

The Effects of Interactivity on Cross-Channel Communication Effectiveness

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Abstract

This study investigated the effects of web site interactivity on consumers' trust in brands and product evaluations, and their subsequent purchase intentions in a multi-channel context. Results from the experiment indicated that through greater interactivity, individuals developed greater trust in the vendor and better understanding of its products. Further, it was demonstrated that trust and product evaluation carried interactivity's influence onto not only online purchase intention, but also offline purchase intention at a brand-specific business level. These findings indicate that online interactivity can have broad implications for multi-channel marketing.

Introduction

As an advertising medium, the Internet is unique in permitting firms to create interactive online environments that allow consumers to directly experience products. Scholars have considered this unique interactivity as an important feature that differentiates the Internet from other traditional advertising media (Griffith and Chen 2004; McMillan and Hwang 2002; Shen 2002). Traditionally, advertising messages and direct experience have been considered the two primary sources of information that marketers used to communicate product information to consumers (Singh, Balasubramanian, and Chakraborty 2000). The Internet bridges these two information sources by enabling firms to digitalize experiential attributes in multimedia formats (Alba et al. 1997; Burke 1997; Griffith and Chen 2004; Hoffman and Novak 1996), thus endowing advertising messages with attribute experiences. Through virtual reality (Biocca 1992), telepresence (Steuer 1992), or virtual direct experience (Griffith and Chen 2004), the Internet can approximate key characteristics of direct experience when promoting experience products, and in doing so, provide consumers elements of interactivity previously unavailable via traditional media. This has broad implications for both marketers and consumers as prior research has indicated that direct experience with products can result in a greater consistency between consumer attitudes and behaviors than can indirect experience (Fazio and Zanna 1978; Fazio, Zanna, and Cooper 1978; Sherman 1982). Furthermore, researchers have found that attitudes based on direct experiences tend to be better predictors of behavioral intentions than attitudes formed through indirect experience alone (Smith 1993; Smith and Swinyard 1982).

In this study, we investigate the effects of interactivity on consumers' trust and product evaluation, and their subsequent purchase intentions. Moreover, the purchase intentions under investigation were examined in a multi-channel context (i.e., online and offline). One of the motivations for this study is the recent call of marketing academics and practitioners to study multi-channel strategy, and to understand how interactive and conventional media work together to move consumers through the purchase process (Burke 2002). An additional motivation to investigate the effect of interactivity in a multi-channel setting is that a large number of businesses have experienced difficulty in synchronizing their online and offline operations (McKillen 2001). If indeed the online executions can directly or indirectly influence consumers' online and offline behaviors, then any disjunction, in a short time, will hurt the company's sales, and in a long run, will dilute a company's brand equity and reputation. Therefore an empirical investigation of the influence of interactivity on online and offline purchase intentions is warranted.

Conceptual Background

Product experience (i.e., consumer's living through or observation of a product) can be considered a continuum anchored by direct and indirect experience (Fazio and Zanna 1978). Seeing a product demonstrated on TV is a more direct experience than hearing it described on radio. Similarly, product trial is a more direct experience than watching the product being demonstrated on the TV (Coyle and Thorson 2001). In an advertising context, one can argue that the more interactive the medium, the more likely it is to provide more direct experience, while less interactivity provides a more indirect experience. According to Griffith and Chen (2004), product experiences in an online context can be viewed as virtual direct experiences (VDE), varying from "lean" to "rich" with the lean VDE approximating an indirect experience, and rich VDE approximating a direct experience. The central dimension differentiating lean

VDE from rich VDE is the level of realism, which is determined by interactivity (Coyle and Thorson 2001).

Interactivity has been credited for helping generate various benefits for marketers and consumers. Some of these benefits reported previously include creation of stronger brand identity (Upshaw 1995), facilitation of relationship marketing (Cuneo 1995), conversion of interested consumers to interactive customers (Berthon, Pitt, and Watson 1996), and greater control over information search and acquisition (Hoffman and Novak 1996). Scholars have studied interactivity from a variety of perspectives. Researchers, for example, have studied it as a part of the communication process (e.g., Blattberg and Deighton 1991; Steuer 1992), medium features (e.g., Hoffman and Novak 1996) and individual perceptions (e.g. McMillan and Hwang 2002; Newhagen, Corders, and Levy 1995). Studies on interactivity generally tap into this construct from either a system-centered or a user-centered approach (Unz and Hesse 1999). The system-centered approach deals with objective/functional features of interactive environments such as Web sites (e.g. Ghose and Dou 1998; Ha and James 1998; Schlosser 2003; Stout, Villegas, and Kim 2001), whereas the user-centered approach tends to deal with perception, i.e. perceived level of interactivity from users' point of view (e.g. McMillan and Hwang 2002; Newhagen, Cordes, and Levy 1995; Wu 1999).

Although a system-centered approach is helpful in identifying key design factors, a user-centered perspective is crucial in helping to gauge the effectiveness of these design factors as users' perception of the interactivity may be independent of design features (Lee et al. 2004). Hence, a user-centered approach complements the system-centered approach by reflecting the corresponding levels of objective/functional interactivity in users' minds.

Although there have been several studies focusing on interactivity in the context of the Internet (e.g. Coyle and Thorson 2001; Häubl and Trifts 2000; Heeter 2000; Novak, Hoffman, and Yung 2000), very little attention has been given to developing a normative (trust) and cognitive (product evaluation) model of the influence of interactivity in a multi-channel advertising context. In this research, we conceptualize interactivity as that of consumers' perception of their interaction with the medium. We adopted a unique approach of using functional design factors to manipulate different levels of objective interactivity as means of increasing the variance of perceived interactivity in consumers' minds.

Researchers have found that consumer trust is contingent upon the consumer's perceived level of interactions with the marketer that provides the consumer information (Sultan and Mooraj 2001; Yoon 2002). It is therefore possible that online interactivity can increase consumer information acquisition, e.g., through the dynamic participation in modifying the form and content of a mediated trial environment in real time. Advertisers' efforts in encouraging information flows via interactivity signal to consumers a concern and willingness on the part of the advertisers to involve the consumer in the purchase decision. This signaling of concern and openness for information flows enhances a consumer's trust. There is also evidence that direct experience is more effective at influencing a consumer's cognitive structure than indirect experience (Smith 1993; Smith and Swinyard 1982). The Internet, with its ability to incorporate levels of interactivity, allows consumers to interact with products while gathering product information (Meeker 1997). Previous research reported that richer VDE (which offers more direct experience) was more likely to be effective than leaner ones (which offers more indirect experience) (Griffith and Chen 2004). What differentiates richer VDE from leaner VDE is the level of conveyance of experiential product attributes and consequently the level of realism provided in the product experience. As one of the determinants of the level of realism (Coyle and Thorson 2001), interactivity also becomes a focal attribute to help decide whether the VDE is "lean" or "rich". Parallel with the advantage of direct vs. indirect experience, if consumers perceive the VDE to be more interactive (i.e. richer), they tend to have a more positive evaluation of the product. In light of the above-mentioned research evidence, we hypothesize that online interactivity will have a positive relationship with both brand trust and product evaluations. Stated formally, our first two hypotheses are as follows.

H1: Consumers' perceived interactivity has a positive impact on their trust in the vendor.

H2: Consumers' perceived interactivity has a positive impact on their evaluations of products.

Considerable disagreement exists within the literature regarding the influence of interactivity on purchase intentions and other behavioral changes. Some researchers have found interactivity to have a direct influence on purchase intention (e.g., Wu 2000; Yoo, and Stout 2001), whereas others (e.g., Ghose and Dou 1998) suggested that interactivity influenced consumer's decision making through perceived quality of the Web site. In this study, we propose that interactivity influences consumers' online purchase intention through normative and cognitive structures. As the social perspective of trust is usually emphasized in a cross-channel context (e.g. Ratnasingham 1998), trust is treated as a normative structure in this study which mediates the effect of interactivity on consumer online purchase intention. Product evaluation, which is treated as a cognitive structure, mediates the effect of interactivity on consumer online purchase intention.

Interactivity also has been identified as a major catalyst in fostering relationship development. It has been proposed that the "outcomes of interactivity are engagement in communication and relationship building between a company and its target consumers" (Ha and James 1998, p. 459). Central to relationship development is trust (Hart and Johnson 1999; Merrilees and Fry 2002; Sirdeshmukh, Singh, and Sabol 2002). While prior research has added to our understanding of trust in traditional channels, it has not explored the transferring effect of trust across channels. More importantly, research has yet to explore if a consumer's trust toward a firm developed in one channel influences consumer behavioral intentions in the firm's other channels.

Trust influences behavioral intent (e.g. Geyskens, Steenkamp, and Kumar 1999; Singh and Sirdeshmukh 2000). For instance, Morgan and Hunt (1994) found empirical support for the relationship between trust and cooperative behavior. Lynch, Kent, and Srinivasan (2001) note that given the absence of physical exposure and contact between a firm and its customers in an online channel, trust might be particularly important in influencing behavioral intentions. As such, we propose that consumer trust reduces consumer uncertainty (e.g., false advertising, not honoring policies, privacy concerns, etc.), thus enhancing positive behaviors (e.g., online purchase intentions). In a cross-channel context, because trust is a normative (interpersonal) structure, the influence of interactivity from the development of trust is likely to be transferred to a consumer's in-store/offline purchase intention.

At a product/brand level, Aaker (1996) argues that a firm's brand equity can be leveraged as a firm expands its product line. Extending the branding literature to this study, it is theorized that trust developed within one of a marketer's channels will generate positive behavioral implications in a marketer's other channels. Specifically, we argue that consumer trust developed in an online channel will transfer to a marketer's offline channel. As such, we propose the following hypotheses:

H3: Consumer trust mediates the influence of interactivity on consumer online and offline purchase intentions.

H4: Consumer product evaluation mediates the influence of interactivity on consumer online and offline purchase intention.

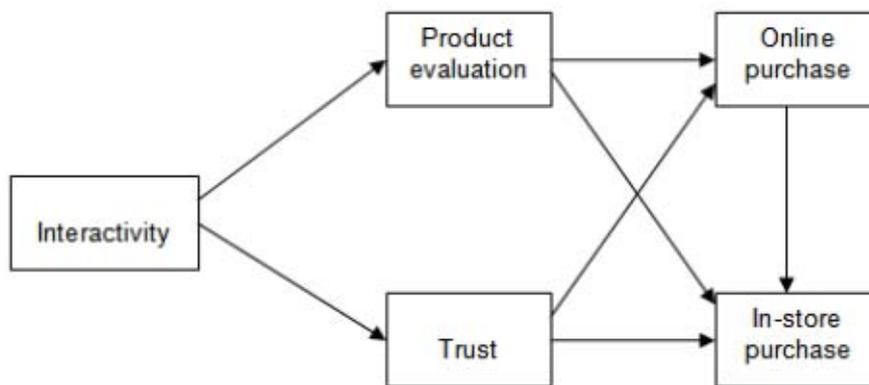
An offline (i.e., in-store) setting is typically perceived as richer than an online setting. For instance, previous research contends that consumers will derive greater shopping context utility from an in-store retail experience than an online retail experience (Lee and Tan 2003). As the in-store retail setting approximates the richest media and offers the most direct experience, we argue that the stimulation of online purchase intentions will carry-over toward the richer media hence transfer online purchase intention to offline purchase intention. As the basic shopping process consists of the activities of gathering information (e.g. window shopping), purchasing, and delivery (Salomon and Koppelman 1992), consumers are likely to utilize the online retail channel as a shopping venue carrying-over this intention

when considering the richer media setting. Therefore, we propose the next hypothesis.

H5: Online purchase intention has a positive impact on offline purchase intentions.

Figure 1 presents a conceptual model of the relationship between the key variables. As can be seen, while it is expected that interactivity will have positive associations with brand trust and product evaluations, we also posit that online interactivity has an indirect effect on online as well in-store purchase intentions mediated by trust and product evaluation.

Figure 1: Conceptual Model of Direct and Indirect Effects of Interactivity



Research Methods

To examine the proposed hypotheses, we decided to cast our investigation in the context of an online retail site. We used search engines (e.g., Yahoo, Netscape, Altavista, etc.) to identify sites that target the 18-35 age segment and also offer interactive features. An apparel website site by Land's End (the largest online apparel marketer, generating \$1.462 billion in revenue in 2001) was finally selected as the context for use in this study. The site was ideal because first it permits a meaningful interactivity manipulation in a laboratory setting due to it being an experience product with limited digitizable experiential product attributes. Second, it is appropriate for use as stimuli for the intended subject pool (i.e., undergraduate students).

Sample

One hundred students (48 male and 52 female) in undergraduate marketing courses in a major state university participated in the experiment. Ninety-two percent of the participants were between the ages of 20 and 25 with the balance between the ages of 26 and 35. On average, the participants spent eleven hours online per week. Seventy-seven percent of participants had purchased products online. Nearly half of the participants had purchased online once a month or more frequently (42%), with 24% routinely purchasing clothes online. Participants were assigned randomly to three treatment conditions (i.e., degree of interactivity-low/medium/high) resulting in average cell sizes of 34.

Experimental procedure

We manipulated interactivity using three levels (high/medium/low). This decision was based on the possibility of an “inverted-U” relationship between the interactivity and web-related dependent variables (Liu 2002). One week prior to the experiment subjects were randomly assigned to the three treatment conditions (high/medium/low interactivity) and asked to fill out a short-survey regarding their body features (body feature information was needed to create virtual models for the high interactivity treatment). Although only the body feature information from the subjects assigned to the high interactivity treatment was used, all participants were asked to fill out the short-survey to minimize the confounding effect of the task. The online shopping task employed necessitated subjects to select casual pants and a casual shirt for personal use. The levels of interactivity were implemented by manipulating the availability of the interactive features/functions, adopted from the marketing-tool dimension based on Ghose and Dou’s (1998) interactivity index, in an online product trial context. In the low-interactivity treatment condition only color palate and fabric choices were used to stimulate interactivity (with opportunity to increase viewing size of each). The medium interactivity treatment condition included a color palate, fabric choice, and a generic body model on which subjects could try the apparel. Further, each generic virtual model could be manipulated by the subject (e.g., rotating view, changing color of clothing, etc). The high interactivity treatment condition consisted of a color palate and fabric choices for the clothing presented (with opportunity to increase viewing size of each) and a virtual model built for each subject (each virtual model was designed to replicate the subject’s body features). All experimental treatments constrained subjects from accessing additional product or company information. Efforts were taken to ensure that male and female subjects were exposed to comparable apparel in terms of price, style, color, and fabric. Interactivity was therefore conceptualized as structural features of the medium that allow immediate feedback within a retail channel.

Experimental sessions were conducted in a computer lab in groups ranging from 8 to 12 participants. Male and female subjects were assigned to different sessions to avoid cross-gender confounding effects. Experiment administrator’s gender matched the subjects’ in each session. Experiment administrators read the instructions from a script describing the procedures. Subjects were first asked to complete the questions measuring their pre-exposure to the brand and their risk aversion characteristics. Next, subjects were directed to the computers, preloaded for each treatment. After examining the apparel subjects were asked to complete the questionnaire. Subjects were then debriefed.

Measures

Interactivity was measured by asking subjects to fill out a four-item, seven-point Likert scale similar to Jee and Lee (2002) and Li, Kuo, and Russell (1999). The scales assessed the respondent’s perception of interactivity. It was modified to fit into the brand-specific online apparel retail environment. The four-item, seven-point Likert scale asked: (1) Interacting with this site is like having a conversation with a sociable, knowledgeable and warm representative from the company, (2) I felt as if this web site talked back to me while I was navigating, (3) I perceive the web site to be sensitive to my needs for product information, and (4) All of the attributes about clothes I want to know have been successfully digitized online (?=.92). A composite perceived interactivity index was created by averaging scores on the four items.

Trust was assessed using a four-item, seven-point semantic differential scale similar to the scales used by Ganesan (1994) and Sirdeshmukh, Singh, and Sabol (2002). This scale was chosen because of its normative nature. Respondents were asked to rate their overall trust toward the online marketer: (1) very undependable-very dependable, (2) very incompetent-very competent, (3) of very low integrity-of very high integrity, and (4) very unresponsive to customers-very responsive to customers (?=.82). A composite index was created by averaging the scores on each item.

Product Evaluation was assessed using a four-item, seven-point semantic differential scale similar to the scale proposed by Petty, Cacioppo, and Schumann (1983). Subjects were asked to rate their overall

impression of the product from: (1) bad-good, (2) unsatisfactory-satisfactory, (3) unfavorable-favorable, and (4) not carefully produced-carefully produced ($r=.89$). A composite index was created by averaging the individual items' scores.

Online and In-store Purchase Intentions. As the focus of the study was the transferring effect of interactivity through trust in a multi-channel setting, we employed scales similar to Griffith, Krampf, and Palmer (2001) and Baker and Churchill (1977). Online purchase intention was assessed using a one-item seven-point scale (ranging from "not likely" to "very likely") capturing the subject's intention to buy the clothes directly from the online marketer. In-store purchase intention was assessed using a two-item, seven-point scale (ranging from "not likely" to "very likely") capturing the subject's intention to (1) buy the product if they saw it in store, and (2) actively seek out the product in store to purchase it. Composite indices were created for online and in-store purchase intentions respectively.

Results

Interactivity Manipulation

Results indicated there was a significant difference in perceived interactivity between the three treatment groups, $F(2, 95)=49.62, p<.001$. The perceived interactivity in the IH treatment ($M=5.48, p < .001$) was significantly higher than that in the IM treatment ($M=3.38$) and the IL treatment ($M=3.11$). The IL and IM treatments were not significantly different, and were combined into a single low interactivity group in subsequent analyses. As mentioned previously, the different levels of functional interactivity were designed to increase variance of the interactivity in consumers' perception and the focal variable we are interested in is the perceived interactivity. To achieve this purpose, we adopted the composite perceived interactivity index as a continuous variable in our subsequent analysis which is preferred to dichotomizing when dealing with predictor variables (Irwin and McClelland 2003).

Test of Hypotheses

Descriptive statistics and correlations between the core variables are presented in Table 1. The correlation analysis indicated that perceived interactivity was indeed significantly correlated with trust ($r = .59, p < .01$) as well as product evaluations ($r = .20, p < .05$). Further path analysis demonstrated that perceived interactivity significantly impacts on trust ($\beta = .59, p < .001$) and product evaluation ($\beta = .20, p < .05$). Hence, both H1 and H2 were supported.

Table 1: Descriptive Statistics and Intercorrelations (N=100)

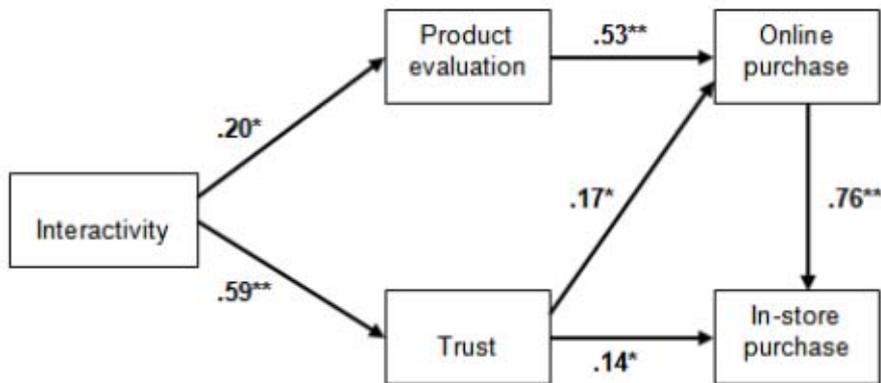
	Mean	SD	Interactivity	Trust	Product Evaluation	Online Purchase	In-store purchase
Interactivity	3.99	1.50	1				
Trust	4.43	1.18	.59**	1			
Product evaluation	3.61	1.20	.20*	.03	1		
Online purchase	5.11	1.73	.10	.18	.54**	1	
In-store purchase	4.81	1.60	.15	.28**	.49**	.78**	1

Note: * $p < .05$, ** $p < .01$

Figure 2 is the final model that we derived by removing all nonsignificant paths ($p < .05$) from the full model (see Figure 1). Standard parameter estimates for the final model are presented in Table 2. The model's fit for the data was assessed in accordance with three criteria (Kelloway 1998; Kline 1998): a nonsignificant goodness-of-fit chi-square statistics; a value of .90 or greater for GFI (good of fit index), AGFI (adjusted goodness of fit index), CFI (comparative fit index), and NFI (normed fit index); and a value of .10 or less for RMSEA (root mean squared error of approximation). Results indicated that the final model produced a good fit to the data ($\chi^2 = 6.59$, $df = 4$, $p = .16$; $RMSEA = .08$; $GFI = .98$; $AGFI = .91$; $NFI = .97$; $NNFI = .96$; $CFI = .99$). Missing links between the direct paths indicate they were nonsignificant.

As Table 2 and Figure 2 indicated, despite the zero-order positive associations between perceived interactivity and online or offline purchase intentions (see Table 1), the relationships became nonsignificant when product evaluation and trust were introduced into the model. Parameter estimates indicated that product evaluation had a significant influence on online purchase intention ($\beta = .53$, $p < .001$), but no significant effect on in-store purchase intention. Trust had a significant influence on online purchase intention ($\beta = .17$, $p < .05$), as well as in-store purchase intention ($\beta = .14$, $p < .05$). These provide evidence that product evaluation and trust mediated the effects of perceived interactivity on purchase intentions. H3 and H4 were therefore supported. The direct path between online purchase intentions and in-store purchase intentions was also significant after controlling for other variables ($\beta = .76$, $p < .001$). The magnitude of the standard coefficient indicated that the online purchase intentions accounted for a substantial portion of the variance in offline purchase intentions. H5 was therefore also supported.

Figure 2. Direct and Indirect Effects of Interactivity



Note: * $p < .05$, ** $p < .05$

Table 2: Structural Parameter Estimates for Hypothesized Model

Paths	Parameter Estimates	p
Interactivity→Trust	.59	.00
Interactivity→Product Evaluation	.20	.05
Trust→Online Purchase	.17	.04
Trust→In-store Purchase	.14	.02
Product Evaluation →Online Purchase	.53	.00
Online Purchase → In-store Purchase	.76	.00

The above results were based on treating perceived interactivity as the independent variable. Therefore, the question arises as to whether using the manipulated functional interactivity would lead to different results. To check that possibility, we re-specified our models by using interactivity as a manipulated, categorical variable, and re-fitted the model with the adjusted data. Results indicated that the new model's fit indexes, parameter estimates and their p values did not vary significantly from our final model (see Figure 2). We therefore conclude that in the present study, perceived interactivity highly corresponds to the objective/functional interactivity in the context of online product trial.

Discussion

The purpose of this study was two-fold. First, our intention was to examine the impact of perceived interactivity in advertising on the normative and cognitive evaluation of consumers' product experience. Second, we wished to develop a greater understanding of how trust developed in one channel would influence consumer behavioral intentions in another channel. The findings indicated that through greater interactivity, a consumer develops greater trust and understanding of the business and its products. Further, it was demonstrated that trust transferred perceived interactivity's influence not only onto online behavior intention, but also onto offline purchase intention at a brand-specific business level. This indicates that the influence of interactivity in online communication can have significant implications for offline behaviors. Interestingly, while trust significantly mediated the influence of perceived interactivity on online and in-store purchase intentions, product evaluation mediated only the influence of interactivity on online purchase intention. This difference might be due to the differences between the nature of these two structures, i.e., while evaluation is a cognitive structure, the normative nature of trust may have served to foster positive relationships in both online and offline venues.

This suggests that while both consumers' cognitive and normative evaluations of online communication can influence their online behavior intention, the building and development of trust can facilitate consumers' offline behavioral intentions. While this concept has been investigated at the brand level when examining products (e.g., Aaker 1996), it has not been extended to the marketing channel context.

Findings from this research suggest that the Internet can be used as an effective advertising tool to drive brand understanding and continuity of purchase intentions. As Elkin and Neff (2002) have noted, the online venue has not yet been effectively used in the larger mix in advertising campaigns. They indicated that most marketers only spent 2% to 3% or less of their media budgets to advertise to consumers on the Internet despite the fact that the Internet represents 10% to 15% of total media consumption. This lack of utilization of online advertising may derive from the lack of research demonstrating the effect of online advertising execution (e.g. interactivity) on consumers' online and even offline buying intentions. Our findings highlight the importance of synchronizing online with offline advertising as online advertising could influence both online and offline consumer behaviors intentions.

Although this study provides new insights, it is not without its limitations. One limitation of the current study is that it was conducted within a single industry, i.e., the apparel industry. While apparel is one of the largest and most important product categories, the findings here are limited to this context. For instance, while the use of apparel (a product category higher in experience attributes) may provide new insights into apparel promotion, the findings may not be generalizable to product categories such as computers, which tend to have a higher proportion of search attributes. Therefore, it can be theorized that the transferring effect observed is a function of the product category as with search products a consumer does not necessarily need to experience the product and thus may be more willing to purchase online. As such, researchers should be cautious in generalizing these findings beyond the scope of the current product category. Future research could expand upon the current findings using a variety of products within a broader range of product categories, thus extending the generalizability of the work. Second, the focus in this study was limited primarily within the interactive execution under the context of online virtual product trial (as a form of interactive advertising). Future research might want to replicate the study under other interactive advertising contexts, e.g., in-store kiosk, etc.

In conclusion, although changes in the competitive environment have stimulated marketers to develop strategies aimed at synchronizing multiple and complementary channels to service an increasingly diverse consumer marketplace, little empirical research has been conducted in this area. As such, academics and practitioners have a limited understanding of this topic. While this study demonstrated the importance of interactivity in fostering behavioral intentions both within and across channels, it provides only a starting point for the development of more elaborate multi-channel communication models. As such, a systematic research effort is warranted.

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