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Reports

Closing the Growth Gap: Balancing "Big I" and "small i" Innovation (06-121)
George S. Day

Building Long-term Firm Value Through Innovation (06-122)
Alina B. Sorescu and Jelena Spanjol

Growing Small Brands: Does a Brand's Equity and Growth Potential Affect Its Long-term Productivity? (06-123)
Rebecca J. Slotegraaf and Koen Pauwels

The Role of Expert versus Social Opinion Leaders in New Product Adoption (06-124)
Jacob Goldenberg, Donald R. Lehmann, Daniella Shidlovski, and Michal Master Barak

Managing Marketing Relationships Through Qualification and Incentives (06-125)
Kenneth H. Wathne and Jan B. Heide

Multichannel Customer Management: Understanding Research Shopping (06-126)
Peter C. Verhoef, Scott A. Neslin, and Björn Vroomen

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Multichannel Customer Management: Understanding Research Shopping

Peter C. Verhoef, Scott A. Neslin, and Björn Vroomen

Research shopping—when consumers search in one channel and purchase in another—is prevalent on the Internet. This study examines the processes that underlie this behavior, and suggests ways to decrease or, in some cases, increase research shopping.

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Report Summary

In research shopping, consumers engage in product search in one channel and use another channel for purchase. Research shopping has become a particularly important issue for the Internet, as customers are prone to search for product information on the Internet and then make their purchases in a bricks-and-mortar store. Here, authors Verhoef, Neslin, and Vroomen develop and estimate a model to understand why the research shopper phenomenon is prevalent in some channels, and discuss how firms can decrease or increase research shopping.

They hypothesize three fundamental reasons for research shopping: (1) attribute-based decisionmaking, (2) lack of channel lock-in, and (3) cross-channel synergy. They find that Internet search with store purchase research shopping is due in large part to attribute-based decisionmaking and lack of channel lock-in. The Internet garners stronger search-attribute evaluations than the store, while receiving weaker purchase-attribute evaluations. There is also very little lock-in on the Internet; that is, consumers who like searching on the Internet are not naturally driven to purchase on it. This is in contrast to other channels, such as stores and catalog, which have strong consumer lock-in. The cross-channel synergy effect is weakly supported, in that customers who like to search on the Internet tend to like purchasing in the store, but this effect is weak in magnitude and not strongly significant statistically.

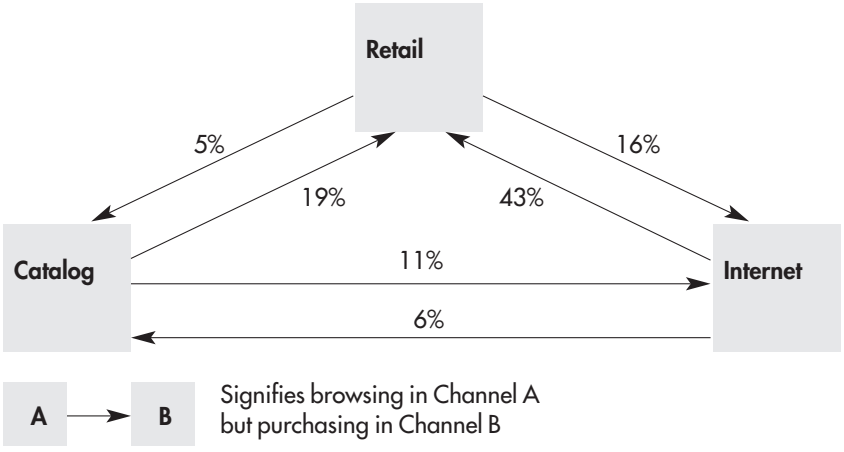
The authors illustrate how their methods could be used to simulate and evaluate various strategies for managing (either decreasing or increasing) research shopping, either by changing the search or purchase attributes of one or both of the channels, creating or decreasing channel lock-in, or creating or reducing cross-channel research synergies.

In one example, Internet lock-in might be increased by offering instantly redeemable rebates for customers who immediately decide to buy the product on the Internet, or by requiring a small fee for searching, which is refunded when the customer purchases through the website. ■

Introduction

Today's firms are constantly adding new shopping channels, such as the Internet, to serve their customers better (Geyskens, Gielens, and Dekimpe 2002). In this environment, many consumers have become multichannel users. The multichannel shoppers present several challenges (Kelley 2002; Stone, Hobbs, and Khaleeli 2002). One of these is that the firm may lose the customer in the course of the shopping process (Nunes and Cespedes 2003). Customers who start the shopping process in one channel but do not complete the purchase in that channel are referred to as *research shoppers*, because it is after the research stage of shopping that they switch channels (e.g., moving from the Internet to a bricks-and-mortar store). For instance, in the vacation industry, 30% of consumers use one channel for search and a different channel for purchase (Yellavali, Holt, and Jandial 2004). Kelley (2002) reports that roughly half of online shoppers research their desired product on the Internet and then purchase it in a bricks-and-mortar store. The specific term *research shopping* is not yet common in the academic literature. However, practitioner-oriented work uses the term (e.g., DoubleClick 2004).

Figure 1
Research Shopping



To be read, for example, 43% of research shoppers gather information on the Internet but make the final purchase at the bricks-and-mortar retail store.
Source: Adapted from DoubleClick (2004).

Figure 1 shows the results of a DoubleClick study of research shopping (DoubleClick 2004). It reveals that by far the most common form of research shopping is gathering information on the Internet and purchasing at a bricks-and-mortar retail store. There is also some catalog → store and store → Internet research shopping. Why are these forms so common, and what can managers do either to increase or decrease research shopping? To answer this, companies need to understand the behavioral process that underlies research shopping.

Accordingly, the objectives of this paper are to: (1) develop a framework for understanding how customers choose which channel to use for search and purchase, (2) use that framework to propose three mechanisms that drive research shopping, (3) measure these mechanisms using survey data, and (4) demonstrate how managerial actions can either promote or inhibit research shopping.

Based on our framework, we derive the following explanations for research shopping: (1) attribute-driven decisionmaking, (2) lack of channel lock-in, and (3) cross-channel synergy. In our empirical work, we find evidence for all three, but we find Internet → store research shopping is driven mostly by attribute-driven decisionmaking and lack of lock-in.

In comparison to previous literature, our work is distinct in its dual emphasis on multiple behaviors (search and purchase) *and* multiple channels. Table 1 summarizes earlier literature, classified along two dimensions: whether the studies considered search, purchase, or both, and whether the studies considered only one channel or multiple channels. Some studies have focused on the search decision, either for a single channel (e.g., Vermeir and van Kenhove 2005) or multiple channels. For example, Ratchford, Lee, and Talukdar (2003) study the determinants of the consumer's decision to search for automobile information on the Internet as opposed to in other potential channels. Some studies have focused on the purchase decision, either in a single-channel context

Table 1
Literature Review

		Number of Channels: Single	Number of Channels: Multiple
Customer Decision	**Search**	Biswas (2004); Johnson et al. (2004); Vermeir and van Kenhove (2005)	Ratchford, Lee, and Talukdar (2003); Ratchford, Talukdar, and Lee (2001); Strebel, Erdem, and Swait (2004); Wendel and Dellaert (2005)
	Purchase	Baker et al. (2002); Darian (1987); Childers et al. (2001); Bell and Lattin (1998)	Gupta, Su, and Walter (2004); Alba et al. (1997); Bhatnagar and Ratchford (2004); Fox, Montgomery, and Lodish (2004); Inman, Shankar, and Ferraro (2004); Teerling and Huizingh (2005)
	Search and Purchase	Montoya-Weiss, Voss, and Grewal (2003)	Balasubramanian, Raghunathan, and Mahajan (2005); this paper

(e.g., Baker et al. 2002) or a multiple-channel context. For example, Ansari, Mela, and Neslin (2005) study the impact of marketing and learning on customer purchase from either a catalog or the Internet. Kumar and Venkatesan (2005) study the effect of customer characteristics on multichannel purchase behavior.

Table 1 lists a few studies that have looked at the search and purchase decisions jointly, albeit for a single channel. In particular, Montoya-Weiss, Voss, and Grewal (2003) study the determinants of online use, where use appears to include both search and purchase. In a multichannel context, Balasubramanian, Raghunathan, and Mahajan (2005) present a qualitative study on multichannel choice for search and purchase. However, research on multichannel customer behavior is still in its early stages. Rangaswamy and van Bruggen (2005), note that research has produced few generalizable insights regarding why customers use multiple channels. Balasubramanian, Raghunathan, and Mahajan (2005) state that research that focuses specifically on consumers' use of multiple channels in searching for and deciding on which products to buy is relatively sparse.

Thus, there is particular need for studies that investigate how and why customers choose the channels they do for search and purchase in a multichannel environment.[1] Our research is positioned to fill this gap in the literature.

We first discuss our conceptual model and derive explanations for the research shopping phenomenon. Then we detail our methodology and our empirical results. Next, we discuss simulations that illustrate the impact of potential managerial actions. We end with a theoretical discussion, managerial implications, research limitations, and issues for further research. A short glossary of the key terms introduced in this paper is provided in Table 2.

Conceptual Model

The conceptual model for a two-channel case is displayed in Figure 2 (p. 105). The objective is to understand why customers choose particular channels for search and purchase. Thus, we distinguish a channel choice decision for search from a channel choice decision for purchase. These behaviors are not mutually exclusive; the consumer may choose the same channel for both search and purchase or one channel for search and the other for purchase. We assume that consumer perceptions of a channel's search and purchase attributes relate directly to the attractiveness of the channel for search and purchase, and that consumer perceptions in turn affect

Table 2
Glossary of Key Terms Introduced in the Paper

Key Term	Key Term
Research shopping	Search in one channel and purchase in another channel
Attribute-driven explanation for research shopping	Consumers perceive that one channel's attributes make it superior for search purposes, while another channel's attributes make it superior for purchase. The more this is true, the more likely it is that customers will engage in research shopping.
Channel lock-in explanation for research shopping	Channel lock-in implies the ability to keep consumers within the same channel during the shopping process. Lack of lock-in increases the likelihood of research shopping.
Cross-channel synergy explanation for research shopping	Cross-channel synergy exists if searching on one channel enhances the experience of purchasing on another channel. Cross-channel synergy encourages research shopping.

whether the consumer chooses the channel for search and purchase (Fishbein and Ajzen 1975; Sheppard, Hartwick, and Warshaw 1988). This fits with other channel studies, in which, for instance, store attributes, such as store atmosphere and assortment, affect perceived value, which subsequently affects patronage intentions (e.g. Baker et al. 2002; Montoya-Weiss, Voss, and Grewal 2003). Note that we distinguish among purely search-related attributes (e.g., ease of gathering information), purely purchase-related attributes (e.g., speed of obtaining the product), and attributes that apply to both search and purchase (e.g., product assortment).

As in all theory-of-reasoned-action models, attribute perceptions drive attitudes, which in turn determine behavior. However, we extend this framework in two ways. First, we allow the attitude toward searching in Channel A (the search attractiveness of Channel A) to directly affect the attitude toward purchasing in Channel A (the purchase attractiveness of Channel A), and vice versa. We call this channel lock-in. Channel lock-in is represented by the short solid arrows in Figure 2—one for Channel A, one for Channel B. Second, we allow for (search or purchase) attitudes toward Channel A to affect (search or purchase) attitudes toward Channel B, and vice versa. These we call cross-channel synergy. There are four cross-channel synergy effects depicted in Figure 2, represented by curved dashed arrows.

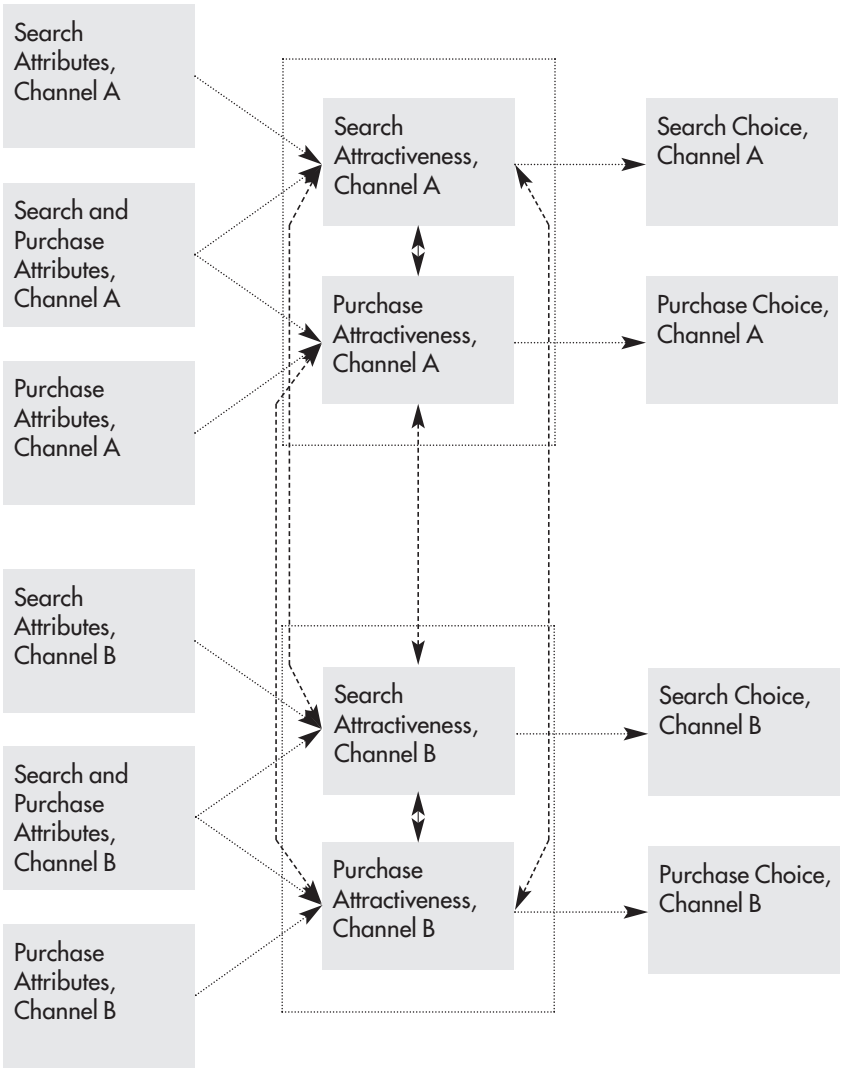
Note that lock-in and cross-channel synergy are defined with a positive valence. Channel lock-in means that positive attitudes toward searching in Channel A translate into positive attitudes toward purchasing in Channel A. Channel synergy means that positive attitudes toward search or purchase in Channel A translate into positive attitudes toward search or purchase on Channel B. However, the valence could turn out to be negative: for example, positive attitudes toward search in Channel A could translate into negative attitudes toward purchase in Channel B. This would be negative cross-channel synergy and would imply that the channels are substitutes.

Channel lock-in and cross-channel synergy play crucial roles in our analysis and, as discussed above, are based on a causal relationship between attitudes toward different behaviors. The theoretical rationale for this relationship is rooted in the attitude literature, where it has been shown that Attitude A can cause Attitude B if Attitude A essentially assumes the role of an attribute in determining Attitude B. For example, in the literature on attitudes toward ads and brands, it has been shown that an ad (A_{ad}) can serve as a factor determining the evaluation of a brand (A_{bd}) (Mitchell and Olson 1981). In our context, a channel's search attractiveness may serve as a factor determining its purchase attractiveness. In the same vein, a positive attitude toward searching in Channel

Figure 2

Theory of Reasoned Action Applied to Search and Purchase: Two Channels

(dotted arrows show crossover effects)



Note: The solid lines between channel attractiveness represent channel lock-in. The dashed double arrows represent cross-channel synergy.

A may translate into a positive attitude toward purchasing in Channel B, if the customer realizes that he or she will be better able to take advantage of the services provided in Channel B having been previously educated and informed in Channel A by searching in that channel. Cross-channel synergy is also referred to as complementarity of channels (Teerling and Huizingh 2005).

Motives for research shopping

Given the attitude formation model in Figure 2, we can identify three reasons for research shopping: (1) attribute-driven decisionmaking, (2) lack of channel lock-in, and (3) cross-channel synergy.

Attribute-driven Decisionmaking. Attribute-driven decisionmaking is based on the perception that one channel excels in the attributes that determine search, while the other channel excels in the attributes that drive purchase. For instance, the Internet is often considered convenient for gathering information, especially for products with digital attributes, while it is considered risky as a channel for purchase because of security factors and because it is not possible to physically touch and test the product (e.g. Alba et al. 1997; Lal and Sarvary 1999; McKnight, Choudhury, and Kacmar 2002). On the other hand, consumers generally consider it laborious to search for information in retail stores, but not risky to make a purchase there, with the result being that consumers may tend to search on the Internet and purchase in a store.

Lack of Channel Lock-in. As described above, the solid double arrows in Figure 2 show that more positive attitudes toward searching in Channel A translate into more positive attitudes toward purchasing in Channel A, and vice versa. This is channel lock-in. High channel lock-in deters research shopping because searching and purchasing become highly correlated. However, if a given channel has low lock-in, that is, if positive attitudes toward search in the channel do not translate clearly into positive attitudes toward purchase in the channel, the result is research shopping. For example, we would hypothesize that the Internet has relatively low lock-in, because it is very easy to search multiple sites to narrow down the particular product and retailer and then to go to the bricks-and-mortar store of the selected retailer to actually pick up the product.

Cross-channel Synergy. Cross-channel synergy—represented by dashed double arrows

in Figure 2—may drive research shopping because searching in Channel A enhances the experience of purchasing in Channel B. First, searching in one channel and purchasing in another channel may provide economic benefits. For instance, searching on the Internet may provide consumers with price information, which allows them to obtain a better deal at the store through negotiation or better-informed choices (e.g., Bakos 1997; Morton, Zettelmeyer, and Silva-Risso 2001). Second, from a psychological perspective, research shopping may provide the consumer with smart-shopper feelings (Balasubramanian, Raghunathan, and Mahajan 2005; Chandon, Wansink, and Laurent 2000): that is, searching in one channel makes consumers feel smart; they believe their research will make it possible for them to obtain a better deal in another channel. This results in improved self-image.

Data Collection and Management

We surveyed 396 Dutch consumers regarding channel attributes, channel search and purchase attractiveness, and intended choice of channel for search and purchase. Each respondent evaluated one of six product or service categories: loans, vacations, books, computers, clothing, or electronic appliances. The categories differ in terms of purchase complexity, purchase frequency, and tangibility (Peterson, Balasubramanian, and Bronnenberg 1997) and we expected substantial variation in perceptions of the different search and purchase channels depending on the product category. The use of multiple categories also enhances the external validity of our research.

For a sampling frame, we used a 40,000-member research panel of a large research agency in the Netherlands. We selected from this frame a random sample of 3,000 panel members aged 20-65 years and having an Internet connection. In May 2004 a short telephone survey determined whether these respondents had made any purchases in the six service or product categories in the three months before May 2004. We included only consumers with recent purchase experiences in these categories because these consumers are better able to provide meaningful channel perceptions. Two thousand panel members indicated that they purchased one or more items or services from the six categories. Of these 2,000 panelists, we selected 800 for our survey. These panelists were equally distributed over the six product categories (approximately 130 panelists per category). We mailed a 12-page survey to these 800 panel members; each respondent's survey used as its shopping context one of the categories from which the respondent had made a purchase. The survey consisted of multiple questions on channel usage and satisfaction, general channel perceptions, specific channel perceptions, and intended channel choice for a product category, as well as psychographics.[2] A total of 396 panel members responded (response rate 49.5%). Of these 396 responses, 51 were excluded because the respondents did not fully complete the questionnaire. The final analysis sample was 345 (usable response rate 43.1%).

The characteristics of our sample are reported in Table 3. Income and education levels are relatively high, which can be explained as follows. First, we selected respondents based on recent purchases in product groups such as loans, which are purchased by wealthy consumers. Second, we only included consumers with Internet connections. Respondents are relatively equally distributed across the six product categories. Per category there are 59-61 respondents. The only exception is clothes, for which the database only contains 45 respondents.

Definition and measurement of search and purchase benefits and costs

We generated an initial list of attributes by considering: (1) benefits and costs that pertain to search, (2) benefits and costs that pertain to both search and purchase, and (3) benefits and costs that pertain to purchase (Alba et al. 1997; Baker et al. 2002; Bell, Ho, and Tang 1998; Messinger and Narasimhan 1997; Stigler 1961).

Table 3
Sample Characteristics

Age	Percentage	Income	Percentage
< 35 years	19.4%	Below median	13.6%
35-50 years	48.7%	Median	24.1%
> 50 years	31.9%	Above median	62.2%
Education		**Family**	
University or polytechnic	41.7%	1-2 person household; no children	49.7%
High school (high level)	39.7%	Family with children < 5 years	10.2%
High school (low level)	18.0%	Family with children 5-14 years	25.3%
Low-level education	.6%	Family with children > 14 years	14.8%

Based on previous research (cited below), we identify the following benefits and costs that pertain to search:

Information availability (benefit) is the benefit deriving from having information of suitable quality and quantity readily accessible and being able to compare alternatives (Alba et al. 1997; Hoque and Lohse 1999; Ratchford, Talukdar, and Lee 2001).

Search convenience (benefit) is the benefit deriving from easy and speedy search. For instance, easy navigation tools on the Internet may increase a website's search convenience (Hoque and Lohse 1999).

Search effort (cost) is the cost associated with the time spent searching and the difficulty of finding information on products and services (Kang, Herr, and Page 2003; Ratchford, Lee, and Talukdar 2003).

We identify the following benefits and costs that pertain to purchase:

Service quality (benefit), the benefit deriving from a high level of service, has been shown to be an important determinant of store patronage intentions both online and offline (Baker et al. 2002; Montoya-Weiss, Voss, and Grewal 2003).

After-sales service (benefit) is the benefit deriving from service that is provided after a purchase; it includes delivery, assistance when having problems, and installation of products (van Kenhove, De Wulf, and van Waterschoot 1999).

Purchase convenience (benefit) is the benefit deriving from being able to purchase products efficiently, easily, and speedily (e.g., Mathwick, Malhotra, and Rigdon 2001; Messinger and Narasimhan 1997; van Kenhove, De Wulf, and Van Waterschoot 1999).

Negotiation possibilities (benefit) comprise the benefit of being able to negotiate on price and other aspects of the products. Morton, Zettelmeyer, and Silva-Risso (2001) have shown that a significant part of the price savings obtainable through use of an Internet car referral service stems from bargaining power.

Purchase effort (cost) is the cost in terms of time and effort of purchasing a product using a specific channel (e.g., Baker et al. 2002; Bhatnagar and Ratchford 2004).

Purchase risk (cost) is the cost deriving from the perceived uncertainty associated with buying products through a specific channel. Researchers have pointed to the importance of trust for online shopping, as consumers cannot physically check the quality of a product or monitor

the security surrounding their transmission of sensitive personal information, financial information, and payments (Hoffman, Novak, and Peralta 1999; McKnight, Choudhury, and Kacmar 2002).

We identify the following benefits and costs that pertain to both search and purchase:

Enjoyment (benefit) is the benefit deriving from the pleasure of shopping (Alba et al. 1997; Babin, Darden, and Griffin 1994; Childers et al. 2001; Mathwick, Malhotra, and Rigdon 2001).

Assortment (benefit) is the benefit deriving from having a wide variety of products available. The literature on store patronage intentions usually only relates assortment to purchase activities (e.g., Baker et al. 2002). However, Alba et al. (1997) consider the presence of a number of categories and alternatives within categories to be an information (i.e., search) benefit.

Promotions (benefit) comprise the benefit deriving from consumers' perceptions that promotions are deep and frequent. Researchers have pointed to the importance of promotions in achieving store traffic (search) and sales (purchase) (Gijsbrechts, Campo, and Goossens 2003; Lam et al. 2001).

Reference group (benefit) is the benefit deriving from relatives' and acquaintances' using the same channel for either search or purchase as the consumer. This clearly relates to the fact that social interactions are an important part of the shopping experience (Alba et al. 1997; Balasubramanian, Raghunathan, and Mahajan 2005).

Price level (cost) is the cost consumers perceive based on the prices in a specific channel. As with assortment, researchers have mainly related price to purchase (Baker et al. 2002; Montoya-Weiss, Voss, and Grewal 2003).

Having developed our list of benefits and costs, we next generated a list of 46 survey items to cover these attributes. We list these in the appendix. This approach is similar to that used by Rust, Lemon, and Zeithaml (2004) to evaluate multiple brands or suppliers on several characteristics. The items were presented to four academics and four researchers at the marketing research agency to check for content validity and formulation. Occasionally we adapted items to specific product category conditions, especially for after-sales. Although we defined the benefits and costs ex-ante, we use principal-components analysis (PCA) to distill the attributes consumers use to evaluate channels.

We use PCA for the following reasons (Rust, Lemon, and Zeithaml 2004). First, our concern was to rigorously generate a list of attributes, not to test specific hypotheses with regard to them. This is why we generated benefits and costs based on previous literature and then generated items. It is not our aim to test a theory regarding the possible antecedents (with theoretical derived constructs) of channel attractiveness for search or purchase. If that were the aim of the paper, confirmatory factor analysis would be the method to use. Second, PCA permits us to use orthogonal factor scores in our subsequent regression analysis, which reduces multicollinearity.

We do not use PCA for the after-sales questions, because these differ by product category (see the appendix). We computed coefficient alphas per category for the items in each category. These coefficient alphas vary between .68 and .88, revealing a sufficient level of reliability. Hence, we summated these items to create an after-sales scale for each product and used these summated scores in our model.

Measurement of channel attractiveness and choice

The attractiveness of each channel for search and purchase (A_{search} and $A_{purchase}$) was measured by asking respondents to evaluate two items for each channel on a five-point scale: (one anchored by "absolutely not attractive" and "absolutely very attractive" and the other

anchored by "absolutely not appropriate" and "absolutely very appropriate"). The coefficient alpha for search attractiveness was .83; it was.84 for purchase attractiveness.

To measure intended channel choice, we asked which channel respondents would use for search and purchase if they were again to buy the product or service. Respondents were permitted to choose multiple channels for search (because they may, in fact, use multiple channels for search), but they had to choose only one channel for purchase.

Analysis

Channel attitude formation model

We modeled attitude/attractiveness formation as a six-equation simultaneous model and estimated it using three-stage least squares (3SLS). The exogenous drivers of attitudes are the factors we classified as pertaining to search (X), purchase (W), or search and purchase (Z). The model also includes controls for customer characteristics (V) such as age and income, as well as the product category (U) that formed the context in which consumers rated each channel. The simultaneity arises because of lock-in and cross-channel synergy, which imply that attitudes serve both as dependent and independent variables in the model. Formally, our 3SLS attitude formation model for a given channel can be written as:

$$Search_{ij'} = \alpha^{sj'} + \sum_{j \neq j} \gamma_j^{sj'} Search_{ij} + \sum_j \omega_j^{sj'} Purchase_{ij} + \sum_k \beta_k^{sj'} X_{ij'k} + \sum_k \delta_k^{sj'} Z_{ij'k} + \sum_d \phi_d^{sj'} V_{id} + \sum_c \kappa_c^{sj'} U_{ijc} + \varepsilon_{ij'}^{s} \quad (1a)$$

$$Purchase_{ij'} = \alpha^{pj'} + \sum_j \gamma_j^{pj'} Search_{ij} + \sum_{j \neq j} \omega_j^{pj'} Purchase_{ij} + \sum_k \beta_k^{pj'} W_{ij'k} + \sum_k \delta_k^{pj'} Z_{ij'k} + \sum_d \phi_d^{pj'} V_{id} + \sum_c \kappa_c^{pj'} U_{ijc} + \varepsilon_{ij'}^{p} \quad (1b)$$

where

X_{ijk} = Consumer i's perception of channel j along search attribute k.

W_{ijk} = Consumer i's perception of channel j along purchase attribute k.

Z_{ijk} = Consumer i's perception of channel j along search-and-purchase attribute k.

V_{id} = Consumer i's value along customer characteristic d.

U_{ijc} = Dummy variable for product class c, equal to 1 if consumer i's rating of channel j is for product class c; 0 otherwise.

$Search_{ij}$ = The perceived attractiveness of channel j to consumer i for search.

$Purchase_{ij}$ = The perceived attractiveness of channel j to consumer i for purchase.

Equations 1a and 1b are for one channel, j'. There are three sets of these equations, one for each channel, for a total of six equations. Parameters are specific to the channel and to the attitude—search or purchase. For example, $\gamma_j^{sj'}$ depicts the impact of the customer's search attitude toward channel j on the customer's search attitude toward channel j'. Note that the sum over search attitudes in Equation 1a does not include the impact of search attitude toward j' on search attitude toward j', and in 1b does not include the impact of purchase attitude toward j' on purchase attitude toward j'.

The γ's and ω's reflect cross-channel synergy and lock-in effects. For example, Equation 1a includes the impact of purchase attitude toward j' on search attitude toward j' ($\omega_j^{sj'}$). This is one measure of channel lock-in. The second would be the impact of search attitude toward j' on purchase attitude toward j', captured by $\gamma_j^{pj'}$. The other γ and ω coefficients, when $j \neq j'$, depict various forms of cross-channel synergy. For example, $\gamma_j^{pj'}$ would reflect the cross-channel synergy of using channel j for search and j' for purchase.

Note that the search attributes X appear in Equation 1a (the search equation) but not in Equation 1b (the purchase equation), while

purchase attributes *W* appear in Equation 1b but not Equation 1a. This allows the model to be identified, since several exogenous variables are excluded from each equation. The error terms ε^{s}_{ij} and ε^{p}_{ij} are potentially correlated with each other for a given channel and across channels. [3]

Search choice model

The search choice model translates search attractiveness into whether the consumer chooses the channel for search or not. Search choice is modeled as a multivariate probit—multivariate because the consumer can choose more than one channel for search (Manchanda, Ansari, and Gupta 1999). Formally, define Y^{*}_{ij} as the latent variable reflecting the overall utility for consumer *i* in choosing channel *j* for search, and define $SearchChoice_{ij}$ as 1 if consumer *i* chooses to search on channel *j* and 0 otherwise. The multivariate probit is then:

$$Y^{*}_{ij} = \psi_{0j} + \psi_{1j} Search_{ij} + \eta_{ij} \quad + \quad (j = 1, 2, 3) \qquad (2a)$$

$$SearchChoice_{ij} = \begin{cases} 1 \; if \; Y^{*}_{ij} > 0 \\ 0 \; otherwise \end{cases} \qquad (2b)$$

Purchase choice model

The purchase choice model translates purchase attractiveness into whether the consumer chooses that channel for purchase. We use a multinomial logit model—multinomial because the consumer can only choose one channel for purchase. Define R^{*}_{ij} as a latent variable reflecting the utility for consumer *i* in choosing channel *j* for purchase. $PurchaseChoice_{ij}$ is defined as 1 if consumer *i* chooses channel *j* for purchase; 0 otherwise. The multinomial logit is then:

$$R^{*}_{ij} = \theta_{o,j} + \theta_1 Purchase_{ij} + \mu_{ij} \qquad (3a)$$

$$PurchaseChoice_{ij} = \begin{cases} 1 \; if \; R^{*}_{ij} = \underset{m}{Max}(R^{*}_{im}) \\ 0 \; otherwise \end{cases} \qquad (3b)$$

The θ_{oj} parameters are channel-specific constants reflecting average preference for the channel, while θ_1 reflects the impact of an individual customer's purchase attitudes toward that channel on channel choice. Assuming the μ's are independent and follow an extreme value distribution, equations 3a and 3b imply:

$$\text{Prob}\,(PurchaseChoice_{ij} = 1) = \frac{e^{\theta_{o,j} + \theta_1 Purchase_{ij}}}{\sum_{m} e^{\theta_{o,j} + \theta_1 Purchase_{ij}}} \qquad (4)$$

where $\hat{\theta}$ is the estimated value of θ.[4]

Empirical Results

PCA search and purchase benefits and costs

We used PCA to simplify 36 perceptual rating scales to a more manageable and interpretable number of orthogonal factors.[5] We conducted one PCA across all product categories and channels. Hence, there were 1,035 observations (3 channels x 345 respondents). It was important that we could clearly distinguish between factors related to search (*X*), purchase and search (*Z*), and purchase (*W*). Therefore, items that had small loadings or caused interpretation problems were excluded from the PCA. This resulted in 28 remaining items. Table 4 (pp. 112-3) shows the Varimax-rotated loadings of these items. We retained 14 components because this was the solution with the best interpretation. The minimal eigenvalue is .51. These components explained 83.9% of the variation in the original 28 items, with the first components explaining 28.42% of the variance.[6] The communalities of the components are all above .8. The derived components interpret nicely and grouped clearly into search, purchase, and search-and-purchase attributes as follows:

Search Attributes (*B* = benefit; *C* = cost) (*X*):

Compare information: the ease with which consumers can compare products and their prices using the channel. (*B*)
Search convenience: the ease and convenience of collecting information in the channel. (*B*)
Search effort: the time and effort it takes to search for information in the channel. (*C*)

Purchase Attributes (*B* = benefit; *C* = cost) (*W*):

Service: the availability of excellent personal advice, excellent assistance during purchase, and excellent service. (*B*)
Negotiation possibilities: the chance to negotiate price when using the channel. (*B*)
Quick obtain: the ability to receive the product quickly after the purchase. (*B*)
Purchase risk: risks arising from difficulty in judging quality, from the possibility of not receiving an order placed on the channel, and of payment hassle. (*C*)
Purchase effort: the effort required to purchase the product. (*C*)
Buying time: how fast a product can be purchased. (*B*)
Privacy: the perception that privacy is guaranteed when using the channel. (*C*)

Search-and-Purchase Attributes (*B* = benefit; *C* = cost) (*Z*):

Assortment: the availability of popular brands, the newest types of products, wide range, and good-quality products. (*B*)
Price promotion: the availability of low prices and attractive offers. (*B*)
Reference group: friends and acquaintances use the channel for search and/or purchase. (*B*)
Enjoyment: use of the channel is fun and comfortable. (*B*)

In sum, the PCA is pretty much in line with the ex-ante defined benefits and costs. However, there are some differences. The ex-ante defined purchase convenience factor is split into multiple factors, while price and promotion are grouped together in one factor. Privacy is not grouped into the risk factor, but appears to be a separate factor.[7]

Figure 3 (p. 115) plots average factor scores for each of the three channels along each of the 14 factors plus after-sales. The results are intuitive. The store channel is particularly strong on Service, Risk, and Privacy, and relatively weak on Search Convenience. The Internet is very strong on Search Convenience and Compare Information, although not strong on Search Effort and very weak on Privacy. Catalogs are particularly weak on Service and Negotiation, but relatively high on Enjoyment. In summary, Figure 3 suggests stores are positioned around service and Privacy, the Internet is positioned along Search Convenience and Compare Information, Catalogs are positioned as enjoyable and fairly convenient for search.

Estimation results: 3SLS model

Effect of Attributes on Attractiveness. Table 5 (p. 114) shows the estimated coefficients and their *t*-statistics for the included attributes in the channel attractiveness formation models. The system-weighted R^2 for the model was .659. The correlations between the error terms were generally small, with the largest occurring between equations for a given channel. For example, the correlations between the estimated residuals for search and purchase were −.682 in the store model and −.462 in the catalog model. All other correlations between the estimated residuals were less than .4 in absolute value. The negative correlations signify that the unobserved factors we could not measure tended to work in opposite directions; that is, if they increased search attractiveness, they tended to decrease purchase attractiveness.

In the search equations, Search Convenience and Compare Information are highly significant, with a positive sign for each channel, as would be expected. Search Effort has a negative sign in each equation, as would be expected, although this attribute is not as strong in absolute value or significance levels.[8] Search-and-purchase benefits also influence search attractiveness; Enjoyment, Assortment, Price Promotion, and Reference Group are strongly significant in the Internet and catalog equations. The relatively strong coefficient for Price Promotion in the Internet equation might signal that consumers use the Internet to search for good deals. Note, finally, that there are fewer significant coefficients in the store search equation and that the coefficients are generally smaller than in the other two equations.

Table 4
PCA Loadings after Varimax Rotation (only loadings > .30 are reported)

	Assortment	Service	Risk	Price Promotion	Search Convenience
Popular brands and types	.824				
Newest products	.808				
Wide range of products	.803				
High-quality products	.647	.368			
Excellent assistance		.809			
Good personal advice		.800			
Good service		.693			
Do not get right product			.854		
Difficult to judge quality			.815		
Wrong payments		–.317	.727		
Attractive offers	.306			.819	
Regular promotions	.324			.809	
Low prices				.692	
Obtain info any time of the day					.849
Quickly obtain info					.838
Fun to shop					
Comfortable to shop					
Friends, acquaintances search					
Friends, acquaintances purchase		.354			
Quickly compare options					
Easy to compare prices	.348				
A lot of time to search					
A lot of effort to search					
Effort to buy product					
Negotiate on price					
A lot of time to buy product					
Privacy guaranteed		.333			
Quickly obtain product		.324			

There are also significant effects in the purchase equations, and these too have expected signs. Surprisingly, however, in the store equation we find only one marginally significant coefficient (Price Promotion). In the other two equations we find many significant effects. For example, Service is significantly positive in both equations, and Purchase Effort is significantly negative in both equations. Risk and Privacy are particularly important deterrents for using the Internet for purchase, as would be expected. Risk is also very important for catalogs. Likewise, in the search equation, we find that Assortment, Reference Group, and Enjoyment significantly affect Internet purchase attractiveness.

An explanation for the absence of significant effects in the store equation might be the range of the data. The store was rated at such a high level on several key attributes, especially assortment, service, and after-sales, that we really didn't have enough variation to see what would happen to overall attitudes toward the store if these attributes changed significantly. Another

Enjoyment	Reference Group	Compare Information	Search Effort	Purchase Effort	Negotiation	Buying Time	Privacy	Quick Obtain
.791								
.749								
	.877							
	.800							
		.810						
		.733						
			.934					
			.698	.408				
				.828				
					.939			
			.339			.866		
							.835	
								.793

explanation is that much variation is already explained by the endogenous variables (search and purchase attractiveness).

Lock-in and Cross-Channel Synergy Effects. Table 6 (p. 115) provides the estimated coefficients and their *t*-statistics for lock-in and cross-channel synergy effects. The coefficients for the effects of search on purchase and purchase on search, for a given channel, represent lock-in effects (see equations 1a and 1b). There are six such coefficients (shaded in gray). They are strongly positive for the store and catalog and weakly positive but not significant for the Internet. This suggests that the Internet has poor lock-in. Thus, this finding indicates that customers choosing the Internet for search are more likely to engage in research shopping than customers choosing the store or catalog channel.

The cross-channel synergy effects are reflected by the coefficients for the relation between search in one channel and purchase in another (e.g., Internet search → store purchase). There

Table 5

Attitude Formation Model Results: Search and Purchase Attitudes as Function of Attributes*

	Store				Internet				Catalog			
	Search		Purchase		Search		Purchase		Search		Purchase	
	Coeff.**	*t*-stat	Coeff.**	*t*-stat	Coeff.**	*t*-stat	Coeff.**	*t*-stat	Coeff.**	*t*-stat	Coeff.**	*t*-stat
Search Convenience	**.062**	**2.96**			**.379**	**7.57**			**.116**	**2.94**		
Search Effort	–.014	.08			.006	.20			–.087	.24		
Compare Information	**.072**	**2.79**			**.220**	**5.92**			**.197**	**5.39**		
Service			.043	.89			**.262**	**4.18**			**.171**	**2.53**
Risk			–.012	.48			**–.288**	**5.38**			**–.195**	**3.99**
Purchase Effort			–.013	.88			**–.084**	**1.93**			–.044	1.18
Negotiation			–.022	1.34			–.018	.37			.028	.51
Quick Obtain			.001	.10			**.082**	**1.80**			.056	1.41
Privacy***			.020	.83			**–.231**	**5.19**			**–.079**	**1.92**
Buying Time***			.019	1.07			**.076**	**1.97**			**.075**	**1.97**
After-sales			.031	.68			**.348**	**3.81**			**.144**	**1.85**
Assortment	.033	.82	.043	.48	**.280**	**7.71**	**.253**	**4.18**	**.177**	**8.37**	**.099**	**2.02**
Price Promotion	–.012	.39	**.051**	**1.71**	**.217**	**5.53**	**.094**	**1.82**	**.116**	**2.94**	.059	1.52
Reference Group	.002	.08	.016	.72	**.120**	**3.24**	**.191**	**4.14**	**.103**	**2.39**	.045	.91
Enjoyment	**.057**	**1.70**	.015	.46	**.291**	**6.27**	**.340**	**5.50**	**.178**	**4.10**	.073	1.39

*Figures in bold are statistically significant at $p \leq .10$.
**In order to save space, we do not report the coefficients of the consumer characteristics and the product dummies. These coefficients are available upon request from the authors.
***We included negative factor scores in our model for these two variables. Privacy is considered a cost, but the item is stated positively (privacy guaranteed). Buying time is considered a benefit, but the item is stated negatively (a lot of time to buy).

are 12 such coefficients in Table 6. Five of these are statistically significant. Of those, three are positive and two are negative. Positive significant coefficients are found for Internet search → store purchase, catalog search → Internet purchase, and catalog purchase → Internet search. Thus, there is evidence for some cross-channel synergies. The negative significant coefficients are found for catalog purchase → store search, and store search → catalog purchase. Thus consumers perceiving the catalog to be attractive for purchase believe that the store is less attractive for search and vice versa.[9]

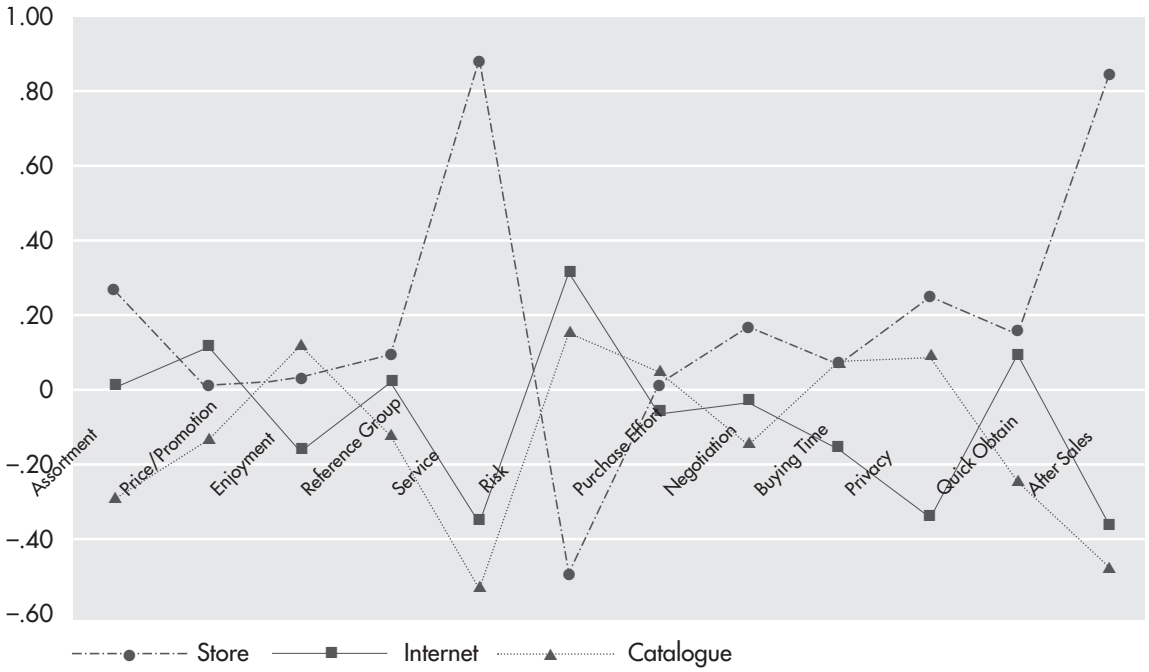
Thus, our results show that the Internet seems especially vulnerable to the research shopper. This is because channel lock-in is insignificant for this channel, and there is a marginally significant cross-channel synergy between Internet search and store purchase. Note, however, that there is a strong cross-channel synergy from catalog search to Internet purchase (.309, $t = 2.52$), suggesting that there may be cases of catalog research shopping and purchase on the Internet.

Multivariate probit and multinomial logit results

Tables 7 and 8 (p. 116) display the results of the multivariate probit model linking search attractiveness to search choice and the multinomial logit model linking purchase attractiveness to purchase choice. The key finding presented in these tables is verification of the fact that search or purchase attractiveness translates into search or purchase choice. The probit attractiveness coefficients are strongly significant for each channel, meaning that customers who find a channel more attractive for search are indeed

Figure 3

Customer Perceptions of Channels along Attributes*



* Entries are mean-factor scores and mean standardized score for after-sales

Table 6

Within- and Between-Channel Crossover Coefficients*

			Effect on											
			Store				Internet				Catalog			
			Search		Purchase		Search		Purchase		Search		Purchase	
			Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value
Effect of	Store	Search			**.738**	**8.14**	**−.306**	**1.83**	−.189	.84	−.155	.87	**−.420**	**2.13**
		Purchase	**.918**	**11.23**			.127	.70	−.307	1.18	.016	.08	.293	1.30
	Internet	Search	−.057	1.09	**.093**	**1.88**			.086	.77	.029	.37	−.096	1.10
		Purchase	.077	1.64	**−.109**	**2.45**	.049	.70			−.119	1.64	.041	.50
	Catalog	Search	**.143**	**2.16**	−.017	.26	**−.171**	**1.95**	**.309**	**2.52**			**.731**	**7.92**
		Purchase	**−.14**	**2.43**	.029	.50	**.138**	**1.70**	**−.259**	**2.29**	**.539**	**8.25**		

*Figures in bold are statistically significant at $p \leq .10$. Gray shading depicts estimated lock-in effects.

more likely to choose it for search. Similarly, the multinomial logit model shows a significant coefficient for purchase attractiveness, meaning that customers who find a channel more attractive for purchase are indeed more likely to choose it for purchase.

Table 7
Multivariate Probit Model

Coefficients*	Constant		Attractiveness Coefficient	
	Coeff.	*t*-value	Coeff.	*t*-value
Store	**–2.045**	**3.40**	**.707**	**5.08**
Internet	**–3.938**	**7.87**	**1.069**	**8.97**
Catalog	**–3.012**	**7.84**	**.795**	**8.05**

Correlations between Equations	Store	Internet	Catalog
Store	1		
Internet	**–.259**	1	
Catalog	–.062	.153	1

*Figures in bold are statistically significant at $p \leq .10$.

Table 8
Multinomial Logit Model*

	Coeff.	*t*-value
Constant: store	**1.494**	**3.702**
Constant: Internet	**.959**	**2.23**
Purchase attractiveness	**2.867**	**6.449**

*Figures in bold are statistically significant at $p \leq .10$.

Diagnosing and Managing Research Shopping

The central goals of this paper are to understand (1) why the research shopper phenomenon is prevalent in some channels and (2) how firms can decrease or increase research shopping. We therefore first use our survey and model results to identify the degree of research shopping in our data and explain it using our three proposed mechanisms: attribute-based decisionmaking, lock-in, and cross-channel synergy. Next we use our model to simulate the impact that various changes, motivated by those three mechanisms, would have on research shopping.

Extent of and reasons for research shopping across channels

Among the three reasons for research shopping, the absence of channel lock-in and the existence of cross-channel synergies are measured by our model coefficients. However, for the attribute-driven motive, we need additional calculations. We are interested in what channel attributes account for differences in search attractiveness and purchase attractiveness between channels. To calculate these differences, we used the average values of the attributes and substituted these into the reduced forms of our equations. Subsequently, we calculated the search and purchase attractiveness for each channel based on the average values of these attributes and then computed the differences. The results of this analysis and the summary of our other findings are reported in Table 9. We also calculated the percentage of consumers using one channel for search and using the other channel for purchase, as a direct measure of the extent of research shopping between the various channels.

The analysis provides some interesting results. First, the highest research shopping percentage can be found for the Internet search → store purchase combination. This reflects the independent findings shown in Figure 1. All three mechanisms appear to be at work in producing that particular pattern of research shopping. In terms of attributes, the Internet has a search advantage and a purchase disadvantage when compared with the store. The Internet also has little lock-in (Table 6). Finally, there is some positive cross-channel synergy (weakly significant but still positive) from Internet search to store purchase (Table 6). These three factors combine to produce a large degree of research shopping in the Internet channel.

While less common, Table 9 also reveals some catalog → Internet research shopping. This is not explained by attributes (the catalog and Internet are roughly equal on purchase attrib-

Table 9
Diagnosing the Extent of and Reasons for Research Shopping

	Reasons for Research Shopping				
Research Shopping Pattern	**Attribute-driven***		**Search Channel Lock-in**	**Cross-Channel Synergy**	**Actual Research Shopping****
	Search Difference	Purchase Difference			
Internet → store	.2	–.7	Low	Positive ($p < .10$)	50.3%
Internet → catalog	.37	.05	Low	n.s.	1.4%
Catalog → store	–.17	–.75	High	n.s.	33.7%
Catalog → Internet	–.37	–.05	High	Positive ($p < .05$)	6.6%
Store → catalog	.17	.75	High	Negative ($p < .05$)	2.1%
Store → Internet	–.2	.7	High	n.s.	5.9%

*These numbers show the average difference in attribute-driven evaluation between the left-hand channel and the right-hand channel. A positive difference means the left-hand channel is superior. For example, the Internet is perceived as superior to the store for search (Internet → store = .20), while the store is perceived as superior to the Internet for purchase (by .70, since Internet → store = –.70).
**These numbers represent the percentage of research shopping instances that are of each form of research shopping. In particular, we identified research shoppers as purchasers in our sample if they either reported searching multiple channels or searched in only one channel but purchased in another. This yielded 214 research shoppers and 288 instances of research shopping (since a respondent could engage in more than one form of research shopping (e.g., the respondent who searched in the Internet and the catalog channel yet purchased in the store would be engaging in Internet → store and catalog → store research shopping). Our goal was to calculate actual research shopping behaviors in a manner consistent with the DoubleClick study reported in Figure 1. We therefore divided the actual instances by 288 so that the percentages in Table 9 would sum to one, as they do in Figure 1.

utes), nor is it explained by lack of lock-in, because the catalog has high lock-in (Table 6). However, there is a great deal of cross-channel synergy, as the .309 coefficient from catalog search to Internet purchase (Table 6, column 10) reveals. In short, customers find it natural to peruse the catalog to search for what they want, and then order it on the Internet.

In the rest of the channel pairs, research shopping is curtailed either by high lock-in (for catalog and store), by lack of cross-channel synergy, or by attributes. To produce attribute-driven research shopping, the search difference in Table 9 should be highly negative and the purchase difference should be highly positive. This occurs only for Internet → store research shopping.

In summary, Table 9 lists the reasons for research shopping proposed in this paper (attribute-driven decisionmaking, lack of lock-in, and cross-channel synergy) and shows which types of research shopping are observed in our data, making it clear that the most common form is Internet → store.

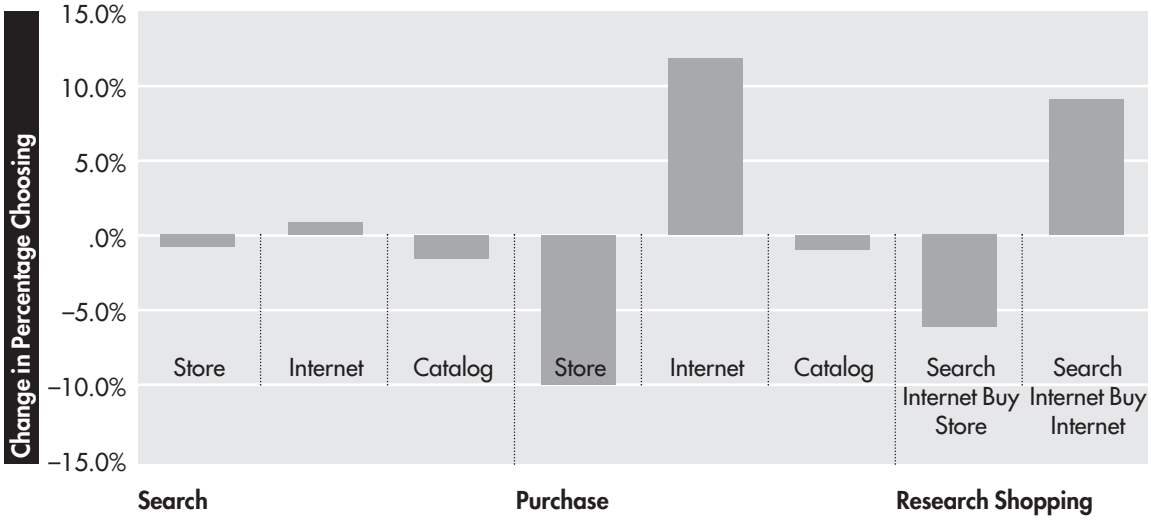
Managing research shopping

Research shopping can be viewed as either a negative or positive phenomenon from a company standpoint. Internet → store research shopping is usually viewed negatively, since companies are afraid they will lose the customer if the customer searches various websites and then buys at another store (Nunes and Cespedes 2003). Also, a pure-play Internet retailer would certainly view Internet → store research shopping as a negative. However, Internet → store research shopping can be viewed positively by a company that uses both the Internet and store channels if the company's strategy is to use the Internet to acquire customers for the store.

In any case, the three mechanisms this research has identified as drivers of research shopping suggest three strategies for managing it: (1) change the search or purchase attributes of one or both of the channels, (2) create or decrease channel lock-in, and (3) create or reduce cross-channel research synergies. We will illustrate how our model can be used to suggest and measure the impact of specific strategies. We focus on

Figure 4

Decreasing Research Shopping by Improving Internet Purchase Attributes



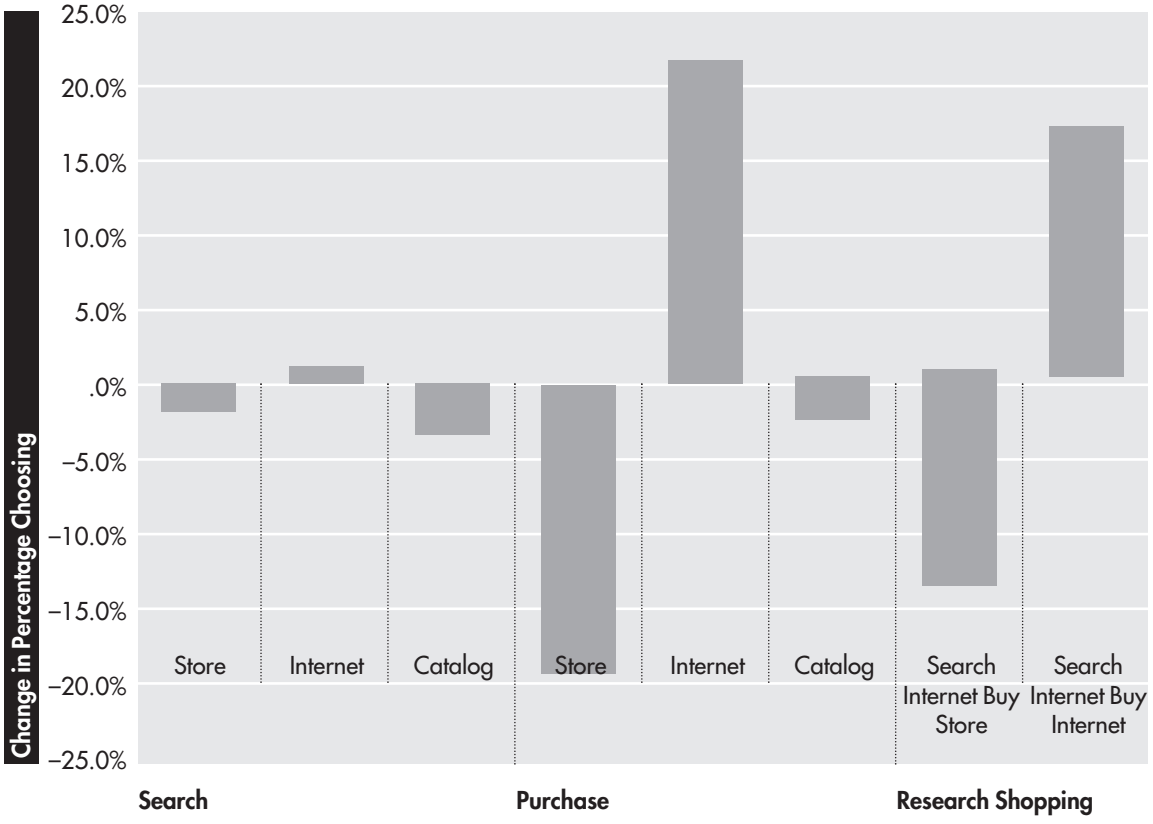
Note: The results are based on a change in the Internet's factor scores for Service and Privacy by one unit (roughly one standard deviation).

Internet → store research shopping since it is most common, and on attribute and lock-in management, since these appeared to be the most powerful drivers of Internet → store research shopping.

Our model can be used to simulate the impacts of changes either in attribute ratings or in the attribute coefficients in equations 1a-1b. The attribute coefficients suggest which attributes are important, and the channel positioning map (Figure 3) suggests which attributes should be changed to achieve a desired outcome. For example, Table 9 suggested that a major reason for Internet → store research shopping is that the Internet is deemed unattractive for purchase. Figure 4 shows that two attributes that particularly hurt the Internet as a purchase channel are its low scores on Service and Privacy, relative to the store. Table 5 shows that these attributes are important determinants of Internet purchase attractiveness. Accordingly, we use the model to simulate the impact of increasing the Internet's Service and Privacy attribute ratings: we see what an improvement of one unit in the Internet's ratings for Service and Privacy would accomplish. (The Internet's ratings might improve in this manner if, for example, the company added a real-time shopping assistant to improve service or adopted and publicized a transparent and strict privacy policy.) Figure 4 shows the results of this change: Internet purchasing increases by about 10% at the expense of store purchasing, and the percentage of customers searching on the Internet and buying at the store decreases by about seven percentage points.

Another strategy for decreasing Internet → store research shopping is to increase Internet lock-in. In terms of the model, this amounts to increasing the coefficient relating Internet search to Internet purchase (.086 in Table 6). Managerially, this could be done by having the website remember a customer's previous orders, delivery addresses, and credit numbers, as is done by Amazon.com. Figure 5 shows the impact if we assume the coefficient increases from .086 to .286 as a result of these changes. (This would increase Internet lock-in to somewhat less than half the level of the other two channels; see Table 6). Figure 5 shows that if this were accomplished, Internet purchasing would increase by 21 percentage points and research shopping would decrease by 13 percentage points.

Figure 5
Decreasing Research Shopping by Increasing Internet Lock-in



Note: The results follow from increasing the Internet search → store purchase coefficient from .086 to .286.

These examples illustrate how our model can be used to suggest and evaluate different options for changing the amount of research shopping. The model is useful because it captures all three of the three mechanisms that cause research shopping—attribute-driven decisions, lack of lock-in, and cross-channel synergy.

Summary and Discussion

The framework we have presented in this paper is based on the theory of reasoned action, whereby consumers' beliefs regarding either channel search attributes or channel purchase attributes determine how attractive they perceive a channel to be for search or purchase, which in turn determines their choice of channel for search or purchase. Our framework is distinct in its focus on two behaviors—the search decision and the purchase decision. This suggests a mutual relationship between attitudes toward searching on Channel A and purchasing on Channel A (lock-in). It also suggests a mutual relationship between attitudes toward searching on Channel A and purchasing on Channel B (cross-channel synergy). The theoretical basis for allowing an attitude toward one behavior to affect the attitude toward another behavior is rooted in the "attitude-as-an-attribute" notion and the customer's preference for one-stop shopping (Mitchell and Olson 1981; Messinger and Narasimhan 1997).

Our empirical model is simply our framework expressed as a multi-equation model and estimated using survey data. The channel lock-in and synergy mechanisms are represented by

particular coefficients in that model. Attribute-driven decisionmaking can be measured by examining average attribute perceptions and comparing one channel to another (Figure 3 and Table 9). Note that three factors—attribute-driven decisionmaking, lack of lock-in, and cross-channel synergy—work together to produce research shopping. As we have shown, lack of lock-in is certainly a factor in the relatively high levels of research shopping in the Internet channel. Note also that research shopping is directed at the store as the purchase channel, not the catalog. This is because the Internet is inferior to the store on purchase attributes, plus there is cross-channel synergy between the Internet and the store, while the Internet is marginally better than the catalog as a purchase channel and there is no cross-channel synergy between those two channels.

Our findings replicate previous studies in that we find that Internet → store research shopping is the most common form of research shopping (Table 8 and Figure 1). We were able to diagnose that this is due to (1) the strong search attribute advantage the Internet has over the store, coupled with the strong purchase attribute advantage the store has over the Internet, (2) the lack of statistically significant lock-in for the Internet, in stark contrast to the very strong lock-in enjoyed by the store and catalog, and (3) to a lesser extent (because the coefficient is not strongly significant), cross-channel synergy between using the Internet for search and the store for purchase.

Finally, we show in figures 4 and 5 that using plausible assumptions for managing the three mechanisms, we can evaluate various policies. In particular, we showed Internet → store research shopping could be reduced either by an attribute approach (improving service and privacy in purchasing on the Internet) or by managing lock-in (increasing lock-in for the Internet from basically zero to somewhat less than half the other channels' lock-in).

Our work has implications both for researchers and practitioners. For researchers, we need to understand better the reasons why certain channels achieve better lock-in than others. For example, the Internet clearly emerges as having poorer lock-in than the other channels, and this is a prime determinant of research shopping. Is the poorer lock-in due to the newness of the Internet channel, to the ease of surfing across many different companies' sites on the Internet, or to the design of websites that do not encourage purchase? We also need to understand what creates cross-channel synergies. Is it the degree of channel integration, as perceived by the consumer? If so, what influences these perceptions? What are the best ways to design a website so as to create or mitigate cross-channel synergies? More broadly, we need to understand the economic implications of research shopping. Does it increase price competition? Does it potentially allow firms to differentiate in terms of their channel design and the degree of research shopping they encourage? (See Zettelmeyer 2000.)

The key implication of our work for management is that there are three underlying reasons for research shopping, and the degree to which they are operating can be measured. For example, a retailer could replicate our survey and estimate our model for consumers in its particular product category, using actual competitor evaluations rather than the generic channel evaluations used in this research. This would allow management to diagnose the extent of research shopping and whether it should be curtailed or encouraged, and then allow the retailer to generate strategies—through manipulating the three mechanisms—for doing so.

It is rather important to understand the difference between the attribute-driven explanation for research shopping and the lack-of-lock-in explanation. Managerially, the attribute-driven issue can be solved by, for example, increasing purchase attributes of a channel. Recently, Schlosser, Barnett White, and Lloyd (2006) showed that website investments in consumer trust that reduce risk can convert Web searchers into Web buyers. Lock-in can be created by managerial actions that increase the stickiness of a channel. For example, Internet lock-in can

be increased by techniques such as remembering the customer's address and credit card number (as Amazon does), and offering promotions such as instantly redeemable rebates for customers who immediately decide to buy the product on the Internet. Some firms also mandate channel lock-in. For example, firms may require a small fee for searching, which is only refunded when the customer purchases through the website.

Another important managerial implication of our work is that we reinforce the notion that consumers' channel choice is largely determined by channel attributes. For example, efforts companies make to relieve consumer concerns about privacy will indeed improve attitudes toward buying on the Internet. They can do this through more transparent, highly publicized privacy policies, and through opt-in rather than opt-out agreements with customers as to how their data can be used.

While we believe this study has increased our understanding of the research shopper phenomenon, the work is subject to limitations that provide avenues for future research. First, we modeled intended choice instead of actual choice of a channel for either search or purchase. Future research could study consumers' actual channel choices for search and purchase.[10] Second, although we studied multichannel behavior in six product categories, these categories might still be limited in terms of certain characteristics. Future research might apply our model in other categories. Third, this study is limited geographically, as we studied only Dutch consumers. Researchers might consider multichannel behavior in other countries, as well as collect international data on multichannel customer behavior in order to make comparisons between countries. Fourth, our study does not study the multichannel issues from a single-firm perspective. Future work could take on this perspective and gain insights not only on competition between channels but between companies as well. Fifth, we considered multichannel choice for search and purchase as a simultaneous process. However, one could perhaps argue that this is a sequential process. Future research should collect data that follows consumers' channel choice within the consumers' shopping process. This would clearly enhance our understanding of channel choice.

Sixth, we did not consider any underlying consumer segments. There might be some very interesting consumer segments that might be intriguing targets for future research. For example, it may be possible to segment consumers based on where their scarcities lie. For example, retired people on a fixed income, who have plenty of time for search but may be short on money, may form one segment; wealthier retired people who are short on neither time nor money may form another; and young families with children, who may be very short on time and money, may form a third. Seventh, another limitation of our work is that we are using a survey of customers to try to infer causality—specifically, the causal factors of research shopping. Strictly speaking, it is extremely difficult to infer causality from a survey, so what we have really is evidence that attribute perceptions, lack of lock-in, and cross-channel synergy, are strongly *associated* with research shopping. Finally, our research did not consider channels such as sales over the television or mobile commerce. Future research can extend our model by including these channels as well. However, this would necessitate very extensive data collection. ■

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Appendix. Measurement of Search and Purchase Benefits and Costs

In this appendix we report the items used to measure defined search and purchase costs and benefits. The literature we based the items on is provided in parentheses.

Search Benefits
Information benefits (Montoya-Weiss, Voss, and Grewal 2003)
I can get plenty of information on product X in … *
The information quality on product X is good in … *
I can easily compare options of product X in …
I can easily compare prices of product X in …

Search convenience (Childers et al. 2001)
I can get information on product X at any time of the day in …
I can quickly get information on product X in …

Search Costs
Search effort (Baker et al. 2002)
It takes a lot of time to search for information on product X in …
Collecting information on product X requires a lot of effort in …
It is difficult to collect information on product X in …*

Search-and-Purchase Benefits
Assortment (Kunkel and Berry 1968; Samli, Kelly, and Hunt 1998; Yoo, Park, and MacInnis 1998)
A large assortment of product X can be found in …
I can buy the newest product X in …
The popular brands and types of product X can be found in …
High-quality products X are available in …
Here I can find products X that fit my needs*

Price (Dickson and Albaum 1977)
The prices of product X are low in …
Buying product X in … provides much value for money*

Promotions (Kunkel and Berry 1968; Dickson and Albaum 1977)
There are regularly promotions for product X in …
There are attractive offers for product X in …

Reference group (Park and Lessig 1977)
My friends and acquaintances seek information on product X in …
My friends and acquaintances usually buy product X in …

Shopping enjoyment (Childers et al. 2001)
It is fun to search for and buy product X in …
Searching for and buying product X is comfortable in …

Purchase Benefits
Service (Baker et al. 2002; Homburg, Hoyer, and Fassnacht 2002)
I can get good service for product X in …
When buying product X, I get excellent help in …
I get good personal advice about product X in …

Purchase convenience (Childers et al. 2001)
I can buy product X at any time of the day in …*
I can quickly obtain product X when buying in …

After-Sales (these items are specific for each category)
Delivery is well arranged when buying product X in … (books, computers, electronic appliances, clothing)
I can easily trade in product X for money in … (books, computers, electronic appliances, clothing)
Returning product X is well arranged in … (books, computers, electronic appliances, clothing)
Product X is usually in stock in … (books, computers, electronic appliances, clothing)
If I have problems with product X, I will get good help in … (all products)
When needing repair for product X, that is easily arranged in … (computers, electronic appliances)
Having product X installed is easily arranged in … (computers, electronic appliances)
I can have a customized product X in … (loans, holidays)
I can easily adapt product X in … (loans, holidays)
I can easily cancel product X in … (loans, holidays)

Negotiation
I can easily negotiate on prices of product X when buying in …

Purchase Costs
Risk (Forsythe and Shi 2003; Park and Jun 2003)
There is a large probability that I will not get the right product X when buying in …
It is difficult to judge the quality of product X in …
The probability of wrong payments for product X is large in …
Privacy of my personal data is secured when buying product X in …

Purchase Effort (Baker et al. 2002)
It takes a lot of time to buy product X in …
Buying product X requires a lot of effort in …
It is difficult to buy product X in … *
It costs a lot of time to buy product X in …
*These items did not end up in PCA due to low loadings or interpretation problems.

Notes

1. The phenomenon of searching for information as part of the shopping process is not new (see Moorthy, Ratchford, and Talukudar 1997; Punj and Staelin 1983). However, the literature on this topic has mainly assumed a single channel, so that implicitly the customer would purchase in the channel in which they did their research. In a multichannel environment, search and purchase can take place in different channels, raising the question of why one would search in one channel yet purchase in another. That is the question we address in this research.

2. Our research was part of a large-scale study conducted by the largest Dutch marketing consulting company and a Dutch market research agency on the Dutch multichannel consumer.

3. Our model is estimated for product categories jointly. We account for possible differences between the considered product categories with the inclusion of product dummies. Another option would have been to estimate models per product category. However, given the limited sample size (approximately 50 per product category) and the large number of explanatory variables, this would lead to unreliable estimates for both the endogenous and the exogenous variables in our model.

4. The multivariate probit model is estimated in SAS using Proc QLIM, via simulated maximum likelihood, while the multinomial logit model is estimated in Limdep 8.0 using maximum likelihood.

5. Note that we do not include the 10 after-sales items in this analysis because it was not appropriate to use the same items for each product.

6. An often-used approach for determining the number of components is the eigenvalue > 1 cut-off rule. We certainly considered the eigenvalue cut-off rule, but put more emphasis on interpretation and managerial relevance. Lehmann, Gupta, and Steckel (1998) as well as Gatignon (2004) recommend such considerations in addition to the eigenvalue cut-off rule. Our approach is also similar to Rust, Lemon, and Zeithaml (2004). As these authors note, there are many other criteria for selecting the number of factors, one being interpretability or psychological meaningfulness (p. 118, see also Kaiser 1960). In addition, using the eigenvalue cut-off rule results in only seven factors explaining 67% of the variation. These factors are much more difficult to interpret, while multiple variables have relatively high factor loadings on multiple factors. Our 14 factors account for 84% of total variation yet are orthogonal, so we have no problems with multicollinearity among the factor scores. Moreover, their interpretability is high, while the variables do not have high factor loadings on multiple factors.

7. In principle it is better to have multiple-item components, as single-item components may be swamped by other items. However, this is not problematic in our data, as (1) the single-item components have very high loadings and hence communality, and (2) the components turn out to be significant in our regression analysis in very sensible and insightful ways. For example, privacy is very important for purchasing on the Internet, and quick buying is important for Internet and catalog.

8. Note that it is appropriate to compare magnitudes of coefficients since the variables are PCA factor scores, which are standardized across consumers and channels, and hence all these variables have the same standard deviation, 1.

9. Our results also reveal five significant cross-channel effects between the same behavior between different channels. Of these, four are negative. These effects are not of direct relevance to the research shopper phenomenon, but the negative results suggest channel substitution for the same behavior.

10. We did measure actual channel choice in the last purchase occasion. Our results reveal a large association between intended channel choice and actual choice.

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