Field, B. A. (2009). *Discovering Statistics Using SPSS* (3rd ed.). London: Sage Publications Ltd.
Fishbein, M. E. (1967). *Readings in attitude theory and measurement.* Oxford, England: Wiley.
Forman, C., Ghose, A., & Wiesenfeld, B. (2008). Examining the Relationship Between Reviews and Sales: The Role of Reviewer Identity Disclosure in Electronic Markets. *Information Systems Research*, *19*(3), 291–313.
Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 39–50.
Forsythe, S. M., & Shi, B. (2003). Consumer patronage and risk perceptions in Internet shopping. *Journal of Business Research*, *56*(11), 867–875.
Frambach, R. T., Roest, H. C. A., & Krishnan, T. V. (2007). The impact of consumer Internet experience on channel preference and usage intentions across the different stages of the buying process. *Journal of Interactive Marketing*, *21*(2), 26–41.
Ginn, T. (2010). Selling online. *Econsultancy*, 1–110. Retrieved at: http://econsultancy.com, on March 13th, 2013
Grieger, M. (2003). Electronic marketplaces: A literature review and a call for supply chain management research. *European journal of operational research*, *144*(2), 280–294.
Gupta, A., Su, B. C., & Walter, Z. (2004). An empirical study of consumer switching from traditional to electronic channels: A purchase-decision process perspective. *International Journal of Electronic Commerce*, *8*(3), 131–161.
Hair, J. F., Black, B., Babin, B., & Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed.). New Jersey: Upper Saddle River.
Hoffman, D. L., Novak, T. P., & Chatterjee, P. (1995). Commercial scenarios for the Web: opportunities and challenges. *Journal of Computer-Mediated Communication*, *1*(3), 0–0.
Hoque, A. Y., & Lohse, G. L. (1999). An information search cost perspective for designing interfaces for electronic commerce. *Journal of Marketing Research*, 387–394.
Jiang, P., & Rosenbloom, B. (2005). Customer intention to return online: price perception, attribute-level performance, and satisfaction unfolding over time. *European Journal of Marketing*, *39*(1/2), 150–174.
Johnson, K. K. P., Yoo, J.-J., Rhee, J., Lennon, S., Jasper, C., & Damhorst, M. L. (2006). Multi-channel shopping: channel use among rural consumers. *International Journal of Retail & Distribution Management*, *34*(6), 453–466.
Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and psychological measurement*, *20*, 141-151.
Kaufman-Scarborough, C., & Lindquist, J. D. (2002). E-shopping in a multiple channel environment. *Journal of Consumer Marketing*, *19*(4), 333–350.
Keen, C., Wetzels, M., de Ruyter, K., & Feinberg, R. (2004). E-tailers versus retailers. *Journal of Business Research*, *57*(7), 685–695.
Knox, G. A. H. (2006). *Modelling and Managing Customers in a Multichannel Setting*. (Doctoral dissertation). Available from ProQuest Dissertations & Theses database.
Konus, U., Verhoef, P., & Neslin, S. (2008). Multichannel Shopper Segments and Their Covariates. *Journal of Retailing*, *84*(4), 398–413.
Kotler, P., & Keller, K. L. (2008). *Marketing Management* (13th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
Kumar, V., & Venkatesan, R. (2005). Who are the multichannel shoppers and how do they perform?: Correlates of multichannel shopping behavior. *Journal of Interactive Marketing*, *19*(2), 44–62.
Kwon, K.-N., & Jain, D. (2009). Multichannel Shopping Through Nontraditional Retail Formats: Variety-Seeking Behavior With Hedonic and Utilitarian Motivations. *Journal of Marketing Channels*, *16*(2), 149–168.
Laudon, K. C., & Traver, C. G. (2007). *E-commerce* (4th ed.). Upper Saddle River, N.J.: Prentice Hall.

Lee, C. H., Eze, U. C., & Ndubisi, N. O. (2011). Analyzing key determinants of online repurchase intentions. *Asia Pacific Journal of Marketing and Logistics*, *23*(2), 200–221.
Lim, J., Grover, V., & Purvis, R. L. (2012). The Consumer Choice of E-Channels as a Purchasing Avenue: An Empirical Investigation of the Communicative Aspects of Information Quality. *Engineering Management, IEEE Transactions on*, *59*(3), 348–363.
Lohse, G., Bellman, S., & Johnson, E. (2000). Consumer buying behavior on the Internet: Findings from panel data. *Journal of Interactive Marketing*, *14*(1), 15–29.
Lynch, J. G., & Ariely, D. (2000). Wine online: Search costs affect competition on price, quality, and distribution. *Marketing Science*, *19*(1), 83–103.
Mathwick, C., Malhotra, N., & Rigdon, E. (2001). Experiential value: conceptualization, measurement and application in the catalogue and Internet shopping environment☆. *Journal of Retailing*, *77*(1), 39–56.
McCarty, J. A., & Hastak, M. (2007). Segmentation approaches in data-mining: A comparison of RFM, CHAID, and logistic regression. *Journal of Business Research*, *60*(6), 656–662.
Mcgoldrick, P. J., & Collins, N. (2007). Multichannel retailing: profiling the multichannel shopper. *International Review of Retail, Distribution and Consumer Research*, *17*(2), 139–158.
Mehra, A., Kumar, S., & Raju, J. (2013). "Showrooming"and the Competition between Store and Online Retailers. *Available at SSRN 2200420*.
Miyazaki, A. D. (2008). Online privacy and the disclosure of cookie use: Effects on consumer trust and anticipated patronage. *Journal of Public Policy & Marketing*, *27*(1), 19–33.
Montoya-Weiss, M. M., Voss, G. B., & Grewal, D. (2003). Determinants of online channel use and overall satisfaction with a relational, multichannel service provider. *Journal of the Academy of Marketing Science*, *31*(4), 448–458.
Moore, G. A. (2009). *Crossing the Chasm*. New York: HarperCollins Publishers.
Neslin, S. A., Grewal, D., Leghorn, R., Shankar, V., Teerling, M. L., Thomas, J. S., & Verhoef, P. C. (2006). Challenges and Opportunities in Multichannel Customer Management. *Journal of Service Research*, *9*(2), 95–112.
Neslin, S., & Shankar, V. (2009). Key issues in multichannel customer management: current knowledge and future directions. *Journal of Interactive Marketing*, *23*, 70–81.
Ngai, E. W., & Wat, F. (2002). A literature review and classification of electronic commerce research. *Information & Management*, *39*(5), 415–429.
Norusis, M. J. (2012). *IBM SPSS Statistics 17 Statistical Procedures Companion*. Englewood Cliffs: Prentice Hall.
Palmer, J., & Lindemann, M. (2003). Business Models and Market Mechanisms: Evaluating efficiencies in consumer electronic markets. *ACM SIGMIS Database*, *34*(2), 23–38.
Pan, X., Ratchford, B. T., & Shankar, V. (2004). Price dispersion on the internet: A review and directions for future research. *Journal of Interactive Marketing*, *18*(4), 116–135.
Petersen, J. A., & Kumar, V. (2009). Are product returns a necessary evil? Antecedents and consequences. *Journal of Marketing*, *73*(3), 35–51.
Rainer, R. K., & Cegielski, C. G. (2010). *Introduction to Information Systems* (3rd ed.). New York, NY: John Wiley & Sons, Inc.
Rangaswamy, A., & Van Bruggen, G. H. (2005). Opportunities and challenges in multichannel marketing: An introduction to the special issue. *Journal of Interactive Marketing*, *19*(2), 5–11.
Rust, R. T., Lemon, K. N., & Zeithaml, V. A. (2004). Return on marketing: using customer equity to focus marketing strategy. *Journal of Marketing*, 109–127.
Schoenbachler, D. D., & Gordon, G. L. (2002). Multi-channel shopping: understanding what drives channel choice. *Journal of Consumer Marketing*, *19*(1), 42–53.
Schwarz, G. (1978). Estimating the dimension of a model. *The annals of statistics*, *6*(2), 461–464.

Shankar, V., Inman, J. J., Mantrala, M., Kelley, E., & Rizley, R. (2011). Innovations in Shopper Marketing: Current Insights and Future Research Issues. *Journal of Retailing*, *87*, S29–S42.

Shankar, V., Smith, A. K., & Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*, *20*(2), 153–175.

Sousa, R., & Voss, C. (2012). The impacts of e-service quality on customer behaviour in multi-channel e-services. *Total Quality Management & Business Excellence*, *23*(7-8), 789–806.

Spiller, P., & Lohse, G. L. (1997). A classification of Internet retail stores. *International Journal of Electronic Commerce*, 29–56.

Srinivasan, S. S., Anderson, R., & Ponnavolu, K. (2002). Customer loyalty in e-commerce: an exploration of its antecedents and consequences. *Journal of Retailing*, *78*(1), 41–50.

Steenkamp, J.-B. E., & Baumgartner, H. (1992). The role of optimum stimulation level in exploratory consumer behavior. *Journal of Consumer Research*, 434–448.

Stephen, A. T., & Toubia, O. (2010). Deriving value from social commerce networks. *Journal of Marketing Research*, *47*(2), 215–228.

Su, B.-C. (2007). Consumer E-Tailer Choice Strategies at On-Line Shopping Comparison Sites. *International Journal of Electronic Commerce*, *11*(3), 135–159.

Thomas, J. S., & Sullivan, U. Y. (2005). Managing marketing communications with multichannel customers. *Journal of Marketing*, 239–251.

Torkzadeh, G., & Dhillon, G. (2002). Measuring factors that influence the success of Internet commerce. *Information Systems Research*, *13*(2), 187–204.

Turban, E., King, D., McKay, J., Marshall, P., Lee, J. K., & Viehland, D. (2007). *Electronic Commerce 2008* (5th ed.). Harlow: Prentice Hall.

Uncles, M. D., Dowling, G. R., & Hammond, K. (2003). Customer loyalty and customer loyalty programs. *Journal of Consumer Marketing*, *20*(4), 294–316.

Van Baal, S., & Dach, C. (2005). Free riding and customer retention across retailers' channels. *Journal of Interactive Marketing*, *19*(2), 75–85.

Van Birgelen, M., de Jong, A., & de Ruyter, K. (2006). Multi-channel service retailing: The effects of channel performance satisfaction on behavioral intentions. *Journal of Retailing*, *82*(4), 367–377.

Venkatesan, R., Kumar, V., & Ravishanker, N. (2007). Multichannel shopping: causes and consequences. *Journal of Marketing*, *71*(2), 114–132.

Verhoef, P. C., Neslin, S. A., & Vroomen, B. (2007). Multichannel customer management: Understanding the research-shopper phenomenon. *International Journal of Research in Marketing*, *24*(2), 129–148.

Wang, C.-C., & Chen, C.-C. (2010). Electronic commerce research in latest decade: A literature review. *International Journal of Electronic Commerce*, *1*(1), 1–14.

Wolfinbarger, M., & Gilly, M. C. (2001). Shopping online for freedom, control, and fun. *California Management Review*, *43*(2), 34–55.

Wu, D., Ray, G., Geng, X., & Whinston, A. (2004). Implications of Reduced Search Cost and Free Riding in E-Commerce. *Marketing Science*, *23*(2), 255–262.

Wu, J.-H., & Wang, S.-C. (2005). What drives mobile commerce? *Information & Management*, *42*(5), 719–729.

Zhang, J., Farris, P. W., Irvin, J. W., Kushwaha, T., Steenburgh, T. J., & Weitz, B. A. (2010). Crafting integrated multichannel retailing strategies. *Journal of Interactive Marketing*, *24*(2), 168–180.

Zhang, N. L. (2004). Hierarchical latent class models for cluster analysis. *The Journal of Machine Learning Research*, *5*, 697–723.

Zhu, F., & Zhang, X. (2010). Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics. *Journal of Marketing*, *74*(2), 133–148.

APPENDIX A: FORMER MODELS

These models have guided the formation of the proposed research model in that channel-based segmentation is determined by channel usage, and segments are being shaped by, or consist of people liking different attributes, or have different demographics and psychographic profiles.

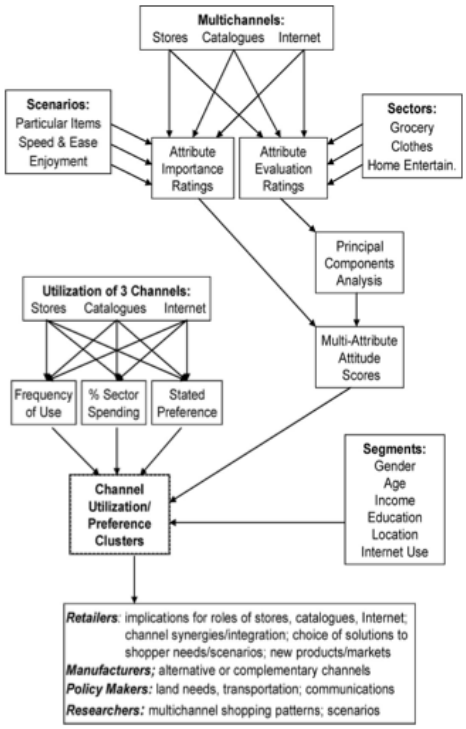

FIGURE 1 Research model McGoldrick & Collins (2007)

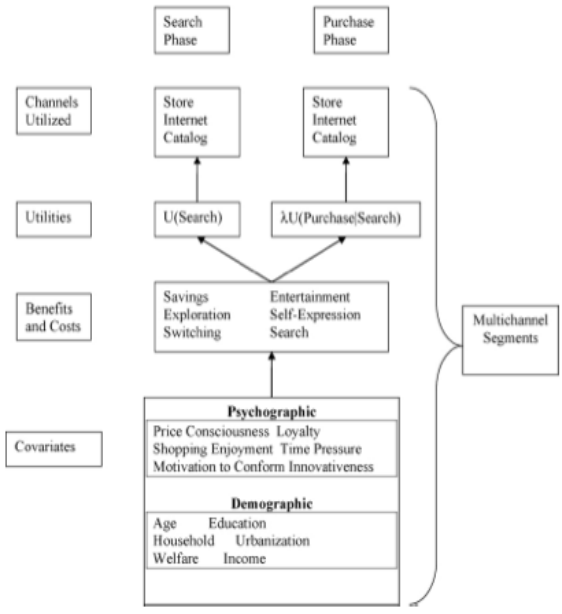

FIGURE 2 Research model Konus et al. (2008)

APPENDIX B: CHANNEL ATTRIBUTES

Attributes in underneath table have been discussed in included papers, where some are qualitatively researched, and some quantitatively. For researching attribute importance, items are borrowed from multiple papers, as outlined in appendix D.

TABLE 1 Channel Attributes incorporated in other studies

Source	Information comparability (quality)	Search convenience	Search effort	Aesthetic appeal	Service	Risk/Security	Privacy	Purchase effort	Delivery time	Assortment	Price promotion	Enjoyment	After sales
Alba et al. (1997)	x												
Baker et al (2002)			x	x	x			x		x	x		
Bhatnager & Ghose (2004)					x	x	x	x	x		x		x
Burke (2002)	x	x		x	x	x	x	x		x	x	x	
Childers et al (2001)	x	x										x	
Forsythe & Shi (2003)						x	x						
Gupta et al. (2004)			x			x			x				
Hoque & Lohse (1999)	x	x	x										
Jiang & Rosenbloom (2005)											x		x
Keen et al. (2004)								x			x		
Lynch & Ariely (2000)	x												
Mathwick et al. (2001)				x								x	
Montoya-Weiss et al. (2003)				x	x	x							
McGoldrick & Collins (2007)				x	x	x				x	x		x
Schoenbachler & Gordon (2002)				x		x	x			x	x		
Torkzadeh & Dhillon (2002)						x	x	x		x			x
Verhoef et al. (2007)	x	x	x		x	x	x	x	x	x	x	x	x

APPENDIX C: INVITATION TO QUESTIONNAIRE (IN DUTCH)

Onderwerp: Vul deze enquête in, help een student en win €50.

Beste,

[*Bedrijf x*] werkt mee aan een onderzoek over online koopgedrag, uitgevoerd door een student aan de Technische Universiteit Eindhoven. Het invullen van de enquête kost 10 minuten en zou ons zeer helpen om onze bedrijfsvoering te verbeteren. Als dank worden onder de respondenten **twee waardecheques van €50,-** verloot.

Uw antwoorden worden volledig vertrouwelijk behandeld en enkel samengevoegde data en inzichten worden met [*bedrijf x*] gedeeld.

Middels het klikken op onderstaande 'link' komt u bij de vragenlijst. Heel hartelijk dank voor uw medewerking.

Enquête: **https://www.surveymonkey.com/s/XXXXXXXX** *(link)*

Hartelijke groet,

[*Bedrijf x*]

*N.B. Als u niet wilt meewerken aan dit onderzoek, kunt u dit **hier aangeven** (link). Dank.*

APPENDIX D: CHANNEL ATTRIBUTE ITEMS

Verhoef et al. (2007); Lynch & Ariely (2000)

Information Comparability 1	Comparing products and product options
Information Comparability 2	Comparing product prices
Information Comparability 3	Presence of product reviews

Verhoef et al. (2007)

Search Convenience 1	Finding information quickly
Search Convenience 2	Finding information easily

Verhoef et al. (2007)

Search Effort 1	Needed effort to find information (search effort)
Search Effort 2	Needed time to find information (seek time)

Mathwick et al. (2001)

Aesthetics 1	The way the website looks
Aesthetics 2	Attractive display of products
Aesthetics 3	Attractive appearance of the website

Verhoef et al. (2007)

Service 1	Help while buying
Service 2	Personal advice when buying
Service 3	Good service when buying

Verhoef et al. (2007); Forsythe & Shi (2003); Bhatnager & Ghose (2004)

Risk/Security 1	Reliability of vendor
Risk/Security 2	Receiving the right product after order (delivery error)
Risk/Security 3	Security of payment data
Risk/Security 4*	*Judging of the quality of the product during the order*

Verhoef et al. (2007); Torkzadeh & Dhillon (2002)

Privacy 1	Privacy of my personal data
Privacy 2	Capturing and using my personal information (through cookies)

Verhoef et al. (2007); Bhatnager & Ghose (2004)

Purchase Effort 1	Needed effort to buy product
Purchase Effort 2	Needed time to buy product (quick checkout)
Purchase Effort 3	Ease of placing order

Verhoef et al. (2007); Gupta et al. (2004)

Delivery Time 1	Quick delivery
Delivery Time 2	Possible delay in delivery

Verhoef et al. (2007)

Assortment 1	Large assortment
Assortment 2	Newest products
Assortment 3*	*High-quality products*
Assortment 4*	*Stock availability*

Verhoef et al. (2007)

Price Promotion 1	Low prices
Price Promotion 2	Regular promotions
Price Promotion 3	Attractive offers

Verhoef et al. (2007)

Enjoyment 1	Having fun while shopping
Enjoyment 2	Entertaining shopping

Verhoef et al. (2007); Bhatnager & Ghose (2004)

After Sales 1*	*Easy handling returns or refunds after buying*
After Sales 2	Possible troubleshoot after buying
After Sales 3	Ease of cancelling order after buying

** Deleted in the final model.*

APPENDIX E: PSYCHOGRAPHIC ITEMS

Konus et al. (2008)

Motivation to Conform 1	Being accepted by other people is important for me.
Motivation to Conform 2	It interests me when other people criticize my behaviours.
Motivation to Conform 3	Other people's opinions are important for me
Motivation to Conform 4*	*When considering a product purchase, I ask other people for advice.*

Konus et al. (2008)

Loyalty 1	Brand of the product is important for me in my purchase decisions.
Loyalty 2	I generally purchase the same brands.
Loyalty 3	The place where I do my shopping is very important for me.
Loyalty 4	I generally do my shopping in the same way.

Konus et al. (2008)

Innovativeness 1	I am one of those people who try a new product first.
Innovativeness 2	I find it boring to use the same product (or brand) repetitively.
Innovativeness 3	I always have the newest gadgets.

Konus et al. (2008)

Time Pressure 1	I am always busy.
Time Pressure 2	I usually find myself pressed for time.

Konus et al. (2008)

Shopping Enjoyment 1	I like shopping.
Shopping Enjoyment 2	I take my time when I do shopping.

Konus et al. (2008)

Price Consciousness 1	It is important for me to have the best price for the product.
Price Consciousness 2	I compare the prices of various products before I make a choice.

** Deleted in the final model.*

APPENDIX F: E-COMMERCE-RELATED BEHAVIOUR ITEMS

Showrooming 1	I check products in a physical store before I buy them online.
Showrooming 2	I prefer to experience products in a physical store, even if I buy them online
Showrooming 3	I try products first physically, before I buy them online.
Product Returns 1	I frequently send online product purchases back.
Product Returns 2	I often return online purchases.
Mobile Commerce 1	I order products via a mobile phone.
Mobile Commerce 2	I order products via a tablet.
Mobile Commerce 3	I pay for products via my mobile device.
Social Commerce 1	I use social media (Facebook, Pinterest, blogs) to gain information about product purchases.
Social Commerce 2	I buy products via social channels.
Research Shopping 1	I search for product information online, without the intention to buy products there.
Research Shopping 2	I check products online, even if I buy them in a physical store.

APPENDIX G: FACTOR ANALYSIS CHANNEL ATTRIBUTES

TABLE 1 Factor analysis Channel Attributes

Channel Attribute items	Risk/ Security	Aesthe-tics	Info Compar-ability	Service	Enjoy-ment	Purchase Effort	Search Effort	Price Promo-tion	Assort-ment	Search Conv.	Delivery Time	Sharing Personal Info	Ease Cancelling Order
Risk/Security 2	.889												
Risk/Security 1	.886												
Risk/Security 3	.886												
After Sales 2	.684												.306
Privacy 2	.650												
Aesthetics 3		.973											
Aesthetics 1		.921											
Aesthetics 2		.891											
Information Comparability 1			.863										
Information Comparability 2			.815										
Information Comparability 3			.799										.391
Service 2				.914									
Service 1				.831									
Service 3	.345			.659									
Enjoyment 2					.959								
Enjoyment 1					.947								
Purchase Effort 2						.990							
Purchase Effort 1						.797							
Purchase Effort 3						.702							
Search Effort 1							.875						
Search Effort 2							.792						
Price Promotion 1								.887					
Price Promotion 2								.709					
Price Promotion 3								.687					
Assortment 1									.898				
Assortment 2									.827				
Search Convenience 1										.889			
Search Convenience 2										.880			
Delivery Time 2											.948		
Delivery Time 1											.442		
Privacy 1												1.006	
After Sales 3													.909

Principal Component Analysis with Promax rotation

Loadings of <.300 were suppressed in the table

TABLE 2 Multi-item factor measures Channel Attributes

Constructs	Mean	SD	Cronbach's α	AVE
Risk/Security	6.412	.901	.893	.650
Aesthetics	5.163	1.265	.902	.863
Information Comparability	5.487	1.156	.835	.682
Service	4.504	1.352	.811	.653
Enjoyment	4.434	1.694	.893	.908
Purchase Effort	5.568	1.046	.840	.703
Search Effort	5.517	1.168	.894	.696
Price Promotion	5.390	1.269	.840	.587
Assortment	5.277	1.271	.817	.745
Search Convenience	5.949	.995	.883	.782
Delivery Time	*5.528*	*1.074*	*.650*	*.547*
Capturing Personal Information	4.467	1.892	-[a]	1.012
Ease of Cancelling Order	5.851	1.363	-[a]	.826

[a] Due to unfortunate measures, these constructs only exist of 1 item therefore the reliability coefficient cannot be determined.

TABLE 3 Component correlations matrix Channel Attributes

	Constructs	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Risk/Security	1.000												
2	Aesthetics	.398	1.000											
3	Information Comparability	.373	.282	1.000										
4	Service	.344	.416	.208	1.000									
5	Enjoyment	.225	.532	.121	.399	1.000								
6	Purchase Effort	.565	.505	.348	.415	.385	1.000							
7	Search Effort	.408	.297	.324	.302	.147	.500	1.000						
8	Price Promotion	.413	.436	.336	.239	.474	.427	.208	1.000					
9	Assortment	.296	.406	.289	.298	.445	.445	.188	.478	1.000				
10	Search Convenience	.589	.280	.357	.242	.084	.421	.401	.315	.227	1.000			
11	Delivery Time	.361	.148	.164	.187	.031	.316	.196	.276	.262	.479	1.000		
12	Capturing Personal Information	.104	.103	.101	.145	.207	.228	.199	.010	.142	-.082	-.170	1.000	
13	Ease of Cancelling Order	.495	.471	.251	.400	.457	.578	.328	.394	.359	.314	.134	.232	1.000

APPENDIX H: FACTOR ANALYSIS PSYCHOGRAPHICS

TABLE 1 Factor analysis Psychographics

Psychographic items	Motivation to Conform	Loyalty	Innovative-ness	Time Pressure	Shopping Enjoyment	Price Con-sciousness
Motivation to Conform 1	.900					
Motivation to Conform 2	.885					
Motivation to Conform 3	.826					
Loyalty 1		.872				
Loyalty 2		.757				
Loyalty 3		.743				
Loyalty 4		.607		.300		
Innovativeness 1			.852			
Innovativeness 2			.834			
Innovativeness 3			.820			
Time Pressure 1				.953		
Time Pressure 2				.935		
Shopping Enjoyment 1					.917	
Shopping Enjoyment 2					.912	
Price Consciousness 1						.899
Price Consciousness 2						.864

Principal Component Analysis with Promax rotation

Loadings of <.300 were suppressed in the table.

TABLE 2 Multi-item factor measures Psychographics

Constructs	Mean	SD	Cronbach's α	AVE
Motivation to Conform	2.824	.950	.841	.759
Loyalty	3.306	.786	.755	.563
Innovativeness	2.179	.927	.826	.698
Time Pressure	3.140	1.068	.941	.891
Shopping Enjoyment	3.264	1.116	.837	.836
Price Consciousness	3.980	.841	.735	.777

TABLE 3 Component correlations matrix Psychographics

	Constructs	1	2	3	4	5	6
1	Motivation to Conform	1.000					
2	Loyalty	.226	1.000				
3	Innovativeness	.133	.283	1.000			
4	Time Pressure	.116	.313	.271	1.000		
5	Shopping Enjoyment	.254	.269	.263	.115	1.000	
6	Price Consciousness	.116	.155	.152	.196	.170	1.000

APPENDIX I: FACTOR ANALYSIS E-COMMERCE-RELATED BEHAVIOURS

TABLE 1 Factor analysis e-commerce-related behaviours

Psychographic items	Showrooming	Product Returns	Mobile Commerce	Social Commerce	Research Shopping
Showrooming 3	.928				
Showrooming 2	.905				
Showrooming 1	.625				.344
Product Returns 2		.968			
Product Returns 1		.960			
Mobile Commerce 2			.917		
Mobile Commerce 3			.833		
Mobile Commerce 1			.521		
Social Commerce 1				.937	
Social Commerce 2				.889	
Research Shopping 1					.871
Research Shopping 2					.850

Principal Component Analysis with Promax rotation

Loadings of <.300 were suppressed in the table.

TABLE 2 Multi-item factor measures e-commerce-related behaviours

Constructs	Mean	SD	Cronbach's α	AVE
Showrooming	2.808	.938	.799	.690
Product Returns	1.924	.658	.917	.929
Mobile Commerce	2.046	1.072	.709	.602
Social Commerce	1.700	.644	.788	.834
Research Shopping	3.407	.638	.657	.741

TABLE 3 Component correlations matrix e-commerce-related behaviours

	Constructs	1	2	3	4	5
1	Showrooming	1.000				
2	Product Returns	.087	1.000			
3	Mobile Commerce	.047	.246	1.000		
4	Social Commerce	.138	.314	.445	1.000	
5	Research Shopping	.386	.010	.002	.093	1.000

APPENDIX J: SEGMENT DIFFERENCES E-COMMERCE-REL. BEHAVIOURS

TABLE 1 Examining mean differences of segments: e-commerce-behaviours

Control Variables	Segments						One-Way ANOVA	
	1 (N=120)		2 (N=134)		3 (N=209)		F-value	*p*-value
	Mean	SD	Mean	SD	Mean	SD		
Showrooming	**2.775**	**.951**	**2.659**	**.932**	**2.922**	**.924**	**3.334**	**.037**
Product Returns	1.800	.965	1.944	.990	1.983	.997	1.352	.260
Mobile Commerce	**1.753**	**1.026**	**2.062**	**1.078**	**2.204**	**1.065**	**6.949**	**.001**
Social Commerce	1.583	.933	1.679	.933	1.780	1.003	1.623	.198
Research Shopping	3.304	1.097	3.358	.939	3.498	.874	1.813	.164

TABLE 2 Post-hoc tests pairwise comparisons e-commerce-related behaviours

Control Variables	Test	Segm. i	Segm. j	Mean diff. (i – j)	St. Error	Sig.
Showrooming	**Tukey HSD**	**2**	**3**	**-.263**	**.103**	**.030**
	Games-Howell	2	3	-.263	.103	.030
Mobile Commerce	**Tukey HSD**	**1**	**2**	**-.309**	**.133**	**.053**[a]
		1	**3**	**-.451**	**.121**	**.001**
	Games-Howell	1	2	-.309	.133	.052[a]
		1	3	-.451	.121	.001

Leading test due to (un)equality of variance in **bold**

[a] Significant at .10 *p*-value level

APPENDIX K: SEGMENT DIFFERENCES IN CONTROL VARIABLES

TABLE 1 Examining mean differences of segments: change in e-channel usage

Change in E- Channel Usage	Segments						One-Way ANOVA	
	1 (N=120)		2 (N=134)		3 (N=209)		F-value	*p*-value
	Mean	SD	Mean	SD	Mean	SD		
Frequency E-Marketplace	**-.158**	.674	.627	.772	.689	.756	55,226	.000
Monetary Value E-Marketplace	**-.250**	.677	.694	.787	.612	.837	58,317	.000
Frequency E-Mall	.083	.495	.000	.173	.397	.620	3.709	.000
Monetary Value E-Mall	.067	.561	-.015	.212	.440	.663	34,631	.000
Frequency E-Storefront	.325	.842	.649	.758	.708	.711	1.213	.000
Monetary Value E-Storefront	.275	.830	.619	.774	.694	.708	12,069	.000

TABLE 2 Post-hoc tests pairwise comparisons change in e-channel usage

Change in E-Channel Usage	Test	Segm. i	Segm. j	Mean diff. (i – j)	St. Error	Sig.
Frequency E-Marketplace	Tukey HSD	1	2	-.785	.093	.000
		1	3	-.847	.085	.000
	Games-Howell	**1**	**2**	**-.785**	**.093**	**.000**
		1	**3**	**-.847**	**.085**	**.000**
Monetary Value E-Marketplace	Tukey HSD	1	2	-.944	.099	.000
		1	3	-.862	.090	.000
	Games-Howell	**1**	**2**	**-.944**	**.099**	**.000**
		1	**3**	**-.862**	**.090**	**.000**
Frequency E-Mall	Tukey HSD	1	3	-.314	.057	.000
		2	3	-.397	.055	.000
	Games-Howell	**1**	**3**	**-.314**	**.057**	**.000**
		2	**3**	**-.397**	**.055**	**.000**
Monetary Value E-Mall	Tukey HSD	1	3	-.374	.062	.000
		2	3	-.454	.060	.000
	Games-Howell	**1**	**3**	**-.374**	**.062**	**.000**
		2	**3**	**-.454**	**.060**	**.000**
Frequency E-Storefront	**Tukey HSD**	**1**	**2**	**-.324**	**.096**	**.002**
		1	**3**	**-.383**	**.087**	**.000**
	Games-Howell	1	2	-.324	.096	.002
		1	3	-.383	.087	.000
Monetary Value E-Storefront	**Tukey HSD**	**1**	**2**	**-.344**	**.096**	**.002**
		1	**3**	**-.419**	**.087**	**.000**
	Games-Howell	1	2	-.344	.096	.002
		1	3	-.419	.087	.000

Leading test due to (un)equality of variance in **bold**

TABLE 3 Search and buying preferences per segment

Demographics	Segments[a]			Chi-square	Sig.	Fisher's Exact	Sig.
	1 (N=120)	2 (N=134)	3 (N=209)				
Search Preference				**48.988**	**.000**	**49.838**	**.000**
E-Marketplace	1.70%	**15.70%**	5.70%				
E-Mall	**31.70%**	**15.70%**	**43.50%**				
E-Storefront	33.30%	37.30%	19.10%				
No Preference	33.30%	31.30%	31.60%				
Buying Preference				11.447	.076	11.950	.060
E-Marketplace	4.20%	10.40%	12.40%				
E-Mall	4.20%	1.50%	6.20%				
E-Storefront	**67.50%**	**68.70%**	**62.70%**				
No Preference	24.20%	19.40%	18.70%				

[a] Number indicate percentages within segment.