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ORIGINAL ARTICLE

Understanding multi-channel research shoppers: an analysis of Internet and physical channels

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Abstract The purpose of this study is to analyze how channel characteristics influence the channel attitudes of multi-channel research shoppers. In addition, the study also considers consumers' complex shopping behaviors that involve using one channel for search and another for purchase simultaneously. Survey data were collected from 191 consumers with recent (i.e., in the last 3 months) multi-channel experiences. Qualified respondents had either searched in physical retail stores and purchased on the Internet or searched on the Internet and subsequently purchased in physical retail stores. The research hypotheses were examined using multiple regression analysis. The results show that customer perceptions of channel characteristics drive channel choice attitudes. Importantly, we find the significance of channel characteristics varies between the Internet and the physical channel. The research findings deepen our understanding of shopping behaviors in the multi-channel context. Practitioners may use the findings to manage the characteristics of the complementary channels while also designing marketing programs to create positive consumer attitudes toward search and purchase.

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1 Introduction

With the emergence of innovative Internet technologies and competitive pressure, businesses increasingly adopt multiple marketing channels. Further, more and more consumers are becoming multi-channel research shoppers that use various channels for their search and purchase (Hsiao et al. 2012; Yu et al. 2011). Therefore, the use of multiple channels enables a business to differentiate itself from competition by expanding the scope of their offers (e.g., in terms of time, space and range) (Kotler and Armstrong 2007; Schröder and Zaharia 2008).

Engaging multi-channel consumers is an important issue to businesses since they are typically more valuable than single-channel consumers (Heitz-Spahn 2013; Neslin and Shankar 2009). As consumers combine multiple channels during the search and purchase phases of consumption, they are engaging in complex shopping behaviors and these significantly affect business profits (Chiou et al. 2012; Kim et al. 2005; Kumar and Reinartz 2012).

Businesses, consequently, must effectively manage multiple channels to increase cross-channel synergy and reduce channel conflicts. This is principally a question of integrating physical stores and the Internet (DoubleClick 2004). Prior studies often focus on consumer behaviors in the single channel in isolation of the other channels (Yu et al. 2011). However, previous studies that emphasize research-shopper attitudes toward search and purchase in the multi-channel environment remains limited (Balasubrananian et al. 2005; Gupta et al. 2004; Maity and Dass 2014; Verhoef et al. 2007; Zhang et al. 2014). This is surprising since multi-channel attitude is an important determinant of channel choice and so central to understanding these complex consumption behaviors.

More and more consumers prefer multiple channels and use different channels (i.e. switch channels) when they undertake the process of purchasing goods and services (Chiu et al. 2011; Neslin and Shankar 2009). These phenomena represent that consumer behaviors become more complicated. Furthermore, adopting multichannel strategies has become a norm for companies to comply with the customers' preferences and keep up with competitors (Heitz-Spahn 2013; Kumar and Reinartz 2012). Therefore, it is a massive and constant challenge for companies to effectively manage multiple channels and create synergy across channels (Chiu et al. 2011; Pookulangara and Natesan 2010; Pookulangara et al. 2011; Yu et al. 2011). Consumer channel choice is largely determined by channel characteristics (Verhoef et al. 2007; Macik et al. 2012). As a result, many scholars pointed out that it is critically important for practitioners and academics to understand how consumers' perceptions of channel characteristics (attributes) influence their channel choice in the multi-channel environment (Gupta et al. 2004; Maity and Dass 2014; Pookulangara et al. 2011; Yu et al. 2011).

This study attempts to fill the research gap and focuses on analyzing how multi-channel characteristics influence the multi-channel attitudes of research shoppers. In

addition, the study also considers searching and purchasing behaviors of research shoppers simultaneously. The findings will deepen the understanding of research shopping phenomena in the multi-channel context. The results are valuable to researchers and practitioners interested in managing multiple channels.

This paper is organized as follows. In Sect. 2 we introduce the theoretical background, research model and hypotheses. Section 3 describes the research method. In Sects. 4 and 5 we report our results. Finally, in Sect. 6, conclusions are drawn and future research directions are suggested.

2 Theoretical background and research model

Theory of reasoned action (TRA), developed by Fishbein and Ajzen (1975), is a well-established theory that is frequently used to analyze and explain human behaviors in many domains, including marketing, consumer behavior, and information system. The TRA argues that attitude is an important determinant of behavior. The attitude is determined by one's beliefs in the behavior. Beliefs are defined by the person's subjective perception that performing a particular behavior will produce specific results. By using TRA, it is possible to analyze how consumer attitudes toward a particular behavior influence how they actually behave. Based on the TRA, Srisuwan and Barnes (2008) and Verhoef et al. (2007), we argue that consumer-perceived channel characteristics may affect consumer channel attitudes but the effects may be different across channels.

Behaviors of multi-channel customers are complex, because they use different types of channels in the buying process. By classifying channel characteristics and attitudes based on the major stages in the buying process, it is possible to deeply analyze the relationships between these two variables. In this study we focus on *search* and *purchase* phases in the buying process (Moon 2004; Noble et al. 2005; Schröder and Zaharia 2008). The former involves satisfying information requirements about products and services while the latter signifies the actual conclusion of a transaction (Kollmann et al. 2012).

Through a cost-benefit analysis, consumers select specific channels for search or purchase based on their perceptions regarding how well the channels will satisfy their search/purchase needs (Hardy 1982; Noble et al. 2005). The cost-benefit paradigm can be used to explain human choices. Its rationale is similar to the push–pull effect (Lee 1966). Push–pull effects allow analysis of consumers' behaviors. Push effects are negative factors that compel people to leave their current situation. Pull effects are the positive aspects of a destination that attract people to it. This approach suggests that high costs of using a channel may push consumers to an alternative. However, the pull of benefits may attract the consumer to a particular channel.

Based on the literature (Hardy 1982; Jepsen 2007; Kollmann et al. 2012; Moon 2004; Noble et al. 2005; Park and Kim 2003; Reardon and McCorkle 2002; Verhoef et al. 2007), this study identifies six main consumer-perceived channel characteristics and classifies these characteristics into four types: *perceived search benefits,*

Table 1 Channel characteristics and respective perceived costs and benefits

Type	Channel characteristics
Perceived search benefits	Information availability
Perceived search costs	Search effort
Perceived purchase benefits	Purchase convenience, service quality
Perceived purchase costs	Purchase effort, purchase risk

perceived search costs, perceived purchase benefits, and perceived purchase costs. Table 1 shows the channel characteristics and respective types.

Figure 1 shows the research framework. Channel attitude refers to consumers' positive or negative feelings towards a channel for search or purchase (Fishbein and Ajzen 1975). Since channel attitude is an important predictor of channel choice, it serves as the dependent variable.

The primary channel characteristic of search benefits derived from using a channel is *information availability*. This refers to consumer's perception of the quantity and quality of information available to evaluate the product or service in the specific channel (Jepsen 2007; Noble et al. 2005). If the channel offers useful information, consumers will hold positive attitudes toward it and tend to increase their search behaviors in the specific channel (Avery 1996; Duncan and Olshavsky 1982). Thus, this study proposes the following hypotheses:

H1 Perceived information availability from a given channel has a positive effect on consumer attitudes toward search on that channel.

H1a Perceived information availability from a physical channel has a positive effect on consumer attitudes toward search on that channel.

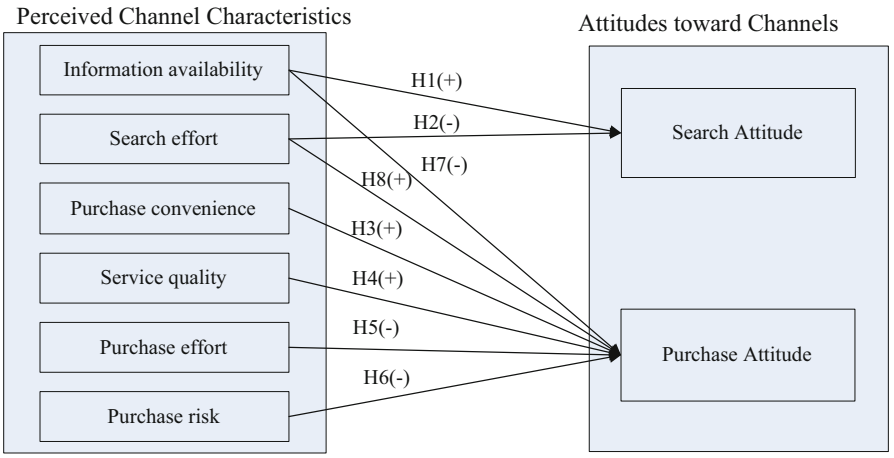

Fig. 1 Research framework

H1b Perceived information availability from the Internet has a positive effect on consumer attitudes toward search on that channel.

The *search costs* of using a channel reflect consumers' perceptions of the time and effort they invest in information search about a product or service (Hardy 1982; Moorthy et al. 1997; Verhoef et al. 2007). It is important in consumers' evaluations of whether to buy online or in-store (Gupta et al. 2004). Consumers generally look for information in the channel that requires expending the least amount of effort (Hardy 1982). If consumers perceive the costs of search (including time and effort) as high, they will avoid that search channel (Avery 1996; Punj and Stealin 1983). Thus, the following hypotheses are proposed:

H2 Perceived search effort from a given channel has a negative effect on consumer attitudes toward search on that channel.

H2a Perceived search effort from a physical channel has a negative effect on consumer attitudes toward search on that channel.

H2b Perceived search effort from the Internet has a negative effect on consumer attitudes toward search on that channel.

Consumers may perceive two benefits from using a channel for purchase: *purchase convenience* and *service quality*. Three elements define purchase convenience: possession convenience, transaction convenience, and time convenience (Forsythe et al. 2006; Schröder and Zaharia 2008). Purchase convenience has a significant impact on consumer's channel attitudes toward shopping online or in-store (Bhatnagar and Ghose 2004; Johnson et al. 2006; Laukkanen 2007; Szymanski and Hise 2000; Wolfinbarger and Gilly 2001). When consumers can conveniently buy products, they want they will tend to choose that channel to make more purchases. Thus, this study proposes the following hypotheses:

H3 Perceived purchase convenience from a given channel has a positive effect on consumer attitudes toward purchase on that channel.

H3a Perceived purchase convenience from a physical channel has a positive effect on consumer attitudes toward purchase on that channel.

H3b Perceived purchase convenience from the Internet has a positive effect on consumer attitudes toward purchase on that channel.

Service quality combines the service received during the purchase process and the outcome; including exchange-refund policy for returns, helpfulness, product warrantees, and post-purchase service (Chiang and Li 2010; de Ruyter et al. 1997; Stanley and Wisner 2002). Service quality is an important influence on consumers who are purchasing products and is an antecedent of consumer's positive attitudes (Kim et al. 2005; Parasuraman et al. 1988; Zeithaml et al. 1996). Consumers perceive higher levels of service quality so they hold increasing perceptions of value in the retail context (Yu et al. 2011). Thus, the following hypotheses are proposed:

H4 Perceived service quality from a given channel has a positive effect on consumer attitudes toward purchase on that channel.

H4a Perceived service quality from a physical channel has a positive effect on consumer attitudes toward purchase on that channel.

H4b Perceived service quality from the Internet has a positive effect on consumer attitudes toward purchase on that channel.

The channel characteristics of *purchase effort* and *purchase risk* associate with purchase costs of using a channel. Purchase effort denotes consumers' costs (time) and difficulty when purchasing a product through a specific channel (Bhatnagar and Ratchford 2004). A consumer may not buy from the channel if they perceive the purchase process as too complex or if they do not possess the resources necessary to perform the considered behavior (Park and Kim 2003). Furthermore, when consumers cannot use their senses (e.g., touch) to evaluate a purchase then they spend more time (Gupta et al. 2004). As purchase effort increases, it has a negative effect on customer attitudes toward purchase through a given channel (Forsythe and Shi 2003). Thus, the following hypotheses are proposed:

H5 Perceived purchase effort from a given channel has a negative effect on consumer attitudes toward purchase on that channel.

H5a Perceived purchase effort from a physical channel has a negative effect on consumer attitudes toward purchase on that channel.

H5b Perceived purchase effort from the Internet has a negative effect on consumer attitudes toward purchase on that channel.

Purchase risk concerns consumer's perception of uncertainty or the potential for undesirable consequences resulting from purchases through a specific channel (Forsythe and Shi 2003). Risk factors, such as transaction security and lack of privacy, lead to consumers' uncertainty. Consumers' risk perceptions significantly influence decisions about whether to purchase online or in a physical store (Burke 2002; Gupta et al. 2004; Reardon and McCorkle 2002; Szymanski and Hise 2000). Thus, the following hypotheses are proposed:

H6 Perceived purchase risk from a given channel has a negative effect on consumer attitudes toward purchase on that channel.

H6a Perceived purchase risk from a physical channel has a negative effect on consumer attitudes toward purchase on that channel.

H6b Perceived purchase risk from the Internet has a negative effect on consumer attitudes toward purchase on that channel.

As consumers perceive high search benefit from using a given channel, it is likely this will lead to a positive attitude toward search in this channel. When consumers have a positive attitude toward searches in a particular channel, then they are unlikely to switch channels for purchase (Janda et al. 2002; Szymanski and Hise

2000). This refers to the channel lock-in phenomenon and infers consumers hold a negative attitude toward purchase through channels not used for search (Joo and Park 2008). Thus, this study proposes the following hypotheses:

H7 Perceived information availability of using a given channel has a negative effect on consumer attitudes toward purchase on the other channel.

H7a Perceived information availability of using the Internet has a negative effect on consumer attitudes toward purchase on physical channels.

H7b Perceived information availability of using physical channels has a negative effect on consumer attitudes toward purchase on the Internet.

Consumers often substitute purchase through one channel for another because of variations in search time and effort (Gupta et al. 2004; Reardon and McCorkle 2002). Therefore, when consumer perceive the search costs of a particular channel are high, it likely leads to negative attitudes toward this channel and increases their propensity to seek an alternative. Thus, this study proposes the following hypotheses:

H8 Perceived search effort of using a given channel has a positive effect on consumer attitudes toward purchase on the other channel.

H8a Perceived search effort of using the Internet has a positive effect on consumer attitudes toward purchase on physical channels.

H8b Perceived search effort of using physical channels has a positive effect on consumer attitudes toward purchase on the Internet.

3 Methods

3.1 Measurement of variables

A questionnaire was implemented to empirically test the research framework. The measure items were developed based on prior literature in the areas of marketing and channel management and the items were adapted to suit the context of this study. Measures for perceived information availability were developed based on Hardy (1982), Jepsen (2007), To et al. (2007) and Verhoef et al. (2007) and had four items. These items reflect the consumers' perceived quality, usefulness, availability, and easy acquisition of information for their product/service evaluation in the channel. Perceived search effort was measured by three items based on Hardy (1982), Jepsen (2007), Scansaroli and Eng (1997) and Verhoef et al. (2007). The items capture the consumers' perceived required time, required effort, and difficulty to gather information of the product or service in the channel. Based on the works of Brown (1990), Forsythe et al. (2006), Johnson et al. (2006) and Schröder and Zaharia (2008), perceived purchase convenience was measured with three items. These items measure the extent to which a customer perceives convenient to purchase products/services in terms of time, process, and compatible lifestyle in the

channel. Perceived service quality was measured by a five-item instrument. The construct reflects the consumers' service perceptions during the purchase process and the outcome. Four items were adapted from Yu et al. (2011) to measure consumer-perceived service levels of assistance supports, product delivery, payment, and exchange-refund. One item was adopted based on Baker et al. (2002) to measure the overall service quality of a channel perceived by consumers. Perceived purchase effort was operationalized by three items from Baker et al. (2002) and Verhoef et al. (2007). The items assess consumers' costs, time, and difficulty in purchasing a product through a specific channel. Perceived purchase risk was measured by three items based from the works of Forsythe et al. (2006), Forsythe and Shi (2003) and Wang (2008). The construct reflects consumers' concerns related to uncertainty and undesirable consequences from purchases through a specific channel. The items assess consumers' risk perceptions about product accuracy, product quality, and transaction security. Channel attitude is conceptualized as the consumer's evaluation of the desirability of using the channel for search or purchase (Pookulangara and Natesan 2010). Based on the works of Fishbein and Ajzen (1975), Beatty et al. (1988) and Schiffman and Kanuk (2000), the construct was measured by three items. These items asked respondents to indicate whether they perceive that using a specific channel for search or purchase is satisfactory, pleasant, and a clever decision.

To establish the face validity of our instrument, this study followed the methods suggested by Hair et al. (2003) and Kerlinger and Lee (2000). Three marketing professionals and eight consumers reviewed the completeness, wording, clarity, structure, and appropriateness of the original items. Drawing on their suggestions, slight wording changes of a few items and minor modifications of the items order and the layout in the survey instrument were made. The final measurement items are reported in Table 2. Respondents answered all question items on a seven-point Likert-type scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*. This study continues to assess the construct validity (factor structure, convergent validity, and discriminant validity) after the data collection (Hair et al. 2003; Marsh et al. 2013).

3.2 Research subjects and procedure

This study distributed a total of 650 questionnaires and obtained 303 responses that were multi-channel shoppers. We sought research subjects with recent (i.e., in the last 3 months) multi-channel experience. 197 qualified respondents had either searched in physical retail stores and purchased on the Internet or searched on the Internet and subsequently purchased in physical retail stores. Furthermore, we delete 6 responses because these respondents did not fully complete the questionnaire. Finally, 191 valid responses were used in the following analysis.

The sample demographics are shown in Table 3. There were more females than males in the sample (61.8 %) and 87.4 % had the academic status of an undergraduate or postgraduate degree. The most popular type of multi-channel use was "Internet → physical" (79.1 %). Most respondents search for product information on the Internet and then purchase in a physical channel. The remaining respondents, still significant (20.9 %), chose to approach the physical store followed

Table 2 Measure items and references of key constructs

Constructs and measurement items	References
Perceived information availability	
IA1 I can easily compare and select options of product X* in this channel	Hardy (1982); Jepsen (2007); To et al. (2007); Verhoef et al. (2007)
IA2 I can get useful information on product X in this channel	
IA3 I can quickly get information on product X in this channel	
IA4 I can easily get information on product X in this channel	
Perceived search effort	
SE1 It costs me some time to search for information on product X in this channel	Hardy (1982); Jepsen (2007); Scansaroli and Eng (1997); Verhoef et al. (2007)
SE2 It costs me some effort to search for information on product X in this channel	
SE3 I need to follow certain procedures to search for information on product X in this channel	
Perceived purchase convenience	
PC1 I can buy product X at my convenient time in this channel	Brown (1990); Forsythe et al. (2006); Johnson et al. (2006); Schröder and Zaharia (2008)
PC2 I can speedily possess product X when buying from this channel	
PC3 I live a more convenient life by buying product X from this channel	
Perceived service quality	
SQ1 I can have a high level of services for product X from this channel	Baker et al. (2002); Yu et al. (2011)
SQ2 I can get helpful assistance when I want to purchase product X from this channel	
SQ3 I can have flexible delivery options when buying product X from this channel	
SQ4 I can easily complete my payment for product X in this channel	
SQ5 I can easily return and exchange or receive refund in this channel	
Perceived purchase effort	
PE1 It costs a lot of time to buy product X from this channel	Baker et al. (2002); Verhoef et al. (2007)
PE2 It costs a lot of efforts to buy product X from this channel	
PE3 It is difficult to buy product X from this channel	
Perceived purchase risk	

Table 2 continued

Constructs and measurement items	References
PR1 I think there are potential risks of getting the incorrect product X when buying from this channel	Forsythe et al. (2006); Forsythe and Shi (2003); Wang (2008)
PR2 I think there are potential risks of incompletely examining the product quality when buying product X from this channel	
PR3 I think there are potential risks of wrong payments when buying product X from this channel	
Search attitude	
SA1 Overall, searching on this channel is satisfactory	Fishbein and Ajzen (1975); Beatty et al. (1988); Schiffman and Kanuk (2000)
SA2 Overall, searching on this channel is a clever decision	
SA3 Overall, searching on this channel is pleasant	
Purchase attitude	
PA1 Overall, purchasing on this channel is satisfactory	Fishbein and Ajzen (1975); Beatty et al. (1988); Schiffman and Kanuk (2000)
PA2 Overall, purchasing on this channel is a clever decision	
PA3 Overall, purchasing on this channel is pleasant	

To ensure that respondents could offer reliable responses to the measurement items, we asked them to develop their answers based on products that they have searched and purchased through the Internet and physical channels in the last 3 months

Table 3 Respondents' characteristics

Characteristics	Percentage
Gender	
Male	38.2
Female	61.8
Multi-channel use type	
Physical → Internet	20.9
Internet → physical	79.1
Education	
High school and below	12.6
University	68.6
Postgraduate and above	18.8

by the Internet. The ratio between these two multi-channel use types is close to the findings of DoubleClick (2004), which found that "Internet → physical" was the most common form of multi-channel use.

3.3 Reliability and validity of the measures

Exploratory factor analysis was performed to validate the various dimensions underlying the data set. Because the items measuring search attitude and purchase

attitude are similar (Table 2), we exclude one construct (i.e., perceived purchase attitude) from factor analysis. Following Lederer et al. (2000), we performed an exploratory factor analysis using a Varimax rotation with 24 items (i.e., those comprising the 6 channel characteristics and perceived search attitude). Any item that failed to load on a single factor at .5 or greater was dropped and the factor analysis was rerun. As a result, two items (i.e., SQ3, PC3) were eliminated. Table 4 shows the overall results. Seven factors explain 70.9 % of the variance. There is a good and consistent factor structure as all items appropriately load on their anticipated constructs. The internal consistency reliability coefficients for all the constructs are well above the recommended level of .7.

The multitrait-multimethod (MTMM) approach was used to assess the convergent validity and discriminant validity of the measures (Kerlinger and Lee 2000). The convergent validity refers to the extent to which multiple items of a factor agree with one another (Campbell and Fiske 1959). Table 5 presents the correlation matrix between items. The smallest within-factor correlations are: information availability = .33; search effort = .49; purchase convenience = .66; service quality = .31; purchase effort = .42; purchase risk = .40; and search attitude = .54. All these correlations between items of the same factor are significantly different from zero ($p < .01$). The convergent validity is supported. The discriminant validity refers to the extent to which items of different factors are distinct. The discriminant validity is assessed by counting the number of times that an item correlates more with an item of another factor than with the items of its own theoretical factor (Doll and Torkzadeh 1988). Such counts should be less than one-half the total number of all comparisons. The results show only nine violations out of 391 comparisons in Table 5, supporting adequate discriminant validity.

Harman's (1976) one factor test was used to assess for common method bias. The results of the unrotated factor analysis did not indicate a dominant first factor and showed the first factor accounted for 21.27 % of the total variance. Thus, common method bias does not pose a serious problem in this study.

The correlation coefficients between the independent variables were examined to diagnose if multicollinearity was an issue in this study. Since the highest correlation is .44 and this is below the threshold value of .9, we conclude that multicollinearity is not a major issue in this study (Hair et al. 2006).

4 Analysis and results

For analysis, we split the sample into two groups based on channel use style. The first group (151 respondents) searches for products on the Internet and subsequently makes their purchase in a physical retail store. The second group (40 respondents) searches for a product in physical retail stores and then purchases it on the Internet. Multiple regression analysis was used to test the hypotheses. The ratios of sample size to the number of predictors are 25.17 and 6.67 respectively for the two groups. They are above the minimum ratio requirement of 5 (Hair et al. 2006). The respective regression equations are shown in Appendix 1. The standardized regression coefficient (β) represents the positive or negative impact of the

Table 4 Factor analysis results and α coefficients

	IA	SE	PC	SQ	PE	PR	SA
IA1	.72						
IA2	.67						
IA3	.76						
IA4	.77						
SE1		.90					
SE2		.89					
SE3		.70					
PC1			.84				
PC2			.80				
SQ1				.75			
SQ2				.81			
SQ4				.61			
SQ5				.68			
PE1					.84		
PE2					.87		
PE3					.73		
PR1						.82	
PR2						.82	
PR3						.69	
SA1							.78
SA2							.80
SA3							.79
Eigen value	4.96	3.61	1.06	1.88	1.58	1.14	1.37
Variance explained (%)	22.54	16.44	4.80	8.54	7.16	5.19	6.23
α coefficient	.76	.84	.80	.76	.80	.73	.80

IA information availability, *SE* search effort, *PC* purchase convenience, *SQ* service quality, *PE* purchase effort, *PR* purchase risk, *SA* search attitude

independent variables on the dependent variables. A two-tailed p value $<.05$ was considered statistically significant.

Table 6 presents two regression analyses with the search channel characteristics as independent variables (i.e., information availability and search effort of the search channel) and search attitudes toward using this channel as the dependent variable. Consumer perceptions of channel information availability have a significant and positive effect on search attitudes toward using the channel for both the Internet and physical channels. This supports H1. While consumer perceptions of search effort for physical channels have a significant and negative effect on search attitudes toward using that channel, this is not significant for the Internet. Thus, H2 is partially supported.

Table 7a presents the regression analysis with the Internet channel's search characteristics (i.e., information availability and search effort) and the physical channel's purchase characteristics (i.e., purchase convenience, service quality,

Table 5 Correlation matrix between items

	IA1	IA2	IA3	IA4	SE1	SE2	SE3	PC1	PC2	SQ1	SQ2	SQ4	SQ5	PE1	PE2	PE3	PR1	PR2	PR3	SA1	SA2	SA3
IA1	1																					
IA2	.55	1																				
IA3	.36	.43	1																			
IA4	.45	.33	.61	1																		
SE1	.13	.18	.04	−.10	1																	
SE2	.13	.19	.03	−.05	.83	1																
SE3	.13	.13	−.01	.02	.49	.57	1															
PC1	.21	.24	.29	.29	−.15	−.11	−.12	1														
PC2	.17	.22	.30	.27	−.12	−.11	−.10	.66	1													
SQ1	.20	.24	.12	.15	.04	−.05	−.06	.14	.28	1												
SQ2	.18	.13	.20	.31	.08	.02	.01	.34	.36	.54	1											
SQ4	.15	.05	.30	.35	−.20	−.30	−.20	.35	.47	.31	.50	1										
SQ5	.16	−.05	.08	.13	−.10	−.21	−.11	.25	.39	.40	.42	.49	1									
PE1	.16	.17	.03	.05	.33	.35	.41	−.15	−.00	.11	.05	.00	−.02	1								
PE2	.16	.13	.04	.10	.32	.38	.40	−.09	.06	.04	−.02	.01	−.08	.82	1							
PE3	−.05	.04	−.19	−.17	.18	.27	.24	−.20	−.07	.01	−.17	−.19	−.11	.42	.48	1						
PR1	−.01	−.02	.02	−.08	.13	.18	.25	−.07	−.10	−.01	−.02	−.11	−.09	.18	.20	.15	1					
PR2	.04	−.04	−.05	−.08	.15	.20	.18	−.17	−.27	−.13	−.14	−.13	−.26	.01	.04	.11	.56	1				
PR3	−.05	−.03	−.06	−.17	.08	.19	.14	−.20	−.26	−.23	−.29	−.24	−.23	.04	.12	.40	.40	.46	1			
SA1	.29	.33	.36	.30	−.03	−.04	.04	.33	.37	.24	.26	.32	.21	.03	.02	−.20	.01	−.06	−.15	1		
SA2	.31	.32	.29	.37	−.12	−.07	−.07	.21	.30	.26	.22	.37	.24	−.03	.06	−.18	−.13	−.07	−.19	.63	1	
SA3	.33	.25	.27	.33	−.04	.02	.05	.26	.30	.24	.13	.31	.19	.08	.10	−.03	.10	−.04	.00	.56	.54	1

IA information availability, *SE* search effort, *PC* purchase convenience, *SQ* service quality, *PE* purchase effort, *PR* purchase risk, *SA* search attitude

Table 6 Regression results for channel characteristics affecting search attitude

Independent variables	SD β	*p* value
(a) Dependent variable: search attitude toward using physical channels		
H1a: Information availability (physical channel)	.72	.00
H2a: Search effort (physical channel)	−.34	.04
$R^2 = .35$, F = 9.77 ($p = .00$)		
(b) Dependent variable: search attitude toward using Internet		
H1b: Information availability (Internet)	.45	.00
H2b: Search effort (Internet)	−.06	.42
$R^2 = .21$, F = 19.34 ($p = .00$)		

Table 7 Regression results for channel characteristics affecting purchase attitude

Independent variables	SD β	*p* value
(a) Dependent variable: purchase attitude toward using physical channels		
H3a: Perceived purchase convenience (physical channels)	.40	.00
H4a: Perceived service quality (physical channels)	.12	.13
H5a: Perceived purchase effort (physical channels)	−.06	.49
H6a: Perceived purchase risk (physical channels)	−.02	.80
H7a: Perceived information availability (Internet)	.24	.00
H8a: Perceived search effort (Internet)	.14	.05
$R^2 = .33$, F = 11.92 ($p = .00$)		
(b) Dependent variable: purchase attitude toward using the Internet channel		
H3b: Perceived purchase convenience (Internet)	−.01	.95
H4b: Perceived service quality (Internet)	.67	.00
H5b: Perceived purchase effort (Internet)	.28	.14
H6b: Perceived purchase risk (Internet)	−.37	.01
H7b: Perceived information availability (physical channels)	.02	.89
H8b: Perceived search effort (physical channels)	.38	.01
$R^2 = .61$, F = 8.76 (p value = .00)		

purchase effort, and purchase risk) as independent variables and purchase attitudes toward using physical channels as the dependent variable. Three channel characteristics are significant at the .05 level: consumer-perceived purchase convenience of using physical channels, information availability of using the Internet and the search effort of using the Internet. This supports H3a, H7a, and H8a.

Table 7b presents the regression analysis with the physical channel's search characteristics (i.e., information availability and search effort) and the Internet channel's purchase characteristics (i.e. purchase convenience, service quality, purchase effort, and purchase risk) as independent variables and purchase attitudes toward using the Internet as the dependent variable. Three channel characteristics are significant at the .05 level: consumer-perceived service quality of using the

Table 8 The Chow test results

Dependent variables	F value	Cutoff value	p value
Search attitude	3.01 ($df = 3, 185$)	2.65	.03
Purchase attitude	2.76 ($df = 7, 177$)	2.06	.01

Internet, purchase risk of using the Internet and search effort of using physical channels. This supports H4b, H6b, and H8b.

The Chow tests were used to examine whether or not the regression coefficients were significantly different between the two sub-samples (i.e. Physical → Internet and Internet → physical) (Chow 1960). The equation of Chow test is shown in Appendix 2. The results of the Chow test in Table 8 indicate that the significance of channel characteristics varies between the both multi-channel use styles. Therefore, we can demonstrate and compare the differences in the significant relationships affecting consumer attitudes between the two multi-channel use types. The graphical depictions of these significant relationships are presented in Figs. 2 and 3. Figure 2 shows the significant relationships affecting consumer attitudes when consumers transit from the Internet to physical store; Fig. 3 shows the significant relationships affecting consumer attitudes when consumers transit from the physical store to the Internet.

5 Discussion

5.1 Channel characteristics affecting search attitudes

We find that consumer-perceived information availability of using a channel has a significant and positive effect on their search attitudes for both the Internet and physical channels (H1a and H1b). The finding is consistent with Chen and Wells (1999) and Janda et al. (2002). Information presented by a channel should be relevant, credible, up-to-date and sufficient to satisfy consumers' needs and help them to understand products or services. When consumers think the channel offers suitable information, these positive perceptions encourage consumers to make future searches in this channel.

However, we find the effects of search effort on the search attitudes are different between the two channels (H2). The finding corresponds with the results of Gupta et al. (2004). They argue that different search costs may be incurred in the two channels: Internet and physical. We find that the perceived search effort of using the physical channel has a significant and negative effect on consumer attitudes toward search in this channel (H2a). When consumers feel their investment in search time and energy is excessive, it acts as a disincentive to use that channel. High search effort typifies the physical channel because information search requires actual store visits (Kollmann et al. 2012).

We find that the consumer-perceived search effort of using the Internet has no significant effect on consumer search attitudes (H2b). Search engines make it comparatively quick and easy for consumers to find the information they need (Gupta et al. 2004; Lee and Kim 2008; Park and Kim 2003; Sen et al. 2006).

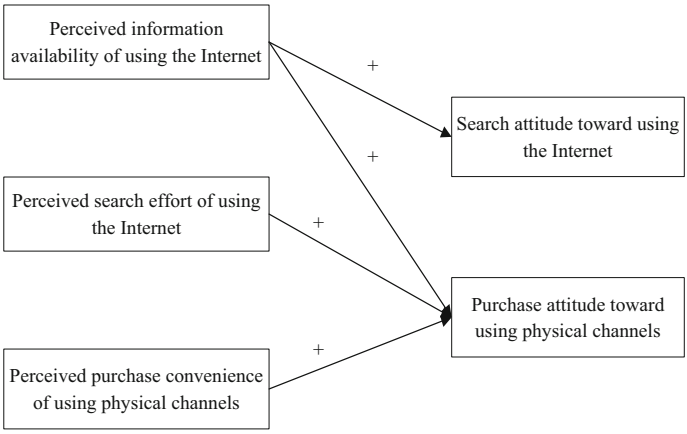

Fig. 2 The relationships between consumer perception and attitude in the Internet to physical channel context

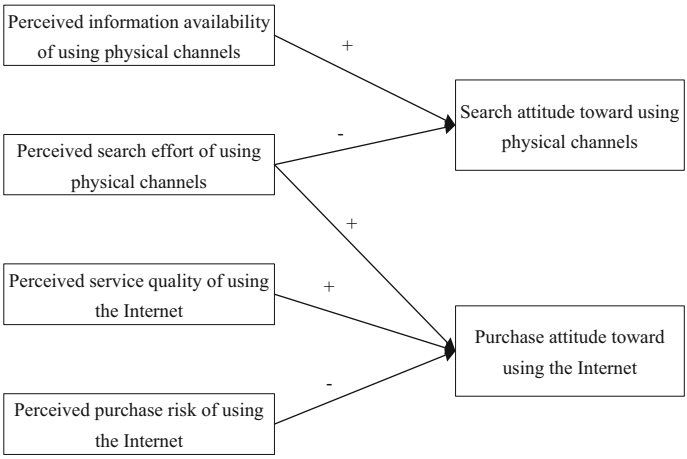

Fig. 3 The relationships between consumer perception and attitude in the physical to Internet channel context

5.2 Consumers' Internet to physical channel choice: characteristics affecting purchase attitude toward using the physical channel

We find that the consumer-perceived purchase convenience of using physical channels has a significant and positive effect on purchase attitudes (H3a). However, other physical channel characteristics for purchase (i.e., perceived service quality, perceived purchase effort, and perceived purchase risk) do not significantly influence consumers' purchase attitudes (H4a, H5a, H6a). When consumers are in a retail store, they have opportunities to easily and immediately evaluate service quality, purchase effort and purchase risk before selecting where to make their

purchase. Neslin et al. (2006) report that the consumers in physical stores have lower service demands and can more readily purchase than on the Internet. Consumers' perceived purchase effort through the physical channel is lower because they have greater possession value (i.e. the product is immediately in their possession) and has interpersonal support during the process (Johnson et al. 2006; Noble et al. 2005). Verhoef et al. (2007) also argues that consumers consider it less risky to make purchases in retail stores rather than on the Internet. Therefore, consumers perceive purchase convenience as the most influential factor affecting their purchase attitudes toward using the physical channel.

As shown in Fig. 2, there are three significant channel characteristics that have positive effects on consumer attitudes toward purchase in the physical channel: perceived information availability of using Internet, perceived search effort of using the Internet and perceived purchase convenience of using physical channels. The findings have important implications for practitioners. First, two Internet search characteristics affect consumer attitudes toward purchase in the physical channel. This implies that the Internet and the physical channel can be complementary. By simultaneously paying attention to the drivers of the two channels, managers develop positive consumer attitudes in the purchasing process. When consumers can get useful and sufficient product information on the Internet (information availability) and can efficiently and easily buy the products in physical stores (purchase convenience), they will have positive attitudes toward using the physical channels for purchasing the products. Third, when consumers have difficulty in searching product information and finding the products they need on the Internet (i.e. high search effort), then consumers substitute the Internet for a purchase through the physical channel.

5.3 Consumers' physical to Internet channel choice: characteristics affecting purchase attitude toward using the Internet

We find that perceived service quality and perceived purchase risk of using the Internet have significant effects on consumer attitudes toward purchase in this channel (H4b, H6b). Other Internet channel characteristics for purchase (i.e. perceived purchase convenience and perceived purchase effort) lack significance in the consumer minds (H3b, H5b).

When consumers purchase on the Internet, they cannot physically touch and test products and this makes them apprehensive about whether purchases can conform to their expectations (Scott 2004). Therefore, purchase risk and perceived service quality of using the Internet are important determinants affecting consumer attitudes toward purchase in this channel. Consumers' positive attitudes toward purchase on the Internet stems from positive perceptions about the design and delivery of services purchased. Many studies find that numerous shoppers consider the Internet to be risky and online transaction involves a number of uncertainties (Holsapple and Sasidharan 2005; Kollmann et al. 2012; Verhoef et al. 2007). Online shoppers worry about product delivery delays, faulty or flawed merchandise and other illegal activities such as fraud (Wu and Wang 2005). Our finding supports these arguments.

Figure 3 shows the significant relationships affecting consumer attitudes as they transit from the physical store to the Internet. In this context, consumers search through physical channels but then turn purchase on the Internet. Figure 3 show three significant channel characteristics affecting consumer attitudes toward purchase through the Internet. The two Internet characteristics for product purchase (i.e., perceived service quality of using the Internet and perceived purchase risk of using the Internet) are discussed above. The third determinant is perceived search effort of using the physical channel. We find that while this characteristic has a significant negative effect on consumer attitudes toward search in physical channels, it has a positive and significant effect on consumer attitudes toward purchases through the Internet. This reveals that when consumers feel product information is hard to find through the physical channel, this pushes them to purchase on the Internet.

6 Implications

6.1 Implications for research

This study confirms the appropriateness of TRA (Fishbein and Ajzen 1975) in analyzing multi-channel research shoppers. The research findings support the TRA's assertion that beliefs affect attitudes. This study thus enhances our understanding of how multi-channel consumers' perceptions of channel characteristics influence their channel choice and use attitudes. The effects vary in different channels and channel purposes.

Further, many previous studies based on TRA just analyzed or explained one certain behavior in one context. This study extends the applicability of TRA to simultaneously explore the relationships among multiple beliefs, attitudes, and behaviors. This study confirms that TRA is a robust model in analyzing individual attitude and behavior. Additionally, this study provides an in-depth understanding of the dynamics underlying the formation and change of consumer channel choice and use attitudes.

6.2 Implications for practice

As multi-channel consumers are growing and they usually switch channels during the search and purchase phases of consumption (i.e. research shopping), the consumer purchasing behaviors have become more sophisticated. It is an important issue for practitioners to effectively manage and develop multi-channel strategies. Considering that channel characteristics are manageable and may be critical determinants of consumer channel choice, this study analyzes the effect of perceived channel characteristics on the channel attitudes of multi-channel research shoppers.

The results show that customer perceptions of channel characteristics actually influence channel choice attitudes. Furthermore, we also find the significance of channel characteristics varies across channels and purchase phases. This study

provides an in-depth understanding and analysis of multi-channel research shoppers' needs and concerns related to channel characteristics. In the future, practitioners can design their multi-channel marketing strategies or assess their channel performance based on the findings of this study. Overall, the findings of this study provide some practical guidelines for multi-channel management to create positive consumer attitudes toward search and purchase.

1. Consumers' perceived information availability of using a channel is an important channel characteristic. The characteristic will positively influence consumer search attitudes of using a specific channel for both the Internet and physical channels. Managers need to ensure that the information provided via their channels is useful, enough, and helpful to consumers. In addition, perceived information availability on the Internet is critical for the research shoppers that search on the Internet and purchase through physical channels. Managers need to notice that Internet and physical channels are complementary for this kind of research shoppers.
2. Perceived search effort is an important factor that may lead to negative attitudes toward a specific channel and increases consumers' propensity to seek an alternative channel. When consumers require expending high efforts to search products or services on a specific, they tend to use another channel for purchase. The channel switching phenomenon exists for both the Internet and physical channels. Managers should pay attention to consumers' channel switching tendency.
3. Perceived purchase convenience of using physical channels is an important factor that facilitates consumer purchase attitudes toward using physical channels. Both perceived service quality and perceived purchase risk on the Internet are significant factors affecting consumer purchase attitudes toward using the Internet. However, the former is an facilitator while the latter is an inhibitor. Managers need to improve their Internet channel service quality and decrease the Internet channel purchase risks.

7 Conclusion

An increasing number of businesses have implemented multi-channel retailing practices. To develop effective multi-channel strategies, businesses need to understand how consumers develop their attitudes toward purchase in this context. This study analyzes the effects of the perceived channel characteristics on the channel attitudes of multi-channel research shoppers. The results show that customer perceptions of channel characteristics drive channel choice attitudes. Importantly, we find the significance of channel characteristics varies between the Internet and the physical channel. The findings deepen our understanding of research shopping behaviors in the multi-channel context. Practitioners can use the findings to manage the characteristics of the complementary channels while also

designing marketing programs to create positive consumer attitudes toward search and purchase.

This study has some limitations that could be addressed in future research. First, the sample size of respondents searching for a product in the physical channel and then switching to the Internet for purchase is small. Although the ratio of sample size to the number of predictors is above the minimum ratio requirement of 5 (Hair et al. 2006), more samples are required to generalize the findings. Field (2009) suggests that there should be 10–15 cases per predictor. In addition, we can use the second-generation statistical technique, namely structural equation modeling (SEM), when the sample size is above 200 (Hair et al. 2006). SEM can examine multiple causal relationships simultaneously and have more rigorous analysis results (Gefen et al. 2000). Second, this study only considers two types of channels: Internet and physical channels, and only analyze how channel characteristics influence the channel attitudes of multi-channel research shoppers. However, the multi-channel consumer behaviors are very complicated. Future studies could extend the results of this study to examine the influences of different product categories, consumer demographics, consumer channel habits and preferences, consumer price sensitivity, and channel types (e.g., the mobile channel). This will enhance our understanding of multi-channel shopping behaviors.

Third, the rapidly increasing number of Internet shopping sites has caused consumers to spend much time and effort on information search and product selection. The phenomenon can result in the information overload and an uncomfortable purchase experience for online consumers. Therefore, the exploitation of online product recommendation agents is becoming prevalent. Online product recommendation agents are web applications that can provide consumers with useful suggestions and shopping assistance based on consumer preferences, habits, and interests (Benbasat and Wang 2005). Some EC leaders such as Amazon and Yahoo have also implemented the recommendation agents on their websites to better serve their customers (Dabholkar and Sheng 2012). Recently, some innovative multi-agent systems (e.g., MASHA, MUADDIB, and ARSEC) that emphasize collaboration and adaptability of users and devices in the distributed environment were developed to improve recommendation effectiveness (Rosaci and Sarné 2006; Rosaci et al. 2009; Rosaci and Sarné 2012). Hence, online recommendation agents may influence the consumer attitudes toward using Internet for search or purchase. Future studies can analyze the effects of online recommendation agents on multi-channel consumer attitudes and behaviors.

Finally, channel lock-in is an important issue in multi-channel customer management. Further research could usefully examine whether a search channel is also used as a purchase channel in both the Internet and the physical channels.

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Appendix 1. Multiple regression equations

To test hypotheses, this study formed four regression models as follows:

Model one The goal of the model is to test Hypotheses 1a and 2a.

$$SA_{physical} = \beta_0 + \beta_1 IA_{physical} + \beta_2 SE_{physical} + \varepsilon \quad (1)$$

SA search attitude, *IA* information availability, *SE* search effort, β_0 intercept, β_i regression coefficient, ε error term.

Model two The goal of the model is to test Hypotheses 1b and 2b.

$$SA_{Internet} = \beta_0 + \beta_1 IA_{Internet} + \beta_2 SE_{Internet} + \varepsilon \quad (2)$$

SA search attitude, *IA* information availability, *SE* search effort, β_0 intercept, β_i regression coefficient, ε error term.

Model three The goal of the model is to test Hypotheses 3a, 4a, 5a, 6a, 7a, and 8a.

$$\begin{aligned} PA_{physical} = {} & \beta_0 + \beta_1 PC_{physical} + \beta_2 SQ_{physical} \\ & + \beta_3 PE_{physical} + \beta_4 PR_{physical} + \beta_5 IA_{Internet} + \beta_6 SE_{Internet} + \varepsilon \end{aligned} \quad (3)$$

PA purchase attitude, *PC* purchase convenience, *SQ* service quality, *PE* purchase effort, *PR* purchase risk, *IA* information availability, *SE* search effort, β_0 intercept, β_i regression coefficient; ε error term.

Model four The goal of the model is to test Hypotheses 3b, 4b, 5b, 6b, 7b, and 8b.

$$\begin{aligned} PA_{Internet} = {} & \beta_0 + \beta_1 PC_{Internet} + \beta_2 SQ_{Internet} + \beta_3 PE_{Internet} \\ & + \beta_4 PR_{Internet} + \beta_5 IA_{physical} + \beta_6 SE_{physical} + \varepsilon \end{aligned} \quad (4)$$

PA purchase attitude, *PC* purchase convenience, *SQ* service quality, *PE* purchase effort, *PR* purchase risk, *IA* information availability, *SE* search effort, β_0 intercept, β_i regression coefficient, ε error term.

Appendix 2. The Chow test (Chow 1960; Doran 1989)

The hypotheses of the Chow test are:

H_0 The two regression models have the same regression coefficients and intercepts.

H_1 The two regression models have not the same regression coefficients and intercepts.

The hypotheses can be tested by the F ratio:

$$F = \frac{(SSE - SSE_1 - SSE_2)/K}{(SSE_1 + SSE_2)/(N - 2K)} \quad (5)$$

SSE: sum of the squared errors from the whole sample; SSE_i: sum of the squared errors from the *i*th sub-sample; K: the total number of estimated regression parameters (i.e. the number of independent variables plus one intercept); N: the total sample number.

The F ratio will be distributed as F(K, N-2 K).

References

Avery RJ (1996) Determinants of search for nondurable goods: an empirical assessment of the economics of information theory. J Customer Aff 30(2):390–420. doi:10.1111/j.1745-6606.1996.tb00064.x

Baker J, Parasuraman A, Grewal D, Voss GB (2002) The influence of multiple store environment cues on perceived merchandise value and patronage intentions. J Mark 66(2):120–141. doi:10.1509/jmkg.66.2.120.18470

Balasubramanian S, Raghunathan R, Mahajan V (2005) Consumers in a multichannel environment: product utility, process utility, and channel choice. J Interact Mark 19(2):12–30. doi:10.1002/dir.20032

Beatty ES, Homer P, Kahle RL (1988) The involvement-commitment model: theory and implications. J Bus Res 16(2):149–167. doi:10.1016/0148-2963(88)90039-2

Benbasat I, Wang W (2005) Trust in and adoption of online recommendation agents. J Assoc Inf Syst 6(3):72–101

Bhatnagar A, Ghose S (2004) Segmenting consumers based on the benefits and risks of Internet shopping. J Bus Res 57(12):1352–1360. doi:10.1016/S0148-2963(03)00067-5

Bhatnagar A, Ratchford BT (2004) A model retail format competition for nondurable goods. Int J Res Mark 21(1):39–59. doi:10.1016/j.ijresmar.2003.05.002

Brown LG (1990) Convenience in services marketing. J Serv Mark 4(1):53–59. doi:10.1108/EUM0000000002505

Burke RR (2002) Technology and the customer interface: what consumers want in the physical and virtual store. J Acad Mark Sci 30(4):411–432. doi:10.1177/009207002236914

Campbell DT, Fiske DW (1959) Convergent and discriminant validation by the multitrait-multimethod matrix. Psychol Bull 56(2):81-105. doi:10.1037/h0046016

Chen Q, Wells WD (1999) Attitude toward the site. J Advert Res 39(5):27–37

Chiang WK, Li Z (2010) An analytic hierarchy process approach to assessing consumers' distribution channel preference. Int J Retail Distrib Manag 38(2):78–96. doi:10.1108/09590551011020101

Chiou JS, Wu LY, Chou SY (2012) You do the service but they take the order. J Bus Res 65(7):883–889. doi:10.1016/j.jbusres.2011.06.035

Chiu H, Hsieh Y, Roan J, Tseng K, Hsieh J (2011) The challenge for multichannel services: cross-channel free-riding behavior. Electron Commer Res Appl 10(2):268–277. doi:10.1016/j.elerap.2010.07.002

Chow GC (1960) Tests of equality between sets of coefficients in two linear regressions. Econometrica 28(3):591–605. doi:10.2307/1910133

Dabholkar PA, Sheng X (2012) Consumer participation in using online recommendation agents: effects on satisfaction, trust, and purchase intentions. Serv Ind J 32(9):1433–1449. doi:10.1080/02642069.2011.624596

de Ruyter K, Bloemer J, Peetersa P (1997) Merging service quality and service satisfaction. An empirical test of an integrative model. J Econ Psychol 18(4):387–406. doi:10.1016/S0167-4870(97)00014-7

Doll WJ, Torkzadeh G (1988) The Measurement of end-user computing satisfaction. MIS Q 12(2):258–274. doi:10.2307/248851

Doran HE (1989) Applied regression analysis in econometrics. Marcel Dekker, New York

DoubleClick (2004) Multi-channel shopping study—Holiday 2003. DoubleClick. http://www.doubleclick.com/us/ knowledge_central/research/email_solutions/. Accessed 20 August 2013

Duncan CP, Olshavsky RW (1982) External search: the role of customer beliefs. J Mark Res 19(1):32–43. doi:10.2307/3151528
Field A (2009) Discovering statistics using SPSS. Sage Publications, London
Fishbein M, Ajzen I (1975) Belief, attitude, intention, and behavior: an introduction to theory and research. Addison-Wesley, Reading
Forsythe SM, Shi B (2003) Customer patronage and risk perceptions in Internet shopping. J Bus Res 56(5):867–875. doi:10.1016/S0148-2963(01)00273-9
Forsythe S, Liu C, Shannon D, Gardner LC (2006) Development of a scale to measure the perceived benefits and risks of online shopping. J Interact Mark 20(2):55–75. doi:10.1002/dir.20061
Gefen D, Straub DW, Boudreau MC (2000) Structural equation modeling and regression: guidelines for research practice. Commun Assoc Inf Syst 4(1):7. http://aisel.aisnet.org/cgi/viewcontent.cgi?article=2531&context=cais
Gupta A, Su B, Walter Z (2004) Risk profile and consumer shopping behavior in electronic and traditional channels. Decis Support Syst 38(3):347–367. doi:10.1016/j.dss.2003.08.002
Hair JF, Babin B, Money AH, Samouel P (2003) Essentials of business research methods. Wiley, New Jersey
Hair JF, Black B, Babin B, Anderson RE, Tatham RL (2006) Multivariate data analysis. Prentice-Hall, New Jersey
Hardy AP (1982) The selection of channels with seeking information: cost/benefit vs. least-effort. Inf Process Manag 18(6):289–293. doi:10.1016/0306-4573(82)90014-0
Harman HH (1976) Modern factor analysis. University of Chicago Press, Chicago
Heitz-Spahn S (2013) Cross-channel free-riding consumer behavior in a multichannel environment: an investigation of shopping motives, sociodemographics and product categories. J Retail Consum Serv 20(6):570-578. doi:10.1016/j.jretconser.2013.07.006
Holsapple CW, Sasidharan S (2005) The dynamics of trust in B2C e-commerce: a research model and agenda. IseB 3(4):377–403. doi:10.1007/s10257-005-0022-5
Hsiao CC, Yen HJR, Li EY (2012) Exploring consumer value of multi-channel shopping: a perspective of means-end theory. Internet Res 22(3):318–339. doi:10.1108/10662241211235671
Janda S, Trocchia PJ, Gwinner KP (2002) Consumer perceptions of Internet retail service quality. Int J Serv Ind Manag 13(5):412–431. doi:10.1108/09564230210447913
Jepsen AL (2007) Factors affecting consumer use of the Internet for information search. J Interact Mark 21(3):21–34. doi:10.1002/dir.20083
Johnson KKP, Yoo JJ, Rhee J, Lennon S, Jasper C, Damhorst MY (2006) Multi-channel shopping: channel use among rural consumers. Int J Retail Distrib Manag 34(6):453–466. doi:10.1108/09590550610667047
Joo Y, Park MH (2008) Information search and purchase channel choice across in-home shopping retail formats. Acad Mark Stud J 12(2):49–62
Kerlinger FN, Lee HB (2000) Foundations of behavioral research. Harcourt, NY
Kim YK, Park SH, Pookulangara S (2005) Effects of multi-channel consumers' perceived retail attributes on purchase intentions of clothing products. J Mark Channels 12(4):23–43. doi:10.1300/J049v12n04_03
Kollmann T, Kuckertz A, Kayser I (2012) Cannibalization or synergy? Consumers' channel selection in online–offline multichannel systems. J Retail Consumer Serv 19(2):186–194. doi:10.1016/j.jretconser.2011.11.008
Kotler P, Armstrong G (2007) Principles of marketing. Prentice Hall, Upper Saddle River
Kumar V, Reinartz W (2012) Impact of CRM on marketing channels. In: Customer relationship management, Springer texts in business and economics, Springer, Heidelberg, pp 235–260. doi:10.1007/978-3-642-20110-3_12
Laukkanen T (2007) Customer preferred channel attributes in multi-channel electronic banking. Int J Retail Distrib Manag 35(5):393–412. doi:10.1108/09590550710743744
Lederer AL, Maupin DJ, Sena MP, Zhuang Y (2000) The technology acceptance model and the world wide web. Decis Support Syst 29(3):269–282. doi:10.1016/S0167-9236(00)00076-2
Lee ES (1966) A theory of migration. Demography 3(1):47–57. doi:10.2307/2060063
Lee HH, Kim J (2008) The effects of shopping orientations on consumers' satisfaction with product search and purchases in a multi-channel environment. J Fashion Mark Manag 12(2):193–216. doi:10.1108/13612020810874881

Macik R, Mazurek G, Macik D (2012) Channel characteristics influence on physical vs. virtual channel choice for information search and purchase—the case of polish young consumers. Int J Cyber Soc Educ 5(1):35–54

Maity M, Dass M (2014) Consumer decision-making across modern and traditional channels: e-commerce, m-commerce, in-store. Decis Support Syst 61:34–46. doi:10.1016/j.dss.2014.01.008

Marsh HW, Vallerand RJ, Lafrenière MA, Parker P, Morin AJ, Carbonneau N, Jowett S, Bureau JS, Fernet C, Guay F, Salah Abduljabbar A, Paquet Y (2013) Passion: does one scale fit all? Construct validity of two-factor passion scale and psychometric invariance over different activities and languages. Psychol Assess 25(3):796–809. doi:10.1037/a0032573

Moon B (2004) Consumer adoption of the Internet as an information search and product purchase channel: some research hypotheses. Int J Internet Mark Advert 1(1):104–118. doi:10.1504/IJIMA.2004.003692

Moorthy S, Ratchford BT, Talukdar D (1997) Consumer information search revisited: theory and empirical analysis. J Consumer Res 23(4):263–277. doi:10.1086/209482

Neslin SA, Shankar V (2009) Key issues in multichannel customer management: current knowledge and future directions. J Interact Mark 23(1):70–81. doi:10.1016/j.intmar.2008.10.005

Neslin SA, Grewal D, Leghorn R, Shankar V, Marije LT, Thomas JS, Verhoef PC (2006) Opportunities and challenges in multichannel customer management. J Serv Res 9(2):95–112. doi:10.1177/1094670506293559

Noble SM, Griffith DA, Weinberger MG (2005) Consumer derived utilitarian value and channel utilization in a multi-channel retail context. J Bus Res 58(12):1463–1651. doi:10.1016/j.jbusres.2004.10.005

Parasuraman A, Zeithaml VA, Berry LL (1988) SERVQUAL: a multi-item scale for measuring consumer perceptions of service quality. J Retail 64(1):12–40

Park C, Kim Y (2003) Identifying key factors affecting consumer purchase behavior in an online shopping context. Int J Retail Distrib Manag 31(1):16–29. doi:10.1108/09590550310457818

Pookulangara S, Natesan P (2010) Examining consumers' channel-migration intention utilizing theory of planned behavior: a multigroup analysis. Int J Electronic Commerce Stud 1(2):97–116

Pookulangara S, Hawley J, Xiao G (2011) Explaining multi-channel consumer's channel-migration intention using theory of reasoned action. Int J Retail Distrib Manag 39(3):183–202. doi:10.1108/09590551111115024

Punj G, Stealin R (1983) A model of customer information search behavior for new automobiles. J Customer Res 9(5):366–380. doi:10.1086/208931

Reardon J, McCorkle DE (2002) A consumer model for channel switching behavior. Int J Retail Distrib Manag 31(4):179–185. doi:10.1108/09590550210423654

Rosaci D, Sarné GML (2006) MASHA: a multi-agent system handling user and device adaptivity of Web sites. User Model User-Adapted Interact 16(5):435-462. doi:10.1007/s11257-006-9015-4

Rosaci D, Sarné GML (2012) A multi-agent recommender system for supporting device adaptivity in e-commerce. J Intell Inf Syst 38(2):393–418. doi:10.1007/s10844-011-0160-9

Rosaci D, Sarné GML, Garruzzo S (2009) MUADDIB: A distributed recommender system supporting device adaptivity. ACM Trans Inf Syst 27(4).doi:10.1145/1629096.1629102

Scansaroli JA, Eng V (1997) Consumers on line. Chain Store Age 73(1):2A–4A

Schiffman LG, Kanuk LL (2000) Customer behavior. Prentice Hall, New York

Schröder H, Zaharia S (2008) Linking multi-channel customer behavior with shopping motives: an empirical investigation of a German retailer. J Retail Customer Serv 15(6):452–468. doi:10.1016/j.jretconser.2008.01.001

Scott JE (2004) Measuring dimensions of perceived e-business risks. IseB 2(1):31–55. doi:10.1007/s10257-003-0026-y

Sen R, King RC, Shaw MJ (2006) Buyers' choice of online search strategy and its managerial implications. J Manag Inf Syst 23(1):211–238. doi:10.2753/MIS0742-1222230107

Srisuwan P, Barnes SJ (2008) Predicting online channel use for an online and print magazine: a case study. Internet Res 18(3):266–285. doi:10.1108/10662240810883317

Stanley LL, Wisner JD (2002) The determinants of service quality: issues for purchasing. Eur J Purch Supply Manag 8(2):97–109. doi:10.1016/S0969-7012(01)00009-0

Szymanski DM, Hise RT (2000) E-satisfaction: an initial examination. J Retail 76(3):309–322. doi:10.1016/S0022-4359(00)00035-X

To PL, Liao C, Lin TH (2007) Shopping motivations on Internet: a study based on utilitarian and hedonic value. Technovation 27(12):774–787. doi:10.1016/j.technovation.2007.01.001

Verhoef PC, Neslin SA, Vroomen B (2007) Multichannel customer management: understanding the research shopper phenomenon. Int J Res Mark 24(2):129–148. doi:10.1016/j.ijresmar.2006.11.002

Wang YS (2008) Assessing e-commerce systems success: a respecification and validation of the DeLone and McLean model of IS success. Inf Syst J 18(5):529–557. doi:10.1111/j.1365-2575.2007.00268.x

Wolfinbarger M, Gilly MC (2001) Shopping online for freedom, control, and fun. Calif Manag Rev 43(2):34–55. doi:10.2307/41166074

Wu JH, Wang SC (2005) What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. Inf Manag 42(5):719–729. doi:10.1016/j.im.2004.07.001

Yu UJ, Niehm LS, Russell DW (2011) Exploring perceived channel price, quality, and value as antecedents of channel choice and usage in multichannel shopping. J Mark Channels 18(2):79–102. doi:10.1080/1046669X.2011.558826

Zeithaml VA, Berry LL, Parasuraman A (1996) The behavioral consequences of service quality. J Mark 60(2):31–46. doi:10.1177/0092070300281007

Zhang H, Xiao T, Tian C, Li J (2014) Empirical analysis of consumers' channel choice for electronics: a consumer's perspective. In: Proceedings of the 2014 international conference on progress in informatics and computing, Shanghai, China