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How Firms Can Shape the Customer Experience for Greater Success in Online Retailing

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Report Summary

Online retail is an increasingly important and competitive sales channel, in which creating an effective customer experience is a crucial success factor. Yet, the amount and diversity of products offered on a single online retail platform make it challenging to create meaningful, product-specific, online experiences. Retailers therefore typically provide sellers with approximately 20 adjustable storefront design elements (e.g., photos, text descriptions, bullet points) which they can use to assemble their own product listings and create unique online customer experiences for each of their products. However, so far it is still largely unclear how to build effective experiences with these design elements.

Previous research has focused on a limited number of design elements, without accounting for the potential need to adjust experiences across brands and products. The objective of this research is therefore to understand *how online “storefront” design elements affect the online customer experience and subsequent purchases, as well as how to adapt the experience to different brand and product factors.*

The authors collaborate with four *Fortune* 1000 firms as well as a specialized online content agency to conduct a set of 16 online experiments spanning 16 different products (from 11 different brands), for which the online content agency created 256 unique “Amazon look-alike” product webpages. On these webpages, they manipulated 13 design elements according to an orthogonal array design, then tested the pages among 10,470 participants. A series of meta-analyses of the results of these 16 experiments yielded the unique effects of each design element, while accounting for the simultaneous influences of all other elements. Next, they collected measures of 8 brand and product factors for each of the 16 products in their sample and conducted a series of moderation analyses that provide insight into which type of online experience is best suited to a specific branded product.

Their study makes four main contributions to theory and practice.

First, the authors identify how 13 distinct online design elements shape four key aspects of the online customer experience (enjoyment, informativeness, social presence, and vividness), which then influences purchases. They find that picture size and customer reviews exert strong, significant effects across all four aspects of the experience while most other design elements instead affect a single aspect more than others.

Second, they evaluate the importance of the four aspects of the online experience for linking design elements to customer purchases, expanding understanding of the role of experience in online retail. The results show that all four experience aspects exert significant impacts on purchases, with enjoyment being the primary driver, followed in order by social presence, informativeness, and then vividness.

Third, they evaluate how brand and product factors influence the effects of different types of experiences on purchases. They find, for example, that the impact of informativeness on purchases is 27% greater for brands about which consumers hold more than average positive attitudes.

Fourth, they offer an online retailing “design guide” to provide managers with actionable insights into how to design effective online customer experiences, catered to specific product and brand factors.

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Introduction

Consumers conduct so many purchases online that by 2020, U.S. retail e-commerce sales are expected to surpass \$460 billion (Statista 2017). In this competitive retailing environment, delivering enticing purchase experiences is key to success (Lemon and Verhoef 2016). Yet, the amount and diversity of products offered on a single online retail platform make it challenging to create meaningful, product-specific, online experiences. For example, Amazon.com lists more than 350 million products from over 680,000 brands and provides a storefront to more than 185,000 unique sellers (360pi 2016). Faced with this challenge, retailers typically provide sellers with approximately 20 adjustable storefront design elements (e.g., photos, text descriptions, bullet points) which they can use to assemble their own product listings and create unique online customer experiences for each of their products. However, so far it is still largely unclear how to build effective experiences with these design elements. Guidelines are limited and mostly based on ad hoc A/B testing or academic investigations of a single design element across a limited number of products (Lamberton and Stephen 2016). Effective guidance instead requires understanding the simultaneous effects of a broad range of design elements on the online customer experience and how these effects may hinge on specific factors of the offered brands and products. The objective of this research is therefore to understand *how online “storefront” design elements affect the online customer experience and subsequent purchases, as well as how to adapt the experience to different brand and product factors.*

We argue that storefront designs influence purchases by shaping the online customer experience, or subjective internal and behavioral consumer responses evoked by brand related stimuli (Brakus, Schmitt, and Zarantonello 2009). Four aspects of an experience can determine purchase decisions: enjoyment, informativeness, social presence, and vividness. Yet, extant

research on the *online* experience primarily focuses on enjoyment and informativeness (Mathwick and Rigdon 2004; Novak, Hoffman, and Yung 2000), even though consumers also benefit from the social aspects of their online interactions (Wang et al. 2007), and technological advances increasingly offer ways to create vivid sensory experiences online. In response, we propose a framework to evaluate how 13 distinct design elements help shape the online customer experience, as enjoyable, informative, social, and vivid. The impact of the four experience aspects on purchases also likely depends on unique brand and product factors (Weathers, Sharma, and Wood 2007), whereas previous research mostly examines a narrow range of products or brands (Anderson and Simester 2014; Wang et al. 2007). For example, products that are challenging to evaluate without direct experience of them (experience goods) may benefit from a more vivid experience that is appealing to the senses, but for products that can be easily assessed using factual descriptions of product attributes (search goods), a mostly informative experience might be advisable.

To facilitate the broad scope and generalizability of our research, we collaborate with four *Fortune* 1000 firms, diverse in terms of their industries, brands, and products (i.e., consumer packaged goods, consumer electronics, industrial electronics, and consumables), as well as a specialized online content agency. We conducted a set of online experiments spanning 16 different products (from 11 different brands), for which the online content agency created 256 unique “Amazon look-alike” product webpages. On these webpages, we manipulated 13 design elements according to an orthogonal array design (Taguchi 1986), then tested the pages among 10,470 randomly assigned participants. To investigate the relative influences of each of the 13 design elements on each aspect of the customer experience, we also performed a series of meta-analyses of the results of these 16 experiments (McShane and Böckenholt 2017). This way, we

can isolate the unique effects of each design element, while accounting for the simultaneous influences of all other elements. Finally, to examine the extent to which brand and product factors determine how effectively a specific aspect of the experience drives purchase, we enriched our experimental data with measures of 8 brand and product factors for each of the 16 products in our sample, obtained from 572 additional customer respondents. We then conducted a series of moderation analyses that provide insight into which type of online experience is best suited to a specific branded product.

Our research offers four main contributions to theory and practice. First, we experimentally isolate the relative influences of 13 distinct online design elements on the four aspects of online experiences. Thus, we build on previous research that either focuses on the effect of a single element in isolation (Roggeveen et al. 2015) or aggregated multiple elements into amorphous constructs such as “aesthetic appeal” or “website investment” (Puccinelli et al. 2009; Schlosser, White, and Lloyd 2006) to provide a holistic perspective on which design elements are most critical for creating a certain type of experience. Picture size and customer reviews exert strong, significant effects across all four aspects of the experience; most other design elements instead affect a single aspect more than others. For example, providing additional descriptive detail (i.e., amount of information contained in product descriptions) is 60% more effective for driving an informative experience than any other type of experience, according to a comparison of effect sizes. Even further, providing additional bulleted features and a comparison matrix affect the informativeness 80% and 67% more, respectively, than any other experience type. Linguistic style (i.e., whether the product description is more journalistically or conversationally worded) and lifestyle picture (i.e., picture connecting the product to the customer’s life) are 148% and 118% more effective, respectively, in shaping social experiences relative to any other types.

Product videos contribute to vivid experiences 107% more; including a recommendation agent on the webpage is 79% more effective at driving vivid or informative experiences than it is at driving any other type. A content filter that allows customers to hide certain parts of the product description has a negative effect on the social aspect of the experience but no effect on the other three experience aspects.

Second, we evaluate the importance of the four different aspects of the online experience for linking “storefront” design elements to customer purchases, expanding our understanding of the role of experience in online retail. The results across 16 experiments show that of all four aspects, enjoyment primarily drives purchase. Its effect size is 215% greater than that of social presence, the second most critical aspect. Moreover, the effect of enjoyment is 219% stronger than that of informativeness and 448% stronger than that of vividness. Although extant online research mainly focuses on enjoyment and informativeness (Steenkamp and Geyskens 2006), we find that on average, social presence is a more important driver of purchase than informativeness. Thus far, this insight appears unappreciated in an online context (Wang et al. 2007), reaffirming the need for a more holistic view of the online customer experience.

Third, we evaluate how brand and product factors determine the effectiveness of different types of experiences for invoking purchases. With a set of spotlight analyses (Spiller et al. 2013), we compare our model results at the mean to those one standard deviation above the mean of each moderator. We find, for example, that the impact of informativeness on purchases is 27% greater for brands about which consumers hold more than average positive attitudes. The effect of vividness on purchase, however, is 44% lower for such brands. Similar findings emerge for brands with a stronger reputation and trust. Moreover, for products that have more than average

experience qualities, the influence of vividness has a 40% stronger impact on purchase, whereas for products with more search qualities, vividness is 35% less effective.

Fourth, on the basis of these results, we offer an online retailing “design guide,” to provide managers with actionable insights into how to design effective online customer experiences, catered to specific product and brand factors. Marketers may benefit from designing specific “types” of experiences for which one of the aspects of the customer experience dominates. For example, strong brands (i.e., with more favorable reputations, attitudes, and trust) should focus on informative experiences. Offering more factual information about the focal product (e.g., more descriptive details, bulleted features) and providing comparative information (i.e., comparison matrix) is key to building this type of experience. For weak brands, vivid experiences that appeal to consumers’ senses are more beneficial and can be built using product videos and recommendation agents. Vivid experiences benefit complex products and those high in experience qualities, but they may be less effective and even potentially detrimental for search products. Social experiences can be built using design elements that serve as social cues, such as a conversational linguistic style and lifestyle photos. With these insights, our research identifies which type of online experience is most effective for different brands and products and also how to build such an experience using specific design elements.

Understanding and Creating Online Customer Experience

In a typical brick-and-mortar retail context, customers get to see, touch, and experience a product in a purposefully designed store environment. For online retailing though, the customer experience comprises indirect, virtual interactions with the product offering and retail environment. Online shopping offers nearly “frictionless commerce,” such that customers can easily gather large amounts of information about a variety of products, at any time of day (Häubl

and Trifts 2000; Lamberton and Stephen 2016). The seller also enjoys virtually unlimited “shelf space,” relatively low production costs, nearly instantaneous adaptability, and a high degree of interactivity. The conditions thus can be advantageous to both sellers and buyers, but they also entail certain challenges. Customers lack any physical contact with products or direct experiential information (Biswas and Biswas 2004), yet they must filter and prioritize the vast multitude of available information. The product webpage is at the heart of this online experience and a key tool that manufacturers can use to convert visits into sales (Schlosser, White, and Lloyd 2006). Manufacturers seek to leverage the design elements offered by the retailer to create a product webpage that offers the most effective customer experience (Gentile, Spiller, and Noci 2007). Consistent with our research objective, we develop a comprehensive conceptual model to link online design elements to purchases, through four aspects of the online customer experience, based on extant literature (Figure 1).

Four Aspects of the Online Customer Experience

The exact nature of the customer experience has been debated in extant research. Brakus, Schmitt, and Zarantonello (2009) define customer experiences, in general, as subjective, internal and behavioral consumer responses evoked by brand-related stimuli. They suggest four distinct aspects: affective (feelings), intellectual (cognitions), sensory (sensations), and behavioral. Schmitt (1999) identifies five similar aspects of experience: affective (feel), cognitive (think), social identity (relate), sensory (sense), and physical (act). Certain aspects of the experience that are relevant in offline, direct interactions, however, may take on new meaning or lose some relevance in online settings. Most prior online research focuses on the affective and cognitive aspects, or enjoyment and informativeness (Novak, Hoffman, and Yung 2000; Steenkamp and Geyskens 2006), and though it is less studied, increasing interest centers on understanding the

social aspects of online experiences (Wang et al. 2007). Moreover, as technology advances, sensory stimuli are growing more relevant, warranting an investigation of vividness in this domain (Jiang and Benbasat 2007). Due to its virtual nature, the online experience prohibits direct physical contact with the product or retail environment, so any potential physical aspect of the experience likely is less relevant. Altogether, we propose that the online customer experience consists of four aspects: enjoyment (affective), informativeness (cognitive), social presence (social), and vividness (sensory). Table 1 summarizes key definitions, relevant research, and pertinent findings about the online customer experience.

Enjoyment. Defined as “the extent to which the activity of using the webpage is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated” (Davis, Bagozzi, and Warshaw 1992, p. 1113), *enjoyment* is one of the primary emotional responses to and a key motivation for online shopping (Ganesh et al. 2010). It involves the positive moods, feelings, and emotions generated through interactions with a focal webpage. It also is a core component of flow, which is an intrinsically enjoyable state (Mathwick and Rigdon 2004) and a key element of the customer experience (Novak, Hoffman, and Yung 2000). Customers’ enjoyment increases their exploration, examination of novel products, responses to online promotions (Menon and Kahn 2002), attitudes toward a website, patronage intentions, and satisfaction (Eroglu, Machleit, and Davis 2003; Hsieh et al. 2014).

Informativeness. Defined as “the extent to which a website provides consumers with resourceful and helpful information” (Lim and Ting 2012, p. 51) informativeness is the primary cognitive aspect of the online customer experience. It captures the webpage’s contribution to helping the consumer make a pending purchase decision, which involves thinking, conscious mental processing, and, typically, problem solving (Gentile, Spiller, and Noci 2007). This fact-

gathering aspect of the online shopping experience generally is “outcome oriented, concentrated, impersonal, and objective” (Schlosser, White, and Lloyd 2006, p. 135). Informativeness focuses, therefore, on the information that remains after interacting with the webpage and has been shown to improve attitudes toward the website (Hausman and Siekpe 2009; Hsieh et al. 2014).

Social presence. People tend to treat “computers as social actors even when they know that machines do not possess human traits” (Wang et al. 2007, p. 143; see also Nass, Fogg, and Moon 1996), prompting increased research into the social aspects of the online customer experience. *Social presence* refers to a “psychological connection with the user, who perceives the website as ‘warm’, personal, [and] sociable, thus creating a feeling of human contact” (Yoo and Alavi 2001, p. 373). This aspect reflects a person’s relationship with others, including affirmations of a social identity or evoking a sense of belonging (Gentile, Spiller, and Noci 2007). The social presence of a website can reduce social proximity concerns and increase perceived tangibility, making the customer feel psychologically closer to the product (Darke et al. 2016). It also influences consumers' trust in a website (Cyr et al. 2009). Furthermore, social presence can explain consumers' perceptions of value and satisfaction with a website, and it predicts patronage (Gefen, Karahanna, and Straub 2003).

Vividness. The sensory component of the customer experience includes aspects that appeal to the senses through sight, sound, touch, taste, or smell (Gentile, Spillers, and Noci 2007). Zajonc (1980) suggests that sensory-level processing and retrieval occurs automatically, which then drives preferences. In an online environment, prior research focuses on webpage *vividness*, or “the representational richness of a mediated environment as defined by its formal features; that is, the way in which an environment presents information to the senses” (Steuer 1992, p. 81). The arousal of a perception of beauty and aesthetically pleasing stimuli are part of vividness

(Schmitt 1999). The online environment naturally limits the scope of the sensory experience, though sensory memories can be evoked through imagery (e.g., pictures, videos) and in turn affect website repatronage (Jiang and Benbasat 2007), customer learning, choice, and satisfaction (MacInnis and Price 1987).

Moderation of Online Customer Experience Effects

Brand and product factors can change customers' shopping needs, goals, and motivations and affect the type of experience they expect (Hauser et al. 2009; Kaltcheva and Weitz 2006). Thus, the same online experience might have different effects, depending on the specific brand or product being sold. To explore these effects, we consider strong versus weak brands (in terms of brand reputation, attitude, and trust) and product factors (utilitarian and hedonic qualities, search and experience qualities, product complexity) that should be particularly relevant to the online customer experience.

Brand moderators. The virtual nature of online shopping can cause consumers to feel especially uncertain in their purchase decisions because of the lack of experiential product information, which creates a context in which brand characteristics can alter the effectiveness of various online customer experiences. We examine brand reputation, brand attitude, and brand trust. *Brand reputation* is “the overall value, esteem, and character of the brand as seen or judged by people in general” (Chaudhuri 2002, p. 34); *brand attitude* is “a brand's potential to elicit positive emotional response in the average consumer as a result of its use” (Chaudhuri and Holbrook 2001, p. 82); and *brand trust* is the “willingness of the average consumer to rely on the ability of the brand to perform its stated functions” (Chaudhuri and Holbrook 2001, p. 81). Brands can minimize purchase risk (Kirmani, Sood, and Bridges 1999) and increase perceived

product value (Keller 1993), so that the type of customer experience that works best for strong brands may differ from that which is most effective for weak brands.

Product moderators. Product factors also likely influence the relevance and attention paid to different aspects of the online experience, which should alter their ultimate effects on customers' purchase behaviors. In multiple disciplines, researchers acknowledge differences in customer goals, motivations, and shopping needs across utilitarian and hedonic products. We examine the moderating effects of *utilitarian qualities*, or the “functions performed by products,” and *hedonic qualities*, which are the “sensations derived from the experience of using products” (Voss, Sangenberg, and Grohmann 2003, p. 310). Utilitarian goods possess mostly qualities that are relevant to consumers' cognitive, instrumental, and goal-oriented needs. Hedonic goods instead feature predominately qualities that cater to consumers seeking affective outcomes related to pleasure, fantasy, and fun (Dhar and Wertenbroch 2000; Roggeveen et al. 2015). For example, customers shopping for utilitarian products often focus on economic optimization and functionality, thus attending to the cognitive aspects of the experience but potentially finding other aspects of the experience irrelevant or distracting. Yet these other, more affective, aspects could be beneficial for a customer shopping for hedonic products (Puccinelli et al. 2009).

Many studies examine the degree to which a customer's satisfaction with the purchase of a product can be assessed prior to buying. A key satisfaction driver in the online domain pertains to the search and experience qualities of a product (Biswas and Biswas 2004). *Search qualities* are product attributes that consumers can easily inspect prior to purchase, using product descriptions or pictures on a webpage. When goods are high in search qualities (e.g., commodities), consumers can assess product value using just the presented information. Conversely, *experience qualities* tend to be challenging to evaluate online with the information

provided, because they require experiential knowledge and an activation of the senses (Weathers, Sharma, and Wood 2007). Customers often believe that experience products (e.g., clothing, food) need to be directly experienced for them to assess their value (Biswas and Biswas 2004). For example, Weathers, Sharma, and Wood (2007) suggest that the sensory aspect (vividness) of the customer experience may be more critical for experience products, but cognitive aspects (informativeness) may be more relevant for search products. In addition, people tend to resort to simpler heuristics and more selective information processing as product complexity increases (Bettman, Luce, and Payne 1998). Therefore, we also examine *product complexity*, referring to the number and intricacy of relevant attributes associated with a product (Yeh 2012). Because these qualities relate to the uncertainty surrounding the product and the need to validate its performance, we examine to what extent these qualities moderate the effects of each aspect of the online customer experience on purchases.

Effects of Design Elements on the Online Customer Experience

In line with our conceptualization, we propose that online customer experiences are evoked by design elements on the product webpage. *Design elements* are static or interactive content features of the webpage, encountered as part of the customer's contact with the webpage and can be verbal (words), nonverbal (e.g., pictures, videos), or a combination. Online retailers define the *structural* elements of the overall shopping environment, such as its navigation, menus, icons, and overall organization; they also often set guidelines and restrictions regarding the layout, presentation, and use of design elements. Thus, firms selling through a retailer's platform must work within the restrictions of the retailer to manage their specific products' webpages (listings). For instance, if a fashion manufacturer sells its goods through Amazon, it has no control over the general structure and layout of Amazon.com, but it can choose how to present its garments on

the specific products' pages, which it manages through design elements such as descriptive text and imagery. When effectively deployed, these design elements are the primary tools for marketers selling products through online retail stores. Altogether, we expect design elements to collectively create the online experience; we do not expect a one-to-one correspondence such that a specific element would trigger a specific experience type and only that type.

Of the many potentially relevant design elements, to identify those that are most important to the *online customer experience*, we reviewed 10 years of research on website design elements published in *Journal of Marketing*, *Journal of Marketing Research*, *Marketing Science*, and *Journal of Consumer Research* as well as various specialized journals and conducted interviews with industry experts. The resulting set of 13 design elements consists of four broad categories (textual, visual, transactional, and decision aid elements), as detailed in Table 2.

Textual elements. *Textual elements* involve the written word. Within this category, we study linguistic style, descriptive detail, and number of bulleted features. The most basic aspect of textual elements is the way in which information is presented. Research suggests that the *linguistic style* in which content is conveyed, i.e., the characteristics of the text including word choice, use of elements such as questions, certain pronouns ('you,' 'your'), and adjectives, can impact its overall impression on customers (Ludwig et al. 2013; Song and Zinkhan 2013). To capture the degree of elaboration of the product descriptions on the webpage, we examine the *descriptive detail*. Providing more attribute information generally improves the overall experience (Cooke et al. 2002; Hauser et al. 2009), but could also lead of information overload (Eppler and Mengis 2004). Finally, the *number of bulleted features* indicates how many product features appear in an abbreviated list form at the top of the webpage. Elements that consolidate information, present it more efficiently, or reduce page complexity help customers' assess the

offering more easily impacting the online experience (Shu and Carlson 2014; Wang et al. 2014).

Visual elements. *Visual elements* subsume all content presented in photographic or illustrated form. They can convey symbolic meaning and pictorial information (Scott 1994) that contributes to persuasive arguments on the product webpage. For this study, we investigate feature crops, lifestyle photos, photo sizes, and product videos. Unlike pictures that show the product as a whole, *feature crops* zoom in on one of its key features. They illustrate tangible, relevant attributes and highlight details that would not be visible if the product were captured in its entirety. Research suggests that pictures featuring cropped objects can improve purchase intentions if the customer is adequately motivated to seek closure with regard to the object (Peracchio and Meyers-Levy 1994). Firms might employ *lifestyle photos*, or pictures that connect the product to customers' lives, such as by depicting people using the product or living with it in a regular setting. They explicitly capture or imply human interaction with the product, which can increase consumers' trust in a website (Cyr et al. 2009). Next, firms can influence product perceptions by adjusting the *photo size*. As Park, Lennon, and Stoel (2005) demonstrate, larger product images increase consumers' purchase intentions, but only if they show the product in motion. Finally, the *product video* element refers to the inclusion or absence of a video that demonstrates the product and its key features. Videos that include human voices and illustrate social roles can serve as cues for human characteristics and influence the level of social presence (Moon 2000; Nass, Fogg, and Moon 1996).

Transactional elements. *Transactional elements* pertain to the actual economic exchange. *Content filters* allow customers to manipulate the online environment by dictating what, when, and how much information appears on the webpage (Mathwick and Rigdon 2004). For example, “show more” buttons reveal or hide certain information (Hauser et al. 2009). The presence of

return policy information refers to whether the webpage contains information about the terms under which customers can return the product if they choose (Bower and Maxham 2012; Wood 2000). Such assurances potentially decrease perceived purchase risks (Biswas and Biswas 2004).

Decision aids. *Decision aids* are designed to improve a customer's decision-making ability. Research cites customer reviews, expert endorsements, comparison matrices, and recommendation agents as key decision aids. *Customer reviews* are user-generated product evaluations, posted on product webpages (Mudambi and Schuff 2010). Reviews increase a website's perceived usefulness and social presence (Kumar and Benbasat 2006; Weathers, Sharma, and Wood 2007). *Expert endorsements* are also product evaluations, but they are assembled from distinguished experts in the category, such as specialized product testing firms (Ansari, Essegai, and Kohli 2000). They can reduce customers' perceived purchase risk (Huang, Lurie, and Mitra 2009). *Comparison matrices* provide tables to compare the focal product against other products from the same category on multiple characteristics in a "display" format, so the product information is presented as alternatives (columns) and attributes (rows) in the matrix. This presentation helps shoppers compare products more efficiently and accurately (Lamberton and Stephen 2016), because they can easily determine the relative advantages and disadvantages of the offered item, in relation to other options. *Recommendation agents* serve a similar purpose, in that they generate a list of alternatives (Häubl and Trifts 2000; Knott, Hayes, and Neslin 2002). Effectively, they "perform a screening function, weeding through a huge number of alternatives" (Lamberton and Stephen 2016, p. 154) to help customers make their purchase decisions.

Methodology

Overview

Our objective is to understand how 13 online “storefront” design elements influence the customer experience, while also acknowledging that the effects of the experience on purchases depend on brand and product factors. Previous work has mostly focused on a single element, aggregated multiple elements into amorphous constructs such as “aesthetic appeal” or “information load” (Puccinelli et al. 2009; Roggeveen et al. 2015; Song and Zinkhan 2008), or investigated effects for a limited number of products (Lamberton and Stephen 2016). In this research, we seek to tackle these limitations in two important ways. First, in collaboration with an online content agency, we created “Amazon look-alike” product webpages according to an orthogonal array design (Taguchi 1986) that allowed us to isolate the unique effect of each of the 13 design element while accounting for all the other elements. Second, to increase the generalizability of our findings, we collaborated with four *Fortune* 1000 firms in multiple industries (consumer packaged goods, consumer electronics, industrial electronics, and consumables), which enabled us to test our conceptual model across 16 different products (4 per firm), representing 11 brands (for details, see Web Appendix A). To examine the effects of design elements on the four aspects of the customer experience we conducted a series of meta-analyses across the 16 products (McShane and Böckenholt 2017). To determine when different types of experiences are most effective for driving purchases, we measured 8 brand and product factors and conducted a series of moderation analyses.

Experimental Design and Procedure

In collaboration with the online content agency, we designed and created Amazon mock product webpages by varying the 13 design elements, on two levels each. On Amazon.com,

vendors can select from a range of module templates they wish to include and then manage the content of that module within the retailer's restrictions. We focused on Amazon as the largest online retailer; most online retailers follow a similar approach though. A typical template contains an image on the left-hand side of the module with accompanying text on the right-hand side. Each of our created pages contained three modules, reflecting this template. Unless replaced by special images (e.g., feature crop, expert endorsement), the three pictures showed product hero shots (i.e., product in front of a white background) from different angles. Web Appendix B contains an example product webpage.¹

Experimental stimuli. Appendix A provides a summary of the two manipulated levels for each of the 13 design elements. We manipulated *linguistic style* as either a journalistic tone (level 1) or a conversational tone (level 2). For the journalistic tone, the neutral product descriptions featured few or no adjectives, no self-relevant words (e.g., you, your) (Carmody and Lewis 2006; Song and Zinkhan 2008), no questions, and no exclamation points. For the conversational tone, the descriptions were more engaging and included numerous adjectives, self-relevant words, words that insinuate instantaneous gratification (e.g., fast, instant, quickly), and self-reflective interrogative sentences (e.g., "Wouldn't it be great to have high-speed Internet everywhere?") (Ahluwalia and Burnkrant 2004; Ludwig et al. 2013). Although linguistic style determines *how* information in product descriptions gets conveyed to customers, it does not affect the actual amount of information presented. To manipulate this facet, we employed the second design element, *descriptive detail*, such that at level 1 the product descriptions contained approximately one-third the amount of information (i.e., number of attributes discussed) that they contained at level 2. We manipulated *bulleted features* as either three (level 1) or five (level 2) bullets in the

¹ All brands are disguised to protect the confidentiality of our participating firms.

top section of the webpage; previous research indicates that these amounts are relevant (Shu and Carlson 2014). A *feature crop*, a close-up picture of a particular feature of the product, was either not included (level 1) or included (level 2), replacing one of the product hero shots on the page. A *lifestyle picture*, which connects the product to the real world and places it in an actual usage situation, was not part of the webpage at level 1 but appeared at level 2, replacing one of the hero shots. We manipulated *picture size* such that at level 2, all pictures were 25% larger than at level 1. *Product video* indicated the absence (level 1) or presence (level 2) of a promotional video about the product, included in the top section. We manipulated the *content filter* element as either not permitting (level 1) or permitting (level 2) consumers to control the amount of information they would see on the page, using “show more” buttons to reveal or hide parts of the modules. *Return policy information* was the absence (level 1) or presence (level 2) of the statement “Return Policy: Items can be returned within 30 days of receipt” on the page. To manipulate *customer reviews*, we either excluded (level 1) or included (level 2) the average star rating for the product in the top section. To assess the effects of this element as cleanly as possible, we included no actual written customer reviews on the page, used 4.5/5 stars for all manipulations, and held the number of reviews constant across conditions. Next, we manipulated *expert endorsement* using a quality seal from a fictitious third-party product rating agency, thus avoiding the potential effects of familiarity with existing rating agencies, which might differ across respondents. At manipulation level 1 there was no seal, whereas at level 2, this seal replaced one of the hero shot images. We manipulated the *comparison matrix* element as the absence (level 1) or presence (level 2) of a table that compared the focal product with similar products from the same firm on key product factors. Finally, we manipulated *recommendation agent* as the absence (level 1) or presence (level 2) of a section that displayed links to related

products, again from the same manufacturer. For these last two elements, we purposefully chose products from the same manufacturer, to avoid any influences of additional brands, for which consumers might hold differential views.

Experimental design. Testing the effects of such a large number of elements poses a considerable empirical challenge. A full-factorial design would have required building and analyzing 131,072 experimental cells, i.e., webpages (2^{13} combinations of design elements per product \times 4 firms \times 4 products). While such an approach would have allowed us to investigate all potential interaction effects between design elements, it is practically infeasible to execute. We therefore employed fractional factorial designs (Danaher and Mawhinney 2001). Specifically, we adopted a Taguchi orthogonal array design (Taguchi 1986), which reduced the required number of cells to 256 (16 combinations of design elements per product \times 4 products \times 4 firms), such that we feasibly could investigate the simultaneous, causal effect of all 13 design elements.

Sample and procedure. We recruited 10,470 participants via Amazon Mechanical Turk (Mturk) for our 16 experiments (one per product). Participants, randomly assigned to one of the 16 experimental cells, were presented with the corresponding webpage and instructed to explore it for at least 45 seconds. Subsequently, they completed a questionnaire with items designed to measure the four experience aspects and purchase intentions, as well as manipulation and realism checks. Participants also provided their demographic information.

Measures. Appendix A contains the results of our manipulation checks, which are all significant ($p < .01$), indicating successful manipulation of the design elements. We used two items to assess the realism of our created webpages: “I could imagine an actual webpage to look like the one I just saw” and “I believe that this webpage could exist in reality” (Darley and Lim

1993) ($\alpha = .90$). Participants' responses to these items, on a scale of 1 ("strongly disagree") to 7 ("strongly agree"), indicate that our created webpages established sufficient realism ($M_{\text{composite score}} = 5.41$, $SD = 1.29$).

We also captured the latent constructs accurately in our experiments, according to a confirmatory factor analysis with the four aspects of the customer experience and purchase intentions, each measured with three items (see Appendix B). The model has excellent fit ($\chi^2(105) = 151,342.26$; confirmatory fit index [CFI] = .98; Tucker-Lewis index [TLI] = .98; root mean square error of approximation [RMSEA] = .05; standardized root mean residual [SRMR] = .03), and the measures exhibit solid psychometric properties. In Table 3, Panel A, we note the evidence of convergent validity, because all the standardized factor loadings are greater than .7 and significant at $p < .01$. In support of internal consistency, all the Cronbach's alpha values are .85 or higher, and the average variances extracted (AVEs) exceed .60. We also achieve discriminant validity, in that all AVEs are greater than the squared correlations of the focal construct with any other construct.

Results: Meta-Analyses of the Effects of Design Elements on Customer Experience

To investigate how managers can create a specific customer experience using online design elements, we adopt meta-analytical techniques and combine the effects generated from the 16 experiments (one for each product). Specifically, for each experiment, we regress each of the four aspects of the customer experience on the 13 design elements, coded according to Appendix A, as well as customer age, gender, income, and education, to control for customer heterogeneity.² By including all design elements in each regression, we can account for their

²In a robustness check, we included the perceived number of words ("Approximately how many words are on the product webpage [make your best estimate]?") as another control variable. The key results remain unaffected, as detailed in Web Appendix C.

simultaneous effects on each type of experience. Next, in a series of meta-analyses, we aggregate and summarize the effects across experiments and identify the average effect of each design element on each type of experience. Single-paper meta-analyses such as this one have grown increasingly popular in empirical research (McShane and Böckenholt 2017). We report the meta-analytic effects of the design elements on each experience aspect in Table 4. In addition, we present the univariate results for each design element across each product in Web Appendix D.

Consistent with previous research (Huang, Lurie, and Mitra 2009; Ludwig et al. 2013), we can confirm the importance of customer reviews as strong drivers of all aspects of the customer experience (all β s $\geq .069$, all p s $< .01$). Picture size also emerges as a core design element influencing all aspects (β s $\geq .077$, p s $< .01$). In contrast, when accounting for the impact of all 13 design elements, return policy information and expert endorsement do not contribute significantly to any of the experience aspects (p s $> .05$).

Enjoyment. Nine of the thirteen design elements substantially shape enjoyment. The most important are picture size ($\beta = .083$, $p < .01$) and customer reviews ($\beta = .071$, $p < .01$), which exert significantly stronger influences than product feature crops ($\beta = .031$, $p < .01$), text tone ($\beta = .028$, $p < .01$), product video ($\beta = .028$, $p < .05$), or lifestyle pictures ($\beta = .020$, $p < .05$), as indicated by their respective, non-overlapping confidence intervals (Table 4). Including additional bulleted features ($\beta = .047$, $p < .01$), a comparison matrix ($\beta = .041$, $p < .01$), and more descriptive detail ($\beta = .034$, $p < .01$) increase enjoyment too, with effect strengths between those of the former elements.

Informativeness. Eight elements influence informativeness with the strongest effects stemming from including customer reviews ($\beta = .108$, $p < .01$), more bulleted features ($\beta = .092$, $p < .01$), a comparison matrix ($\beta = .087$, $p < .01$), more descriptive detail ($\beta = .080$, $p < .01$), and

larger pictures ($\beta = .077, p < .01$). Including a product video ($\beta = .030, p < .01$), a recommendation agent ($\beta = .024, p < .05$), and lifestyle pictures ($\beta = .021, p < .05$) also drive informative experiences, though to a significantly lesser extent.

Social presence. Ten elements are relevant for social presence. The most important are picture size ($\beta = .085, p < .01$), customer reviews ($\beta = .083, p < .01$), linguistic style ($\beta = .082, p < .01$), and lifestyle pictures ($\beta = .075, p < .01$). Significantly less important are bulleted features ($\beta = .022, p < .05$), and product feature crops ($\beta = .022, p < .05$). The effect strengths of product video ($\beta = .047, p < .01$), descriptive detail ($\beta = .045, p < .01$), and comparison matrix ($\beta = .032, p < .01$) lie somewhere in between. The use of content filters decreases a webpage's social presence ($\beta = -.041, p < .01$).

Vividness. Ten elements are also relevant for vividness. The most important are picture size ($\beta = .096, p < .01$) and product video ($\beta = .095, p < .01$). Of significantly lesser strength are the effects of the comparison matrix ($\beta = .052, p < .01$), additional bulleted features ($\beta = .051, p < .01$), more descriptive detail ($\beta = .050, p < .01$), lifestyle pictures ($\beta = .034, p < .01$), linguistic style ($\beta = .033, p < .01$), product feature crops ($\beta = .029, p < .01$), and recommendation agents ($\beta = .026, p < .01$). In between these ends of the spectrum fall the effects of customer reviews ($\beta = .069, p < .01$).

Results: Effects of the Customer Experience on Purchase

To determine how the four aspects of the online customer experience drive purchases, we regress purchase intentions on each aspect as well as the four control variables we used previously to capture customer heterogeneity (i.e., age, gender, income, and education). The composite scores, reflecting the averages over the corresponding items of each experience type, appear in Table 5. As Model 1 reveals, all four aspects of the customer experience have a

positive and significant influence on purchase intentions. Enjoyment has the strongest influence ($\beta = .460, p < .01$), followed by social presence ($\beta = .146, p < .01$), informativeness ($\beta = .144, p < .01$), and then vividness ($\beta = .084, p < .01$). The results also remain stable when we exclude the demographic controls, as shown in Model 2.

Results: Brand and Product Moderating Effects

In line with our general insights into the relative strengths with which the four aspects of the customer experience influence purchases, previous research that has taken a more fine-grained view suggests that consumers evaluate marketing content differently, depending on the characteristics of the featured brand or product (Ho-Dac, Carson, and Moore 2013; Huang, Lurie, and Mitra 2009; Weathers, Sharma, and Wood 2007). We therefore investigate the extent to which brand and product factors might moderate the effects of experience aspects on purchases. Our brand-related moderators include brand reputation, attitude, and trust. As product-related factors, we examine a product's utilitarian, hedonic, experience, and search qualities, as well as its complexity.³ To capture brand and product factors as accurately as possible, uninfluenced by the webpages on which the products appeared in our experiments, we conducted a separate data collection ($N = 452$) in which participants saw only randomly selected hero-shots of the products from our 16 experiments, then answered a questionnaire with the brand and product measures, except for product complexity. Each participant rated two products. In a second survey ($N = 120$), we collected information about product complexity, and each participant rated four products. All the measurement items are in Appendix B.

³ In an exploratory analysis we also tested the moderating effects of brand and product factors on the relationships between each of the design elements and the aspects of the customer experience. Consistent with our conceptualization, only two of the 512 potential moderating effects were significant. Thus, product and brand factors moderate the effects of experience on purchase, but these factors have little effect on the linkages among design elements and the different aspects of experience (Web Appendix E).

A confirmatory factor analysis of all constructs except product complexity (for which we collected the data separately) shows good fit ($\chi^2(254) = 21,552.34$; CFI = .95; TLI = .95; RMSEA = .07; SRMR = .05). We report the corresponding psychometric properties in Table 3, Panel B. We find convergent validity, with all standardized factor loadings above .7 and significant at $p < .01$.⁴ In support of internal consistency, the Cronbach's alpha values are .83 or higher, and all AVEs are greater than .60. The model also achieves discriminant validity, because all AVEs are greater than the squared correlations of the focal construct with any other construct.

We next averaged measures across participants to derive customers' perspectives at the brand and product levels, to be used as moderators in our next analysis. In this analysis, we test each moderator in separate, extended versions of our base model that include the interaction terms between each experience aspect and the focal moderator. Thus, we can identify which aspects of the experience become more or less relevant in driving purchases for each moderating (brand or product) factor (see Models 1–8 in Table 6).

Brand factors. The results of Models 1–3 in Table 6 show that all three brand factors interact positively with informativeness (brand reputation $\beta = .020$, $p < .05$; brand attitude $\beta = .028$, $p < .01$; brand trust $\beta = .019$, $p < .05$) and negatively with vividness (brand reputation $\beta = -.022$, $p < .05$; brand attitude $\beta = -.027$, $p < .05$; brand trust $\beta = -.026$, $p < .05$). Informativeness is a more important driver of purchases for stronger compared with weaker brands, as suggested by previous research that shows that consumers exhibit a higher probability to process information and arguments more deeply from a likable source, such as the brand (Ho-Dac, Carson, and Moore 2013). Strong brands typically are considered credible sources, whose provided

⁴ Two measures—one of utilitarian qualities, “unnecessary–necessary” (standardized loading = .587, $p < .01$), and one for product complexity, “A salesperson selling this kind of product needs to know a lot to do a good job” (standardized loading = .659, $p < .01$)—exhibited slightly low internal consistency, but we retained them for construct validity.

information and arguments appear more persuasive (Petty, Cacioppo, and Heesacker 1981).

Accordingly, the stronger and more likable a brand, the more consumers actually engage with the information on its products' webpage, and the more they find this information relevant to their purchase decisions. In contrast, vividness is more important for weaker brands, which are less highly regarded and trusted, so consumers experience more uncertainty about their purchase (Roselius 1971). In these situations, vividness can be a means to reduce product uncertainty (Weathers, Sharma, and Wood 2007) and effectively counter the relative disadvantage of being a weaker brand. Thus, these brands benefit from adding more sensory content to product listings.

In Model 4, we find that more utilitarian product qualities interact negatively with enjoyment ($\beta = -.021, p < .05$) and social presence ($\beta = -.022, p < .05$) but positively with informativeness ($\beta = .021, p < .05$). More hedonic qualities do not influence the effects of any aspect, as Model 5 shows. The consumption of products with mainly utilitarian qualities occurs typically for functional reasons (Voss, Spangenberg, and Grohmann 2003). When evaluating such products, consumers tend to focus on the relationship between their characteristics and the objective outcomes they produce (Roggeveen et al. 2015), which increases the importance of an informative experience. Moreover, social presence does not help consumers shopping for utilitarian products (Hassanein and Head 2005), in line with our findings. A more social experience may even be less effective for utilitarian products, because it creates a potentially distracting pleasurable, rather than an efficient, experience (Hassanein and Head 2007). This explanation also resonates with our finding that enjoyment has less relevance when consumers shop for utilitarian products.

According to Model 6, when consumers shop for products high in experience qualities, which they cannot inspect fully prior to purchase, the informativeness aspect of the experience is

less important ($\beta = -.029, p < .01$) but vividness is more important ($\beta = .024, p < .05$). These findings are consistent with extant research that suggests consumers extract only minimal direct information from advertisements for experience goods (Nelson 1974) and that information is less pertinent for experience goods than search goods (Franke, Huhmann, and Mothersbaugh 2004). Because product attribute information is not very useful when assessing experience products, perceived purchase risk is often high (Maity and Dass 2014), and consumers turn to alternative signals on the webpage (Eroglu, Machleit, and Davis 2003). Heightened vividness, which can effectively reduce uncertainty (Park, Lennon, and Stoel 2005; Weathers, Sharma, and Wood 2007), thus becomes more important to consumers' purchase decisions. Model 7 indicates the reverse results for products that are high in search qualities. Because product attribute information is very useful for assessing search products, informativeness ($\beta = .024, p < .05$) is a more important aspect of the experience, but consumers rely less on vividness ($\beta = -.022, p < .05$). The relevance of the social aspect of the experience also decreases for search products ($\beta = -.024, p < .05$). Social presence is a further means to reduce perceived purchase risk (Bart et al. 2005), but it is not crucial for products for which direct product attribute information is sufficient to make a purchase decision.

Finally, as is evident from Model 8, the more complex a product, the more important the vividness of the experience becomes ($\beta = .033, p < .01$). Consumers generally perceive more product risk for more complex products, because they are less confident that they will function as expected (Bart et al. 2005). A more vivid experience can reduce risk perceptions and thereby increase purchase intentions (Park, Lennon, and Stoel 2005; Weathers, Sharma, and Wood 2007), enhancing the importance of vividness for more complex, risky-to-buy products.

Discussion, Limitations, and Research Directions

A product webpage is a key tool for managers, who can use design elements to create a customer experience that encourages webpage visitors to become buyers. With a series of 16 large-scale experiments, we provide empirical evidence of four key aspects of the online customer experience (enjoyment, informativeness, social presence, and vividness) and identify which design elements are more or less effective in shaping specific aspects of the experience. Furthermore, the influence of each aspect of the experience on consumers' purchase decisions depends on the factors that define the brands and products sold. Our findings offer important theoretical and managerial contributions to extant research on online customer experience management (Grewal, Levy, and Kumar 2009; Verhoef et al. 2009).

Theoretical Implications

First, all four experience aspects exert significant impacts on purchases, with enjoyment being the primary driver, followed in order by social presence, informativeness, and then vividness. Thus, we augment extant work that mainly has focused on enjoyment and informativeness but neglected the importance of both the social (social presence) and sensory (vividness) aspects of the customer experience.

Second, of all the design elements we identified as relevant for building an online customer experience, providing customer reviews and employing larger pictures proved universally beneficial, across all aspects of the experience. When accounting for the other content elements, providing return policy information and expert endorsements do not add value though. For the remaining elements, each is uniquely more effective at stimulating a particular aspect of the experience than any other aspect.

Third, we show how brand and product factors determine the impact that each aspect of the experience exerts on purchases. In particular, stronger brands (i.e., those with better reputations, more trust, and more positive consumer attitudes) benefit mainly from informative experiences, whereas brands that are weaker along these dimensions gain more from vivid experiences. Product factors also can alter the effectiveness of different aspects of the experience. For example, due to differences in the type of information sought prior to purchase, experience and complex products benefit from vivid experiences that activate the senses. More vivid experiences instead are less effective for search products whose performance can be assessed easily, using the descriptions provided on the webpage. By contrast, we find that the effects of design elements on aspects of the customer experience are not influenced by brand and product factors providing confirmation of our conceptual model.

Overall then, our findings suggest that the online context approaches the richness of the offline context, so researchers and practitioners should attempt to provide unique experiences, based on specific brand and product factors. Consistent with emerging online shopping research, we find that consumers engage in a significant amount of social processing, which is highly relevant to their purchase decisions (Kozlenkova et al. 2017).

Managerial Implications: Creating Customer Experiences in Online Retailing

The finding that brand and product factors affect the relevance of each aspect of the customer experience for determining purchases implies that marketers should use design elements strategically to evoke specific types of experiences for different brands or products. To guide this effort, we identify the types of experiences that are most useful for particular brands and products and also conduct a comparative analysis to determine which design elements are most effective in terms of building that particular type of experience. In Figure 2, we summarize these

strategic suggestions by presenting the relative importance of each design element for each type of experience and offering strategic guidance for online product retailing.

Enjoyable experiences are pleasurable in their own right, apart from any anticipated performance implications. We find them generally effective across product factors, except for those that are high in utilitarian qualities, for which a strong focus on enjoyment may seem distracting. Aside from product reviews and picture size, which are effective at building all four types of experiences, only feature crop emerges as slightly more effective (7%) in building enjoyment compared with the other experience types, based on relative effect sizes.

Informative experiences are dominated by the provision of outcome-oriented information. Such experiences are most effective for stronger brands (i.e., strong reputation, trust, and positive customer attitudes). They also benefit products with high utilitarian and search qualities. To build informative experiences, customer reviews are particularly important: The effects of customer reviews on informativeness are 30% stronger than on any other experience type. Bulleted features (80% more effective), a comparison matrix (67% more effective), and descriptive detail (60% more effective) are also key. Therefore, elements that either directly increase the amount of descriptive detail about a product or summarize core information to make it accessible to customers are critical drivers of informative experiences. Webpages of stronger brands and those built for search or utilitarian products should benefit especially from the inclusion of a comparison matrix, as well as more descriptive detail and bulleted features.

Social experiences, conveying a degree of human presence in the encounter, are more effective for products that are low in utilitarian and search qualities. A conversational linguistic style and lifestyle photos are especially effective at building this type of experience. Linguistic style exerts a 148% and lifestyle picture a 118% stronger influence on this experience type than

on any other type. A conversational linguistic style frequently addresses consumers directly, thereby emulating a sales clerk talking to them in person. Moreover, lifestyle pictures connect the product to a customer's real life, which should convey an atmosphere of increased personal warmth. To create these social experiences, managers should add social cues by using conversational linguistic styles and lifestyle photos on their webpages.

Finally, *vivid experiences* focus on activating the customer's senses and providing a sensory experience. These types of experiences are especially successful for weaker brands, more complex products, and products that are high in experience and low in search qualities. Product videos, which have a 107% stronger effect on this type of experience than on any other, increase the webpage's sensory breadth or number of senses addressed (Steuer 1992). Recommendation agents, which provide additional photos of and links to products similar to the focal product, also have their strongest influence on this type of experience, though similar to the effect on informativeness. Companies can create an especially vivid experience by adding product videos or a recommendation agent.

Limitations and Further Research Directions

Although our research setting and design allowed us to examine the effects of various design elements on the online customer experience and purchases, and thus to provide managers with actionable guidance for their online content strategies, this study is not without limitations. Conducting our research using lab experiments enabled us to measure the latent aspects of the customer experience—a crucial element of our research—but our ultimate success variable is purchase intentions rather than actual purchases. In addition, Amazon does not allow manufacturers to conduct A/B tests that would suit our complex experimental design. Yet, further research might build on our findings by focusing on select relationships, then testing

them in the field. Our results indicate no effects of return policy information or expert endorsement on any of the four aspects of the customer experience. Continued research might explore these elements further. In addition, e-commerce technologies are constantly evolving and adding new design elements, such as video chats and virtual reality applications. Such forms of content could be especially relevant for the social and vividness aspects of the customer experience. Finally, our experimental design is based on a Taguchi orthogonal array design (Taguchi 1986), which has not been used frequently in prior marketing research. We recommend its application in other marketing domains with similar characteristics, where multiple factors are manipulated and the feasibility of the study's execution is non-trivial.

Appendix A

Manipulated Constructs, Definitions, Operationalizations, and Manipulation Checks

Design Elements	Definitions	Operationalizations		Means		t-value	p-value
		Level 1	Level 2	Level 1	Level 2		
Linguistic style	Informational text explains the characteristics and merits of the product in a neutral tone, whereas persuasive text celebrates it in an advertising-like, persuading voice.	Product descriptions have primarily an unemotional tone.	Product descriptions have primarily an emotional tone.	2.97	3.51	-16.03	0.00
Descriptive detail	Word count of the descriptive text while keeping general information content constant.	Baseline amount of words of product descriptions.	Amount of words of product description is 25% more than at level 1.	4.66	5.24	-20.01	0.00
Bulleted features	Number of key product features that appear as a bulleted list.	Webpage contains a list of 3 bulleted key product features.	Webpage contains a list of 5 bulleted key product features.	3.72	6.13	-5.96	0.00
Product feature crop	Whether or not the webpage contains at least one picture that shows only a specific part of product.	No picture with only a specific part of the product.	At least one picture shows only a specific part of the product.	3.72	4.76	-18.02	0.00
Lifestyle picture	Whether or not the webpage contains at least one picture that shows the product in use by a person.	No picture shows the product in use by a person.	At least one picture shows the product in use by a person.	2.34	3.22	-16.21	0.00
Picture size	General size of product pictures shown on the webpage.	Baseline picture size.	Pictures are 25% larger than at level 1.	4.03	4.74	-28.91	0.00
Product video	Whether or not the webpage contains a video about the product.	Webpage contains no product video.	Webpage contains at least one product video.	1.83	5.06	-61.75	0.00
Content filter	The extent to which consumers can control the amount of information they are shown at once on the webpage.	Consumers cannot control the amount of information shown to them at once.	Consumers can control the amount of information shown to them at once.	4.32	4.94	-13.38	0.00
Return policy information	Whether or not the webpage shows product return policy information.	Webpage shows no product return policy information.	Webpage shows product return policy information.	3.13	5.27	-40.20	0.00
Customer reviews	Whether or not the webpage contains consumer review information.	Webpage contains no consumer reviews.	Webpage contains consumer reviews.	2.34	5.51	-85.98	0.00
Expert endorsement	Whether or not the webpage contains a seal that shows the product's quality to be certified by a third expert party.	Webpage does not contain a seal of a third expert party certifying the product's quality.	Webpage contains a seal of a third expert party certifying the product's quality.	3.12	4.54	-27.08	0.00
Comparison matrix	Whether or not the webpage contains a table that shows the featured product and at least 2 similar products side by side, including information about relevant characteristics that allow for an easy product comparison.	Webpage does not contain a table that allows for an easy product comparison.	Webpage contains a table that allows for an easy product comparison.	2.64	5.46	-57.40	0.00
Recommendation agent	Whether or not the webpage contains a section where links to related products are displayed.	Webpage does not include links to related products.	Webpage includes links to related products.	3.73	5.72	-38.44	0.00

Notes: All means and t-values are calculated using 10,470 observations.
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APPENDIX B
Constructs and Measures

Constructs (Scale Sources)	Standardized Loadings
Online Experience Aspects	
Customer enjoyment (adapted from Ghani, Supnick, and Rooney 1991; Tamborini et al. 2011)	
Uninteresting - interesting	.878
Not fun - fun	.909
Not enjoyable - enjoyable	.939
Webpage informativeness (adapted from Luo 2002)	
Information obtained from the product page is useful.	.853
I learned a lot from using the product page.	.830
I think the information obtained from the product page is helpful.	.917
Social presence (Gefen and Straub 2003)	
There is a sense of human contact in the webpage.	.888
There is a sense of human warmth in the webpage.	.963
There is a sense of human sensitivity in the webpage.	.944
Webpage vividness (Jiang and Benbasat 2007)	
The product presentation on this webpage is lively.	.792
I can acquire product information on this webpage from different sensory channels.	.726
This webpage contains product information exciting to senses.	.909
Performance Outcome	
Purchase intention (Ajzen and Fishbein 1980)	
My purchasing this product is	
Very unlikely - very likely	.969
Very improbable - very probable	.969
Very uncertain - very certain	.860
Moderating Brand Characteristics	
Brand reputation (Chaudhuri 2002)	
This brand has status.	.859
This brand has a good reputation.	.920
This is a popular brand.	.863
This brand has high esteem.	.882
Brand attitude (Chaudhuri 2002)	
The brand is...	
likable.	.917
high quality.	.878
good.	.935
pleasant.	.901
Brand trust (adapted from Verhoef, Franses, and Hoekstra 2002; Chaudhuri and Holbrook 2001)	
The brand...	
can be relied on to keep its promises.	.930
puts the customer's interest first.	.817
usually keeps the promises that it makes to me.	.891
Moderating Product Characteristics	
Utilitarian qualities (Voss et al. 2003)	
The product is...	
ineffective - effective	.870
unhelpful - helpful	.886
not functional - functional	.899
unnecessary - necessary	.587
impractical - practical	.835
Hedonic qualities (Voss et al. 2010)	
The product is...	
not fun - fun	.905
dull - exciting	.891
not delightful - delightful	.894
not thrilling - thrilling	.876
unenjoyable - enjoyable	.852

Notes: Data for moderators collected at the brand/product level, separately from experimental studies. N.A. = Not applicable.

APPENDIX B (continued)
Constructs and Measures

Constructs (Scale Sources)	Standardized Loadings
<i>Moderating Product Characteristics (continued)</i>	
Experience goods (Weathers, Sharma, and Wood 2007)	
It is important for me to see this product in real life to evaluate how it will perform.	.841
It is important for me to touch this product to evaluate how it will perform.	.848
Search goods (Weathers, Sharma, and Wood 2007)	
I can adequately evaluate this product using only information provided by the webpage about the product's attributes and features.	.922
I can evaluate the quality of this product simply by reading information about the product.	.926
Product complexity (Yeh 2012)	
A salesperson selling this kind of product needs to know a lot to do a good job.	.659
This product is complicated in nature.	.918
It is difficult to understand how to take advantage of the benefits offered by this product.	.779
<i>Content Elements</i>	
Linguistic style	
The style of the text on this webpage is mostly unemotional-emotional. (bipolar scale)	N.A.
Descriptive detail	
Approximately how many words are in the product descriptions on this webpage (make your best estimate)? (numeric)	N.A.
Bulleted features	
Approximately how many bulleted features are on this webpage (make your best estimate)? (numeric entry)	N.A.
Product feature crop	
The webpage contained feature crops (i.e., pictures of key features of the product).	N.A.
Lifestyle picture	
The webpage contained pictures showing the product in use by a person.	N.A.
Picture size	
Product pictures on this webpage are (very small- very large).	N.A.
Product video	
The webpage contained a video featuring the product.	N.A.
Content filter	
The webpage allowed me to control the amount of information I would see at once.	N.A.
Return policy information	
The webpage provided return policy information.	N.A.
Customer reviews	
The webpage contains customer product reviews (i.e., star ratings).	N.A.
Expert endorsement	
The quality of the product is certified by a third party on the webpage.	N.A.
Comparison matrix	
The page provides a clear product comparison chart with features of other products side by side.	N.A.
Recommendation agent	
The webpage contains links to related products.	N.A.

Notes: Data for moderators collected at the brand/product level, separately from experimental studies. N.A. = Not applicable.

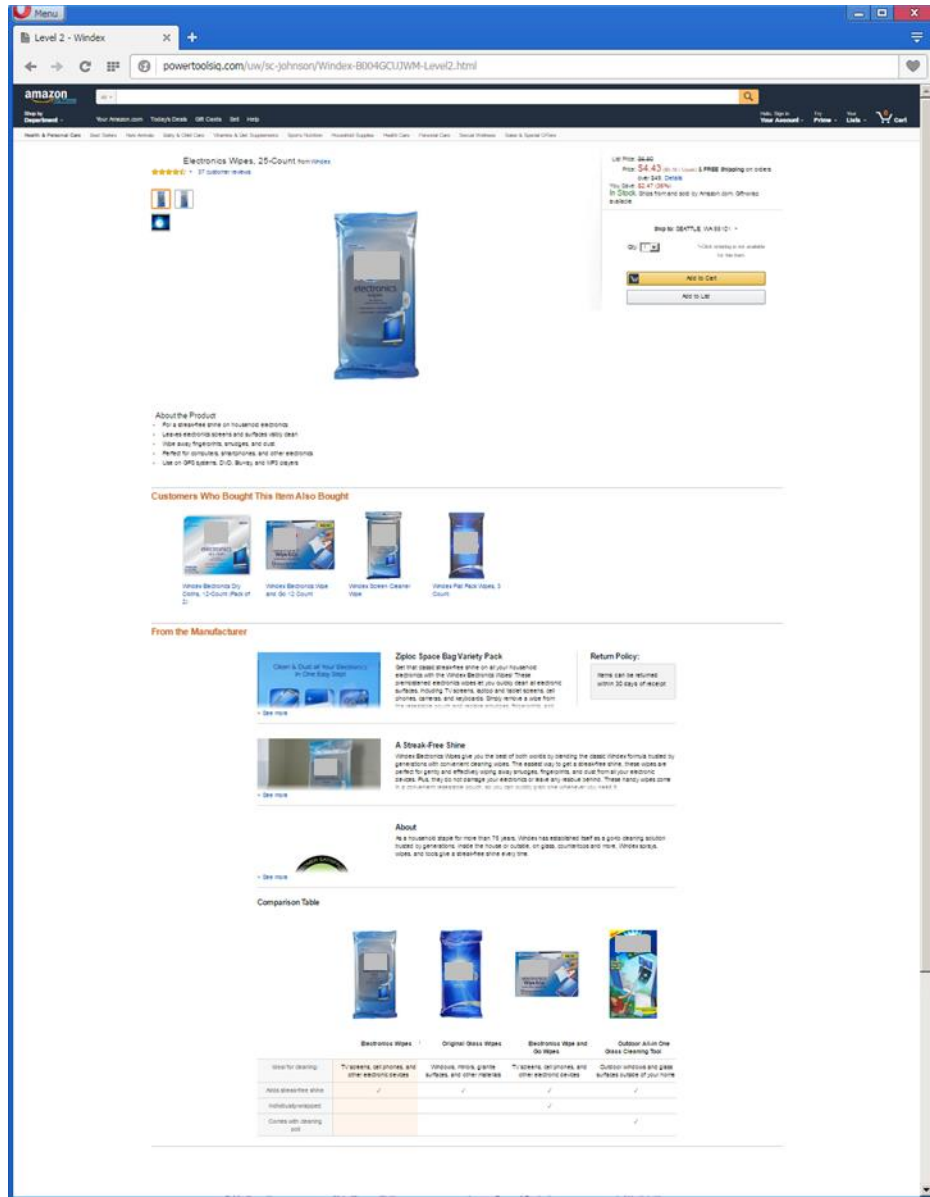
Web Appendix A
Description of Firms Participating in Study

Firm	Annual Sales (\$B)	Number of Employees	Number of Products Online	Type of Products	Number of Online Channels	Firm Age	Headquarters	Private/Public
A	\$1.6	1,725	2,000 SKUs	Consumer electronics, home networking	16	32	USA	Private
B	\$3.2	13,300	1,000 SKUs	Supplements	5	44	USA	Private
C	\$12.0	13,000	2,000 SKUs	Consumer packaged goods, personal care, household	5	129	USA	Private
D	\$33.1	185,965	1,000 SKUs	Business electronics, consumer electronics	30	179	France	Private

Notes: Data provided by Private Company Financial Intelligence (privco.com) and Compustat.

Web Appendix B

Example Product Webpage



Web Appendix C

Robustness Check: Meta-Analysis of Design Elements' Effects on the Online Customer Experience with Perceived Amount of Words as Additional Control

Design Elements	Online Customer Experience Aspects															
	Enjoyment				Informativeness				Social Presence				Vividness			
	Estimates	Std. Errors	95% CI		Estimates	Std. Errors	95% CI		Estimates	Std. Errors	95% CI		Estimates	Std. Errors	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper			Lower	Upper
Textual Elements																
Linguistic style	.027 **	(.010)	.007	.047	.010	(.010)	-.009	.028	.083 **	(.013)	.058	.108	.032 **	(.010)	.014	.051
Descriptive detail	.030 **	(.010)	.010	.049	.065 **	(.012)	.041	.089	.046 **	(.010)	.027	.066	.046 **	(.010)	.027	.066
Bulleted features	.046 **	(.011)	.024	.067	.090 **	(.010)	.071	.108	.023 *	(.011)	.001	.044	.050 **	(.012)	.027	.073
Visual Elements																
Product feature crop	.031 **	(.010)	.012	.050	.005	(.010)	-.014	.024	.021 *	(.010)	.002	.040	.029 **	(.010)	.010	.047
Lifestyle picture	.020 *	(.010)	.001	.039	.021 *	(.010)	.002	.040	.074 **	(.013)	.049	.100	.033 **	(.013)	.009	.058
Picture size	.082 **	(.011)	.061	.103	.074 **	(.010)	.055	.092	.086 **	(.010)	.067	.105	.095 **	(.010)	.076	.114
Product video	.028 *	(.011)	.006	.050	.030 **	(.010)	.011	.049	.047 **	(.011)	.026	.067	.095 **	(.010)	.076	.114
Transactional Elements																
Content filter	-.008	(.010)	-.027	.011	-.004	(.010)	-.024	.017	-.042 **	(.011)	-.064	-.020	-.009	(.013)	-.034	.017
Return policy information	.001	(.013)	-.025	.026	.013	(.011)	-.008	.035	.001	(.010)	-.018	.020	.003	(.010)	-.017	.024
Decision Aids																
Customer reviews	.069 **	(.010)	.050	.088	.103 **	(.012)	.079	.126	.083 **	(.010)	.064	.102	.068 **	(.010)	.049	.086
Expert endorsement	.003	(.012)	-.020	.026	.008	(.015)	-.021	.038	.019	(.011)	-.002	.041	.009	(.013)	-.017	.034
Comparison matrix	.041 **	(.010)	.022	.060	.086 **	(.010)	.067	.104	.033 **	(.010)	.014	.052	.052 **	(.010)	.033	.071
Recommendation agent	.014	(.010)	-.005	.033	.025 **	(.010)	.007	.044	-.013	(.010)	-.032	.006	.025 **	(.010)	.007	.044

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

Notes: N = 10,470; CI = confidence interval; variables were standardized before the analysis.

Web Appendix D
Univariate Analysis of Effects of Design Elements on Aspects of the Customer Experience

Panel A: Consumer Electronics

Relationships	Product 1			Product 2			Product 3			Product 4		
	Means		p-value	Means		p-value	Means		p-value	Means		p-value
	Level 1	Level 2		Level 1	Level 2		Level 1	Level 2		Level 1	Level 2	
Linguistic style → enjoyment	5.102	4.886	.042	4.528	4.871	.001	4.815	4.778	.734	4.848	4.983	.211
Linguistic style → informativeness	5.744	5.691	.444	5.437	5.571	.079	5.478	5.495	.834	5.497	5.589	.261
Linguistic style → social presence	3.788	3.760	.805	3.514	4.059	.000	3.867	4.020	.184	3.839	4.206	.001
Linguistic style → vividness	4.505	4.457	.606	3.958	4.210	.014	4.160	4.094	.526	4.239	4.350	.252
Descriptive details → enjoyment	5.042	4.940	.337	4.700	4.709	.928	4.717	4.873	.153	4.889	4.941	.631
Descriptive details → informativeness	5.734	5.699	.616	5.411	5.602	.012	5.414	5.556	.076	5.440	5.643	.013
Descriptive details → social presence	3.789	3.758	.791	3.736	3.854	.290	3.853	4.028	.128	3.914	4.128	.059
Descriptive details → vividness	4.500	4.460	.665	4.064	4.112	.642	4.062	4.189	.222	4.221	4.367	.131
Bulleted features → enjoyment	4.966	5.016	.638	4.625	4.788	.126	4.796	4.798	.988	4.846	4.986	.194
Bulleted features → informativeness	5.654	5.779	.070	5.442	5.572	.088	5.404	5.568	.040	5.407	5.681	.001
Bulleted features → social presence	3.705	3.843	.234	3.856	3.731	.262	3.918	3.968	.659	3.912	4.134	.051
Bulleted features → vividness	4.482	4.479	.973	4.036	4.143	.295	4.045	4.209	.114	4.259	4.331	.454
Product feature crop → enjoyment	5.019	4.963	.602	4.616	4.797	.088	4.754	4.842	.422	4.843	4.987	.183
Product feature crop → informativeness	5.773	5.663	.112	5.491	5.522	.687	5.513	5.459	.506	5.590	5.498	.256
Product feature crop → social presence	3.786	3.762	.831	3.823	3.765	.601	3.891	3.997	.356	3.951	4.094	.208
Product feature crop → vividness	4.441	4.517	.413	4.085	4.091	.955	4.127	4.128	.992	4.288	4.302	.888
Lifestyle picture → enjoyment	4.998	4.982	.881	4.691	4.718	.804	4.771	4.824	.627	4.859	4.973	.292
Lifestyle picture → informativeness	5.737	5.694	.539	5.514	5.498	.841	5.432	5.543	.165	5.546	5.541	.956
Lifestyle picture → social presence	3.621	3.936	.007	3.710	3.878	.132	3.926	3.960	.764	3.998	4.048	.659
Lifestyle picture → vividness	4.461	4.501	.664	4.086	4.090	.969	4.173	4.080	.371	4.287	4.303	.865
Picture size → enjoyment	4.890	5.090	.059	4.670	4.739	.514	4.711	4.880	.120	4.773	5.061	.007
Picture size → informativeness	5.639	5.793	.025	5.444	5.567	.109	5.431	5.540	.174	5.465	5.623	.051
Picture size → social presence	3.699	3.848	.199	3.661	3.927	.017	3.840	4.044	.075	3.850	4.199	.002
Picture size → vividness	4.440	4.520	.387	3.984	4.191	.042	4.018	4.234	.037	4.158	4.434	.004
Product video → enjoyment	5.033	4.946	.413	4.700	4.709	.930	4.696	4.903	.056	4.904	4.927	.829
Product video → informativeness	5.719	5.714	.939	5.502	5.510	.908	5.435	5.540	.185	5.534	5.553	.818
Product video → social presence	3.711	3.838	.276	3.778	3.811	.766	3.841	4.049	.069	3.982	4.064	.470
Product video → vividness	4.383	4.581	.033	4.025	4.148	.227	4.049	4.209	.123	4.191	4.401	.030
Content filter → enjoyment	5.069	4.910	.137	4.731	4.679	.626	4.798	4.796	.991	4.898	4.933	.747
Content filter → informativeness	5.770	5.661	.111	5.527	5.485	.577	5.569	5.402	.037	5.578	5.508	.391
Content filter → social presence	3.816	3.730	.458	3.901	3.689	.057	3.981	3.904	.506	3.973	4.074	.378
Content filter → vividness	4.521	4.439	.374	4.091	4.085	.949	4.112	4.143	.762	4.221	4.371	.122
Return policy information → enjoyment	4.972	5.010	.721	4.659	4.752	.382	4.822	4.772	.647	4.943	4.889	.622
Return policy information → informativeness	5.725	5.707	.786	5.484	5.529	.558	5.517	5.455	.443	5.570	5.517	.518
Return policy information → social presence	3.800	3.746	.640	3.780	3.810	.790	3.951	3.934	.882	4.061	3.985	.503
Return policy information → vividness	4.509	4.449	.515	4.046	4.131	.408	4.160	4.094	.523	4.273	4.317	.653
Customer reviews → enjoyment	4.846	5.137	.006	4.626	4.780	.149	4.774	4.820	.675	4.793	5.038	.024
Customer reviews → informativeness	5.566	5.869	.000	5.367	5.640	.000	5.479	5.494	.853	5.423	5.664	.003
Customer reviews → social presence	3.612	3.938	.005	3.676	3.909	.036	3.839	4.047	.069	3.870	4.176	.007
Customer reviews → vividness	4.436	4.525	.341	3.979	4.193	.037	4.073	4.182	.293	4.251	4.338	.370
Expert endorsement → enjoyment	5.064	4.922	.179	4.742	4.668	.485	4.780	4.815	.752	4.926	4.905	.846
Expert endorsement → informativeness	5.781	5.655	.066	5.509	5.504	.946	5.488	5.485	.966	5.539	5.548	.912
Expert endorsement → social presence	3.735	3.810	.516	3.832	3.758	.510	3.971	3.913	.614	3.960	4.089	.258
Expert endorsement → vividness	4.393	4.561	.070	4.137	4.040	.347	4.103	4.153	.627	4.193	4.402	.031
Comparison matrix → enjoyment	4.936	5.049	.287	4.697	4.712	.890	4.879	4.717	.136	4.780	5.048	.013
Comparison matrix → informativeness	5.656	5.781	.070	5.412	5.594	.017	5.410	5.560	.061	5.426	5.659	.004
Comparison matrix → social presence	3.663	3.893	.047	3.830	3.762	.540	3.944	3.942	.990	3.990	4.055	.565
Comparison matrix → vividness	4.448	4.516	.463	4.036	4.137	.321	4.167	4.089	.456	4.208	4.380	.077
Recommendation agents → enjoyment	5.033	4.947	.414	4.669	4.744	.478	4.796	4.798	.989	4.884	4.951	.536
Recommendation agents → informativeness	5.729	5.704	.715	5.498	5.515	.826	5.492	5.480	.879	5.510	5.581	.384
Recommendation agents → social presence	3.831	3.715	.319	3.806	3.782	.831	3.942	3.944	.990	4.055	3.987	.552
Recommendation agents → vividness	4.543	4.417	.175	4.047	4.134	.394	4.142	4.113	.778	4.229	4.368	.150

Web Appendix D (Continued)
Univariate Analysis of Effects of Design Elements on Aspects of the Customer Experience

Panel B: Supplements

Relationships	Product 5			Product 6			Product 7			Product 8		
	Means		p-value	Means		p-value	Means		p-value	Means		p-value
	Level 1	Level 2		Level 1	Level 2		Level 1	Level 2		Level 1	Level 2	
Linguistic style → enjoyment	4.409	4.553	.232	4.222	4.344	.309	4.004	4.167	.199	4.032	4.076	.722
Linguistic style → informativeness	5.273	5.297	.768	5.211	5.283	.390	4.851	5.011	.093	5.049	5.135	.341
Linguistic style → social presence	3.570	3.776	.068	3.576	3.756	.138	3.356	3.477	.317	3.831	3.911	.492
Linguistic style → vividness	3.965	4.185	.030	3.860	3.936	.460	3.730	3.913	.090	3.810	3.869	.566
Descriptive details → enjoyment	4.480	4.479	.994	4.233	4.340	.377	3.931	4.251	.012	4.040	4.069	.814
Descriptive details → informativeness	5.274	5.295	.806	5.168	5.332	.050	4.805	5.066	.006	5.065	5.121	.540
Descriptive details → social presence	3.649	3.693	.700	3.607	3.735	.288	3.298	3.543	.043	3.806	3.939	.252
Descriptive details → vividness	3.986	4.159	.089	3.829	3.974	.156	3.648	4.007	.001	3.816	3.864	.640
Bulleted features → enjoyment	4.401	4.559	.186	4.168	4.409	.044	4.085	4.088	.979	3.962	4.149	.130
Bulleted features → informativeness	5.197	5.373	.033	5.121	5.382	.002	4.862	5.002	.143	4.937	5.254	.000
Bulleted features → social presence	3.649	3.693	.700	3.552	3.793	.046	3.489	3.344	.228	3.787	3.960	.138
Bulleted features → vividness	4.055	4.092	.716	3.788	4.017	.025	3.803	3.842	.723	3.739	3.944	.046
Product feature crop → enjoyment	4.459	4.500	.727	4.359	4.213	.223	3.976	4.200	.077	4.007	4.100	.452
Product feature crop → informativeness	5.263	5.305	.610	5.245	5.252	.930	4.874	4.991	.222	5.153	5.035	.195
Product feature crop → social presence	3.584	3.757	.125	3.723	3.617	.381	3.330	3.506	.145	3.830	3.913	.475
Product feature crop → vividness	4.012	4.134	.231	3.938	3.862	.457	3.742	3.905	.130	3.798	3.880	.426
Lifestyle picture → enjoyment	4.391	4.564	.149	4.202	4.372	.157	4.027	4.142	.368	4.005	4.102	.433
Lifestyle picture → informativeness	5.223	5.343	.149	5.197	5.302	.210	4.869	4.991	.201	5.040	5.145	.247
Lifestyle picture → social presence	3.465	3.866	.000	3.374	3.977	.000	3.294	3.534	.048	3.681	4.058	.001
Lifestyle picture → vividness	3.965	4.175	.039	3.743	4.064	.002	3.716	3.923	.057	3.745	3.933	.068
Picture size → enjoyment	4.339	4.616	.021	4.129	4.453	.007	4.013	4.159	.252	3.876	4.241	.003
Picture size → informativeness	5.225	5.342	.159	5.177	5.326	.075	4.846	5.017	.071	4.974	5.218	.007
Picture size → social presence	3.496	3.841	.002	3.496	3.856	.003	3.262	3.571	.010	3.686	4.067	.001
Picture size → vividness	3.917	4.225	.002	3.766	4.043	.006	3.650	3.994	.001	3.730	3.954	.029
Product video → enjoyment	4.353	4.598	.041	4.197	4.380	.127	4.101	4.072	.819	3.992	4.118	.307
Product video → informativeness	5.240	5.327	.291	5.227	5.272	.588	4.878	4.984	.268	5.074	5.113	.666
Product video → social presence	3.566	3.770	.071	3.666	3.674	.945	3.344	3.488	.231	3.684	4.064	.001
Product video → vividness	3.962	4.177	.035	3.754	4.056	.003	3.709	3.932	.039	3.675	4.008	.001
Content filter → enjoyment	4.502	4.457	.707	4.285	4.286	.993	4.097	4.075	.861	3.990	4.127	.270
Content filter → informativeness	5.305	5.265	.624	5.218	5.280	.464	4.931	4.932	.993	5.066	5.123	.530
Content filter → social presence	3.695	3.648	.674	3.796	3.541	.035	3.502	3.332	.161	3.937	3.799	.237
Content filter → vividness	4.067	4.078	.915	3.943	3.856	.390	3.892	3.752	.195	3.849	3.829	.850
Return policy information → enjoyment	4.432	4.528	.426	4.366	4.203	.175	4.101	4.070	.805	4.154	3.956	.109
Return policy information → informativeness	5.274	5.295	.793	5.201	5.297	.254	4.804	5.068	.005	5.087	5.099	.899
Return policy information → social presence	3.628	3.714	.446	3.706	3.633	.544	3.351	3.487	.261	3.918	3.826	.432
Return policy information → vividness	4.061	4.086	.806	3.980	3.818	.112	3.743	3.907	.131	3.894	3.786	.294
Customer reviews → enjoyment	4.467	4.492	.830	4.164	4.401	.048	3.986	4.190	.107	3.971	4.137	.179
Customer reviews → informativeness	5.254	5.314	.465	5.137	5.354	.010	4.783	5.086	.001	4.938	5.247	.001
Customer reviews → social presence	3.663	3.679	.885	3.493	3.838	.004	3.242	3.598	.003	3.768	3.974	.078
Customer reviews → vividness	4.073	4.073	.994	3.802	3.993	.062	3.705	3.944	.027	3.735	3.943	.043
Expert endorsement → enjoyment	4.520	4.439	.502	4.292	4.279	.916	4.077	4.096	.878	3.953	4.159	.096
Expert endorsement → informativeness	5.321	5.248	.376	5.169	5.329	.056	4.954	4.908	.628	4.972	5.219	.006
Expert endorsement → social presence	3.600	3.742	.208	3.687	3.652	.775	3.395	3.440	.709	3.762	3.985	.056
Expert endorsement → vividness	4.032	4.115	.415	3.908	3.892	.882	3.856	3.786	.516	3.735	3.948	.038
Comparison matrix → enjoyment	4.443	4.513	.563	4.247	4.324	.519	4.039	4.135	.450	3.996	4.111	.351
Comparison matrix → informativeness	5.238	5.327	.288	5.170	5.327	.061	4.835	5.032	.038	4.885	5.296	.000
Comparison matrix → social presence	3.680	3.663	.882	3.613	3.727	.345	3.337	3.500	.178	3.740	4.000	.026
Comparison matrix → vividness	4.071	4.075	.967	3.825	3.975	.140	3.641	4.010	.001	3.736	3.941	.046
Recommendation agents → enjoyment	4.402	4.552	.211	4.256	4.313	.641	3.954	4.214	.041	4.031	4.077	.710
Recommendation agents → informativeness	5.227	5.339	.175	5.166	5.326	.056	4.856	5.005	.118	5.058	5.128	.445
Recommendation agents → social presence	3.661	3.681	.859	3.732	3.611	.320	3.427	3.407	.867	3.911	3.833	.508
Recommendation agents → vividness	3.998	4.143	.154	3.848	3.949	.326	3.790	3.854	.558	3.820	3.859	.707

Web Appendix D (Continued)
Univariate Analysis of Effects of Design Elements on Aspects of the Customer Experience

Panel C: B2B and B2C Electronics

Relationships	Product 5			Product 6			Product 7			Product 8		
	Means		p-value	Means		p-value	Means		p-value	Means		p-value
	Level 1	Level 2		Level 1	Level 2		Level 1	Level 2		Level 1	Level 2	
Linguistic style → enjoyment	4.315	4.394	.510	4.180	4.392	.118	3.858	3.949	.468	4.240	4.343	.379
Linguistic style → informativeness	5.498	5.388	.132	5.434	5.520	.309	5.031	5.066	.707	5.397	5.476	.332
Linguistic style → social presence	3.168	3.482	.006	3.138	3.644	.000	3.014	3.219	.074	3.374	3.686	.009
Linguistic style → vividness	3.836	3.916	.424	3.826	3.952	.271	3.523	3.471	.627	4.002	4.022	.846
Descriptive details → enjoyment	4.349	4.363	.907	4.206	4.364	.246	3.726	4.084	.004	4.290	4.295	.960
Descriptive details → informativeness	5.337	5.545	.004	5.389	5.566	.035	4.862	5.237	.000	5.405	5.471	.419
Descriptive details → social presence	3.371	3.293	.497	3.395	3.379	.907	3.013	3.221	.070	3.511	3.555	.715
Descriptive details → vividness	3.851	3.905	.586	3.770	4.008	.036	3.349	3.647	.005	4.029	3.995	.738
Bulleted features → enjoyment	4.318	4.393	.533	4.264	4.305	.760	3.761	4.046	.023	4.281	4.303	.854
Bulleted features → informativeness	5.373	5.506	.068	5.427	5.528	.231	4.870	5.226	.000	5.394	5.478	.299
Bulleted features → social presence	3.327	3.336	.938	3.350	3.426	.560	3.066	3.167	.380	3.616	3.455	.176
Bulleted features → vividness	3.820	3.934	.250	3.843	3.935	.421	3.388	3.605	.043	3.999	4.025	.802
Product feature crop → enjoyment	4.374	4.338	.763	4.262	4.308	.733	3.779	4.026	.049	4.215	4.376	.168
Product feature crop → informativeness	5.431	5.450	.795	5.454	5.502	.564	5.052	5.044	.932	5.424	5.452	.726
Product feature crop → social presence	3.337	3.326	.925	3.393	3.380	.918	2.972	3.258	.013	3.469	3.601	.267
Product feature crop → vividness	3.885	3.871	.882	3.825	3.957	.246	3.414	3.578	.126	3.911	4.122	.037
Lifestyle picture → enjoyment	4.416	4.295	.314	4.210	4.357	.278	3.842	3.964	.328	4.265	4.320	.639
Lifestyle picture → informativeness	5.471	5.410	.406	5.489	5.464	.763	5.007	5.089	.379	5.465	5.410	.498
Lifestyle picture → social presence	3.329	3.334	.966	3.188	3.584	.003	3.019	3.212	.093	3.454	3.613	.181
Lifestyle picture → vividness	3.913	3.842	.475	3.739	4.036	.009	3.394	3.598	.058	4.054	3.970	.404
Picture size → enjoyment	4.280	4.430	.211	4.094	4.480	.004	3.913	3.894	.884	4.204	4.380	.136
Picture size → informativeness	5.379	5.501	.092	5.386	5.570	.029	4.985	5.114	.165	5.385	5.489	.203
Picture size → social presence	3.252	3.409	.171	3.320	3.456	.303	3.034	3.202	.143	3.474	3.591	.322
Picture size → vividness	3.786	3.967	.067	3.755	4.025	.017	3.400	3.598	.066	3.934	4.089	.126
Product video → enjoyment	4.335	4.377	.727	4.223	4.344	.375	3.804	4.005	.109	4.207	4.378	.146
Product video → informativeness	5.421	5.460	.590	5.370	5.582	.012	4.963	5.136	.062	5.381	5.493	.167
Product video → social presence	3.179	3.485	.008	3.282	3.492	.110	3.055	3.179	.282	3.547	3.519	.811
Product video → vividness	3.736	4.021	.004	3.691	4.085	.001	3.268	3.730	.000	3.881	4.142	.010
Content filter → enjoyment	4.421	4.291	.275	4.302	4.265	.783	3.878	3.928	.695	4.231	4.351	.308
Content filter → informativeness	5.441	5.440	.996	5.529	5.423	.209	5.050	5.046	.968	5.417	5.457	.618
Content filter → social presence	3.428	3.235	.093	3.377	3.397	.881	3.122	3.111	.927	3.631	3.438	.106
Content filter → vividness	3.917	3.838	.424	3.833	3.944	.330	3.459	3.532	.495	3.976	4.047	.489
Return policy information → enjoyment	4.361	4.351	.935	4.092	4.469	.005	3.750	4.064	.012	4.315	4.269	.693
Return policy information → informativeness	5.424	5.457	.647	5.377	5.573	.020	5.028	5.069	.662	5.398	5.478	.330
Return policy information → social presence	3.378	3.286	.424	3.230	3.539	.019	3.038	3.198	.165	3.514	3.552	.748
Return policy information → vividness	3.907	3.848	.549	3.750	4.021	.017	3.406	3.591	.086	3.998	4.027	.779
Customer reviews → enjoyment	4.251	4.461	.079	4.212	4.355	.293	3.810	3.995	.140	4.067	4.519	.000
Customer reviews → informativeness	5.373	5.508	.063	5.389	5.563	.039	4.940	5.154	.021	5.244	5.632	.000
Customer reviews → social presence	3.263	3.400	.232	3.193	3.578	.003	3.091	3.141	.661	3.296	3.771	.000
Customer reviews → vividness	3.810	3.946	.167	3.781	3.993	.063	3.454	3.538	.435	3.839	4.186	.001
Expert endorsement → enjoyment	4.295	4.411	.331	4.193	4.375	.179	3.957	3.851	.396	4.343	4.238	.372
Expert endorsement → informativeness	5.365	5.509	.046	5.425	5.528	.221	5.125	4.972	.100	5.487	5.384	.204
Expert endorsement → social presence	3.297	3.363	.563	3.345	3.429	.525	3.078	3.154	.506	3.577	3.485	.441
Expert endorsement → vividness	3.792	3.956	.096	3.811	3.965	.174	3.542	3.452	.403	4.089	3.930	.118
Comparison matrix → enjoyment	4.327	4.385	.631	4.243	4.325	.549	3.796	4.013	.084	4.226	4.356	.269
Comparison matrix → informativeness	5.353	5.529	.015	5.377	5.578	.017	4.915	5.184	.004	5.354	5.517	.045
Comparison matrix → social presence	3.184	3.480	.010	3.350	3.425	.569	3.062	3.172	.340	3.544	3.522	.856
Comparison matrix → vividness	3.815	3.941	.198	3.831	3.946	.313	3.416	3.579	.128	3.914	4.106	.060
Recommendation agents → enjoyment	4.280	4.435	.194	4.295	4.271	.860	3.880	3.928	.699	4.344	4.238	.368
Recommendation agents → informativeness	5.432	5.450	.804	5.437	5.519	.327	5.006	5.092	.354	5.496	5.377	.145
Recommendation agents → social presence	3.271	3.395	.283	3.428	3.343	.521	3.099	3.134	.757	3.589	3.475	.338
Recommendation agents → vividness	3.821	3.937	.238	3.869	3.908	.730	3.396	3.601	.056	4.063	3.959	.303

Web Appendix D (Continued)
Univariate Analysis of Effects of Design Elements on Aspects of the Customer Experience

Panel D: Consumer Packaged Goods												
Relationships	Product 5			Product 6			Product 7			Product 8		
	Means		p-value	Means		p-value	Means		p-value	Means		p-value
	Level 1	Level 2		Level 1	Level 2		Level 1	Level 2		Level 1	Level 2	
Linguistic style → enjoyment	4.577	4.640	.593	4.451	4.542	.426	3.851	4.012	.176	4.188	4.204	.889
Linguistic style → informativeness	4.980	5.045	.477	5.382	5.373	.918	4.901	4.938	.701	5.091	4.994	.272
Linguistic style → social presence	3.840	4.297	.000	3.684	4.008	.007	3.369	3.651	.018	3.315	3.416	.369
Linguistic style → vividness	4.112	4.321	.036	4.013	4.193	.094	3.525	3.657	.219	3.694	3.719	.799
Descriptive details → enjoyment	4.506	4.709	.087	4.431	4.565	.240	3.861	3.996	.254	4.161	4.230	.550
Descriptive details → informativeness	4.921	5.101	.049	5.330	5.427	.245	4.721	5.115	.000	4.935	5.149	.015
Descriptive details → social presence	3.933	4.199	.025	3.765	3.931	.170	3.300	3.709	.001	3.315	3.416	.369
Descriptive details → vividness	4.161	4.270	.273	4.025	4.184	.138	3.472	3.704	.031	3.665	3.749	.394
Bulleted features → enjoyment	4.434	4.791	.002	4.395	4.592	.086	3.754	4.116	.002	4.219	4.173	.685
Bulleted features → informativeness	4.861	5.169	.001	5.256	5.492	.005	4.790	5.058	.005	4.994	5.089	.282
Bulleted features → social presence	3.934	4.206	.021	3.812	3.878	.584	3.498	3.514	.889	3.323	3.407	.456
Bulleted features → vividness	3.999	4.442	.000	3.993	4.206	.049	3.490	3.695	.056	3.732	3.683	.618
Product feature crop → enjoyment	4.501	4.716	.069	4.447	4.549	.370	3.927	3.931	.969	4.114	4.277	.156
Product feature crop → informativeness	4.964	5.061	.287	5.368	5.388	.817	4.865	4.971	.270	5.014	5.070	.526
Product feature crop → social presence	4.032	4.102	.555	3.842	3.851	.936	3.482	3.528	.702	3.368	3.364	.971
Product feature crop → vividness	4.127	4.305	.076	4.064	4.144	.455	3.595	3.583	.908	3.665	3.749	.393
Lifestyle picture → enjoyment	4.544	4.676	.263	4.473	4.520	.682	3.892	3.966	.528	4.251	4.142	.344
Lifestyle picture → informativeness	4.910	5.119	.021	5.308	5.447	.095	4.900	4.939	.682	4.998	5.085	.326
Lifestyle picture → social presence	3.987	4.151	.167	3.730	3.962	.055	3.384	3.628	.040	3.329	3.401	.525
Lifestyle picture → vividness	4.218	4.214	.963	4.030	4.176	.173	3.536	3.642	.324	3.728	3.687	.676
Picture size → enjoyment	4.406	4.815	.001	4.269	4.712	.000	3.749	4.106	.003	4.079	4.305	.051
Picture size → informativeness	4.853	5.175	.000	5.230	5.517	.001	4.830	5.007	.064	4.972	5.108	.123
Picture size → social presence	3.835	4.305	.000	3.722	3.964	.045	3.315	3.694	.001	3.270	3.455	.102
Picture size → vividness	3.970	4.467	.000	3.942	4.255	.004	3.462	3.714	.019	3.554	3.850	.003
Product video → enjoyment	4.537	4.682	.221	4.401	4.595	.091	4.042	3.821	.062	4.146	4.242	.407
Product video → informativeness	4.990	5.035	.623	5.286	5.472	.026	4.963	4.878	.374	5.026	5.057	.724
Product video → social presence	3.976	4.162	.118	3.701	3.996	.015	3.503	3.508	.961	3.358	3.373	.898
Product video → vividness	4.109	4.326	.030	3.933	4.278	.001	3.543	3.633	.405	3.594	3.814	.026
Content filter → enjoyment	4.585	4.633	.687	4.591	4.400	.094	4.028	3.828	.091	4.195	4.196	.998
Content filter → informativeness	4.923	5.104	.048	5.435	5.319	.167	4.942	4.896	.625	4.985	5.098	.197
Content filter → social presence	4.077	4.058	.873	4.063	3.625	.000	3.645	3.364	.018	3.387	3.345	.714
Content filter → vividness	4.155	4.279	.217	4.284	3.918	.001	3.700	3.476	.038	3.713	3.701	.902
Return policy information → enjoyment	4.539	4.678	.240	4.536	4.459	.499	3.941	3.917	.845	4.273	4.119	.183
Return policy information → informativeness	5.007	5.017	.913	5.448	5.311	.100	4.895	4.943	.622	5.010	5.074	.472
Return policy information → social presence	4.092	4.042	.672	3.841	3.851	.937	3.515	3.496	.877	3.423	3.309	.312
Return policy information → vividness	4.201	4.231	.769	4.094	4.112	.868	3.570	3.607	.731	3.778	3.636	.151
Customer reviews → enjoyment	4.455	4.755	.011	4.350	4.647	.009	3.844	4.017	.145	4.056	4.332	.017
Customer reviews → informativeness	4.867	5.150	.002	5.204	5.556	.000	4.779	5.064	.003	4.941	5.142	.022
Customer reviews → social presence	3.930	4.199	.023	3.721	3.975	.035	3.390	3.625	.048	3.268	3.462	.085
Customer reviews → vividness	4.120	4.308	.061	3.997	4.212	.045	3.425	3.759	.002	3.611	3.801	.055
Expert endorsement → enjoyment	4.544	4.673	.278	4.596	4.398	.084	3.863	3.997	.257	4.062	4.328	.021
Expert endorsement → informativeness	4.960	5.065	.249	5.428	5.328	.233	4.881	4.959	.416	4.947	5.137	.031
Expert endorsement → social presence	3.967	4.168	.089	3.941	3.752	.118	3.373	3.642	.024	3.293	3.439	.195
Expert endorsement → vividness	4.254	4.178	.452	4.221	3.985	.028	3.566	3.613	.659	3.660	3.754	.340
Comparison matrix → enjoyment	4.495	4.716	.062	4.404	4.593	.097	3.782	4.068	.015	4.089	4.305	.062
Comparison matrix → informativeness	4.922	5.097	.056	5.334	5.423	.288	4.806	5.027	.021	4.962	5.124	.065
Comparison matrix → social presence	4.050	4.084	.778	3.817	3.877	.618	3.435	3.572	.250	3.351	3.381	.796
Comparison matrix → vividness	4.084	4.340	.011	4.024	4.186	.133	3.509	3.665	.149	3.677	3.738	.537
Recommendation agents → enjoyment	4.544	4.671	.284	4.457	4.537	.487	3.987	3.868	.314	4.199	4.193	.959
Recommendation agents → informativeness	4.916	5.104	.040	5.369	5.386	.838	4.822	5.021	.037	5.059	5.027	.720
Recommendation agents → social presence	4.000	4.132	.267	3.884	3.808	.532	3.572	3.436	.253	3.397	3.337	.597
Recommendation agents → vividness	4.129	4.300	.088	4.059	4.147	.414	3.529	3.651	.257	3.705	3.708	.974

Web Appendix E

Results: Moderation of Effects of Design Elements on Aspects of the Customer Experience by Brand and Product Factors

Relationship	Moderators							
	Brand Factors			Product Factors				
	Brand Reputation	Brand Attitude	Brand Trust	Utilitarian Qualities	Hedonic Qualities	Experience Qualities	Search Qualities	Product Complexity
Return policy information → enjoyment	-.023	-.028	-.036	-.009	.003	.043	-.035	.021
Descriptive detail → informativeness	-.010	-.018	-.029	-.004	-.024	.014	-.035	.011
Expert endorsement → informativeness	.014	.014	.019	.009	-.039	-.054	.054	-.020
Linguistic style → social presence	.003	.025	.013	.032	.027	-.015	.032	.006
Lifestyle photo → social presence	.010	-.007	.010	-.018	-.064 *	-.062	.013	-.015
Lifestyle photo → vividness	-.003	-.027	-.022	-.039	-.071 **	-.040	-.024	-.007
Content factor → vividness	-.030	-.035	-.056	-.026	.028	.059	-.031	.013
Expert endorsement → vividness	-.020	-.028	-.035	-.008	-.003	.041	-.033	.005

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

Notes: Only effects with significant Q-statistic as of Table 4 are examined. Shown are the moderation estimates of 64 meta-regressions of the effects of design elements on experience aspects, moderated by respective brand and product factors. For instance, -.064 for the "Lifestyle photo → social presence" relationship means that the effect of lifestyle photo on social presence is significantly lower for products with more hedonic qualities.

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Table 1
Relevant Research on Online Customer Experience

Experience Aspects	Aliases	Definitions	Key Findings	References
Enjoyment	Entertainment, hedonic value, pleasure, emotional experience, emotional component	"The extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated" (Davis, Bagozzi, and Warshaw 1992, p. 1113)	Perceived enjoyment increases arousal, attitudes toward the website, patronage intentions, and satisfaction.	Eroglu, Machleit, and Davis 2003; Gentile, Spiller, and Noci 2007; Hsieh et al. 2014; Steenkamp and Geyskens 2006; Wang et al. 2007
Informativeness	Information content, utilitarian value, perceived website diagnosticity, utilitarian experience, cognitive component	The extent to which a website provides users with resourceful and helpful information	Informativeness increases consumers' perceived control, as well as flow and attitude toward the site.	Gentile, Spiller, and Noci 2007; Hausman and Siekpe 2009; Hsieh et al. 2014; Jiang and Benbasat 2007; Steenkamp and Geyskens 2006
Social presence	Website socialness perceptions, social response, relateability, relational component, website sociability	"The extent to which a medium allows users to experience others as being psychologically present" (Gefen and Straub 2003, p. 11)	Cues such as language, human voice, interactivity, and social roles increase customer perceptions of social presence, which influences their trust in a website, arousal, pleasure, and flow.	Cyr et al. 2009; Gefen, Karahanna, and Straub 2003; Gentile, Spiller, and Noci 2007; Wang et al. 2007
Vividness	Imagery, visual attractiveness, image appeal, aesthetic appeal, sensory, sense, sensorial component, sensations, stimulation	"The representational richness of a mediated environment as defined by its formal features; that is, the way in which an environment presents information to the senses" (Steuer 1992, p. 81)	Photos and videos increase vividness, which increases the perceived usefulness of the site and customer enjoyment and reduces perceived product performance risk .	Brakus, Schmitt, and Zarantonello 2009; Gentile, Spiller, and Noci 2007; Schlosser 2003; Weathers, Sharma, and Woods 2007

Table 2
Relevant Research on Online Design Elements

Studies	Textual Elements			Visual Elements				Transactional Elements		Decision Aid Elements				Key Findings
	Linguistic Style	Descriptive Details	Bulleted Features	Product Feature Crop	Lifestyle Picture	Picture Size	Product Video	Content Filter	Return Policy Information	Expert Endorsement	Comparison Matrix	Customer Reviews	Recommendation Agent	
Anderson and Simester 2014												x		Each deceptive review not associated with a purchase can lower revenue by approximately .56% compared to the previous year.
Ansari, Essegiaier, and Kohli 2000										x			x	Recommendation agents that use a combination of collaborative filtering, predictions based on the person's preference for product attributes, expert evaluations, and individual characteristics are more effective than any single recommendation method.
Bower and Maxham 2012									x					Free returns produce the greatest increase in postreturn purchases.
Cooke et al. 2002		x											x	Unfamiliar items presented by recommendation agents in the context of other favorable recommendations will be assimilated and evaluated more favorably; unfamiliar items presented in the same context but with item-specific information will create a contrast and be evaluated less favorably.
Haubl and Trifts 2000											x		x	The use of recommendation agents and comparison matrices decreases the size but increases the quality of customers' consideration sets and also improves purchase decision quality.
Hauser, Urban, Liberali, and Braun 2009		x						x				x		Deriving customer cognitive styles based on previous clickstream data and customizing website content according to these styles can increase purchase intentions.
Ho-Dac, Carson, and Moore 2013												x		Brand equity moderates the positive relationship between customer reviews and sales, such that weak brands are more affected by customer reviews.
Huang, Lurie, and Mitra 2009							x			x		x		Experience goods involve greater depth (time per page) and lower breadth (number of pages) of search than search goods. Customer reviews, expert endorsements, and multimedia presentations (e.g., product videos) are more effective for experience than search goods.
Ludwig et al. 2013	x											x		The more a review's linguistic style matches the product interest group's linguistic style, the greater the conversion rate for that product. This linguistic style match amplifies the effect of positive affect in reviews.
Naylor, Lamberton, and Norton 2011													x	Customers infer similarities in preferences when reviewers are ambiguous, which makes these reviews more influential on customer purchase behaviors compared with reviews by overtly dissimilar reviewers.
Roggeveen et al. 2015							x							Product videos increase a webpage's vividness and create experiences that mimic real products, ultimately enhancing customers' preferences and willingness to pay.
Shi and Zhang 2014													x	Recommendation agents that allow the customer to select certain decision factors, then filter product choices, as well as other decision aids, vary in effectiveness based on the customer's prior experience and habitual decision processes.
Song and Zinkhan 2008	x													A more personal linguistic style/tone is the strongest predictor of website interactivity and effectiveness.
Wang et al. 2007	x						x							Social presence, website informativeness, and website enjoyment are three key aspects of the online shopping experience that interact to increase patronage intentions. Social cues (manipulated using more personal language, human voice, and interactivity) can increase perceived social presence and encourage purchases.
Wood 2001									x					Greater return policy leniency increases the likelihood of purchasing a product remotely but decreases the probability of continued product search during time between order and receipt.

Notes: To derive a list of relevant research, we examined articles pertaining to online product marketing published in the last 10 years in *Journal of Marketing*, *Journal of Marketing Research*, *Marketing Science*, and *Journal of Consumer Research*. To be included, the research needed to be empirical in nature, focusing on webpage content elements that are available to manufacturers selling through the website. We exclude studies of website design elements (e.g., navigation), email marketing, online advertising, word of mouth, or search research.

Table 3
Descriptive Statistics and Correlations

Panel A: Customer Experience

Variable	N	Mean	SD	CR	CA	1	2	3	4	5
Enjoyment	10,470	4.40	1.54	.93	.93	(.82)				
Informativeness	10,470	5.29	1.11	.90	.89	.59	(.75)			
Social presence	10,470	3.65	1.52	.95	.95	.58	.39	(.87)		
Vividness	10,470	3.97	1.34	.86	.85	.67	.54	.69	(.66)	
Purchase intentions	10,470	3.91	1.77	.95	.95	.58	.42	.43	0.48	(.88)

Panel B: Brand and Product Moderators

Variable	N	Mean	SD	CR	CA	1	2	3	4	5	6	7	8
Brand reputation	904	4.93	1.24	.93	.93	(.77)							
Brand attitude	904	5.19	1.09	.95	.95	.75	(.82)						
Brand trust	904	4.88	1.01	.91	.91	.74	.81	(.78)					
Utilitarian qualities	904	5.41	1.12	.90	.90	.52	.68	.58	(.64)				
Hedonic qualities	904	4.08	1.39	.95	.95	.28	.42	.38	.39	(.78)			
Experience qualities	904	3.99	1.67	.83	.83	-.03	.08	.08	.06	.37	(.71)		
Search qualities	904	4.18	1.59	.92	.92	.39	.41	.49	.35	.37	.06	(.85)	
Product complexity'	480	3.51	1.53	.83	.82	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	(.63)

Notes: Mean and SD based on composite scores; Product complexity data collected in a separate dataset; CA = Cronbach's Alpha; Average Variance Extracted (AVE) in brackets; CR = Composite Reliability

Table 4
Results: Meta-Analyses of Design Elements' Effects on the Online Customer Experience

Design Elements	Online Customer Experience Aspects																			
	Enjoyment					Informativeness					Social Presence					Vividness				
	Estimate	Std.	95% CI		Q	Estimate	Std.	95% CI		Q	Estimate	Std.	95% CI		Q	Estimate	Std.	95% CI		Q
	s	Errors	Lower	Upper	Statistic	s	Errors	Lower	Upper	Statistic	s	Errors	Lower	Upper	Statistic	s	Errors	Lower	Upper	Statistic
Textual Elements																				
Linguistic style	.028 **	(.010)	.008	.049	17.459	.014	(.010)	-.005	.033	10.461	.082 **	(.013)	.057	.108	27.741 *	.033 **	(.010)	.014	.052	13.967
Descriptive detail	.034 **	(.010)	.015	.053	12.027	.080 **	(.012)	.055	.104	25.224 *	.045 **	(.010)	.025	.066	17.412	.050 **	(.010)	.030	.071	17.605
Bulleted features	.047 **	(.011)	.025	.068	19.253	.092 **	(.010)	.073	.111	13.880	.022 *	(.011)	.001	.043	18.632	.051 **	(.012)	.028	.075	23.148
Visual Elements																				
Product feature crop	.031 **	(.010)	.012	.050	12.041	.005	(.010)	-.014	.024	11.629	.022 *	(.010)	.003	.041	11.763	.029 **	(.010)	.010	.048	11.961
Lifestyle picture	.020 *	(.010)	.001	.039	6.997	.021 *	(.010)	.002	.040	15.024	.075 **	(.013)	.049	.100	26.971 *	.034 **	(.012)	.009	.058	25.463 *
Picture size	.083 **	(.011)	.061	.104	18.691	.077 **	(.010)	.059	.096	6.966	.085 **	(.010)	.067	.104	14.858	.096 **	(.010)	.077	.115	14.655
Product video	.028 *	(.011)	.006	.051	20.760	.030 **	(.010)	.011	.049	13.456	.047 **	(.010)	.026	.067	17.591	.095 **	(.010)	.076	.114	13.903
Transactional Elements																				
Content filter	-.009	(.010)	-.028	.010	12.929	-.009	(.011)	-.031	.012	19.830	-.041 **	(.011)	-.063	-.019	20.174	-.010	(.013)	-.034	.015	25.604 *
Return policy information	.001	(.013)	-.024	.027	27.119 *	.014	(.011)	-.008	.035	19.48	.001	(.010)	-.017	.020	14.719	.004	(.010)	-.016	.025	18.171
Decision Aids																				
Customer reviews	.071 **	(.010)	.052	.090	11.892	.108 **	(.012)	.086	.131	22.395	.083 **	(.010)	.064	.102	14.616	.069 **	(.010)	.050	.087	14.133
Expert endorsement	.004	(.012)	-.019	.026	21.212	.009	(.015)	-.020	.038	35.606 **	.019	(.011)	-.002	.041	18.936	.009	(.013)	-.017	.035	28.814 *
Comparison matrix	.041 **	(.010)	.022	.060	15.045	.087 **	(.010)	.068	.106	10.025	.032 **	(.010)	.013	.051	9.572	.052 **	(.010)	.033	.071	14.896
Recommendation agent	.014	(.010)	-.005	.033	12.765	.024 *	(.010)	.006	.043	14.742	-.012	(.010)	-.031	.007	8.377	.026 **	(.010)	.007	.044	11.925

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

Notes: N = 10,470; CI = confidence interval; variables were standardized before analysis; estimates represent regression coefficients combined across all 16 experiments.

Table 5
Results: Effects of Online Customer Experience on Purchases

	Model 1			Model 2		
	Estimates	Std. Errors	Standardized Estimates	Estimates	Std. Errors	Standardized Estimates
<i>Experience Aspects</i>						
Enjoyment	.460 **	(.013)	.400 **	.459 **	(.013)	.399 **
Informativeness	.144 **	(.016)	.090 **	.147 **	(.016)	.092 **
Social presence	.146 **	(.012)	.126 **	.145 **	(.012)	.124 **
Vividness	.084 **	(.015)	.064 **	.085 **	(.015)	.064 **
<i>Control Variables</i>						
Customer age	-.001	(.001)	-.004			
Customer gender	.039	(.028)	.011			
Customer income	.011 *	(.004)	.021 *			
Customer education	-.042 **	(.011)	-.032 **			
Intercept	.343 **	(.099)	.000 **	.249 **	(.069)	.000 **
Observations		10,470			10,470	
R ²		.34			.34	

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

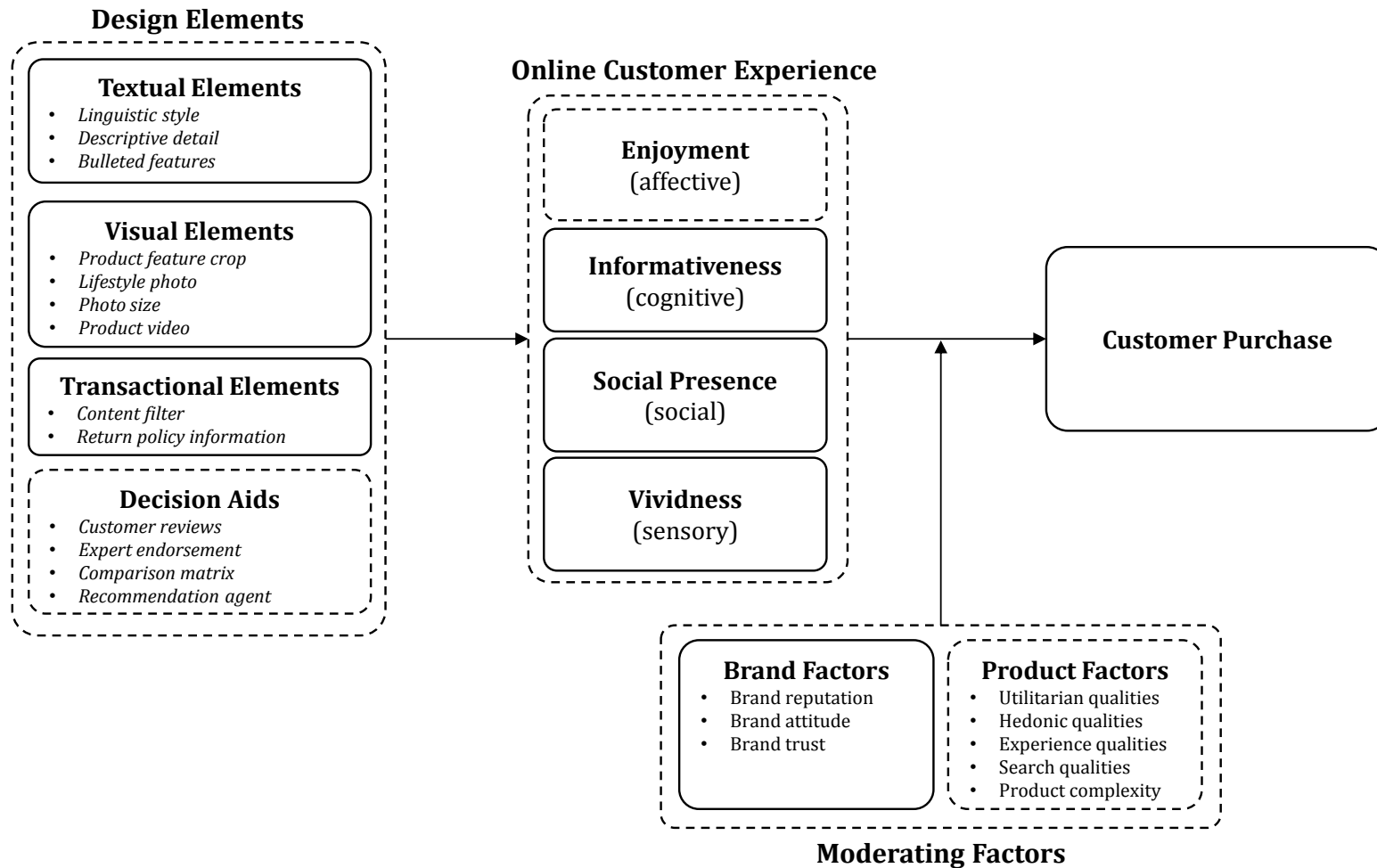
Table 6
Results: Brand and Product Moderation of Effects of Online Customer Experience on Purchases

	Brand Factors			Product Factors				
	Model 1: Brand Reputation	Model 2: Brand Attitude	Model 3: Brand Trust	Model 4: Utilitarian Qualities	Model 5: Hedonic Qualities	Model 6: Experience Qualities	Model 7: Search Qualities	Model 8: Product Complexity
Main effects								
Enjoyment	.397 **	.387 **	.395 **	.391 **	.394 **	.404 **	.399 **	.403 **
Informativeness	.108 **	.103 **	.102 **	.077 **	.091 **	.100 **	.086 **	.111 **
Social presence	.115 **	.113 **	.114 **	.129 **	.124 **	.118 **	.122 **	.111 **
Vividness	.059 **	.061 **	.060 **	.068 **	.063 **	.059 **	.062 **	.059 **
Moderator	.191 **	.213 **	.196 **	.179 **	.044 **	-.104 **	.176 **	-.140 **
Moderating effects								
Enjoyment × moderator	-.019	-.014	-.015	-.021 *	.011	-.008	-.009	.006
Informativeness × moderator	.020 *	.028 **	.019 *	.021 *	-.013	-.029 **	.024 *	-.008
Social presence × moderator	-.011	-.019	-.013	-.022 *	-.015	.014	-.024 *	-.002
Vividness × moderator	-.022 *	-.027 *	-.026 *	-.016	.011	.024 *	-.022 *	.033 **
Controls								
Customer age	-.010	-.008	-.009	-.003	-.004	-.006	-.006	-.009
Customer gender	.007	.006	.007	.010	.010	.009	.009	.007
Customer income	.022 **	.022 **	.023 **	.024 **	.021 *	.021 *	.023 *	.020 *
Customer education	-.030 **	-.026 **	-.027 **	-.027 **	-.031 **	-.034 **	-.029 **	-.031 **
Model fit								
R ²	.38	.39	.38	.37	.34	.35	.37	.36
Observations	10,470	10,470	10,470	10,470	10,470	10,470	10,470	10,470

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

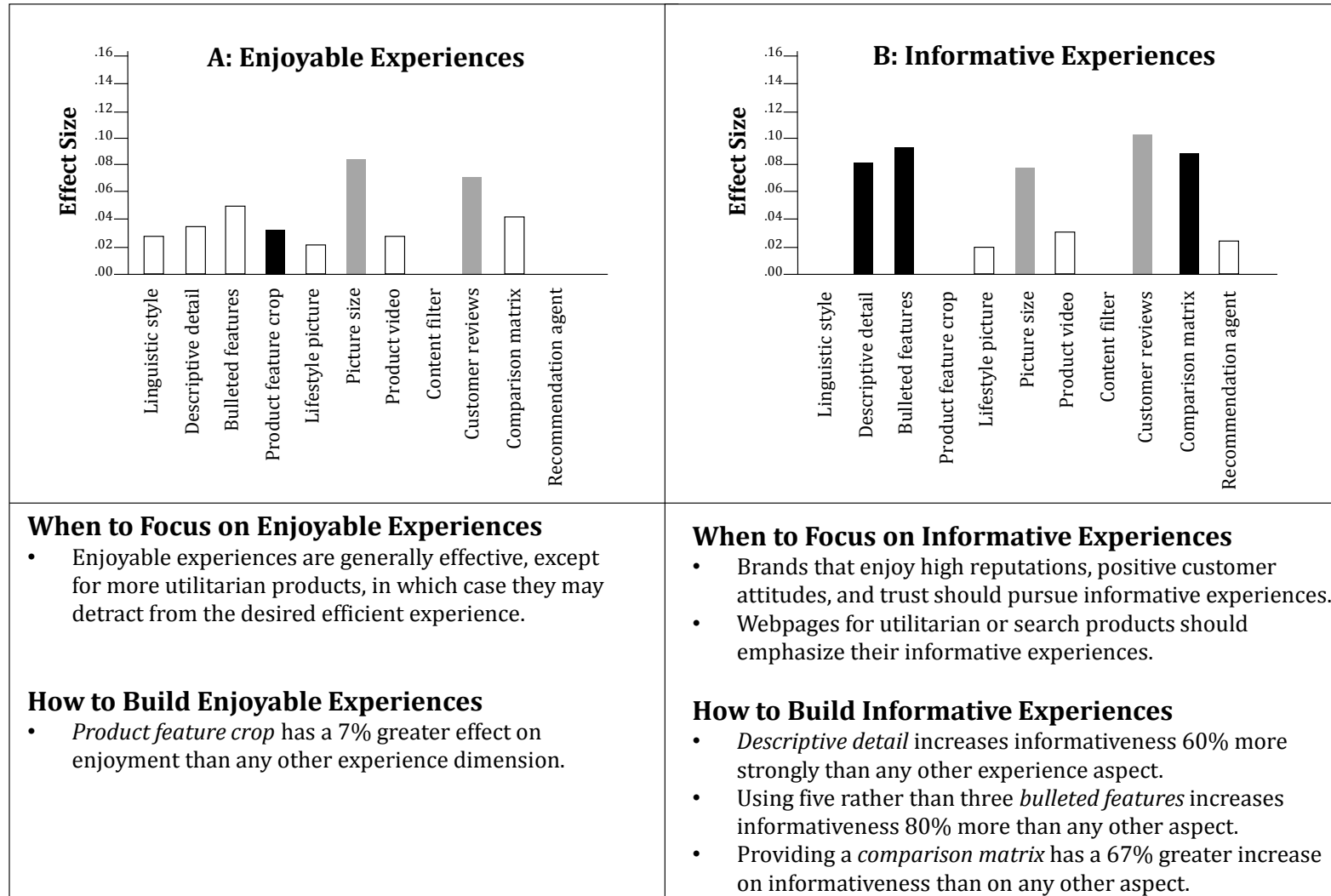
Notes: Each moderator was tested individually, so that the moderator included in the model is designated by the model name. The variables were standardized prior to the analysis.

Figure 1
Building and Leveraging the Online Customer Experience



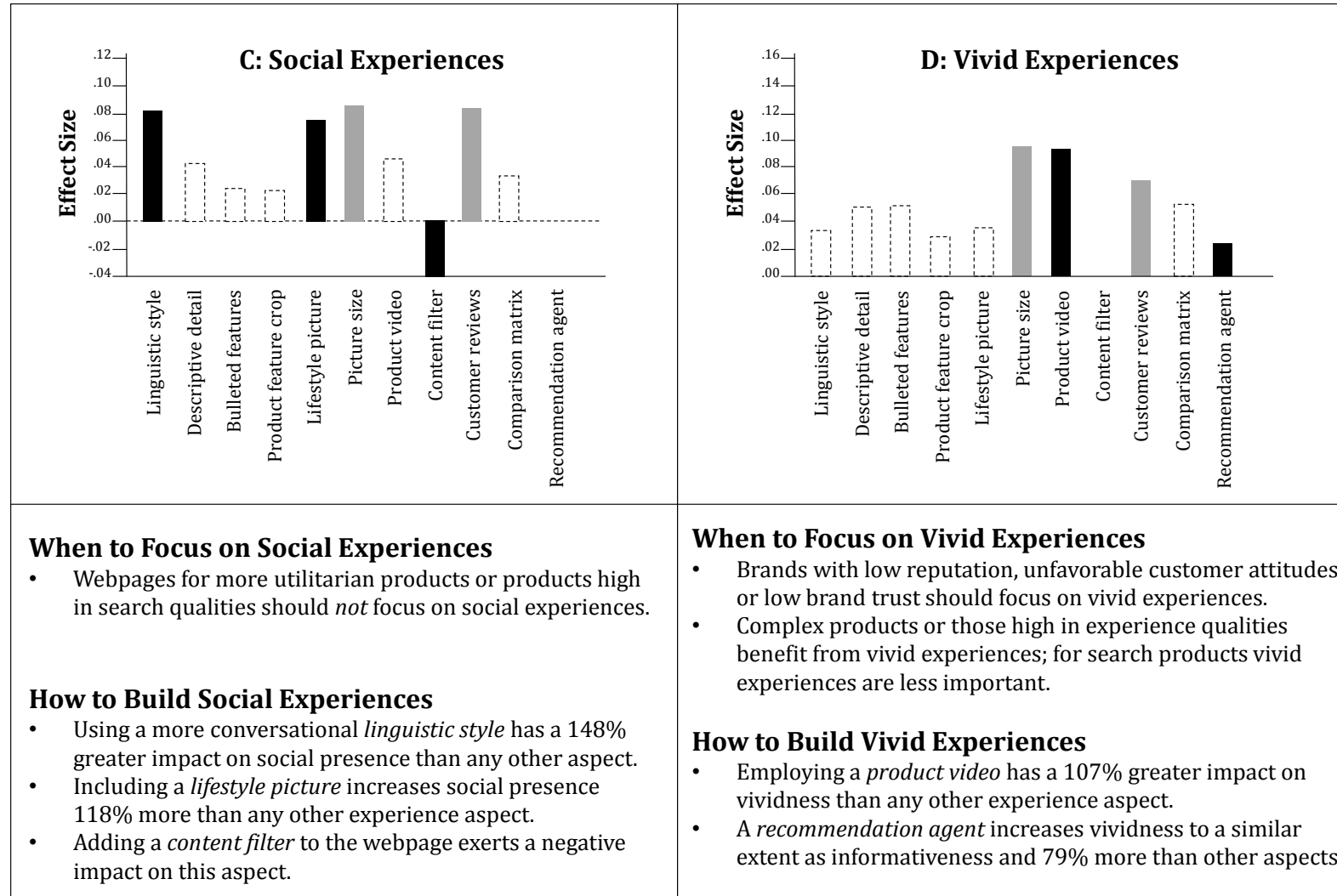
Notes: Constructs in italics were experimentally manipulated across 16 products and 11 brands. N = 10, 470.

Figure 2
Building Online Customer Experiences



Notes: Only significant effects are shown; gray bars represent universally effective design elements across all experience aspects, black bars depict uniquely more effective elements for a specific aspect compared to all other aspects, and white bars indicate the remaining elements.

Figure 2 (Continued)
Building Online Customer Experiences



Notes: Only significant effects are shown; gray bars represent universally effective design elements across all experience aspects, black bars depict uniquely more effective elements for a specific aspect compared to all other aspects, and white bars indicate the remaining elements.