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The Effect of Product Type on Consumer Preferences for Website Content Elements: An Empirical Study

Tibert Verhagen

VU University Amsterdam

Jaap Boter

VU University Amsterdam

Thomas Adelaar

University of Amsterdam Business School

This study attempts to demonstrate empirically how the importance of website content in online purchasing varies across 2 product categorizations: goods versus services and hedonic versus utilitarian products. We conducted an experiment that showed that when purchasing services, customers value evaluative elements and risk-reducing content, while consumers buying goods may be satisfied with fewer features. In addition, selling hedonic products could be more effective when focusing on large and unique assortment. Websites selling utilitarian products, on the other hand, may profit from investing in instrumental website content. The study validates the guiding role of product type in website design, and suggests that incorporating product tactics into design likely contributes to the development of websites tailored to specific consumer groups.

Key words: product type, goods/services, hedonic/utilitarian, website content elements, online purchasing, product-centered website design.

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The role of website features in attracting and retaining customers has been an e-commerce research topic for more than a decade. Scholars have focused on the effects that consumer evaluations of website content elements have on satisfaction and online performance (e.g., Burke, 2002). Others have addressed the role that website content plays in online purchase processes (e.g., Liang and Lai, 2002; O'Keefe and McEachern, 1998). Moreover, attention has been paid to the usage of website features across different types of industries (e.g., Baack and Singh, 2007; Liao, To, and Shih, 2006) or different cultures (Singh and Baack, 2004; Würtz, 2005). Several authors have warned that the adequate use of website content is

likely to depend on the characteristics of the products to be sold (e.g., Peterson, Balasubramanian, and Bronnenberg, 1997; Van der Heijden and Verhagen, 2004). However plausible, empirical investigation into this assumption has been surprisingly limited. Even recently, Lian and Lin (2008) stated: "Most studies have focused on a single product or similar products. The effects of different product types have been relatively neglected" (p. 48). Obviously, product type is underserved as an e-commerce research theme (see also Huang, Lurie, and Mitra, 2009). Answering the question of how differences in product type influence consumer preference for various website content elements was what motivated us to conduct this study.

The few academic works into the role of product type published so far have only addressed the role of the search/experience typology (e.g., Girard, Silverblatt, and Korgaonkar, 2002; Huang et al., 2009; Levin, Levin, and Weller, 2005). Here, we extend these works to two other, well-known product type classifications: goods versus services (Zeithaml, Parasuraman and Berry, 1985) and hedonic versus utilitarian products (Hirschman and Holbrook, 1982). The goods/services continuum reflects fundamental differences in *form;* that is, in (in)tangibility (Zeithaml et al., 1985), and may be used to map out prerequisites for website design (Laroche, Bergeron and Goutaland, 2001). The hedonic/utilitarian dichotomy mirrors differences in product *function;* that is, pleasure versus utility (Hirschman and Holbrook, 1982), and may be applied to website designs that offer appealing value propositions (Overby and Lee, 2006). Both categorizations have been hypothesized and have been shown in part to have different (online) decision-making processes; each is part of a well-established body of research; and each is a prominent category in Internet trading, adding to the external validity of our study. This research tests the value of both typologies in understanding consumer preference for website content elements and provides guidelines for more product-centered website design.

The remainder of this paper is structured as follows: In section 2, we review the literature on goods versus services and hedonic versus utilitarian products. We consider the major differences in purchasing these products and reflect on the role of the online shopping environment. In section 3, we extend this to hypotheses on the potentially different preference for 10 important website content elements when purchasing goods versus services and hedonic versus utilitarian products. In section 4 we describe our research method, while section 5 reports on the empirical results of this study. We conclude with a theoretical reflection on our findings and suggestions for web-based shopping system design in section 6.

Product Types and Associated Consumer Purchase Behavior

Goods versus Services

The different nature of goods and services has been discussed extensively in the literature (e.g., Laroche et al., 2001; Lovelock, 1983). Differentiating characteristics considered in the literature include intangibility, the inseparability of production and consumption, heterogeneity and perishability. Although these four elements are

widely cited, the fundamental difference between goods and services is intangibility (Laroche, Yang, McDougall and Bergeron, 2005). Intangibility can be seen as the key distinction from which the other differences emerge (Zeithaml, 1981; Zeithaml et al., 1985).

While earlier research focused on offline settings, recent work (e.g. Laroche et al., 2005; Lee and Park, 2009) confirms the role of intangibility as a key differentiator between goods and services in online settings. However, given that the online medium significantly affects the experienced nature of goods and services, which are both defined, shaped, and communicated by information (Peppard and Rylander, 2005; see also Klein, 1998), traditional views on intangibility as being immaterial and impalpable seem inapplicable. Our research accounts for this notion by adopting the conceptualization of Laroche and associates (2001, 2005) who define intangibility around three dimensions: physical intangibility, generality, and mental intangibility. *Physical intangibility* refers to the degree to which a product cannot be seen, experienced or touched, or is inaccessible to the senses. One may intuitively expect that all products are perceived as physically intangible online. The online medium, however, offers several opportunities for adding senses of tangibility (Li, Daugherty, and Biocca, 2002). This especially applies to goods as they are dominated by visual attributes (see also Alba et al., 1997). With the availability of detailed pictures, video, and three-dimensional product interactions, consumers can experience the psychological sensation of product presence (Li et al., 2002). Services, in contrast, are performances that are much more difficult to illustrate or demonstrate visually (Abernethy and Butler, 1992), which makes it hard to get an online sense of physical presence (Lee and Park, 2009). *Generality* addresses the consumer's difficulty in precisely defining or describing the product. Services are assumed to have a high level of generality, as the lack of perceived online product presence makes it hard for consumers to refer precisely to identifiable definitions, features, and/or outcomes of the product. Goods have a much lower generality and may even be perceived as specific, as their observable attributes generate numerous clear-cut definitions, features, and/or outcomes in the consumer's mind (Laroche et al., 2005, p. 253). *Mental intangibility* concerns the ease of grasping the product mentally. The greater generality of services makes it relatively hard for a consumer to comprehend and remember services in detail. Furthermore, a lack of visual online stimulus impedes consumers from applying visual information processing strategies when evaluating and judging services. Both characteristics make the mental construction of representations of services relatively complex (cf. Glenberg and Langston, 1992; Wyer, Hung and Jiang, 2008), leading to the observation that services can be seen as being more mentally intangible than goods.

The differences in intangibility between goods and services have vital implications for consumer online purchasing. Goods, being easier to visualize, describe, and experience in advance, are rather easy to judge and evaluate. The intangible nature of services, in contrast, implies a lack of available information (Bebko, 2000), and difficulties in information visualization and recall (Szymanski, 2001),

resulting in more difficult prepurchase evaluations. To address these difficulties in information processing, and to reduce the efforts associated with discriminating among and assessing service alternatives (Laroche et al., 2005), consumers extend the search for information from an internal search (memory and experience) to an external search (the purchase environment) (cf., Cheema and Papatla, 2009). The external search for service-related information includes controlled and uncontrolled sources (Abnernethy and Butler, 1992). Controlled sources are dominated by the marketer and include pricing, product descriptions, money-back guarantees, and frequently asked questions (FAQ). Uncontrolled sources reflect consumer opinions and include product reviews, product ratings, message/bulletin boards and product recommendations.

Intangibility also causes consumers to perceive the online purchase of services as riskier[1] than the purchase of goods (Laroche et al., 2005). Following the adopted three-dimensional view on intangibility, services are unlikely to be experienced before consumption and a direct comparison of alternatives is hampered since visual cues and concrete attributes are lacking. Both experience and comparison difficulties make online prepurchase evaluation of services complex (Laroche et al., 2001), and increase the likelihood of making the wrong purchase decisions. To deal with this greater degree of uncertainty consumers use external searches as a risk-reduction strategy (cf. Verhagen, Meents, and Tan, 2006). Important controlled external sources that are used to assess risk perceptions include intangible informational cues, such as brands, as well as more factual cues that contribute to feelings of safety, such as company information and guarantees. Uncontrolled sources of risk-reducing information include direct observation/experience, consumer opinions, and product reviews/ratings.

Hedonic versus Utilitarian Products

While the key difference between goods and services is their *form* (tangibility), the fundamental difference between hedonic and utilitarian products lies in their *function*. Utilitarian products perform purely instrumental functions, with product features that can be directly and objectively linked to the utility of the product (e.g., ''more RAM leads to more processing capacity''). Hedonic products, on the other hand, elicit sensory stimulation, emotions and fantasies; their function lies in the pleasure they evoke (Hirschman and Holbrook, 1982; Holbrook and Hirschman, 1982). However, as pleasure is a matter of personal taste, product features are more difficult to link to the product function. For example, ''more colors lead to a more beautiful painting'' may be true for some, but not for others. As such, the distinction between utilitarian and hedonic products is also characterized by their objective versus subjective natures.

Given that consumers shop both online and offline for products that fulfill hedonic or utilitarian functions (Wolfinbarger and Gilly, 2001), the hedonic-utilitarian product dichotomy applies directly online and has been used by researchers accordingly (e.g. Bridges and Florsheim, 2008; Cheema and Papatla, 2009; Overby and Lee, 2006;

Sen and Lermann, 2007). The relevant literature on hedonic/utilitarian consumption has demonstrated that the distinctive functions of hedonic and utilitarian products have vital implications for consumer decision-making online. For utilitarian products, the objective link between features and utility eases product communication and information, while for hedonic products, the subjective nature of pleasure may force consumers to pursue subjective impressions and rely less on 'tangible' product features or information (Noble, Griffith, and Weinberger, 2005). For instance, for utilitarian products, consumers have been found to collect detailed product information, conduct analytical information processing (Bridges and Florsheim, 2008; Chaudhuri and Ligas, 2006), compare more options, and focus more on objective features and knowledge (Noble et al., 2005; Park and Moon, 2003). Information also plays an important role for hedonic products; however, it does not lead to a more extensive decision-making process (cf. Laurent and Kapferer, 1985). Instead, hedonic products are evaluated holistically, the final decision being the outcome of emotional rather than cognitive processes (To, Liao, and Lin, 2007).

The differences in function between hedonic and utilitarian products influence the use of external sources. The purchase of hedonic product categories, for example, is marked by specific demands on product assortments. Rather than consuming the same movie or CD over and over again, consumers are likely to search for products that are different from the last one (Inman, 2001; Van Trijp, Hoyer, and Inman, 1996). Hedonic product categories are therefore often characterized by many different unique products (Hirschman, 1983), and/or by a constant stream of novel products (Jiang and Wang, 2006). In contrast, and perhaps somewhat ambiguously, the stronger emotions elicited by hedonic products may also lead to a higher likelihood of "brand love" (Carroll and Ahuvia, 2006). Consequently, consumers of hedonic products search for specific items and will switch stores when an item is out-of-stock (Sloot, Verhoef, and Franses, 2005). The hedonic nature of products also affects the use of pricing cues. Hedonic products lack objective features relating to a particular utility. Therefore price-performance trade-offs are difficult and it is complicated to establish a right price. Price is a more significant issue for utilitarian products (Na, Son and Marshall, 2007) than for hedonic products (Chaudhuri and Ligas, 2006), and this extends to promotions. Monetary promotions are more important for utilitarian products and nonmonetary promotions are more important for hedonic products, particularly for high-equity brands (Chandon, Wansink, and Laurent, 2000). A comparable logic applies to an uncontrolled information source such as online product reviews. Consumers seem to attribute negative peer reviews of utilitarian products to the product itself, while they are likely to dismiss such reviews of hedonic products as they are seen as a matter of different taste (Sen and Lermann, 2007).

Hypothesized Differences in Website Content Valuation

Website content refers to the features, functions, information and products offered on a website, excluding facets of placement of these elements (cf., Huizingh, 2000;

Table 1 Website content elements associated with online purchasing

Website content element	Description	Role in the online purchase process	Key references
Promotions	Temporary offers, discounts and sales.	Strengthen existing needs; trigger new needs.	Briggs and Hollis (1997), Ghose and Dou, (1998), Liang and Lai (2002), Lohse and Spiller (1999), Wu, Cook and Strong (2005).
Comparisons	Functions enabling consumers to sort products by attributes (e.g. brand, price).	Assess the performance of alternatives before applying decision rules.	Alba et al. (1997), Grewal, Iyer and Levy (2004).
Company information	Description(s) of the company, including news and information about the company's history.	Provide cues to assess the trustworthiness of the selling party.	Burke (2002), Corritore, Kracher and Wiedenbeck (2003).
Help	Features enabling consumers to request information and/or pose questions.	Collect additional purchase-related information.	El Sawy and Bowles, (1997), Lang and Whinston (1999), Wan (2000).
Advice	Recommendation features, including suggestions by experts and/or consumers.	Guide the evaluation of relatively complex products.	Burke (2002), Hanson, (2000), Senecal and Nantel (2004), Zeithaml, Parasuraman and Malhotra (2002).
Personalization	Functions that match the website and its products to individual needs/preferences.	Tailor consideration sets to personal needs.	Coupey (2001), Rust and Lemon (2001), Senecal and Nantel, (2004), Sharma and Sheth (2004).
Size assortment	Product breadth and depth.	Allow easy location of products with little effort, reduce uncertainty by providing relevant information.	Chernev (2006,) Jarvenpaa and Todd, (1996), Oppewal and Koelemeijer (2005), Quinn (1999).

Table 1 Continued

Website content element	Description	Role in the online purchase process	Key references
Unique assortment	Hard-to-find products.	Limit screening criteria to subjective elements such as labels and brands.	Alba et al. (1997), Brynjolfsson, Hu and Smith (2003), Sim and Koi (2002).
Settlement	Options associated with ordering and delivery.	Enable purchase decision-making.	Burke (2002), Van der Heijden and Verhagen (2004).
Security	Features conveying feelings of security, privacy, and confidence.	Cues to assess the risks associated with the purchase.	Aiken and Boush (2006), Belanger, Hiller and Smith, (2002), Bhatnagar and Ghose (2004), Forsythe and Shi (2003).

Aladwani, and Palvia, 2002). In the e-commerce literature, different types of website content associated with online purchasing have been explored. In reviewing the literature, ten important website content elements can be distinguished. Table 1 lists these content elements.

In the remaining part of this section we focus on the potentially different preferences for the 10 website content elements across product types. We address whether the perceived importance of these website content elements differs for purchasing goods versus services and for hedonic versus utilitarian products. While differences are assumed for most content elements, we also posit some hypotheses of equal importance, regardless of product type. Drawing upon the previously discussed product differences and associated purchase processes, the following hypotheses are postulated (Table 2):

Differences in purchasing goods versus services

The intangible nature and high variability of the performance of services over time and across providers result in higher levels of risk and uncertainty of desired outcomes. Consequently, consumers engage more actively in information searches when shopping online for services than when shopping for goods (Laroche et al., 2005). For that reason, we may expect consumers to rely more on information cues such as *company information*, especially since it provides evidence of the expected quality of the delivered service. Furthermore, consumers will rely more profoundly on personal sources such as the recommendations of others (Garbarino and Strahilevitz, 2004) and the opinions of reference groups (Gupta and Harris, 2009). Therefore, we

Table 2 Expected differences

Type of website content element	Is more important for (goods versus services)	Is more important for (hedonic versus utilitarian)
Promotion	H1a: services	H1b: utilitarian
Comparison	H2a: services	H2b: utilitarian
Company information	H3a: services	H3b: utilitarian
Help	H4a: services	H4b: utilitarian
Advice	H5a: services	H5b: utilitarian
Personalization	H6a: services	H6b: hedonic
Size assortment	H7a: goods	H7b: hedonic
Unique assortment	H8a: goods	H8b: hedonic
Settlement	H9a: equal	H9b: equal
Security	H10a: equal	H10b: equal

hypothesize that *help* and *advice* content are more important to consumers when they are purchasing services rather than goods. In addition, consumers may highly valuate sales promotions as a risk-reduction method (Garretson and Clow, 1999). In particular, the financial and performance risks associated with buying services are likely to be reduced via sales promotions (Garretson and Clow, 1999). As such, it is reasonable to argue that *promotion* content is more important for services than for goods.

The inseparability of production and consumption means that consumers of services are usually more involved in tailoring the deliverable (Peters and Saidin, 2000). While the delivery of goods is based upon product attributes and meeting standardized specifications, service delivery draws heavily upon real-time customization (Rust and Chung, 2006). The Internet offers many options for personal interaction and information exchange, enabling consumers to express their needs and receive customized services (Rust and Chung, 2006). This suggests that *personalization* content is more important for services than for goods. In addition, large assortments of goods can easily be put together online since prespecified standardized goods and/or customized goods are finished and storable (Edgett and Parkinson, 1993). When buying goods, consumers view a large and/or unique selection of items as an important incentive to shop online (Jarvenpaa and Todd, 1996; Quinn, 1999; Sim and Koi, 2002), perhaps because it reduces search costs and enhances the likelihood of matching products to personal preferences (Bakos, 1997). In contrast, when buying services online, the offering is dynamically tailored to personal needs by the use of interactive tools and real-time information processing. As such, and given the simultaneous production and consumption of services (i.e., prosumption; see Cromie and Ewing, 2009), a virtually infinite selection of services can be customized via consumer involvement (Rust and Chung, 2006). The ability to tailor services while making purchases online implies that large inventories of products are less of an issue when purchasing services. Thus, we hypothesize that *size assortment* and a *unique assortment* are more important when purchasing goods than when purchasing services.

As discussed before, the intangible, experiential nature of services makes it difficult for consumers to evaluate services or to judge their value (Bebko, 2000; Zeithaml et al., 1985). In fact, most service attributes are mentally rather than physically related to the product, which makes it harder for consumers to make mental constructions and visualizations for services than for goods (Laroche et al., 2001 & 2005; Winsor, Sheth and Manolis, 2004). The mental comprehensiveness of evaluating services highlights the need for evaluation support. This decision support can be provided via comparison modules and evaluative tools (cf., O'Keefe and McEachern, 1998). Enabling comparisons by abstract (e.g., brand, quality ratings) and specific attributes (e.g., price), these modules and tools reduce the cognitive and behavioral efforts that are typically used to discriminating between and assess service alternatives. Following this type of reasoning, we assume *comparison* content to be more important for services than goods.

Differences in purchasing hedonic versus utilitarian products

Because the function of utilitarian products is driven by objective attributes, the purchase process involved allows for rational decision-making by collecting information, comparing alternatives and weighing attributes (cf., Childers, Carr, Peck, and Carson, 2001). In the early stages in such a decision-making process, online consumers of utilitarian products are likely to value *advice* content and *help* content as easily accessible means by which to acquire information and the product knowledge needed to understand which attributes are important in creating what kind of utility (Park and Moon, 2003). As consumers of hedonic products are less likely to use detailed product information (Cheema and Papatla, 2009), less likely to rely on online word-of-mouth (Sen and Lermann, 2007), and more likely to rely on subjective knowledge in their decision-making (Park and Moon, 2003), we expect these website content elements to be valued as less important in supporting the hedonic purchase process.

In the next stages of the online decision-making process with regard to utilitarian products, when purchase options are to be compared and weighed (cf. Liang and Lai, 2002), *comparison* content is likely to prove valuable for a side-by-side assessment of options on a number of important criteria. At this stage, *company information* may also prove to be relevant as a cue for product quality. For hedonic products, on the other hand, content allowing the side-by-side comparison of product features and other criteria are less relevant, as they are processed and evaluated only as a whole (Creusen and Schoormans, 2001). Similarly, as each hedonic product is unique (Hirschman, 1983), company information may have less relevance for hedonic goods; while the company itself may be renowned (e.g., an artist), the high variability in the quality of individual products (e.g., an individual album) may still be too large to rely on company information alone.

In the last stage of decision-making, price often plays an important role in the final choice of one particular product or bundle of attributes from the set of options; this is particularly true for utilitarian products, where price-performance trade-offs are easier than for hedonic goods (Chaudhuri and Ligas, 2006; Na et al., 2007). Consequently, special offers, discounts and sales are valued more (cf. To et al.,

2007). We therefore expect (financial) *promotion* content to be more important for utilitarian products.

For hedonic products, other website content elements are important in the purchase process. The combination of uniqueness as a key feature in hedonic categories, particularly artistic ones (Hirschman, 1983), and the higher likelihood of strong attachments to particular products (Carroll and Ahuvia, 2006; Sloot et al., 2005), implies that for hedonic products, having a *unique assortment* with many hard-to-find products is more relevant. In addition, while consumers generally view a large and/or unique selection of goods as an important incentive to shop online (Jarvenpaa and Todd, 1996; Quinn, 1999; Sim and Koi, 2002), this is particularly important for hedonic goods, as it may help in addressing the need for variety (Inman, 2001; Van Trijp et al., 1996). Consequently, we expect the *size of the assortment* to be more relevant for this product type. When faced with larger assortments, *personalization* content may help in quickly limiting the offering to those items that match personal taste. We therefore expect this website content element, too, to be of greater importance in online decision-making for hedonic products.

Similarities in content element preference across product types

While the relevance of previous content elements is assumed to discriminate between the buying process for goods versus services and between hedonic versus utilitarian products, other content elements are likely to be of general importance in online purchasing, regardless of product type.

First, security and privacy are key concerns in online purchasing generally. Empirical results to date support the general importance of security across different product types (e.g., Girard et al., 2002; Shih, 2004). The rationale behind these findings might be that security/privacy applies to the general need for protection against the disclosure/destruction/ modification/theft of transaction data (Belanger et al., 2002), independent of the characteristics of the product to be bought, and thus applies to online purchasing in general. We therefore posit *security* content to be of equal importance across all product types.

Second, while consumers of hedonic products particularly prefer prepayment and customers of utilitarian products prefer post payment (Patrick and Park, 2006), *settlement* content is, in general, of equal importance, driven by practical matters such as the need to be present when a (hedonic or utilitarian) service or product is delivered.

Method

Measurement development

A two-step approach was applied to measure the importance of the website content elements for the product typologies. First, measurement items were selected from previously published literature (e.g., Aladwani and Palvia, 2002; Bodkin and Perry, 2004; Burke, 2002; Liang and Lai, 2002; Putrevu and Ratchford, 1997; Rust and

Lemon, 2001; Van der Heijden and Verhagen, 2004; Wolfinbarger and Gilly, 2003) as well as from suggestions derived from a pilot study conducted with 156 graduate students taking a mandatory course in e-business at a Dutch university. The results were processed, resulting in a draft questionnaire. All items in the questionnaire were measured on a 7-point Likert scale, ranging from 'very unimportant' (1) to 'very important' (7). This approach is comparable to other works in the field of online purchasing (e.g., Belanger et al., 2002; Burke, 2002; Levin et al., 2005). Two members of the research team then evaluated the wording and interpretability of the draft questionnaire.

Second, the validity and reliability of the measures were evaluated in a pretest conducted with a group of 256 undergraduate students taking a mandatory core IS course at a Dutch university. Each respondent studied the purchase of four products (a CD, a calculator, a theatre ticket, and a home insurance policy) at four different Dutch retail websites. The products were selected because they were deemed to vary substantially in terms of tangibility and their hedonic/utilitarian nature. The websites could be studied while students were at home or at the campus. Each website visit was completed by having the respondents fill in an online survey addressing the importance of the website content forms when purchasing the product under study. We then studied the dimensionality of the constructs by applying Exploratory factor analysis (EFA) with varimax rotation to the four paired datasets. The data met the thresholds for sampling adequacy (CD: overall MSA 0.74, Bartlett's test of sphericity = 4941, $p < .001$; calculator: overall MSA 0.80, Bartlett's test of sphericity = 5370, $p < .001$; theatre ticket: overall MSA 0.76, Bartlett's test of sphericity = 4215, $p < .001$; home insurance: overall MSA 0.79, Bartlett's test of sphericity = 5810, $p < .001$). Some items were removed to keep the scales unidimensional. The final solution (Appendix A) indicated convergent validity and discriminant validity for all datasets since each item loaded strongly on its intended construct, and did not load significantly (<.35; see Hair, Anderson, Tatham, and Black, 1998) on other dimensions. Moreover, the computed alphas confirmed the reliability of the scales (appendix A).

Design and data collection

We applied a quasi-experimental research design (see Campbell, Stanley, and Gage, 1963) to collect data and test the hypotheses. An experimental survey was conducted using the same procedures as applied by Van der Heijden, Verhagen, and Creemers (2003). The sample consisted of 122 graduate students[2] taking a marketing course at a Dutch university. The experiment addressed the online purchase of four different products:

1. A greeting card[3] (hedonic good), via a Dutch web store specializing in selling greeting cards (www.kaartjeposten.nl).
2. A calculator (utilitarian good) via a Dutch website selling office supplies (www.centralpoint.nl).

3. A music streaming service (hedonic service) offering paid access to a library of songs via a Dutch portal (www.planet.nl/musicstream).
4. DSL (utilitarian service) via the website of a Dutch telecom offering broadband services (www.hetnet.nl).

The selected products vary in terms of tangibility and their hedonic/utilitarian nature, thereby contributing to the external validity of the study (cf., Laroche et al., 2005).

Each respondent studied the purchase of two of these products according to predefined tasks. These tasks included browsing through the website for 5 minutes, studying the sections containing the 10 content elements, and searching for a product meeting the student's interests (without completing the purchase). The websites[4] could be studied either at home or on campus. A scheme designed to randomly assign the respondents to the two products was used, eliminating the potential effects of order bias. As an incentive to participate, the students were asked to fill in their e-mail address to enter a raffle for a book gift card. After the respondent studied a website, he or she filled in an online survey addressing the importance of the website content forms when purchasing the product under study. In addition, each respondent was asked to fill in the three-dimensional intangibility scale as put forward by Laroche et al. (2001), the hedonic-utilitarian scale as developed by Voss, Spangenberg and Grohmann (2003), and two single-item scales addressing hedonic-utilitarian and goods-services continua (cf., Iacobbuci, 1992). These measures (appendix B) were included to assess and verify the nature of the products under study.

To control for extraneous variance, each survey was concluded by having the respondents fill in measures for *website quality* (Chen and Wells, 1999; attitude towards the site), *product involvement* (Mittal and Lee, 1988, Mittal, 1995), and *search experience characteristics* (Jourdan, 2001; Klein, 1998; Nelson, 1970; Nelson, 1974; Poon and Joseph, 2001) of the product under study. Differences in the quality of website design are likely to affect consumers' perceptions of website content elements. When a website is perceived as well-designed, some elements generate less effect on evaluations of website components, while the same elements can have a substantial effect on consumer evaluations in situations where website design is perceived as poor (Van der Heijden et al., 2003). Correlations between product involvement and information searches are reported (e.g., Chaudhuri, 2000) and the direct influence of product involvement on intentions to collect purchase-related information online are assumed (Lian and Lin, 2008). Since the frequency of buying greeting cards is likely to be higher than calculators/ DSL/ music streaming, and higher-frequency purchases may be associated with different levels of involvement than lower-frequency purchases (Engel, Miniard and Blackwell, 1995), it is conceivable that the differences in product involvement influence website content perceptions and evaluations. Finally, as demonstrated by the few empirical works available (e.g., Girard et al., 2002; Levin et al., 2005), the search experience characteristic of products is likely to affect consumers' preference for website elements. Given the above considerations, inclusion

Table 3 Sample characteristics (n = 122)

Measure and items	Count	Percentage
Gender		
Male	65	53
Female	57	47
Age (years)		
19–20	20	16
21–22	57	47
23–24	34	28
25–26	9	7
>26	2	2
Internet Experience		
Very inexperienced	1	1
Inexperienced	2	2
Neutral	14	11
Experienced	80	66
Very experienced	25	20
Frequency of purchasing products online		
Never	27	22
Occasionally	68	56
Regularly	23	19
Often	4	3

of the three measures enabled us to control and remove any differences in website content importance that are not caused by the treatments in this study (i.e. the two product dichotomies).

Sample

Table 3 shows the characteristics of our sample.

Of the respondents, 53% (n = 65) are men and 47% (n = 57) are women. The vast majority of the respondents are between 20 and 25 years old (75%, n = 91) and consider themselves to be experienced or very experienced Internet users (86%, n = 105), while 78% (n = 95) report making purchases on the Internet.

Results

Manipulation test

We first evaluated the nature of the products under study to verify that these products could indeed be classified into the goods-services and hedonic-utilitarian dichotomies as previously assumed. Means were calculated (table 4 and 5).

The results strongly confirm the goods-services nature of the selected products. Both the greeting card and the calculator score highest on tangibility and generality,

Table 4 Test of products under study: Goods versus Services (Means (SD))

	Goods			Services			
	Greeting card (n = 61)		Calculator (n = 59)	Music streaming service (n = 62)		ADSL (n = 62)	*t-value*[1]
Tangibility	5.97 (1.162)		5.86 (1.468)	2.35 (1.165)		1.87 (0.764)	
Average		**5.92** (1.316)			**2.11** (1.010)		25.408
Generality	5.71 (0.911)		5.30 (1.115)	4.18 (1.268)		3.76 (1.415)	
Average		**5.51** (1.033)			**3.97** (1.355)		9.947
Mental intangibility	2.10 (0.940)		2.77 (1.062)	3.02 (1.038)		3.39 (1.251)	
Average		**2.43** (1.052)			**3.21** (1.160)		−5.490
Good-service	3.77 (2.327)		2.66 (2.461)	5.27 (2.699)		8.11 (1.775)	
Average		**3.22** (2.448)			**6.69** (2.684)		−10.537

[1]All t-values significant at $p < .001$

Table 5 Test of products under study: Hedonic versus Utilitarian (Means (SD))

	Hedonic			Utilitarian			
	Greeting card (n = 61)		Music streaming service (n = 62)	Calculator (n = 59)		ADSL (n = 62)	*t-value*[1]
Hedonic nature	5.06 (1.178)		6.13 (0.698)	3.45 (0.970)		3.95 (1.289)	
Average		**5.60** (1.102)			**3.71** (1.167)		12.991
Utilitarian nature	4.61 (0.892)		5.75 (0.752)	6.13 (0.530)		5.64 (1.024)	
Average		**5.19** (1.001)			**5.87** (0.854)		−5.779
Hedonic-utilitarian	3.08 (1.986)		2.63 (1.849)	9.34 (0.843)		6.53 (2.109)	
Average		**2.85** (1.923)			**7.90** (2.14)		−19.370

[1]All t-values significant at $p < .001$

and lowest on mental intangibility. The scores on the goods-services continuum underline this view. Obviously, greeting cards and calculators can be labeled as goods and music streaming service and ADSL can be labeled as services.

Regarding the hedonic-utilitarian dichotomy, the scores are also sufficiently convincing. The results demonstrate that greeting cards and music streaming services are highly hedonic while calculators and ADSL are minimally hedonic. With respect to a utilitarian nature, calculators and ADSL are perceived as highly utilitarian, which is in line with our expectations. The scores on utilitarian nature for the music streaming service and for the greeting card may seem somewhat unexpected. However, this may be attributed to the particular items used in the utilitarian scale devised by Voss et al. (2003). Even though music streaming services and greeting cards are assumed to be minimally utilitarian, we believe most respondents will still evaluate these products as being 'helpful,' 'functional,' or 'effective,' rather than 'unhelpful,' 'not functional,' or 'ineffective.' On the overall hedonic-utilitarian continuum, however, both products have, correctly, very low scores, confirming their highly hedonic / minimally utilitarian nature.

Validity and reliability of measures

We examined the validity of the constructs by applying EFA using the principle components model with the oblique rotation technique (direct oblimin). The data met the thresholds for sampling adequacy (overall MSA 0.84, Bartlett's test of sphericity = 6044, $p < .001$) and confirmed convergent and discriminant validity since factor loadings loaded high (table 6) on their own factor and not significantly ($<.35$; see Hair, et al., 1998) on the others.

Convergent validity was further assessed by an evaluation of factor loadings, Cronbach's alphas and minimum item-to-total correlations. Overall, the results meet or exceed acceptable rules of thumb (factor loadings: 0.70, see Ko, Kirsch, and King, 2005; alpha: 0.80, see Ping, 2004; minimum item-to-total correlations,

Table 6 Reliability and convergent validity statistics (n = 244)

Construct (no. of items)	EFA loadings	Cronbach's Alpha (α)	Minimum item-to-total correlation
Promotion content (3)	0.91, 0.91, 0.82	0.89	0.72
Comparison content (4)	0.91, 0.50, 0.76, 0.53	0.83	0.61
Company information (4)	0.83, 0.92, 0.83, 0.69	0.87	0.62
Help content (3)	0.69, 0.90, 0.82	0.87	0.68
Advice content (4)	0.78, 0.81, 0.85, 0.73	0.91	0.76
Personalization content (4)	0.71, 0.82, 0.77, 0.79	0.86	0.65
Size assortment (3)	0.89, 0.89, 0.91	0.95	0.86
Unique assortment (3)	0.80, 0.92, 0.92	0.91	0.77
Settlement content (3)	0.76, 0.86, 0.69	0.71	0.45
Security content (3)	0.85, 0.89, 0.93	0.88	0.69

Table 7 MANCOVA Results

Multivariate results Source	Wilks' Λ	Df	F	*P*
Intercept	0.224	10	78.955	<.001
Good/service (factor)	0.806	10	5.474	<.001
Hedonic/utilitarian (factor)	0.486	10	24.100	<.001
Website quality (covariate)	0.928	10	1.766	.068
Product involvement (covariate)	0.935	10	1.574	.115
Search-experience characteristic (covariate)	0.956	10	1.048	.404

Univariate results (factors)

	Good/service			Hedonic/utilitarian		
Source	Df	F	*P*	Df	F	*P*
Promotion content	1	25.831	.000	1	18.735	.000
Comparison content	1	6.739	.010	1	45.323	.000
Company information	1	3.608	.059	1	4.404	.037
Help content	1	16.403	.000	1	15.187	.000
Advice content	1	31.458	.000	1	29.869	.000
Personalization content	1	12.976	.000	1	.142	.707
Size assortment	1	.424	.515	1	104.735	.000
Unique assortment	1	.221	.638	1	65.247	.000
Settlement content	1	.008	.931	1	.030	.862
Security content	1	2.727	.100	1	.389	.526

0.40, see Jayanti and Burns, 1998), hereby providing strong support for convergent validity. Finally, we assessed the reliability of the scales. Except for Settlement Content ($\alpha = 0.71$), all alphas exceed the value of 0.80. As such, reliability of the scales is confirmed.

Hypothesis testing

To assess the differences in the role of the 10 website content forms for the goods/services and hedonic/utilitarian dichotomies, a MANCOVA was conducted using the goods-services and hedonic-utilitarian classifications as factors and *website quality*, *product involvement,* and *search-experience characteristic* as covariates. Average importance scores were computed for each product type. For the goods-services dichotomy the averages of the greeting card and calculator (goods) versus the music streaming service and ADSL (service) were taken. The importance scores for the hedonic-utilitarian dichotomy were assessed by taking the averages of the greeting card and music streaming service (hedonic) versus the calculator and ADSL (utilitarian).

Table 7 and 8 present the main effects of the MANCOVA.

Table 8 Means and standard deviation per product/per product type

	Good (n = 120)	Service (n = 124)	Hypothesis	Result
Dependent variables	M (SD)	M (SD)		
Promotion content	4.49 (1.504)	5.46 (1.138)	H1a	accepted
Comparison content	5.08 (1.253)	5.39 (1.129)	H2a	accepted
Company information	3.65 (1.137)	3.98 (1.232)	H3a	rejected
Help content	4.72 (1.459)	5.50 (1.300)	H4a	accepted
Advice content	4.08 (1.542)	5.15 (1.149)	H5a	accepted
Personalization content	3.74 (1.382)	4.64 (1.183)	H6a	accepted
Size assortment	5.45 (1.427)	5.38 (1.488)	H7a	rejected
Unique assortment	4.31 (1.512)	4.58 (1.579)	H8a	rejected
Settlement content	5.52 (1.015)	5.62 (1.039)	H9a	accepted
Security content	6.38 (0.872)	6.58 (0.610)	H10a	accepted
	Hedonic (n = 123)	Utilitarian (n = 121)	Hypothesis	Result
Dependent variables	M (SD)	M (SD)		
Promotion content	4.60 (1.515)	5.37 (1.194)	H1b	accepted
Comparison content	4.70 (1.207)	5.78 (0.912)	H2b	accepted
Company information	3.63 (1.271)	4.01 (1.323)	H3b	accepted
Help content	4.70 (1.546)	5.54 (1.166)	H4b	accepted
Advice content	4.11 (1.555)	5.14 (1.139)	H5b	accepted
Personalization content	4.25 (1.341)	4.15 (1.378)	H6b	rejected
Size assortment	6.27 (0.868)	4.54 (1.418)	H7b	accepted
Unique assortment	5.24 (1.253)	3.64 (1.400)	H8b	accepted
Settlement content	5.59 (1.060)	5.55 (0.968)	H9b	accepted
Security content	6.45 (0.858)	6.51 (0.638)	H10b	acceptedb

Good: average importance scores of greeting card and calculator; Service: average importance scores of music streaming service and ADSL; Hedonic: average importance scores of greeting card and music streaming service; Utilitarian: average importance scores of calculator and ADSL

There are significant main effects for both the good/service (Wilks' $\Lambda = 0.806$, $F = 5.474$, $P<.001$) and hedonic/utilitarian (Wilks' $\Lambda = 0.486$, $F = 24.1000$, $P<.001$) dichotomies. No significant multivariate effects for the covariates are found, implying an absence of extraneous variance of these elements that could impede the statistical tests in this study. Since inspection of the regression results indicates that the covariates did significantly load one or more dependents, however, we kept the covariates in the analysis (see Hair et al., 1998).

The univariate results reveal that five content forms differ significantly for goods versus services: promotion ($F = 25.831$, $P < .001$, good: $M = 4.49$, service: $M = 5.46$), comparison ($F = 6.739$, $P < .05$, good: $M = 5.08$, service: $M = 5.39$), help ($F = 16.403$, $P < .001$, good: $M = 4.72$, service: $M = 5.50$), advice ($F = 31.458$, $P < .001$, good: $M = 4.08$, service: $M = 5.15$), and personalization ($F = 12.976$, $P < .001$, good: $M = 3.74$, service: $M = 4.64$). These results imply that H1a, H2a, H4a,

H5a, and H6a are accepted. The importance of company information, assortment size, assortment uniqueness, settlement content, and security content do not differ significantly across goods and services, resulting in the rejection of H3a, H7a, H8a, and acceptance of H9a and H10a.

Seven content forms differed significantly for hedonic versus utilitarian products: promotion ($F = 18.735$, $P < .001$, hedonic: $M = 4.60$, utilitarian: $M = 5.37$), comparison ($F = 45.323$, $P < .001$, hedonic: $M = 4.70$, utilitarian: $M = 5.78$), company information ($F = 4.404$, $P < .05$, hedonic: $M = 3.63$, utilitarian: $M = 4.01$), help ($F = 15.187$, $P < .001$, hedonic: $M = 4.70$, utilitarian: $M = 5.54$), advice ($F = 29.869$, $P < .001$, hedonic: $M = 4.11$, utilitarian: $M = 5.14$), size assortment ($F = 104.735$, $P < .001$, hedonic: $M = 6.27$, utilitarian: $M = 4.54$), and unique assortment ($F = 65.247$, $P < .001$, hedonic: $M = 5.24$, utilitarian: $M = 3.64$). Consequently, H1b, H2b, H3b, H4b, H5b, H7b, and H8b are accepted. For the hedonic-utilitarian dichotomy, no statistical differences were noted for personalization, settlement or security content. Therefore, H6b is rejected and H9b and H10b are accepted.

Discussion and Recommendations

This study shows that consumers rely on different website content elements when shopping for different types of products. While it has been argued that differences in consumer decision-making for different products lead to different views of the online shopping environment (e.g., Liang and Huang, 1998; Van der Heijden and Verhagen, 2004), only a few empirical studies have actually tested posited differences, and only for a limited number of product types. Given the importance of website content elements as determinants of online purchasing behavior (e.g., Lohse and Spiller, 1999; Ranganathan and Ganapaty, 2002), this would seem to be a vital system design issue.

This study has several theoretical and practical implications. First, it confirms the relevance of product classifications for the design of web-based shopping systems. Product classifications seem to contribute to a better understanding of underlying Internet user needs and behavior. As such, these typologies provide guidance for web-based shopping system design and online marketing efforts. By aligning the characteristics of the shopping system with the product(s) to be offered, companies are able to incorporate product tactics into their online strategies, and achieve a better fit between product type and the online medium (Peterson et al., 1997). Drawing upon the results of this study, we advocate product-centered system design as a supplement to the vast body of user-centered approaches.

A second theoretical implication of our work is that this study validates the effectiveness of the goods/services and hedonic/utilitarian dichotomies in establishing product-centered shopping system requirements. When proposing and implementing web-based differentiations, both dichotomies appear to be valuable. Regarding the predictive validity of both dichotomies, the hedonic/utilitarian taxonomy can be

labeled as the most powerful predictor of consumer preference for website content elements. Thus, differences in product function seem to have a more profound effect on preferences for website content elements than differences in product form.

Third, from a managerial perspective, the results suggest that customers seeking to purchase services would value the provision of evaluation-facilitating elements such as comparison modules, help options, and personalization, as well as risk-reducing content like promotions. No differentiating elements have been identified for the sale of goods. Jointly, these findings highlight the need for augmented online decision support for the sale of relatively intangible products, and indicate that consumers buying highly tangible products may be satisfied with fewer features. Merchants selling hedonic products could be more effective when they focus on maintaining a large and unique assortment. Websites selling utilitarian products, on the other hand, may profit from investing in website content that performs a rather instrumental function, such as promotion content, comparison content, company information, help content, and advice content. Together, the results underline the practical value of product-based differentiation in shopping system development. A tailored approach might be of particular interest when designing/developing systems selling diverse products. By adapting sections/pages to the different types of products for sale, shopping systems will be more effective at meeting underlying behavioral needs and providing the decision support customers demand.

Most of the differences found in our experiment are as hypothesized. Four of the 20 assumed differences were not significant. The insignificant roles of the size and uniqueness of assortment and of company information content in buying goods/services, and the insignificant difference of personalization content in choosing hedonic/utilitarian products may be attributed to characteristics of the Internet as a kind of shopping channel. The strengths of the online shopping format—bringing large assortments together, and providing hard-to-find products by making use of bundling and real-time customization—apply to both goods and services (Alba et al., 1997; Rust and Chung, 2006). Possibly, consumers associate these strengths with the online channel, without making any distinctions between goods and services. Similarly, the Internet enables real-time interaction, and facilitates instant searching and processing of customer information. These benefits enable personalization of all kinds of products and processes (Rust and Chung, 2006). Consumers may perceive these characteristics as typical advantages of the online channel, without forming product-related associations favoring either hedonic (as hypothesized) or utilitarian products (cf., To et al., 2007). The above suggests that the relevance of website content elements depends not only on product type, but also on channel characteristics. This corroborates the work of Peterson et al. (1997), who state that both product and channel characteristics need to be taken into account to optimize online shopping system performance. The theoretical logic for this notion comes from the decision-making literature (e.g., Engel et al., 1995), indicating that purchase

decision-making consists of a mixture of decisions, including decisions about where to buy and what to buy. While the 'where to buy' decision includes the choice between online and alternative shopping formats (Peterson et al., 1997; Steinfield, Bouwman, and Adelaar, 2002), the 'what to buy' decision addresses the product to be bought (Engel et al., 1995). From this perspective, it is conceivable that some content elements are mainly used as an input for channel choice, while the use of other content forms depends more heavily on product characteristics. Given the focus of this study on the decision of what to buy, more rational and empirical testing is needed. Of particular interest would be a study into the relative influences of product and channel characteristics on consumer needs for website content elements. In addition to product versus channel attribute comparisons, such a study might include the differences between distinct product typologies (e.g., goods/services versus hedonic/utilitarian products) and between channels (for an overview see Alba et al., 1997). Such efforts are likely to shed new light on the roles of product and channel characteristics, and may result in additional guidelines for designing effective web-based shopping systems.

Of course, our research is subject to several limitations. We encourage researchers to complement this study and further contribute to a relatively neglected area of consumer decision-making on the following issues. First, for practical reasons, the selection of products and websites under examination has been limited to four stimuli. Even though we did not pretend to be complete in our selection, and control variables justified the selected products as being exemplary products, additional robustness testing is likely to be valuable. We encourage researchers to cross-validate our findings with a large variety of products and websites. Second, since we adopted product classification as the unit of analysis we did not consider potential differences at a product attribute level. To deepen our understanding of the role of products in website content evaluations, we believe a focus on the influence of distinct product attributes on website content evaluations would be valuable. For example, a study into the influences of the three tangibility attributes (physical tangibility, generality, and mental tangibility) on the need for website content elements would be of interest. Such research is likely to provide a more complete picture of the behavioral interrelationships between product and shopping system characteristics. Third, our demarcation of website content as concrete features, functions, information, and products adds to existing views in the literature (e.g., Aladwani and Palvia, 2002; Huizingh, 2000), but does not include the placement and usability of these elements. We recognize that this view is rather limited, especially since "content design also involves deciding on the placement of those elements to facilitate their use" (Rosen and Purinton, 2004, p. 788). Further research might extend our study by testing the roles of usability elements in the purchasing of different types of products. Fourth, falling outside the scope of this research, interaction effects between the product classifications were not considered. Further research may address these effects, as it is likely to result in a more comprehensive picture of the role of product type typologies in shopping system evaluations.

Notes

1 Perceived risk refers to the subjective feelings of uncertainty and vulnerability concerning the possible negative consequences of a purchase decision (Murray, 1991).
2 Students were considered appropriate subjects since they frequently visit online stores and purchase products online (cf., Day and Stafford, 1997).
3 A piece of paper or thin cardboard having any of a variety of shapes and formats and bearing a greeting or message of sentiment (Merriam-Webster).
4 Before selecting the websites, we verified that each of the four websites did indeed contain the website content elements under study.

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About the Authors

Tibert Verhagen is Associate Professor of e-Business at the Faculty of Economics and Business Administration of the VU University Amsterdam. He holds a Ph.D. in consumer online purchasing. His research interests include online consumer behavior, online retailing, online consumer communities, research methodology, and measurement validation. His research has been published in journals such as *Information & Management* and the *European Journal of Information Systems*.

Address: VU University Amsterdam, Faculty of Economics and Business Administration, Knowledge, Information and Networks Research Group, De Boelelaan 1105, 1081 HV AMSTERDAM, The Netherlands. E-mail: tverhagen@feweb.vu.nl

Jaap Boter is Assistant Professor at the Marketing Department of the VU University Amsterdam and Professor in Book Trade at the Faculty of Humanities of the University of Amsterdam (UvA). Holding an MA in Musicology (Utrecht) and a PhD in Economics (Amsterdam), his research focuses on the (business) economic aspects of cultural goods; with the role of internet and digitization being particularly relevant to e.g., the future of the book trade.

Address: VU University Amsterdam, Faculty of Economics and Business Administration, Marketing Department, De Boelelaan 1105, 1081 HV AMSTERDAM, The Netherlands. E-mail: jboter@feweb.vu.nl

Thomas Adelaar is Assistant Professor at the University of Amsterdam Business School and has a Ph.D. in Media & Information Studies from Michigan State University. His research interests include the social, environmental, business and geographical implications of ICT-enabled innovations. He has studied the effects of Internet-enabled trade mechanisms (auctions, supply integration tools) and their impact on a multitude of industries. He also studies the effects of media on strategy and decision-making in various business strata, with a focus on corporate environmental management.

Address: University of Amsterdam Business School, Section Information Management, Roetersstraat 11, 1018 WB AMSTERDAM, The Netherlands. E-mail: t.adelaar@uva.nl

Appendix A Pretest: Exploratory factor analysis and reliability analysis results (n = 256)

	Variance Explained (%) and factor loadings				Reliability (α)			
	CD	calculator	theatre ticket	home insur.	CD	calculator	theatre ticket	home insur.
Promotion content	**4.65**	**5.01**	**4.71**	**5.08**	**0.73**	**0.85**	**0.73**	**0.84**
Temporary offers	*.905*	*.919*	*.893*	*.876*				
Special offers/sales	*.884*	*.918*	*.906*	*.895*				
Discounts	*.516*	*.709*	*.545*	*.720*				
Comparison content	**6.87**	**6.56**	**6.67**	**11.38**	**0.87**	**0.83**	**0.88**	**0.89**
Product comparisons	*.823*	*.677*	*.841*	*.858*				
Price comparisons	*.833*	*.849*	*.803*	*.829*				
Comparisons of attributes other than price	*.759*	*.768*	*.786*	*.775*				
Product comparisons from different suppliers	*.703*	*.720*	*.741*	*.833*				
Company information	**7.72**	**7.23**	**6.56**	**20.96**	**0.85**	**0.87**	**0.82**	**0.89**
General company information	*.838*	*.829*	*.834*	*.843*				
Detailed company information	*.893*	*.879*	*.853*	*.894*				
Information about the company's history	*.816*	*.839*	*.819*	*.868*				
Company news	*.664*	*.706*	*.630*	*.752*				
Help content	**5.14**	**4.11**	**3.77**	**3.77**	**0.75**	**0.80**	**0.65**	**0.78**
Contact information	*.689*	*.738*	*.491*	*.696*				
Online help	*.812*	*.789*	*.786*	*.765*				
A helpdesk	*.826*	*.836*	*.835*	*.834*				
Advice content	**18.47**	**10.04**	**8.51**	**9.06**	**0.91**	**0.89**	**0.86**	**0.88**
Expert ratings of product quality	*.839*	*.792*	*.764*	*.797*				
Consumer ratings of product quality	*.884*	*.811*	*.831*	*.798*				
Customer reviews	*.846*	*.797*	*.837*	*.831*				
Experiences of experts	*.831*	*.833*	*.747*	*.797*				

Appendix A Continued

	Variance Explained (%) and factor loadings				Reliability (α)			
	CD	calculator	theatre ticket	home insur.	CD	calculator	theatre ticket	home insur.
Personalization content	**10.95**	**22.49**	**19.26**	**7.26**	**0.87**	**0.89**	**0.86**	**0.85**
A personal approach	*.846*	*.838*	*.791*	*.762*				
A personalized website	*.888*	*.869*	*.821*	*.795*				
A customized product	*.802*	*.817*	*.826*	*.794*				
Personalized information	*.807*	*.778*	*.839*	*.822*				
Size assortment	**6.33**	**5.85**	**6.45**	**5.49**	**0.92**	**0.92**	**0.90**	**0.94**
A large assortment	*.856*	*.875*	*.892*	*.897*				
Many products to choose from	*.910*	*.862*	*.870*	*.915*				
Product variety	*.900*	*.887*	*.903*	*.936*				
Unique assortment	**5.35**	**6.18**	**5.73**	**6.23**	**0.88**	**0.91**	**0.85**	**0.94**
Unique products	*.738*	*.806*	*.749*	*.864*				
Hard to find products	*.908*	*.914*	*.901*	*.925*				
Products hard to find at other websites	*.904*	*.879*	*.882*	*.916*				
Settlement content	**3.95**	**3.55**	**3.86**	**3.81**	**0.65**	**0.68**	**0.66**	**0.81**
Delivery promptness	*.638*	*.738*	*.641*	*.764*				
Wide choice of delivery options	*.823*	*.841*	*.793*	*.842*				
Insight status of items ordered	*.771*	*.692*	*.746*	*.860*				
Security content	**4.16**	**4.51**	**5.20**	**4.58**	**0.61**	**0.74**	**0.60**	**0.80**
Privacy protection	*.603*	*.747*	*.676*	*.732*				
Secure transactions	*.878*	*.876*	*.845*	*.883*				
Sufficient security measures	*.815*	*.875*	*.825*	*.860*				
Total variance explained	**73.59**	**75.53**	**70.72**	**77.62**				

Appendix B

Measurement instruments used for product nature test and MANCOVA
Three-dimensional scale of intangibility (7-point Likert scale; ranging from strongly disagree to strongly agree; Laroche et al., 2001)
Intangibility (alpha for sample = 0.97)

1. This product is very easy to see and touch.
2. I can physically grasp this product.
3. This product is very tangible.

Generality (alpha for sample = 0.89)

1. I could easily explain many features associated with this product.
2. It is not difficult to give a precise description of this product.
3. It is easy to describe many features related to this product.

Mental intangibility (alpha for sample = 0.72)

1. I need more information about this product in order to form a clear idea of what it is.
2. This is a difficult product to think about.
3. This is not the sort of product that is easy to picture.

Hedonic nature (7-point semantic differentials; Voss et al., 2003; alpha for sample = 0.94)

1. not fun—fun
2. dull—exciting
3. not delightful—delightful
4. not thrilling—thrilling
5. unenjoyable—enjoyable

Utilitarian nature (7-point semantic differentials; Voss et al., 2003; alpha for sample = 0.89)

1. ineffective—effective
2. unhelpful—helpful
3. not functional—functional
4. unnecessary—necessary
5. impractical—practical

Good-service continuum (10-point semantic differentials; Iacobucci, 1992)
Overall, how would you classify this product

1. a good—a service

Hedonic-utilitarian continuum (10-point semantic differentials; Iacobucci, 1992)
Overall, how would you classify this product

1. hedonic—utilitarian

Website quality/Attitude towards the site (7-point Likert scale; ranging from strongly disagree to strongly agree; Chen and Wells, 1999; alpha for sample = 0.84)

1. This website makes it easy for me to build a relationship with this company.
2. I would like to visit this website again in the future.
3. I'm satisfied with the service provided by this website.
4. I feel comfortable visiting this website.
5. I feel that visiting this website is a good way for me to spend my time.
6. Compared with other websites, I would rate this one as one of the best.

Product Involvement (7-point Likert scale; ranging from strongly disagree to strongly agree; based upon Mittal, 1995, Mittal and Lee, 1988; alpha for sample = 0.92)

1. <Product> are very important to me.
2. <Product> do matter.
3. <Product> are an important part of my life.
4. I have a strong interest in <Product>.

Search-experience characteristic (7-point semantic differentials; based upon Jourdan, 2001; Klein, 1998; Nelson, 1970; Nelson, 1974; Poon and Joseph, 2001; alpha for sample = 0.79)

1. hard to evaluate before purchasing—easy to evaluate before purchasing.
2. hard to describe—easy to describe.
3. hard to inspect before purchasing—easy to inspect before purchasing.
4. difficult to know without experiencing it—easy to know without experiencing it.