Enticing and Engaging Consumers via Online Product Presentations: The Effects of Restricted Interaction Design

CHENG YI, ZHENHUI (JACK) JIANG, AND IZAK BENBASAT

CHENG YI is an assistant professor of information systems at the School of Economics and Management, Tsinghua University, China. She received her Ph.D. in information systems from National University of Singapore. Her research interests include the design and evaluation of information search and decision-support interfaces, electronic commerce, online consumer behavior, and social media. Her work has appeared in top information systems journals such as Information Systems Research, and the proceedings of top information systems and human–computer interaction conferences, such as International Conference on Information Systems (ICIS) and ACM CHI Conference on Human Factors in Computing Systems (CHI).

ZHENHUI (JACK) JIANG is an associate professor in the Department of Information Systems of National University of Singapore and assistant dean (graduate studies) in the School of Computing. He received his Ph.D. in management information systems from University of British Columbia. His research interests include social media, electronic commerce, human–computer interaction, and information privacy. His work has been published in top information systems journals, such as MIS Quarterly, Information Systems Research, and Journal of Management Information Systems, and top human–computer interaction conferences, such as CHI. He has served on the editorial board of MIS Quarterly, IEEE Transactions of Engineering Management, and Journal of the AIS, among others. He has previously taught at Hong Kong University of Science and Technology and Tsinghua University. He was also a visiting scholar in the Marketing Group of MIT Sloan School of Management.

IZAK BENBASAT is a fellow of the Royal Society of Canada and Canada Research Chair in Information Technology Management at the Sauder School of Business, University of British Columbia. He received his Ph.D. in information systems from the University of Minnesota in 1974 and doctorat honoris causa from Université de Montréal in 2009. He currently serves on the editorial boards of Journal of Management Information Systems and Information Systems Journal. He was the editor in chief of Information Systems Research, editor of the Information Systems and Decision Support Systems Department of Management Science, and a senior editor of MIS Quarterly. He became a fellow of the Association for Information Systems (AIS) in 2002, received the LEO Award for Lifetime Exceptional Achievements in Information Systems from Association for Information Systems in 2007, and was conferred the title of Distinguished Fellow by the Institute for Operations Research and Management Sciences (INFORMS) Information Systems Society in 2009. He was a Marvin Bower Fellow at the Harvard Business School and Shaw Visiting Professor at the National University of Singapore.
ABSTRACT: This work investigates the effects of three different online product presentation formats, namely, a noninteractive video presentation and two virtual product experience (VPE) presentations (full interaction and restricted interaction), on engaging users in online product experience as well as enticing users to try products offline. The experimental results show that restricted interaction, which deprives users of part of the interactive product experience, is more enticing than both the noninteractive and fully interactive design for users with more product-class knowledge. In addition, restricted interaction is generally as good as full interaction in engaging users. Both engagement and enticement positively affect users’ purchase intentions. This study contributes to the information systems literature by extending the theory in curiosity formation to the interaction design context and advocating designs for enticement. It contributes to design practice by revealing that less interactive and less costly presentations can be more effective in attracting consumers toward the products.

KEY WORDS AND PHRASES: virtual product experience (VPE), restricted interaction, full interaction, enticement, engagement, purchase intention, online product presentation, online video, online selling.

This study investigates the effects of three online product presentation formats with varying degrees of interactivity on engaging online users and enticing them to pursue further product experiences offline. The role of users’ product-class knowledge in moderating these effects is also assessed.

Many online stores have employed various forms of product presentations to display their newly launched products in order to attract consumers. While traditional product presentations are limited mainly to text and pictures, online vendors are now using more vivid multimedia features to enrich the presentations [17, 84]. For example, the Land Rover website (www.landroverusa.com) uses video clips with visual and sound effects to display cars in motion. The Samsung website (www.samsung.com) allows users to use their mouse or keyboard to rotate and view a virtual cell phone as well as to try out its various functions. This type of online experience, which aims at simulating customers’ feel, touch, and trial of products, is termed virtual product experience (VPE) [42].

The design and impacts of online product presentations have been studied extensively in recent years. Much attention has been paid to the use of interactive multimedia technologies to improve consumers’ online product experience [e.g., 44, 57, 84]. For example, studies have shown that presentations incorporating motion and interactivity are generally better than static images in terms of improving product learning and the playfulness of the experience [e.g., 42]. Particularly, a highly interactive product presentation (e.g., VPEs), as compared to a passive video one, will facilitate product understanding and evoke a strong sense of control, intrinsic enjoyment and fulfillment during the experience [e.g., 28, 80]. Such a state is often described as deep engagement, which reflects an individual’s subjective enjoyment in a holistic experience with technology [18, 33]. Engagement has been an important metric of online consumer experience [13, 58, 88] and is positively related to consumer satisfaction and their approach responses such as store revisits and purchases [41, 70].
While much research emphasis has been placed on improving the engagement and playfulness of an online product experience, whether and how online product exposure influences offline product experiences has attracted little research attention. Indeed, statistics suggest that many consumers (78 percent according to a recent eMarketer survey [25]) are “cross-channel” shoppers who tend to research online and, if they are interested in particular products, turn to the offline stores to inspect the real products and then make a purchase [5, 24, 25, 30, 56]. It has been reported that web-influenced retailing store sales in the United States were more than three times greater than direct online sales [24, 31]. A recent study has further revealed that more than half of customers who sample the real product tend to buy it, and nearly 90 percent of repeated customers will plan for another purchase after product trials [6]. These statistics imply that consumers’ direct product trial is still a critical step before forming purchase decisions, especially for products with experiential attributes that cannot be fully evaluated without trials [83, 95]. Accordingly, retailers are increasingly focusing on driving consumers into their physical store locations while maintaining a growing online presence [25]. For example, companies often feature their new automobile models online, hoping to attract potential buyers into the showroom where a test drive is often followed by a purchase [64]. Therefore, the design of an effective online product presentation should consider enticing potential consumers to conduct product trials offline. In fact, exposure to a virtual product experience preceding a direct product trial is also shown to be more effective in influencing brand attitudes and purchase than having a direct trial experience only [20].

Hence, while creating an engaging online presentation aims to deliver a playful and holistic online product experience, an enticing presentation arouses consumers’ desire for further product experience offline. Existing information systems (IS) literature has focused mainly on building engaging online experiences and has advocated the use of interactive features that grant flexible user control and meet users’ needs [e.g., 19, 44, 53, 62, 84]. However, the design and impacts of enticement have seldom been discussed. We posit that consumers’ approach responses to the featured products (such as their purchase behavior) should be influenced by both the engagement and enticement of the online product experience. Specifically, enticement as a force that generates interest in and desire for product trials is important to the research and practice of online presentation design because enticement could be a key antecedent to heightened awareness of and expectation about the featured product, which boosts purchase propensity.

Indeed, while the need for incorporating interactivity to engage users and fulfill their desire for active control is often agreed upon in previous IS research, some studies in marketing and consumer psychology find that an interest-arousing product experience is often not the one that perfectly fulfills all users’ need or delivers on all the promises [e.g., 21, 37, 77]. Rather, discretionally restricting the experience being delivered is found to effectively stimulate users’ curiosity and interest due to a feeling of “loss” or “deprivation.” For example, movie trailers are designed to reveal only selected parts of the shows; cosmetics advertisements often include cropped...
images, such as half of the face of a sexy model, to attract potential customers. Such restricted or incomplete information often boosts users’ interest in the focal objects.

In the context of online product presentations, similar attempts can be made to restrict users’ interaction with virtual products so as to stimulate their desire for further product experience. For example, suppose that you are on a cell phone website. One presentation to introduce “building your own music library” feature may let you directly act on the interface during every step of this functional process. You would first open your music collection in a computer or connect to an online music store, then select songs, confirm your selections, and play songs. Alternatively, another form of presentation may ask you to open a music collection on the screen and as you are exposed to the collection, it then starts demonstrating the subsequent steps (e.g., select and play a song) in an automatic video form. Apparently, these two presentation designs demonstrate the same functional process, but they differ in the extent to which user–product interaction is embedded. The former allows the user to actively experience all the steps of the entire executing process; hence it is termed full interaction VPE. The latter restricts users’ active interaction with the virtual product to only part of the functional process (“opening a collection” in this case); whereas the rest of the process is shown automatically. We thus term the latter design restricted interaction VPE [82]. In essence, full interaction VPE provides users a completely interactive product experience, whereas restricted interaction VPE allows for some user interactions but does not afford a complete active experience.

The current study thus examines and compares three forms of online product presentations with varying degrees of interactivity—namely, noninteractive video presentation, restricted interaction VPE, and full interaction VPE. We propose that while a more interactive and holistic design may engage online users more effectively, a restricted design may be able to entice users to go beyond the online experience for further information. It is thus meaningful to investigate the relative benefits of different presentation designs and understand how to properly design product interactivity to induce more purchases.

Moreover, different product presentation designs may not exert the same effect for consumers having different knowledge about the target product class [48, 75]. Specifically, since enticement is often achieved through invoking personal goals and needs related to the focal experience [52], the level of enticement should depend on what knowledge one already possesses and what one wants to obtain [61]. Past studies have shown that people with different knowledge about a product category may process new product information in different ways [12] and react to product promotional stimuli differently [68]. This implies that designers may have to tailor the designs for different users in order to achieve the most desirable effect. This study thus further examines how the enticing effect of different online product demonstration formats will be moderated by users’ prior product-class knowledge.

Overall, this study aims to fill three gaps in the extant literature on online product presentations. First, while existing studies tend to treat product interactivity as a dichotomous design factor, that is, either highly interactive or passive [e.g., 28, 43,
80], we aim to shed light on possible new interaction design methods [36]. Second, in addition to user engagement, we advocate the design for enticement, a concept that has largely been neglected by prior IS studies. Our results will show that both online user engagement and enticement toward offline product experience will influence consumers’ purchase intentions. Third, this study investigates the role of consumers’ product-class knowledge in moderating the effects of online product presentations. While this has not attracted much attention in previous research, it is generally agreed that understanding how to customize web provisions for different consumer segments is highly important in achieving the most desired outcome [e.g., 48, 75].

Literature Review

The current study examines how different online product presentation formats affect the engagement and enticement of the online product experience, which are likely conducive to purchase intentions. Engagement refers to the extent to which consumers immerse in the online product experience and enjoy it [92]. The enticement of the online presentation refers to the extent to which the presentation raises consumers’ curiosity and desire about further direct product experiences offline [52, 64, 66]. In other words, enhancing engagement focuses on optimizing users’ ongoing experience and drawing them into online product investigation, whereas increasing enticement aims to elevate users’ voluntary interest in further exploration offline. Prior literature suggests that engaging users in the current experience and enticing them into further related experience may require different design techniques [66, 91]. The following sections thus review the impacts and antecedents of engagement and enticement in detail.

Engagement and the Provision of Interactivity

Prior research in psychology suggests that users’ holistic experiences with technology as captured in constructs such as flow [18, 33], cognitive absorption [1], and engagement [92] are important in explaining online user behavior. In particular, Csikszentmihalyi’s [18, p. 4] notion of flow represents the condition “in which people are so involved in an activity that nothing else seems to matter.” Such a state reflects that the experience is intrinsically enjoyable. The theory of flow has been applied to various contexts, including users’ reactions to and motivations for using computing technologies [33]. It is found that users’ subjective enjoyment when interacting with a technology significantly affects their extent of technology use and attitudes. To further examine users’ holistic experiences with technologies, Agarwal and Karahanna [1, p. 673] describe a concept labeled cognitive absorption, which captures “a state of deep involvement with software.” A common thread underlying flow and cognitive absorption is that users are engaged in an experience when technologies they interact with are riveting and playful. The concept of engagement
thus encompasses users’ focused attention to an experience and the intrinsic enjoyment they derive from it [73, 90]. A high level of engagement is found to develop a positive feeling about the experience and reinforce users’ likelihood to use the medium [49, 59]. In the context of online shopping, consumer engagement is shown to be an important driver of consumers’ satisfaction online and their consumption intentions [38, 79].

With respect to the antecedents of engagement, prior literature suggests that the interactivity of the medium plays an important role [e.g., 1, 73, 91]. Specifically, a highly interactive system allows users to exert their autonomy in determining the material to examine and the pace at which they want to proceed, as well as permits users to carry on a two-way communication with the system [51]. This flexibility as well as the feedback that provides users with prompt acknowledgment of their input create a sense of control, fulfillment, and enjoyment [7, 51].

Incorporating a higher level of interactivity has been demonstrated to enhance user engagement in various task contexts. For example, studies have found that greater interactivity of software interfaces facilitates an acute involvement with the software and leads to increased pleasure [19, 27, 89]. In the context of online shopping, websites with greater interactivity allow consumers to act in a variety of ways to gather product information, resulting in higher affinity toward the website and stronger engagement [45]. Schlosser [80] has specifically investigated product interactivity, which refers to consumers’ virtual interactions with products, and has found that interactivity with virtual products can help produce vivid mental imagery of how a product can be consumed, which leads to high engagement in product experience and positive attitudes.

Enticement and the “Deprivation” of Interactivity

Unlike engagement, enticement has not attracted much attention in IS research. Enticement manifests the quality of a design that attracts a target by arousing hope or desire. For example, marketers often harness the power of enticement in advertising to arouse consumers’ desire for further information on the advertised content [64, 65]. Such desire reflects a heightened curiosity, which has been recognized as a key motive for various human behaviors [61]. In the context of online product investigations, an enticing product presentation may stimulate consumers’ interest and curiosity about further interaction with the physical product beyond the virtual environment. Sufficient curiosity and interest in further experiencing the product represents a strengthened attachment to the product and an anticipated pleasure from approaching it.

A common drive of one’s heightened curiosity and interest, as suggested by previous research, is the incompleteness of a given stimulus. For example, teachers often leave the learning tasks partially incomplete when releasing students for breaks so students can maintain curious minds, thus yielding better retention and active learning. Incorporating incomplete cues in marketing stimuli such as advertising
pictures [74, 76], product names [67], and logos [35] has also been found to intensify consumers’ interests and generate favorable responses. In the domain of “persuasive technology,” which focuses on how technology changes human behaviors, studies also suggest that technology design should “preserve” some elements of surprise rather than making it holistic or perfect so as to entice users into further interactions [e.g., 52]. Underlying these findings is a widely cited theory on curiosity, the information-gap theory, suggested by Loewenstein [61]. This theory views curiosity as arising when one’s attention is focused on a gap in his/her knowledge. Specifically, a gap is defined as the difference between what a person has now and what he/she would like to have [61, 66]. The presence of a gap often implies a sense of loss or deprivation, which induces a cognitive tension and motivates information acquisition to reduce or eliminate the gap [9, p. 122; 26, 34, 60].

One key assumption of the information-gap theory is that users’ awareness of the gap is a necessary precondition for enticement [11, 66]. Particularly, a failure to appreciate what one does not get constitutes a barrier to be enticed since the feeling of a gap is not sufficiently strong to enforce cognitive tension. Such a case is often termed “no-cue curiosity,” that is, users are presented with an information gap but do not tend to pay attention to it. As a result, they have little desire to approach it further [66]. Accordingly, a key to enticement is to provoke users’ awareness of any incomplete provision in the ongoing activity. Specifically, the perception of a gap is often relative; it tends to result from a contrast between one’s actual level of attainment and a subjective goal or aspiration level that serves as a “reference point” [61]. For example, one way to enhance the awareness of a gap presented in the experience is to deprive users of the information or experience previously afforded, which provokes a comparison between the current and past experiences and hence makes the incompleteness salient [86].

Whereas in most prior studies, it is the incomplete provision of visual or text information that creates a perception of gap and tempts users to pursue a completion [e.g., 32, 35, 74], this study attempts to extend the information-gap perspective to the context of interaction design, where a perception of gap can be induced by the lack of user–product interactions. We argue that if users are aware that they have been deprived of the full opportunity of flexibly interacting with a virtual product, a perception of gap in virtual product experience will be invoked and as a result users’ desire for further product experience will be intensified. Accordingly, users who want to close the gap induced by the incomplete virtual experience are more likely to be keen on the opportunity of further direct product trials than others who do not face such deprivation or are not aware of it.

The Moderating Role of Relevant Knowledge in Evoking Enticement

Based on the information-gap theory, Loewenstein [61] further adds that curiosity formation via information gaps is also affected by the knowledge that one has about the domain related to closing the gaps. One’s domain knowledge is his/her general
knowledge about an area [4]. In the context of product investigation, consumers’ domain knowledge is their product-class knowledge, which refers to their general knowledge about the class of products to which the target product belongs. For example, when deciding on a possible purchase of an unknown personal computer model, one’s existing knowledge about personal computers in general serves as his/her domain knowledge to evaluate the product. In investigating the role of domain knowledge in curiosity formation, Berlyne [10] found that unresolved questions about animals evoked greater curiosity for users who were more familiar with the animals. Hence, we expect that the enticing effect of an experience gap will be more pronounced when individuals possess more related domain knowledge [47]. The reasons are twofold.

First, if users have more knowledge on the topic, then the information stimulus is more consistent with their existing knowledge structure and hence they will find the task more relevant [e.g., 69]. Prior literature has shown that users tend to behave with a self-consistency motive. Tasks or situations consistent with users’ knowledge or beliefs tend to make them approach the stimuli and increase their readiness and depth in processing the information [85]. As a result, users with an existing knowledge base may be able to react to any missing information in the offering promptly [3]. On the contrary, individuals with limited related knowledge may be less likely to find the stimuli immediately relevant due to low consistency with their knowledge structure. Information stimuli are likely to be processed superficially and activate little related thought [3]. Accordingly, it is less likely for these users to develop a strong perception of information gap and a need for further experience.

Second, individuals with more domain knowledge have stronger ability to close the gap or resolve the incomplete experience; hence the goal of completion appears more meaningful and manageable to them [61]. Indeed, past studies have suggested that users’ information-processing capability is critical in influencing their motivations and execution of goal-directed activities [23, 81]. Individuals with a good knowledge base are able to encode and process information presented efficiently and thus can afford more information search and digestion [e.g., 14, 46]. For example, trials of games or software may be more effective in attracting users who have higher capabilities and richer resources to process the information [22, 96]. In contrast, the lack of a related knowledge base and the processing capability may dampen one’s enthusiasm to engage in further processing [8]. It is thus reasonable to expect that the enticing impacts of an incomplete experience will be greater for users who believe they can approach the goal of completion more effectively [e.g., 12].

Summary of Literature Review

To summarize, engagement and enticement are both important aspects that characterize consumers’ online product experience. While providing highly interactive features may contribute to building a fulfilling and engaging online product experience, restricting users’ interactions with a virtual product and thus inducing a
perception of gap may entice users to further experience the product. Moreover, the enticing power of an incomplete interaction experience tends to get stronger when users possess a higher level of domain knowledge.

Hypotheses Development
This study examines three different online product presentation formats, including the noninteractive video design, the full interaction design, and the restricted interaction design. The noninteractive format dynamically demonstrates a product’s functions via video, though it does not afford any user interaction with the virtual product. The full interaction format, in contrast, allows users to freely interact with the virtual product in its full detail and at their own pace throughout the process, hence providing a flexible and holistic interactive experience. The restricted interaction format represents a middle course between the noninteractive and the full interaction design. User interactions are restricted to limited steps during the demonstration process and the rest are demonstrated in a noninteractive video form. Restricted interaction thus creates a partial interaction experience. The focus of this study is to investigate how these three presentation formats with varying levels of interactivity can engage users in the online product experience as well as entice them to further experience the products offline. The entire research model is shown in Figure 1. In the following sections, we will first compare the three presentation formats in terms of engagement and then compare their effects on enticement. The effects of engagement and enticement on purchase intentions are then proposed.

The Effect of Presentation Formats on Engagement
According to prior studies, online product presentations that provide users with more interactive experiences by allowing visual and functional control over virtual products are expected to preserve users’ attention and create higher engagement [28, 42, 44]. This is because first, a high level of product interactivity allows users to directly
manipulate the interface and gives them a feeling of “control” over the virtual products [39]. Users thus tend to concentrate on the cues and feedback from the interface in order to determine how to act and proceed. Second, a higher level of interactivity encourages users to be active and exploratory during the experience, hence generating more intrinsic interest and fulfillment [38, 93]. For example, Fiore et al. [28] observed consumers’ reactions when they interacted with virtual models in online clothing stores and found that such interactivity significantly increased consumers’ enjoyment. In our study, since the full interaction design provides users with the most interactive and flexible product experience, it should engage them in product investigation more effectively than other less interactive designs. The restricted interaction design, which offers limited chances for users to actively interact with the product, is also expected to be more engaging than the noninteractive design, which does not involve user interactivity at all. Therefore, we propose,

**Hypothesis 1a:** The full product interaction design will lead to higher user engagement than the restricted product interaction and the noninteractive design.

**Hypothesis 1b:** The restricted product interaction design will lead to higher user engagement than the noninteractive design.

The Effect of Presentation Formats on Enticement

While an engaging presentation draws consumers into the online product experience and makes them enjoy participating in the ongoing experience, an enticing presentation raises consumers’ desire for further product experiences beyond the virtual environment. According to the literature on information-gap theory, discretionally restricting the experience being delivered, rather than making it holistic and fulfilling, tends to create a strong feeling of deprivation, which drives users to pursue further experience. As the three presentation formats offer different interactive experiences with the virtual product, they are expected to achieve different levels of enticement.

With noninteractive presentations, users are a passive audience who do not interact with virtual products at all throughout the process. Since interactivity is completely lacking, there is no explicit awareness cue to prompt users to establish a goal such as having an active product experience, and hence a contrast between users’ current attainment and an elevated goal state is unlikely to form. Accordingly, users may tend to treat the current passive experience as the norm, and thus there is little awareness of incomplete product interactions. This is similar to the case of “no-cue curiosity” in advertising, which presents a gap between what is provided and what can be achieved but does not enforce users’ awareness of the link between the current experience and the pursuable future [66]. Accordingly, a purely passive design may not effectively entice users toward achieving a more interactive and holistic experience [66].
In the restricted interaction design, users are able to interact with the virtual product although part of this interactive experience is deprived. Specifically, the limited interactions embedded during an automatic flow involve users as active players rather than passive observers, and this active experience may serve as a goal state and “reference point” for users in expecting subsequent product experience. Hence, when subsequent product interaction is “deprived,” an underlying “goal tension” will be strongly invoked due to the contrast between the previous active experience and the current passive one. In other words, users’ awareness of the current interactive experience being incomplete is clearly heightened through the interaction cues and the subsequent loss of the active experience. According to the information-gap theory and related studies, such awareness of deprivation should invoke users’ cognitive desire to continue and obtain a holistic and active product inspection to close the gap in virtual product interactions. Overall, this incomplete interaction design creates “cued curiosity” and entices users to further approach the product and gather information by actively experiencing the product [11, 66].

In contrast, the full interaction design makes everything concrete and readily available for users’ complete control. Since users are provided with the full opportunity of flexibly interacting with a virtual product, they are less likely than those using restricted interaction to perceive a gap between what they are offered currently and what they would like to have. The absence of such an explicit product experience gap will fail to produce a strong feeling of deprivation that induces users to modify the current experience or desire more [e.g., 34, p. 203; 94]. As Wilson et al. [94, p. 5] have stated, although “knowledge makes the world more predictable,” it also makes it “less delicious” and “less exciting,” as there is little “loss” and thus less anticipated pleasure from resolving it. Accordingly, full interaction may not create a strong enticement for users to actively investigate the product further. Therefore, we propose,

**Hypothesis 2: The restricted product interaction design will lead to higher enticement than the full product interaction and the noninteractive designs.**

Whereas we expect an incomplete stimulus such as restricted interaction will be effective in enticing users, the strength of this effect may differ depending on users’ level of relevant knowledge. As mentioned earlier, a relevant knowledge base increases the strength of this enticing effect. Particularly, in the context of product investigation, possessing extensive knowledge about the target product class implies that users are familiar with the terminology of the product class, criteria for evaluating attributes, and so on. Accordingly, users with more product-class knowledge are more likely to feel the online product experience as relevant and appealing to them. When a product interaction experience deprives these knowledgeable users of complete product exploration, users are likely to recognize the deprived experience quickly. More knowledge about the product category also makes users feel more capable of obtaining mastery over the product usage through further experience due to the strong capability of accommodating new information [3, 46]. Hence, users possessing a higher level of related knowledge
will be more likely to be motivated toward further knowledge seeking in the presence of an incomplete experience.

In contrast, users with a lower level of related product-class knowledge may tend to follow what is available at the surface and are less involved in the current experience since it is not consistent with their existing knowledge [12]. The information stimuli are less likely to generate focused thoughts, and users may also be reluctant to digest more information because of limited cognitive capability. Accordingly, when users lack elaborate knowledge of a product category, they are less likely to perceive the incompleteness of an experience and to form a goal of completion since it does not appear attractive or approachable. Accordingly, the relative influence of a restricted design on enticement will be weakened for less knowledgeable users. Overall, users’ product-class knowledge is expected to moderate the influence of incomplete stimuli on users’ feeling of cognitive tension and thus the enticing effect. Therefore, we propose,

Hypothesis 3: The superior effect of the restricted product interaction design over the full product interaction and the noninteractive designs on inducing enticement is stronger with the increase of users’ related product-class knowledge.

The Effect of Engagement and Enticement on Purchase Intentions

To further show the importance of engagement and enticement, we posit that both user engagement and the enticement of online presentations will influence consumers’ purchase intentions. First, when the virtual product experience is highly engaging, consumers tend to concentrate on the product investigation and feel an intrinsic enjoyment in participating in it [1, 18, 53]. Various studies have found that an engaging and playful online experience is intrinsically motivating and creates a positive feeling about the medium [44, 84]. Specifically, positive feelings associated with the product presentations tend to increase consumers’ involvement in product information gathering and their fondness for online shopping, which is likely to enhance their desire for purchase [33, 49]. Therefore, we propose,

Hypothesis 4: A higher level of engagement of online product presentations will lead to stronger purchase intentions.

Second, an enticing product presentation arouses consumers’ curiosity and voluntary interest in interacting with the product beyond the online experience. Such curiosity and interest indicate consumers’ anticipated benefits of product consumption and strong approach tendency [50], which may be converted to increased purchase intentions. Prior studies also suggest that a feeling of curiosity is often associated with “the thrill of unsolved problems or undeciphered riddles” [55, p. 99], which stimulates active thinking and affective responses and thus fosters favorable product evaluations [74]. Accordingly, invoking enticement about further product trials may
keep consumers thinking about and expecting new product experience, leading to positive affections toward the product and heightened intention to purchase it. Therefore, we propose,

**Hypothesis 5:** A higher level of enticement of online product presentations will lead to stronger purchase intentions.

**Research Method**

An experiment was designed to test the research model. A cell phone was chosen as the target product to be presented, for two reasons. First, many of the operational behaviors of cell phones can be simulated in the virtual environment using VPE technologies [i.e., virtually high experiential products, 84]. On the websites of most large cell phone companies, virtual product experiences are widely adopted in presenting their new products. This online exposure has become an important point of contact with potential consumers. Second, a cell phone is a common product used by the majority of the population, hence the task of inspecting and considering the purchase of such products represents a realistic scenario for the subjects.

In particular, the general design of the experimental cell phone was adapted from a Nokia model. Hence, the general operating procedures of functions (e.g., the steps of photo editing) were similar to a typical Nokia Symbian phone. However, some other interface elements such as icon design, menu style and items, and color settings did not replicate any existing model on the market. A fictitious brand and model name was associated to this experimental cell phone so as to avoid the possible confounding effect of prior brand involvement. Hence, the experimental cell phone was unknown to all the subjects. This is also in line with the intended context of this study, that is, the promotion of newly launched products through online product presentations.

**Experimental Website Design**

Four typical functions of a cell phone were presented, including calls and contacts management, keyboard settings, photo display editing, and gaming. Every function was demonstrated by three different presentation formats. In the noninteractive condition, participants were able to view the prerecorded videos about the product functions. The whole process did not require any user interaction with the product.

In the full interaction condition, participants were able to launch the VPE simulators from the product homepage to sample the functions of the cell phone freely, using the mouse. For example, the photo display effect function allowed users to select artistic effects to apply to photos such as changing color theme, applying a photo frame, and so on. Full interaction thus demonstrated this function by allowing users to actively perform every step throughout the functional process, and the
virtual cell phone reacted as a real product would by changing the display and emitting sounds.

In the restricted interaction condition, participants were restricted to interact with the virtual product in limited steps only, and their active participation in user–product interactivity was followed by an automatic and dynamic video demonstration rather than continued interactions. For example, to demonstrate the photo display effect function, steps of accessing the gallery application from the main screen were first shown in an automatic video flow. Then, the presentation prompted the user to interact with the virtual product by pressing the Select button to select a photo. After receiving the user’s input, the presentation restricted users from further interaction by automatically performing various photo editing options in a video format.

The factual product information (i.e., the visual characteristics and the execution steps of functions) was kept uniform across the different presentation conditions. For example, if users could apply various photo display effects in the full interaction condition, then the same options were also demonstrated in the noninteractive and restricted interaction conditions. Hence, the only difference across the conditions was in the product interactivity design.

Sample Selection and Experimental Procedure

Students and staff in a major public university volunteered to participate in the experiment. Specifically, presentation format was a factor manipulated between subjects, whereas product-class knowledge was a measured continuous variable. Since the operating system of the experimental cell phone was adapted from a Nokia model, we measured subjects’ prior experience and knowledge about Nokia phones (see Appendix A for measurement items) during the recruitment and used it as their product-class knowledge.¹ The subjects were then randomly assigned to one of the three presentation conditions.

A total of 170 subjects participated in the study, with 58 subjects in the full interaction condition, 57 subjects in the restricted interaction condition, and 55 subjects in the noninteractive condition. This ensured a sufficient statistical power of 0.8 for a medium effect size [15].

During the experiment, the subjects were first asked to fill in a preexperimental questionnaire about their demographic information. They were then asked to examine a cell phone product developed by a new cell phone producer (with a fictitious brand name) on the experimental websites. The website was associated with a commercial domain name related to the producer’s brand name to increase the realism of the experiment. The subjects were told that the cell phone producer was promoting its latest product on its website. They were asked to examine the new product as if they were shopping online. Upon inspecting all the functions and information of the product, they were asked to answer a postexperimental questionnaire that captured variables such as the enticement and engagement of the
online product experience as well as their intentions to purchase the cell phone. The measurement items were adapted from prior studies (seven-point Likert scale, see Appendix A). In addition, the subjects were told that they could have a chance to try the real product if they were interested. Whether a subject had chosen to stay to try the product or leave immediately was recorded as an indication of his/her actual product trial behavior (see Appendix B for the details). The purpose was to provide a complementary measure of the enticement effect. After completing the experiment, each subject was paid $10 for participating and was told not to reveal the experiment content to other students or staff.

Subject Background Information

The subjects were from 6 academic faculties/schools (19 departments) and 7 administration offices, representing very diverse backgrounds. Among them, 58 percent were female. The age of the subjects ranged from 18 to 51. Across the three presentation conditions, there was no significant difference in gender ($F[2, 167] = 2.45, p > 0.10$) and age distribution ($F[2, 167] = 2.75, p > 0.10$), subjects' general Internet experience ($F[2, 167] = 0.21, p > 0.10$), or their general interest in cell phone products ($F[2, 167] = 0.43, p > 0.10$).

Data Analysis and Results

Manipulation Check and Instrument Validity

This study employed three presentation designs with different levels of interactivity. To check our manipulations, we measured subjects’ perceived interactivity of the presentations. The results showed that full interaction (mean = 5.59) was perceived to be more interactive than restricted interaction (mean = 5.05; $p = 0.05$) and the noninteractive format (mean = 3.87; $p < 0.001$), and that restricted interaction was perceived to be more interactive than the noninteractive format ($p < 0.001$). Hence, the manipulation check was successful.

Exploratory factor analysis was performed on product-class knowledge, engagement, enticement, and purchase intention. Results showed that measurement items loaded heavily on their intended factor and lightly on the other factors, indicating adequate convergent and discriminant validity (see Table 1 for factor loadings). The Cronbach alphas of the measure of product-class knowledge, engagement, enticement, and purchase intention were 0.92, 0.92, 0.92, and 0.93, respectively, indicating adequate reliability of the measurement scales. The correlations between these variables are reported in Table 2.

Data analysis was conducted in two steps. First, we tested the effects of different presentation formats and product-class knowledge on user engagement and the enticement of the presentations. Second, we tested the effect of engagement and enticement on purchase intention.
The Interaction Effects of Presentation Formats and Product-Class Knowledge

Since we have two dependent variables (i.e., engagement and enticement), we conducted a MANCOVA (multivariate analysis of covariance) test first to discover the general effect of presentation format on both variables. Specifically, presentation format was modeled as the fixed factor and product-class knowledge as the covariate. Since product-class knowledge was a continuous variable, we centered this covariate and then created an interaction term (presentation format and product-class knowledge) based on the centered variable to avoid the multicollinearity issue. The results showed that the effect of presentation format was significant ($F[2, 164] = 5.61$, Wilk’s lambda = 0.88, $p$ ...
Table 3. Means and Standard Deviations of Engagement and Enticement

<table>
<thead>
<tr>
<th></th>
<th>No interaction</th>
<th>Restricted interaction</th>
<th>Full interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement</td>
<td>4.22 (1.11)</td>
<td>4.78 (1.08)</td>
<td>4.97 (1.15)</td>
</tr>
<tr>
<td>Enticement</td>
<td>4.52 (1.14)</td>
<td>5.18 (1.22)</td>
<td>4.76 (1.32)</td>
</tr>
</tbody>
</table>

< 0.001) and the interaction effect was significant too \( (F[2, 164] = 2.49, \text{Wilk’s lambda } = 0.94, p < 0.05). \) Hence, ANCOVAs were further conducted on the two dependent variables separately. Table 3 presents the mean and standard deviation of the level of engagement and enticement of the different presentation conditions.

The ANCOVA results showed that there was a significant effect of presentation formats on engagement \( (F[2, 164] = 7.41, p < 0.01) \), but there was no interaction effect between presentation formats and product-class knowledge \( (F[2, 164] = 1.83, p > 0.10, \text{see Table 4}) \). Pair-wise comparisons showed that both the full interaction (adjusted mean = 4.96) and restricted interaction (adjusted mean = 4.79) led to higher engagement than the noninteractive design (adjusted mean = 4.19; \( p < 0.001 \) and \( p < 0.01 \), respectively), but the difference between the full interaction and restricted interaction was not significant \( (p > 0.10) \). Hence, H1a was partially supported and H1b was fully supported.

In terms of enticement, there was a significant main effect of presentation formats \( (F[2, 164] = 4.91, p < 0.01) \). Pair-wise comparisons showed that restricted interaction (adjusted mean = 5.22) led to higher enticement than both the full interaction (adjusted mean = 4.76, \( p < 0.05 \)) and noninteractive design (adjusted mean = 4.50; \( p < 0.01 \)), and the difference between the full interaction and noninteractive design was not significant \( (p > 0.10) \). Moreover, the interaction effect between presentation formats and product-class knowledge was significant \( (F[2, 164] = 3.64, p < 0.05, \text{see Table 4}) \). To clarify the nature of this interaction, we performed a spotlight analysis.

Table 4. Main and Interaction Effects on Engagement and Enticement

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>( F )</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected model</td>
<td>Engagement</td>
<td>21.47&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5</td>
<td>4.29</td>
<td>3.48</td>
</tr>
<tr>
<td></td>
<td>Enticement</td>
<td>24.64&lt;sup&gt;b&lt;/sup&gt;</td>
<td>5</td>
<td>4.93</td>
<td>3.35</td>
</tr>
<tr>
<td>Presentation</td>
<td>Engagement</td>
<td>18.29</td>
<td>2</td>
<td>9.15</td>
<td>7.41</td>
</tr>
<tr>
<td></td>
<td>Enticement</td>
<td>14.45</td>
<td>2</td>
<td>7.22</td>
<td>4.91</td>
</tr>
<tr>
<td>Product-class knowledge</td>
<td>Engagement</td>
<td>.30</td>
<td>1</td>
<td>.30</td>
<td>.24</td>
</tr>
<tr>
<td></td>
<td>Enticement</td>
<td>1.35</td>
<td>1</td>
<td>1.35</td>
<td>.92</td>
</tr>
<tr>
<td>Presentation *</td>
<td>Engagement</td>
<td>4.53</td>
<td>2</td>
<td>2.26</td>
<td>1.83</td>
</tr>
<tr>
<td>knowledge</td>
<td>Enticement</td>
<td>10.70</td>
<td>2</td>
<td>5.35</td>
<td>3.64</td>
</tr>
<tr>
<td>Error</td>
<td>Engagement</td>
<td>202.58</td>
<td>164</td>
<td>1.24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enticement</td>
<td>241.12</td>
<td>164</td>
<td>1.47</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>\( R^2 = .10. \)

<sup>b</sup>\( R^2 = .09. \)
at one standard deviation above (i.e., high knowledge level) and one standard deviation below (i.e., low knowledge level) the mean of product-class knowledge [following 2, 29, 40]. Specifically, we tested the simple effects of presentation formats for subjects with relatively high and low product-class knowledge based on the global influence of presentation formats and product-class knowledge. The results showed that for subjects with high product-class knowledge, the restricted interaction condition led to significantly higher enticement than both the full interaction (beta = 0.51, \(t = 3.31; p < 0.01\)) and noninteractive conditions (beta = 0.47, \(t = 2.93; p < 0.01\)), whereas the full interaction and noninteractive conditions did not differ (beta = 0.30, \(t = 0.84; p > 0.10\); see Figure 2).

For subjects with low product-class knowledge, however, the three conditions were not different from each other (\(p > 0.10\) for all pair-wise comparisons, see Figure 2). Hence, both H2 and H3 were supported.

As mentioned earlier, in order to further examine the enticement effect of product presentations, we also captured an indication of subjects’ actual product trial behavior. The findings on the effect of presentation formats on indicative product trial behavior provided further support for the results on the self-reported enticement. Restricted interaction was more effective than the other two designs in enticing high-knowledge users into further product trials (see Appendix B for details).

The Effects of Engagement and Enticement on Purchase Intention

Purchase intention was regressed on engagement and enticement. The results showed that both engagement (beta = 0.31, \(p < 0.001\)) and enticement (beta = 0.38, \(p < 0.001\)) were significant predictors of purchase intention. Together they explained 36 percent of the variance in purchase intention. To further assess common method variance (CMV), we used the marker-variable technique [63] and found that the original correlations between purchase intention and engagement as well as between purchase intention and enticement did not differ significantly from their

![Figure 2. Plots of Interaction Effect on Enticement](image_url)

(Note: Numbers are estimated at high (+1SD from the mean) and low (-1SD from the mean) product-class knowledge.)
CMV-adjusted correlations ($\Delta r < 0.02$). Hence, common method biases were not substantial. Overall, H4 and H5 were supported.

Discussion of Results

Consistent with our predictions, the findings show that both user engagement and the enticement of the online product presentations positively and significantly affect users’ purchase intentions. Whereas it is well-documented that an engaging presentation that offers consumers a playful and enjoyable online product experience will lead to positive feelings about online shopping and thus an increased intention to purchase, our results further show that an enticing presentation that induces an online-to-offline conversion toward continued product investigation will increase purchase propensity too. The findings thus confirm the power of enticement and suggest that designing for presentation enticement should not be neglected.

Specifically, restricted interaction that provides an incomplete interactive experience creates stronger enticement than full interaction and the noninteractive format for users with high product-class knowledge. As we explained earlier, the presence of a gap in interactive product experience is a critical contributor to the enticement effect because a feeling of deprivation, rather than fulfillment, often instigates cognitive tension and active efforts to complete the gap. Furthermore, given an incomplete product exposure stimulus, users possessing a higher level of product-class knowledge tend to find the product evaluation task more relevant and thus be more sensitive about the gaps when interacting with the focal product. These individuals may also view the pursuit of a complete product experience as a more meaningful and approachable prospect; hence they may be more motivated toward such a prospect after an incomplete interactive experience. In contrast, a lower level of relevant knowledge base may lead users to follow the superficial information rather than to process the presentation stimuli carefully with interest. This may result in lower sensitivity to any deprived experience. Users’ failure to perceive the deprivation in the virtual experience and their limited capability to process more information will largely reduce the enticing effect of an incomplete interaction design. Hence, the superiority of restricted interaction in terms of enticement diminishes for users with low product-class knowledge.

In addition, while we expected that a more interactive design, such as full interaction, would be more engaging than restricted interaction, the results showed no significant difference between them. A plausible reason is that although the provision of product interactivity is limited, the variation in the styles of experiencing products via restricted interaction may still be appealing to individuals and engage them in inspecting the product. Specifically, in a restricted interactive experience, users are prompted to interact with the virtual product at certain points and then observe an automatic demonstration of product functions. These alternate modes of presentation as well as the vivid video demonstration following users’ input may keep them involved in the product experience. This finding thus provides an
important extension to previous research by suggesting that although creating interactivity is essential to an engaging experience, the extent of interactivity does not necessarily have a linear effect on engagement.

In sum, prior studies on interaction design have mainly emphasized the mechanisms and importance of creating an engaging experience. Our study generally concurs with these prior findings by showing that a highly engaging online experience indeed contributes to enhanced purchase intention. In addition, we have also clearly demonstrated the critical impact of enticement on purchase intention beyond the effect of engagement. Moreover, we show that restricted interaction design can achieve a superior effect on enticing high-knowledge users to further experience the product offline and is generally comparable with full interaction design in engaging users in the online product experience too.

Implications of the Findings

This study focuses on the interaction design of e-commerce product presentations and reveals the relative effects of three different presentation formats on consumers’ product experience and purchase intentions. This research has several theoretical and practical implications.

First, while the literature on online product presentations has focused on engaging online experiences, the current research advocates a new design perspective about designing for an “enticing” experience. Specifically, this study highlights the ability of online product presentations to entice users to conduct further product trials offline. This is also in line with the current significant increase in web-influenced retail store sales. Indeed, a large proportion of consumers tend to perform offline actions such as visiting local stores to test real products after their online trips [5]. A recent marketing study also points out that product vendors should not only focus on selling products online but also consider online-to-offline (O2O) conversion by tying online presence to the store experience [25]. Many online retailers such as Amazon, Firstcry (kids and baby care), Lenskart (eyewear), and Tmall (the largest B2C platform in China) have recently opened offline kiosks or stores for a richer customer experience. Accordingly, it is important for businesses to employ proper online product presentation tactics in order to grab the customers’ attention, tug on their emotions, and entice them to react passionately to the advertised products and visit the stores. Our results suggest that an enticing online presentation that creates a heightened curiosity about continuing product exploration will lead to increased purchase intentions. Such positive affection associated with the product is based on a voluntary interest in product investigation invoked by the online product experience. Overall, with the unique focus on the enticement of online presentations and its impact on purchase intentions, this research brings about a new theoretical perspective for IS research in related fields.

Second, while past studies have looked mainly at the two contrasting ends of presentation design such as noninteractive presentations and full interaction VPE
[e.g., 43, 80], we suggest that product interactivity design is not a dichotomy and propose that there is a middle course, such as the restricted interaction VPE. Moreover, this study provides important empirical evidence for the nonlinear effect of interactivity design in online product presentations. Specifically, restricted interaction, which deprives users of part of the interactive experience with a virtual product, can be more effective in terms of enticing users’ curiosity about further product trials than both full interaction and a noninteractive presentation for consumers with high product-class knowledge. This heightened enticement in turn enhances their purchase intentions. In other words, simpler and “smarter” restricted interaction design has the potential to outperform both the more widely studied noninteractive format (such as video) and the “luxurious” full interaction design in achieving particular outcomes desired by vendors.

Third, past IS research on online product presentations primarily advocates highly interactive designs. This study integrates the traditional theories in IS research (flow and interaction design) with theories in curiosity formation [61], and suggests that an imperfect or incomplete experience may create “psychic tension” and invoke people’s interest in continued activities. Indeed, the enticing effect of an “information gap” seems to account for behaviors in various contexts such as visual design, effective learning, project management, and marketing plan [66]. These contexts often involve incomplete provision of visual images or storyline (e.g., incomplete photos, unresolved questions, mystery ads, etc.). However, little research has examined the theory in the context of interaction design. Through manipulating the incompleteness of users’ interactive product experience, we find that restricted interaction creates a feeling of loss or deprivation and effectively triggers users’ curiosity about further product exploration (for high-knowledge users). The present study thus makes the first attempt to extend the theories in consumer curiosity and the related findings to the context of online interaction design. It advocates a brand-new design concept, restricted interaction design, which is shown to be effective in inducing users’ further product trials, and is as good as full interaction design in creating an engaging experience online.

Fourth, this study contributes to the literature on consumer curiosity in two ways. It underscores that a mere presence of a gap in experience may not be able to induce the desired enticing effect. A critical premise of such an effect is that users should be made aware of it. In the current study, a noninteractive video presentation does not provide a complete interactive experience either, but it fails to adequately intensify users’ awareness of missing interactive experience. Depriving users of the interactive product experience that has already been afforded may intensify the contrast in experiences and hence raise their sensitivity to the incomplete product interactivity. Hence, incorporating elements of incompleteness in the experience and highlighting users’ awareness of them are both essential to achieving the enticing effect.

In addition, this research highlights the moderating role of users’ relevant knowledge base for the enticing effect of restricted interaction, and thus proposes a boundary condition for the curiosity-arousing effect of a perceived “gap.” Product-class knowledge is of great interest to both researchers and practitioners because it is
often used in customer segmentation and correlates with the level of category consumption [71]. Past studies have demonstrated that optimizing the cognitive fit between decision aids and consumers’ product-class knowledge significantly increases consumer satisfaction and decision performance [e.g., 16, 75]. The central argument is that high-knowledge users have more stable preferences and process information more efficiently, whereas low-knowledge users often require assistance and are more likely to follow the decision aids. This study suggests that since high-knowledge users are more capable of processing information in depth and digesting further information, they are more sensitive to the deprivation of experience and motivated to approach a holistic one given incomplete interaction experience. Understanding the reasons behind individuals’ reactions to presentations based on the level of their product-class knowledge thus allows website designers to tailor their interface to suit different people. This also constitutes a broader implication that goes beyond the realm of interaction design and marketing, that is, stimulating one’s curiosity via information or experience gap requires a preexisting knowledge base in the related domain.

In summary, understanding the enticing tactics is extremely helpful for web designers, who have long been seeking to understand and “manipulate” the audience’s attention and reaction to the exposed information. Based on the current study, the message to marketers and web designers is that using the most complex and costly technology may not necessarily be the most effective in promoting products and boosting purchase. Interactive features are usually costly to develop and maintain due to proprietary software, extensive programming, and a huge database of graphics [28]. In our case, the development cost of the restricted interaction is much lower than that of the full interaction due to the reduced extent of user–product interactions. Hence, our findings provide an important insight into the use of interactive technologies because a less costly restricted interaction design is as effective as a fully interactive design in creating an engaging online experience. For firms that intend to advertise new products or features online and achieve online-to-offline conversions, embedding restricted user interactions could be even more effective in invoking consumers’ attention and desire to continue the product experience offline. Moreover, it is also important to note that the restricted interaction design is more enticing than the full interaction and noninteractive designs only for high-knowledge consumers. In other words, to introduce a new product to consumers who are familiar with the type of product, a restricted interactive presentation could be cost-efficient and persuasive. Indeed, prior IS studies have suggested that web retailers should customize their offerings for different users because customized designs often create more effective experience than a one-size-fits-all design [75, 87]. In the context of online product presentations, business may also want to identify customer segments with different levels of product-related knowledge before deciding which interface design to use. For example, online vendors could trace visitors’ online membership information and their past browsing and purchase behavior to understand the knowledge level of their online customers. They could also design online campaigns or promotions to collect feedback from site
visitors, which could help segment the customer base too. Business can then benefit from presenting customized product presentations to different consumer segments.

Limitations and Future Research

This study has several limitations. First, the findings are best generalized to experience products. Specifically, Nelson [72] has proposed two different types of products, namely, experience products, which users cannot fully evaluate without actual trial or consumption, and search products, which users can accurately evaluate before actual consumption. The product chosen in this study (i.e., cell phone) has a substantial portion of experience attributes, such as the look and feel, usability, and functionality design; hence people tend to personally try the product before purchase. In the case of search products such as hard drives, the vendors may want to promote direct online sales without offering physical trials because consumers should be able to well evaluate the product through searchable information such as disk capacity and access speed. As suggested by Wright and Lynch [95], the best medium to promote the product is the one that communicates the type of product information in the most congruent way. Hence, while it is certainly promising to discover the benefits of the restricted interaction design for many experience products, caution is needed in generalizing and applying our findings to other product types.

Second, in the current study, the effects of different presentation formats are manifested through self-reported measures as well as an indicative trial behavior after the experimental task, as constrained in a lab setting. Future studies could examine the effect of online presentations in field settings by collaborating with companies that intend to launch new products and including actual behavior measures such as users’ actual store visits, their online and offline purchases. Moreover, to complement and extend the current findings, it is also promising to further test whether the engaging and enticing effects are strong enough to hold over a longer period, insofar as there is typically a time lag between consumers’ first online store visit and their offline trips.

We believe that our findings have significant implications for future research in interaction design. A latest trend of interaction design is to create a sense of immersion by increasing users’ ability to interact and communicate with the virtual environment. For instance, museums employ immersive virtual environment to improve visitors’ experience; interactive learning platforms allow learners to “walk around” the environment, make observations, and solve scientific problems. Whereas a common goal of these designs is to construct a holistic and realistic environment, the current study suggests that incorporating interactivity in a less sophisticated but smart way, for example, by offering users active participation in a restricted manner, may effectively arouse users and keep them interested. We thus suggest that future research test the idea of incomplete interaction in different interaction design contexts.
Conclusions

This study investigates three different formats of online product presentation and reveals that an incomplete interaction design, namely, restricted interaction, can be more effective than both the noninteractive and fully interactive designs in enticing users to further explore the product if users are knowledgeable about the product class. Restricted interaction design is also as engaging as full interaction design in general. This study thus complements extant studies of online product presentations by theoretically conceptualizing the enticement effect and empirically comparing different presentation formats on both engagement and enticement. By extending theories in consumer curiosity to the context of interaction design, this study advocates the new design concept of restricted interaction and highlights the moderating role of consumers’ product-class knowledge for the enticing effects of product presentations. The findings provide valuable practical guidance for marketers and web designers, that is, using less costly and less interactive presentation design may promote products and boost online-to-offline conversion more effectively.

Acknowledgment: The authors thank the Ministry of Education (MOE) of Singapore (Grant: MOE2009-T2-1-062) for its financial support.

Notes

1. Since there is a variety of cell phone brands, models, and operating systems, we did not use general cell-phone knowledge as the product-class knowledge. For example, users who are familiar with Nokia cell phones and their Symbian operating system may not be well-versed in dealing with the Android system on a Samsung phone or iOS on an iPhone. Moreover, because a cell phone is a common product used in everyday life, it would be hard to differentiate subjects in terms of their general cell-phone knowledge. Hence, we measured product-class knowledge using the knowledge pertaining to the type of experimental cell phone.

2. The measurement items were: (1) The product presentation is interactive; (2) I am able to interact with this product; and (3) The product presentation is very responsive to my action.

3. For each demonstrated product function, the restricted interaction is designed using Adobe Flash, which loads a video file, plus only 5–10 layers to implement user interaction (e.g., buttons) at specific frames, and a few lines of code at these frames to set the flow sequence. The full interaction format, on the other hand, involves more user interactions, and requires more than 30 layers on average in the source Flash file, plus thousands of lines of codes to implement the flow.

References


51. Kettanurak, V.N.; Ramamurthy, K.; and Haseman, W.D. User attitude as a mediator of learning performance improvement in an interactive multimedia environment: An empirical


68. Moore, D.J.; Reardon, R.; and Durso, F.T. The generation effect in advertising appeals. Advances in Consumer Research, 13 (1986), 117–120.


Appendix A: Measurement Items (Using a Seven-Point Likert Scale)

| Product-class knowledge | (1) I am familiar with Nokia phones’ operating systems and functions;  
|                        | (2) I have substantial knowledge about Nokia phones in general;  
|                        | (3) I can clearly recall the features of the Nokia cell phones I have used/am using. |
| Engagement             | (1) I was absorbed intensely in examining the product presentation;  
|                        | (2) My experience with this product presentation was interesting;  
|                        | (3) I concentrated fully on viewing the product presentation;  
|                        | (4) My experience with this product presentation was enjoyable;  
|                        | (5) My attention was focused on examining the online product;  
|                        | (6) My experience with this product presentation was fun. |
| Enticement             | (1) The product presentation made me want to know more about the product by trying the real one;  
|                        | (2) I was interested in trying the real product;  
|                        | (3) I was enticed to explore functions of the actual phone;  
|                        | (4) I was curious about playing with the real phone. |
| Purchase intentions    | (1) It is likely that I will consider this cell phone if I need a new one.  
|                        | (2) I may purchase the product the next time I need a cell phone.  
|                        | (3) Suppose that a friend calls me to get my advice in his/her search for a cell phone, I would recommend to him/her this one. |

Appendix B: Supplementary Analysis on the Effect of Presentation Formats on Indicative Product Trial

In order to provide a complementary measure of the enticement effect, we also captured an indication of subjects’ actual product trial behavior. Specifically, after subjects had completed the questionnaire, they were told that they could have a chance to try the real product if they were interested; however, the subject would have to wait for 10 minutes before the cell phone could be delivered to the lab. The subject was also told that this decision of whether or not to wait for the real phone was completely voluntary. The purpose of having a waiting interval of 10 minutes was to create a barrier, to filter those who were not truly or highly interested in physically experiencing the product and thus would not spend time waiting for it. Whether the subject had chosen to stay and wait for the real phone or leave
immediately was recorded as the measure of indicative product trial. This way of measuring indicative trial behavior was based on the approach used by Reeve and Cole [78], who gave subjects a free-choice period during the experiment and observed whether the subjects chose to engage in the previous incomplete task or in other activities during this period.

In our study, since the experimental product was a unique model designed solely for the experimental purpose, we did not actually have the physical phone for subjects to try. Hence, after the 10-minute waiting period, we apologized to the subject that the product could not be delivered in time due to an unresolved technical problem. The subjects were then dismissed from the experiment. They were also told not to reveal the experiment content to others. After all the data collection was completed, we explained to all the subjects who chose to wait for the real products, informing them individually about the nature of the experimental product as well as the research purpose of this experimental procedure.

We tested the effect of presentation formats on subjects’ indicative trial behavior. Logistic regression was used since trial was a binary variable—the choice of trying the product was coded “1” and the choice of leaving immediately was coded “0.” The restricted interaction condition was treated as the reference group. The results showed that there was a marginally significant main effect of presentation formats on product trials \( (B = -0.37, p = 0.06) \), and the interaction effect between presentation formats and product-class knowledge was significant \( (B = -0.22, p = 0.05) \). Spotlight analysis at one standard deviation above (i.e., high knowledge level) and one standard deviation below (i.e., low knowledge level) the mean of product-class knowledge showed that for subjects with high product-class knowledge, the restricted interaction condition induced more subjects to try the product than both the full interaction \( (\beta = 0.14, t = 2.16; p < 0.05) \) and noninteractive conditions \( (\beta = 0.12, t = 1.80; p = 0.07) \), whereas the latter two conditions did not differ. For subjects with low product-class knowledge, the three conditions did not differ from each other \( (p > 0.10 \text{ for all pairwise comparisons}) \). The result thus provided further support to the result on self-reported enticement. The plot of interaction effect is shown in Figure B1.

Figure B1. Plots of Interaction Effect on Indicative Product Trial

(Note: The vertical axis represents the percentage of subjects who chose to try the product. Numbers are estimated at high (+1SD from the mean) and low (-1SD from the mean) product-class knowledge.)