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B2B Web Sites: Advertising or Relationship Development?

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Abstract

On most business-to-business markets, Web sites have become a major instrument for companies to communicate and exchange with their customers. The way Web sites are designed and used differs along several dimensions. The Internet is a global technology which companies from various countries use to acquire new customers and to build relationships with them. However, economical, cultural and other factors may lead to differences in the actual use of Web sites in business-to-business marketing. Results from an empirical study analyzing Web sites from about 600 companies in more than 20 countries around the world show that such differences exist between companies from developed and developing countries.

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B2B Web Sites: Advertising or Relationship Development?

Introduction

Corporate Web sites have become important media enabling companies to relate with their target customers (Loiacono, Watson, and Goodhue 2007). Day and Montgomery (1999, p.5) observe that in a globalizing and increasingly interconnected world "rapid developments in information technology and networks facilitate interactive communications and help tighten relationships". Samiee (1998) argues that the Internet plays a particularly strong role in international business-to-business marketing as compared to national setting and consumer marketing. In an article discussing trends in Internet-based business-to-business marketing, Sharma (2001, p.84), even posits that "by utilizing the Internet, firms will better serve the needs of their customers." He predicts that "if business firms do not utilize the Internet, there is a high probability that value will migrate from the firm". Although only few studies have examined the link in depth, the available evidence suggests that a positive relationship between Web site usage and performance may exist (e.g. Karayanni and Baltas 2003, Eid and Elgeltagi 2005). Beyond performance, the Internet can also be assumed to influence variables such as "market size and structure, business buying and selling behavior, negotiation strategies and associated pricing practices" (Lichtenthal and Eliaz 2003).

Current research shows that business-to-business marketing more often relies upon relational rather than transactional marketing practices (Coviello et al. 2002). These empirical results are in line with the predictions scholars made when the relationship marketing concept emerged over the 1990s (e.g. Sheth and Sharma 1997). Relationships have been described as evolving in a sequence of awareness, exploration, expansion and commitment (Dwyer, Schurr, and Oh 1987). In each one of these phases, communication between actors plays a paramount role. Communication takes place in a variety of ways and it can be supported by different media (Boyle 2001).

The extant literature offers little indications about which B2B Web site constellations exist and which factors may influence the type of constellation a company decides to implement.

This paper attempts to fill this gap. Based on an empirical study of about 600 Web sites of industrial companies in over 20 countries around the world we analyze determinants of supplier Web site design. More particularly we focus on the impact supplier company country-of-origin has on the way company Web sites are designed. The remainder of this article is structured as follows: Based upon a review of the literature on business-to-business marketing and Web site design and use we formulate several researchable propositions. Next, we present the design of our empirical study and the results. The paper closes with a discussion of managerial and theoretical implications, limitations, and directions for future research.

Communication type and cost effects of B2B Web site usage

An increasing number of businesses are investing in the development and the management of online resources directed at buyers. At the same time, buyers' use of online services and information resources is increasing rapidly (Eighmey and McCord, 1998). The Internet may play a specific role in each of the relationship phases described by Dwyer, Schurr and Oh (1987). For example, in the awareness phase, the traditional way of reaching new customers was primarily through direct marketing activities or events. The Internet allows suppliers to get in touch with their customers more easily, quickly, and with less costs (Subramaniam and Shaw, 2002). However, the use of Web sites is not a simple dichotomous decision. A broad variety of technological and content-related aspects can be designed and combined to form an almost unlimited number of possible constellations. Yet, as Evans and King (1999, p.344) argue, "many experts feel business-to-business Web marketing is not used effectively enough". Numerous firms work with homepages which are not up-to-date, providing only poor information, and manifesting major technical shortcomings (e.g. Honeycutt, Flaherty, and Benassi, 1998). Against this backdrop, it appears necessary to understand the type of communication for which the Internet may be used by B2B companies as well as the cost effects of Internet communication.

One-way vs. two-way communication

Quelch and Klein (1996) have made a classic distinction between one-way (information-oriented) and two-way (transaction-oriented) communication on the Internet. In B2B settings, suppliers are targets of reputation information (Dellarocas, 2003). Business customers are

typically motivated to obtain a sense of their suppliers' quality level, reliability, and commitment to meet delivery dates. However, industrial suppliers can be legitimately afraid that disclosing too much information on their operations may backfire to their detriment. For instance, announcing large inventories or short delivery delays may be a signal that the supplier's order book is modest. Whereas industrial customers are likely to promote the use of reputation systems (i.e. online rating of supplier performance), most supplying companies are not motivated to create reputation systems for their own products and services. For suppliers, any communication system that is bilateral runs the risk of resulting in uncontrolled messages, sent by their clients rather than by themselves. In general, B2B suppliers prefer to send messages that may affect their reputation after carefully crafting the content and presentation of such messages themselves (that is, one-way communication), rather than having clients freely draft such messages. There is an element of uncertainty in what brand image is likely to emerge from two-way communication. Providing a bilateral medium where users who need not be affiliated with the company nor feel a personal responsibility to promote the company's products and services can be difficult to control, with the risk that the resulting brand image is negative Blattberg and Deighton 1991). An important factor in the supplier's self-confidence is the nature of its product expertise, quality and reliability. Companies that are self-confident in their product and services are more able to enjoy the potential advantages associated with two-way communication, advertising being mostly done by satisfied customers who increase their brand image through positive word-of-mouth or written evaluative statements (see Resnick et al., 2000). Conversely, industrial companies that have little bases for self-confidence (few references, little or no certification, new-to-export, etc.) tend to prudently avoid the potential negative consequences of third party-based reputation information on their corporate image. For this reason, such B2B companies often prefer to invest in one-way communication, especially advertising and brand image development. With a one-way communication Web site, business suppliers are able to unilaterally create their own discourse, boast their products and services with some margin for exaggeration and deviation from actual quality and reliability.

The cost perspective

Often the Web is understood as an automated device that saves the costs of communication and face-to-face interaction. As emphasized by Quelch and Klein (1996, p. 63): 'The dissemination of information via the Internet can also reduce costs by replacing

communications through less efficient channels'. Two types of costs are encountered for reaching customers and for doing business and maintaining a relationship with them: marketing communication expenses and interaction/transaction costs. A B2B Web site can be understood as a cost-saving device for often small, highly specialized B2B companies, with worldwide niche markets and few traditional means to reach end-customers[2] (Quelch and Klein, 1996). It also increasingly appears as a must since no company, including small and medium size businesses, can live without a B2B Web site (Samiee, 1998). Business audiences are scattered and cannot easily be reached through traditional print and mail media. Mainstream marketing communications through advertising in industry publications may sometimes be a way of subsidizing them. On the other hand, there are also reasons to explain why B2B Web sites could be used to reduce transaction costs. Making a B2B Web site more bilateral by disclosing key information that need not be exchanged in face-to-face individualized interaction, offers the advantage of saving part of the transaction costs incurred in business markets. For example, making routine orders accessible online saves transaction costs. However, it requires delivering information on prices, stocks, delivery dates that many industrial companies consider dangerous to disclose as their negotiation position will consequently be weakened. Two-way communication starts with the unilateral disclosure of key cues for marketing negotiations that will later be used by potential customers to assess suppliers' credibility and reliability. The example of price is striking: if an industrial supplier displays a price list on its Web site, it loses the possibility to sell items at a price higher than that listed. Furthermore, some clients may browse and complain that they have been invoiced at a price higher than listed (Quelch and Klein, 1996), even though this can be explained by smaller order size or other circumstances that may justify a higher price.

An Internet communication model for B2B companies

Reviewing ten years of advertising research published in leading marketing and advertising journals, Yale and Gilly (1988) show that industrial advertising and communication are among the least researched areas in advertising research. One of the only models describing some aspects of communication on B2B markets was presented by Gilliland and Johnston (1997). They developed a model of business-to-business marketing communications effects.

[2] This article deals with B2B corporate Web sites. Therefore it excludes the particular cases of B2B Market-places (dedicated to a limited set of customers and suppliers) as well as B2B applications (cf. Al-Naeem et al. 2004).

However, the model provides no concrete guidance for research into the communicative effects of business-to-business Internet sites since it focuses on advertising as the central means of communication. Core variables are the advertising as a stimulus and attitude towards the advertising.

Against this background, table 1 below offers a representation of the continuum between the one-way and two-way perspectives, jointly with the communication/transaction, and the 'learn-like-do' model of marketing communications. We believe it provides an appropriate framework for understanding the role of B2B Web sites.

Table 1: An Internet communication model for B2B companies

One-way ⇐						⇒ Two-way
Web site (WS) Objective	Give minimal identity clues	Explain products	Capture attention	Present company	Propose some customization	Undertake online transactions
WS dimension	Contact	Clarity	Attractiveness	Corporate info	Personalization	Online Business
Communication objectives	Let know basics	Let know potential offers	Let like (appeal)	Let like (trust)	Let do (explore)	Let do (business)
Costs saved	Registration costs in industry directories	Direct Mktg costs (e.g. trade fairs)	Advertising and Direct Marketing costs	Salesforce costs Corp. communication costs	Pre-negotiation costs (e.g. sales force visits)	Transaction costs (*ex ante* and *ex post*)
Stage in buyer seller relationship	Establish first contact with potential buyers	Present product features	Changing a lead into a prospect	Management of perceived risks & uncertainties	Customize proposal: prospect => client	Change a one-time buyer into a loyal, regular customer
Information/Communication ⇐						⇒ Transaction

Web site usage

Earlier studies have examined several topics in relation to B2B Web site usage. For example, Day and Bens (2005) investigate how business firms view the opportunities and threats of the Internet. In an empirical study, they find that managers view the Internet positively, as they believe it will reduce customer service-costs and allow firms to tighten relationships with customers. Ritter (2006) discusses the necessity for industrial companies to translate their competencies through customer-directed communication. In an earlier contribution, Liu and Shrum (2002) review extant definitions of interactivity and develop testable propositions

about the effects of interactivity. However, they do not test these propositions empirically. More generally, Cho and Khang (2006) present the results of a meta-analysis of Internet-related research in communications, marketing, and advertising. They do not report the relative number of articles published on Internet-related research questions in business-to-business as compared to business-to-consumer marketing (and they did not include leading business-to-business marketing journals in their sample). However, their results show that the interest in issues of Web site design and content has clearly increased over the past years and that they represent a topic of substantial importance. In summary, there is a lack of empirical evidence on the general topic of B2B Web site usage. We intend to fill this gap with the present research.

On the one hand, B2B companies have important possibilities for initiating, maintaining and enhancing customer relationships. But on the other hand the definition of the "right" combination of the numerous elements into a coherent solution represents a challenging and complex task. Against the background of the communication model presented above we formulate our first research question as follows.

> ***Research Question 1:*** *Are B2B Web sites designed merely as unilateral communications tools (for saving market communication costs by substituting Web sites for advertising and direct marketing expenses) or also as two-way communication tools (in order to save transaction costs by substituting face-to-face for digital communication)?*

Design of B2B Web sites according to country-of-origin and culture

Country-of-Origin

The Internet is a global medium by definition (Kobrin 2001). It represents a network of interlinked computers operating on a standard protocol. There is no geographic limitation to Internet access and suppliers in any country can create Web sites containing information and dialogue content. In 1996, Quelch and Klein (1996, p.60) observed that "currently, the Internet is mainly a U.S. phenomenon". Less than one year later, the situation had already evolved. "Connectivity has increased rapidly in both developed and developing countries, with one of the fastest growing regions being Asia." (Hamill 1997, p.303). As a consequence,

today the Internet allows supplier companies from all types of countries to relate with customer companies from other, particularly distant country markets. The Internet has also been shown to enable companies to accelerate their internationalization process as compared to companies internationalizing their commercial activities, mainly through classical marketing and sales. In certain cases, new businesses are "born globals" (Loane 2006).

More generally, leading international development agencies and organizations have identified commercial applications of information technology as offering tremendous potential for accelerating economic growth in developing countries (Wood 2004). The background of this appreciation is that important variations in the degree of economic development between countries still exist. While some countries, referred to as developed countries, achieved high levels of wealth, others, referred to as developing countries, are currently in the process of increasing their level of economic wealth and thus bridging the former gap with the developed countries (Dou et al., 2002). Developed and developing countries differ on a variety of dimensions. Research and development capabilities and, as a consequence, access to timely technology is one of the major differences between the two groups of countries. Companies from emerging industrial nations are, on average younger, and therefore, less experienced. They have not been in business for as long and their technological level is, on average, slightly lower than that of companies from older industrial nations. They are legitimately less self-confident, and therefore, more concerned to control information and less prone to enter into more interactive online exchanges. Researchers in the field of marketing have conducted various studies, examining the size of the gap. Recently, for example, Pels, Brodie and Johnston (2004) benchmarked business-to-business marketing practices of firms from developed and developing countries. Their results show that firms in developing countries tend to have lower use of information technology in marketing and stronger emphasis on direct personal interaction with customers. B2B Companies from older industrial nations better understand the necessity to manage customer uncertainties in business markets (need uncertainty, transaction uncertainty, and market uncertainty) through a number of influence tactics that may start from an appropriately designed B2B Web site (Dou et al., 2002). They have been more exposed than companies from emerging industrial nations to the body of knowledge concerning B2B interactions and the ways and means to manage relationships in industrial markets (i.e. the academic literature about business markets, see Ford, 1997). Gaur and Waheed's (2003) research shows that the primary reasons that companies in a developing country use the Internet is to sell their core product to existing customers. Establishing an

interactive channel of communication and providing information about their company are also important. More "sophisticated" functions or features of the Internet are seen as less important.

Based on these insights, one may argue that B2B Companies from older industrial nations are more likely to be aware of the advantages offered by two-way communication. Our general research proposition is that companies from developing countries make less use of the opportunities for interactive marketing offered by the web. More precisely, we formulate the following research question:

> ***Research Question 2:*** *When compared to companies from emerging industrial nations, do industrial companies from older industrial nations score significantly higher on both one-way and two-way communication?*

Cultural differences and B2B Web site design

10 years have passed since Quelch and Klein (1996) and Samiee (1998) noted a large gap between advanced and developing countries in terms of access to broadband, computers, and Internet software. Internet and Web site technology has been available for almost 20 years, so the level of economic development should not make such a difference, especially since information technology is not resource intensive. Our contention is that differences in B2B Web sites between companies from 'emerging' versus 'developed' countries should be further related to cultural differences in terms of communication and social interaction rather than to different levels of economic development. The group of 'emerging' countries is characterized by high-context communication (Hall, 1976), collectivism and large power distance (Hofstede, 2001) while the group of 'developed' countries is characterized by low-context communication, individualism and small power distance. Recent empirical research finds evidence of differences in Web site structure and content due to cultural differences (Singh, Zhao, and Hu, 2005; Steenkamp and Geyskens, 2006; Burgmann, Kitchen, and Williams, 2006; Baack and Singh, 2006; Sinkovics, Yamin, and Hossinger, 2007; Suh, Taylor, and Lee, 2007).

Indeed, the first relevant cultural difference is related to communication styles as described by Hall (1976). Hall explains that, in high-context messages, little is in the coded, explicit part of

the message while most of the information is either in the physical and social context or internalized in the person. Conversely, in low-context communication most information is vested in the explicit code which could be transformed into digits (e.g. Yes/No is 1/0). As emphasized by Samiee (1998, p. 423) : '… high-context cultures revolve around personal contacts and, as the Internet is a relatively impersonal medium, attempts to automate processes and transactions are not likely to be well received.' Comparative studies have a long standing tradition in industrial communication research. For example, Rosenbloom and Larsen (2003) examine the relationship between culture and channel communication in business-to-business marketing channels by comparing fax, phone, email, and written communication between partners from high context and low context countries. They find that email communication is more common within low culture distance countries / channel partners than between channel partners with high cultural distance and that phone communication, on the other hand, is much more frequently used by partners with high cultural distance than by partners with low cultural distance. In a recent comparative study of Web sites from countries with high-context versus low-context communication, Cho and Cheon (2005) show that low-context cultures use more interactive functions than high-context cultures.

Albers-Miller and Gelb (1996) find that there is a significant relationship between Hofstede's (2001) cultural dimensions and the use of particular communication strategies across eleven countries. Influence of individualism and power distance is confirmed in the case of Web sites (in general, not in the particular case of B2B Web sites) by Baack and Singh (2006), Burgmann et al. (2006), Steenkamp and Geyskens (2006), and Suh et al. (2007). Developed countries are overwhelmingly high on individualism and low on power distance. Conversely, emerging countries are low on individualism (i.e. collectivistic) and high on power distance (see Hofstede, 2001). Individualists have independent selves, primarily organized and made meaningful by reference to their own internal repertoire of thoughts, feelings, and action, rather than by reference to the thoughts, feelings, and actions of others (Aaker and Maheswaran, 1997; Markus and Kitayama, 1991). Individualists are more short-term oriented, conduct business independently of personal relationships, and use a cost-benefit analysis (economic model) to evaluate the business exchange (Hofstede, 2001). Conversely, in collectivist cultures, the self is defined as a part of a group. One's group membership is an important statement of identity and achievement. People with interdependent selves (i.e. with collectivistic values) are usually more attentive and sensitive to others (Markus and Kitayama,

1991) than those who have independent selves related to individualistic values. Individualists feel more at ease with digital communication and they are more prone to communicate without personal, face-to-face acquaintance while collectivists cannot easily deal with the rather depersonalized communication style found on the Internet, especially in a B2B context. Precisely because of their need for personalized communication, collectivists have a greater need for face-to-face rather than digital interactions.

Power distance is defined as "the extent to which less powerful members of organizations and institutions accept and expect that power is distributed unequally" (Hofstede, 2001: ix). In large power distance cultures, it is considered legitimate that less powerful members will be dependent on more powerful members. As a consequence, privileges and status symbols for those in higher positions are both expected and popular. Communication is vertical in large power distance cultures, with the more powerful members expecting to be recognized and respected. Conversely, in small power distance cultures, inequalities are minimized, independence of the less powerful is valued and encouraged, and status and class symbols are frowned upon (Hodgetts and Luthans, 1993). As a consequence, communication is understood as horizontal, between peers, and it is relatively unaffected by status differentials. The concept of power distance has its roots in the family structure and is pervasive in the institutions that socialize members of the culture (school, church, and social organizations). In large power distance cultures, organizations are centralized, and they include large differences between those at the top and those at the bottom. In small power distance cultures, organizations are decentralized, there is more consultation in decision-making, and individual differences are minimized. In line with this, Cho and Cheon (2005, p. 103) explain that, in small power distance cultures, 'Web sites may tend to lessen the distance between consumers and marketers in an attempt to maintain and create more *horizontal* relationships through two-way interaction.' (Our emphasis). As a consequence, we formulate the following research question:

> ***Research Question 3:*** *If industrial companies from older industrial nations score significantly higher on both one-way and two-way communication, can it be explained by cultural factors, especially individualism vs. collectivism, power distance, and communication style (i.e. high- versus low-context communication)?*

Alternative explanations for differences in B2B Web site design: firm demographics and industry-related variables

Other factors than country and cultural variables are alternative explanations of diverging B2B Web site designs, mainly corporate demographics and industry-related variables. Such factors are likely to account for differences in B2B Web site design, especially demographic factors related to company size (e.g. number of employees, sales figure). Larger companies are more able than smaller ones to invest in attractive B2B Web sites. They are also more prone to disclose corporate information being larger, more established, and therefore more self-confident. However, it can be argued that they are less inclined to do online business than smaller companies who need to close deals as efficiently as possible, given their limited reach in terms of distribution outlets (Quelch and Klein, 1996).

Dou et al. (2002, p. 109) hypothesize that customized products require face-to-face negotiations and communication in order to draft detailed contracts. Conversely, when products are standardized and their specifications defined once and for all, Web sites are more likely to emphasize transaction feature. As concerns industry contingency, our assumption is, therefore, that B2B companies producing equipment will need more interaction with customers for tailoring offers and customizing products than B2B companies turning out standardized industrial commodities.

Finally, the degree of Research and Development intensity is likely to have an influence on the design of B2B Web sites. High tech industries may be expected to be more sophisticated in Web site design and more prone to promote two-way rather than unilateral communication only. In line with Hanson's (2000) classification of the degree of Web site sophistication into 'simple publishing', 'interactive', and 'personalized' (i.e. Web pages customized to unique needs), we expect high tech industries to develop more interactive and personalized Web sites.

> ***Research Question 4:*** *What is the influence of corporate demographics and industry-related variables (i.e. commodity vs. equipment, R&D intensity) on the design of B2B Web sites?*

Empirical setting

In order to investigate the research questions above, we have used a content analytic approach (Kassarjian, 1977; Weber, 1990), by developing a research instrument that describes Web site information content, graphic design, and interactive features. We first review the existing literature on corporate Web sites, especially for B2B companies, then we present the survey instrument, the coding procedures, and the corporate sample which served as a base for data collection.

Generating coding categories about aspects of Web site design

The communication model presented above needs to be contrasted with the possibilities Web sites offer. Web sites may fulfill different functions and, in the extent literature on Internet marketing, scholars have described a variety of these functions. In order for customer awareness of a potential supplier to arise, it is important for the firm to be easily identifiable on the web. Search engine databases like Google make the task of finding potential suppliers easier for customers (Wilson and Abel, 2001). Access to a company's Web site is based on a URL, often using the "companyname.com" syntax (Lord and Collins, 2002).

After having attracted the potential buyer to its Web site, the company has to present itself and its services or products. In later phases of the cycle, the firm also needs to communicate with its buyer. Language is a major issue in both contexts (Fiocca, 1982). As e-commerce language is assumed to be English (Van der Merwe and Bekker, 2003), it is essential to have, at least, an English version of the Web site. Nevertheless, when targeting certain foreign markets, adding other languages can be an important advantage (Wilson and Abel, 2001). Listing and accurately describing the products offered is a central part of the content on most Web sites. Lord and Collins (2002) found that product presentation is the most important criterion for buyers' purchasing decision and that 91.3% of suppliers include a product presentation on their Web site. Nevertheless a simple presentation may be insufficient to convince buyers. In order to reduce the customer's need uncertainty (Håkansson et al., 1976), the company can provide downloadable databases that contain information (Berthon et al., 2002), independent or scientific confirmation of the product quality (Lord and Collins, 2002), or any other information to make the visitor feel that the firm communicates valuable information (Chakraborty and al., 2003). In addition to product descriptions, the supplier can

also use its Web site to provide prices. As this is the second most important criterion for the customer (Lord and Collins, 2002) failing to provide a price could lead the buyer to defaulting to competitors. Moreover, Internet development has made customers more savvy and more capable of bargaining for their money (Wilson and Abel, 2001), which highlights the importance of price presentation.

The company can extend the Web site's functionality by offering online buying possibilities. This option facilitates and accelerates the purchasing process. As a consequence, the buyer may perceive less uncertainty concerning the order handling process. Moreover, electronic transactions lead to less paperwork and considerable economies (Deeter-Schmeltz and Kennedy, 2004). However, payment transactions need to be secured. As many are still not comfortable with purchasing on the web (Wilson and Abel, 2001), protection of customer privacy or corporate identity (Van der Merwe and Bekker, 2003), credit and payment possibilities (Baratt and Rosdahl, 2002), and storage and transmission of transactional information (Chakraborty et al., 2003) are crucial issues. Technological progresses in the field of Internet and information technologies allow the seller to provide detailed information about its stock availabilities and delivery delays for each product (Van der Merwe and Bekker, 2003; Puschmann and Alt, 2005). Moreover, the level of logistics services that a supplier promises can influence the buyer's level of perceived uncertainty and satisfaction. The Web site can be a powerful tool for a company to reinsure the customer about its delivery capabilities (Van der Merwe and Bekker, 2003). The firm's ability to effectively manage this kind of information is a good way to develop the collaboration with the customer (Fiocca, 1982). In addition, several choice helping devices, such as "Tip of the Week", an online guide or a selection helping software, can be added on the Web site in order to make the buyer's choice easier (Berthon et al, 2002).

Maintaining and enhancing a newly established relationship is another of the supplier core activities for consolidating his customer base (Parvatiyar and Sheth, 2000). In order to develop a relationship, customization can help the firm to obtain further information about their customers and adjust the offerings accordingly. As a result, the company is better able to raise customer satisfaction and hence its performance (Tse and Chan, 2004). If it is easy to register and log on to a site, there are high perceived benefits for the customer to register (Van der Merwe and Bekker, 2003). In addition, the supplier can store the customer's profile, let the buyer adjusting it if necessary, and use it to guide customer ordering. The Internet

provides major personalization opportunities by treating each visitor as an individual, recognizing visitors when they revisit a site, and serving up information based on their explicit or implicit preferences. This is generally achieved using a registration tool (user id and password) in conjunction with cookie technology. The Web site is then tailored based on the explicit preferences of the customer (Chakraborty and al., 2003).

The company's Webpage can be used as a tool to maintain customer relationships by using emails (Deeter-Schmelz and Kennedy, 2004) to communicate with the customers, creating a virtual private network to exchange information and goods (Wilson and Abel, 2001), or simply by proposing a FAQ page or after-sales services specificities (Van der Merwe and Bekker, 2003). Globally, real-time and interactive communication can help firms retain their customers and be competitor focused, as well as respond quickly to changes in the marketplace (Tse and Chan, 2004). Moreover, it has been shown that the more interactive a Web site is, the more visitors appreciate it (Ghose and Dou, 1998).

Corporate information is another potential component of a company's Web site. The site can be used to describe the organization, the positioning to the target audience, its financial status, or its contributions to community or environmental development (Lord and Collins, 2002). Standards followed by the company as well as quality labels or certifications obtained can be displayed. The firm can also demonstrate references of past projects or corporate customers it has worked for, in order to reduce the buyer's transaction uncertainty (Håkansson et al., 1976). The Web site can also be used to present the company's distribution network, job offers, or ways to contact the firm by email, phone, fax, or postal services (Lord and Collins, 2002).

Finally, in order to make the content and technical features useful for the customer, the Web site has to be well organized, logically structured, and easy to navigate (Chakraborty and al., 2003). The Web site has to work correctly, quickly, with no broken links, no under-construction pages, and no problems reaching pages. A well-designed and efficient search engine can help the customer to quickly find what he is looking for (Van der Merwe and Bekker, 2003). Furthermore, the graphical quality of the pages is paramount to make user's impression as positive as possible. The interface, use of colors and texts, entertainment, or multimedia possibilities will influence the user's appreciation of the Web site (Chakraborty and al., 2003; Van der Merwe and Bekker, 2003).

Survey Instrument

In order to analyze the quality of B2B Web sites, a coding instrument was created. It contained 44 items developed based on the above review of literature on corporate Web sites. First the coders were asked to collect the demographics of each company, including its country of origin, its annual sales, and its number of employees. Then they were asked to rate the Web site on each item, checking if the criterion was present or absent from the Web site or rating it on a 5 or 7 point semantic differential scale. For instance, the item "Newsletter registration" was simply coded by "Presence" or "Absence", but the item "References" ranged from "1 - No reference" to "7 - Complete and detailed reference list with the possibility to get in contact with buyers". In addition, a pilot test was performed before using the instrument to collect the data. Each of the future coders had to code two Web sites using the research instrument. Then the items were revised based on feedback to obtain the final version of the instrument. Table 2 presents the coding categories and the scale used for each Web site item.

[Insert here Table 2]

Coding procedure

Coders were business students in Management at a Western European University. They were asked to participate in the data collection as part of their class assignments during an elective industrial marketing course and received credit for participation. They were associated to the coding categories generation process and to the selection of sampled companies. Each Web site was coded by two independent coders who later met to compare their coding outcomes. Product/industry categories were assigned to coders. Disagreements among coders were resolved among each pair of coders after discussion and on the basis of arbitration by one of the researchers in the very rare case of persistent disagreement. Intercoder reliability was assessed by using a per-item-agreement method (Kassarjian, 1977). In most cases, the percentage of final agreement for all descriptive categories cited above was between 95% and 100 % (for 29 out of 39 categories). Intercoder reliability (IR) for coding categories is reported in Table 2. For some coding categories such as Web site graphics, where subjective appreciation was necessary, there was a slightly lower level of intercoder reliability, however,

always above .85 (6 out of 36 categories). This resulted in an average intercoder reliability of .96 across all content analysis categories. Generally, coders differed only in neighbouring points of the scale and further data analysis shows a high level of statistical reliability after disagreement resolution. Intracoder reliability was calculated for each coder on a sub-sample of twenty Web sites within a one-month interval. Average internal consistency levels were above .9.

Sample

It is not feasible to create a probabilistic sample of B2B Web sites since we have no knowledge of the base population. Our project was to generate country and industry representativeness by using large online B2B directories, diversified both in terms of national/cultural origin and industry types. The companies were selected using two online directories: www.alibaba.com for the first half of the sample and www.europages.com for the second half. First, 20 product categories containing a larger number of suppliers were selected. Then, in order to select companies as randomly as possible, one company out of every five or ten companies in the directory was chosen for each category, depending on the total number of firms in the category. Furthermore, as Alibaba.com contains a large quantity of Chinese suppliers, a limit was added during the selection, reducing them to a maximum of one-third of companies selected from this directory for each industry/product category. The sample contains 597 B2B Web sites from 22 different countries. This sample includes firms from China (14.7%), India (8.2%), the U.S. (5.7%), the UK (8.9%), France (9%), Italy (11.2%), or Germany (6.7%). They were principally SMI companies. 54.1% of firms had less than 50 employees and 4.5% had more than 1000. Moreover, 14.9% of companies had sales below $1 million, and 9.2% above $50 million. A full-detail account of the sample composition is provided in Table 3.

[Insert here Table 3]

Data analysis and findings

Data analysis is based on a three-pronged strategy: 1/ descriptive analysis of key variables, especially mean scores for generating evidence that provides preliminary answers to the research questions; 2/ exploratory and confirmatory factor analysis to derive a measurement

scale for assessing the communication features of B2B Web sites, both one-way and two-way; 3/ assessment of measurement invariance across groups for the B2B Web site scale and use of latent mean analysis (Byrne, 2001) to generate confirmatory empirical evidence for research questions.

Instrument development: A measurement scale of B2B Web site design

As is recommended when building measurement scales (Churchill, 1979; Churchill and Peter, 1984), we first performed EFA (Exploratory factor analysis), then CFA (Confirmatory factor analysis). The final sample being large enough with about 600 observations, EFA was undertaken based on only one half of the total sample while CFA was performed on the total sample. The 44 Web site design items were used as a starting base for exploratory factor analysis. The half sample was used in the first step to assess the factorial structure. We deleted items with smaller communalities as well as items that cross-loaded, and eliminated factors based on only one or two items whose meaning consistency was not obvious. A six-factor solution emerged accounting for 67.2% of total variance and highlighting key factors for B2B Web sites in relation to Table 1 (attractiveness, clarity, contact, personalization, online-business, corporate information) each factor being based on three items. Factor 1, related to Web site graphics, emphasizes Web site attractiveness with items displaying satisfactory loadings (see Table 2): 'Web site is appealing' (.90), 'Web site is entertaining' (.89), and 'Web site is exciting' (.92). Factor 2 highlights contact with potential customers with items related to phone (.84), fax (.86), and postal contact (.80). Factor 3 relates to facilitating online-business with items 'Prices' (.77), 'Online Buying' (.82), and 'Secured Transaction' (.80). Factor 4 deals with site personalization; it is based on items 'Customization' (.72), 'Login for logistics' (.83), and 'Login for transaction' (.83). Factor 5 is related to Web site clarity with items 'Customer guided step-by-step' (.78), 'Web site is readable' (.53), and 'Web site is logically organized' (.81). Factor 6 highlights the Web site's disclosure of 'Corporate Information' with three items, 'Financial status' (.81), 'Distribution information' (.61), and 'Job opportunities' (.76).

Confirmatory factor analysis based on AMOS6 shows a good level of reliability for most individual scales (see Table 4). All dimensions of the scale reach a good level of internal reliability (recommended threshold: .70) as well as convergent validity (recommended threshold: around .50 and above) except 'Corporate Information' (see table 2). All items are

significantly related to their construct, supporting the assumed relationships between constructs and their indicators. Convergent validity of individual constructs in the model is confirmed since the mean of squared factor loadings is slightly below or above .5 for all latent variables (rhô of convergent validity, see Table 2), except for the 'corporate information' dimension. Discriminant validity can be assessed on the basis that covariance between any two constructs is lower than the variance shared by the constructs with their measurement indicators (see Fornell and Larcker, 1981: 46). Discriminant validity is met, again except for the 'corporate information' dimension.

[Insert here Table 4]

Before comparing latent means for particular latent constructs (i.e. dimensions of B2B Web site design) across groups, cross-national measurement invariance must be assessed (Steenkamp and Baumgartner, 1998; Vandenberg and Lance, 2000). Variation in the validity and reliability of research instruments across groups may be a threat to comparability. Measurement invariance should be addressed at the three-level search for configural, metric, and scalar invariance in multi-group research. Assessing the invariance for the research instrument with 6 subscales is done through multigroup confirmatory factor analysis (Byrne, 2001; Byrne and Watkins, 2003), for the 'developed' industrial countries group of B2B companies and the 'emerging' industrial group (research question 1). Suppliers were coded as 'emerging' or 'developed' based on their countries of origin. Japan, Australia, Western European (e.g. France, Germany, Italy, the UK) and North American (USA and Canada) countries were coded as 'developed countries'. Other Eastern European, Asian, African, and South American countries were coded as 'emerging countries'. Configural invariance (items exhibit the same basic pattern of salient and nonsalient loadings for the two groups), metric invariance (loadings are non significantly different), and scalar invariance (item intercepts are identical in the two groups) are shown.[3] Then we proceed by latent mean analysis (see Byrne 2001, Chapter 9): since dimensions of Web site design are latent, unobservable constructs (they are observed through their measurement indicators, that is, Web site items), their means cannot be directly compared. Latent mean analysis proceeds by imposing a constraint on one group, considered as baseline, whose mean score is constrained to zero and by computing the mean difference for the other group and its statistical significance.

[3] Detailed statistical computations are available from the authors on request.

Findings

The first research question dealt with whether B2B Web sites are designed merely as unilateral communications tools (for saving marketing communications costs by substituting WS for advertising and direct marketing expenses) or also for two-way communication (in order to save transaction costs by substituting face-to-face by digital communication). The answer is clearly that there is a massive dominance of one-way communication and a striking underdevelopment of interactive, two-way communication through B2B Web sites. On a 0 to 10 adjusted scale[4], unilateral communication is massively privileged with its 3 factors displaying high scores whereas the scores for two-way communication related factors are all lower than 1 on the 10-point scale. The mean score for the 6 Web site design dimensions constantly decreases when evolving from one-way/information to two-way-transaction aspects (see the B2B Web site communication model in table 1), with 9.52 for 'Contact', 6.73 for 'Clarity', 4.44 for 'Attractiveness' for the three one-way dimensions, and only .94 for 'Corporate Information', .62 for 'Personalization', and .44 for 'Online Business', that is, the three two-way dimensions. Descriptive statistics from the 600 B2B Web site database display very low scores for login variables that are the main avenue for digital interaction (6.48% for Logistics-Login and 4.91% for Transaction-Login). Very few B2B Web sites offer interactive possibilities through logins. B2B Companies are extremely reluctant to disclose information on their stocks and availabilities (.19 on a 0 to 10 scale), on delivery dates (.60 on a 0 to 10 scale), and on prices (.55 on a 0 to 10 scale).

Research Question 2 asked whether industrial companies from older industrial nations are more communicative, scoring significantly higher than companies from emerging industrial nations on both one-way and two-way communication. Based on summative scales for both subsamples, with adjusted scores from 0 to 10, it appears that scores for the developed industrial nations group is systematically higher than the emerging industrial nations group[5].

[4] In order to generate a common metric, easier to understand and compare, item scores (S) have been changed to S' = [(S – 1)/n].10, n being the number of points in the scale (5 or 7). For binary answers, S' is the percentage of positive answers divided by 10. For the six Website design scales, we consider that they can be used in an additive manner, given their internal reliability. Redressed scores S' for each Web site dimension is the arithmetic mean of the three items' S's.

[5] With additive scales, developed countries' B2B Web sites score higher for 'Clarity' (.36; $p < .006$), 'Corporate Information' (.7; $p < .0001$), 'Personalization' (.36; $p < .01$) and 'Online Business' (.254; $p < .006$), as well as for 'attractiveness' (.25; $p < .186$) and 'contact' dimension of B2B Web sites (.091; $p < .535$), although in a non significant manner for the last two dimensions.

In order to take measurement error into account and given that there is measurement invariance across the two groups, we performed latent mean analysis by constraining the mean of the assumed lower group (emerging) to zero and calculated the mean difference for the group of developed countries as well as its level of significance. There is no significant difference for 'Contact' ($p< .365$) and 'Attractiveness' ($p< .137$), but developed countries' B2B Web sites score higher for 'Clarity' (.202; $p < .044$), 'Corporate Information' (.379; $p < .0001$), 'Personalization' (.078; $p < .023$ and 'Online Business' (.109; $p < .011$) Web site dimensions. Findings partially support the view that companies from older industrial nations score significantly higher on one-way communication and strongly support it for two-way communication.

Research Question 3 dealt with cultural differences between developed (generally high individualism/low Power Distance) and emerging countries (generally low individualism/high Power Distance) as possible drivers of Web site design[6]. Both cultural dimensions play a significant role (for the 600 total sample) for B2B WS design. Power distance is negatively correlated with site clarity (-.122; $p < .01$, two tailed significance test), online business (-.106; $p < .01$, two tailed significance test) and corporate information (-.101; $p < .05$, two tailed significance test). Individualism is positively correlated with site clarity (.103; $p < .05$, two tailed significance test), online business (.141; $p < .01$, two tailed significance test) and corporate information (.165; $p < .01$, two tailed significance test). It seems, therefore, that countries scoring high on individualism and low on power distance tend to have more interactive WS.

Company size was measured based on payroll and yearly sales figure, both being coded on a 7-point scale. Categories for the number of employees were 'less than 5 employees', '5 to 10', '11 to 50', '51 to 100', '101 to 500', '501 to 1000', and 'more than 1000 employees'. Annual sales brackets were 'Less than 1M USD', '1 to 2.5M', '2.5 to 5M', '5 to 10M', 10 to 50M', '50 to 100M', and 'More than 100M USD'. In fact, firm size appears in our data as positively correlated with site 'Attractiveness' and 'Corporate Information' and negatively with 'Online Business'. Number of employees (.184; $p < .01$, two tailed significance test) and sales figure (.135; $p < .01$, two tailed significance test) are both correlated with WS 'Attractiveness'.

[6] As concerns high vs. low context communication, there is no measurement possibility at the country or organization level. They can be measured only at the indidivudal level. As a consequence, high-context communication is associated with low individualism and large power distance while low-context communication is associated with high individualism and small power distance.

Number of employees (.288; $p < .01$, two tailed significance test) and sales figure (.320; $p < .01$, two tailed significance test) are both correlated with the presence of detailed 'Corporate Information' on a B2B Web site. Number of employees (-.093; $p < .05$, two tailed significance test) and sales figure (.105; $p < .05$, two tailed significance test) are both negatively correlated with the disposition to do 'Online Business'.

As concerns, industry contingency, the sample was divided in two subsamples representing industrial commodities on the one hand and industrial equipment on the other hand[7]. Assessment of invariance of the research instrument with 6 subscales was performed through multigroup confirmatory factor analysis for the 'equipment' group of B2B companies and the emerging industrial group. Full invariance is shown, that is, even mean values for the latent constructs do not differ between the 'equipment' and the 'commodity' groups. Findings do not support the view that 'equipment' companies score significantly higher on two-way communication than the 'commodity' group.

R&D intensity for each firm was measured using the average percentage of sales spent on R&D by their industry, based on estimates from the 2006 Scoreboard using 1,250 global companies from the British Department for Innovation, Universities, and Skills (http://www.innovation.gov.uk/rd_scoreboard). Industry R&D expenditures are positively correlated with B2B WS 'Clarity' (.127; $p < .01$, two tailed significance test), 'Corporate Information' (.093; $p < .05$, two tailed significance test), and the propensity to design the Web site to facilitate 'Online Business' (.093; $p < .05$, two tailed significance test). This gives support to the view that high-tech industries are also two-way communication oriented.

Discussion

Our first research question looked at whether B2B Web sites are rather used for unilateral or also for two-way communication. We observe a strong dominance of one-way communication. This finding is in line with the comments certain scholars have made in recent years (e.g. Klein 2001). One possible explanation could be an implicit assumption that

[7] Companies were included in the 'commodity' group when their products were bulk, industrial inputs and in the 'equipment' group when they sold investment goods. For instance, agricultural fertilizers or coating manufacturers were coded as 'commodity' whereas elevators or paper machinery manufacturers were coded as 'equipment'.

disclosing such information could enable potential or actual customers to make inferences (e.g. on quality), or compare (prices or delivery dates) and/or complain (about how they are actually being treated). A negatively fantasied two-way interaction is always an impediment for daring real two-way communication. There are, however, alternative explanations. For example, the overwhelming importance of direct personal relationships on business-to-business markets may constitute a strong barrier to the transfer of two-way interaction processes from the traditional setting on the Internet. More generally, established habits of companies and their management, which have not changed, and are not questioned for years may lead to passivity or inertia. Finally, E-marketplaces may constitute a much more important space of exchange for business companies than individual companies' Web sites. Overall, we observe that the role of the Internet remains limited to customer acquisition and relationship initiation functions; corporate web pages oftentimes only provide a brief overview of what a supplier may potentially offer to the customer.

Our second research question concerned the use of Web sites by B2B companies in developed vs. developing countries. The analyses we conducted seeking to answer this research question are comparative in nature. Our empirical findings as concerns developed vs. emerging countries are in line with the views of Quelch and Klein (1996). They are also in line with the empirical findings of Dou et al. (2002) who find strong support for their hypothesis that exporters from Internet-developed countries are more likely to employ transaction-related features and two-way communication in their Web sites than exporters from Internet-developing countries model. We observe that companies from developed countries score higher on one- and two-way interaction (higher clarity, better corporate information, more personalization, and higher availability of online business). These findings may appear banal because of the technological advance of developed countries. On the other hand, given the geographical, economic etc. barriers companies from developing countries face when approaching potential or extant customers, the Internet offers tremendous opportunities to overcome classical barriers. Hence, we find it at least partially counter-intuitive that companies from developing countries would not seize the opportunities Internet offers. Likely they have either not realized the scope of opportunities or they lack the know-how to use Web sites in B2B relationships. Future research could attempt to provide insights into the factors preventing companies from developing countries from using the Internet's full potential.

The impact of cultural factors (such as power distance and individualism, or high- vs. low-context communication style) on Web site use was at the heart of our third research question. We find that larger power distance leads to lower clarity, online business and corporate information and that larger individualism leads to higher clarity, online business and corporate information. In countries with higher scores on power distance, power is concentrated at higher levels in the hierarchy. Decisions competence is hardly decentralized and managerial initiatives come from higher hierarchical levels. Also, since information is a central aspect of power, it is oftentimes retained at higher management levels. In environments where top management controls many activities, there is little room for lower management and normal employees to take decisions on their own and actively implement innovative tools. Lower level managers may even expect to be guided by higher level management. Since higher level managers are more senior and likely have less experience with, and affinity towards, the Internet, they may not be aware of the opportunities it offers. Consequently, there is a lack of initiative for more interactive web site use. In high individualism countries (most of them with explicit messages, low-context communication style), on the other hand, initiatives may be taken by managers from lower hierarchical levels who have more Internet affinity and, hence, implement more advanced solutions.

Finally, our fourth research question investigated the impact of corporate demographics, product type and R&D intensity of industrial companies and their use of Web sites. We find that larger companies have more attractive websites and that they provide larger amounts of corporate information. However, fewer possibilities for online business are available on their websites. These results may be based on three factors. First, large companies have larger resources available for the implementation and ongoing management of their Web site. Second, they have large quantities of information to publish and more experience with this, since many of them are obliged to do so in annual business reports and comparable documents. Finally, many large firms have existing distribution channels and within these channels often have strong negotiation power. Hence, they depend less on the Internet in order to access the market than their smaller or more recently established competitors; or they may not wish to damage relationships with existing distributors by implementing direct web sales solutions which would lead to a situation of competition with channel members.

With respect to the influence of product type our findings differ from those of Dou et al. (2002) who find marginal support for companies selling standardized products employing more transaction features than companies selling customized products. Our findings also

differ from those of Boyle (2001) who finds marginal support for commodity-like products differing from customized products in terms of Web site design. Focusing only on B2B Web sites, rather than both B2B and B2C Web sites as in Dou et al., we find no support for such a difference. This may be due to the overwhelming importance of personal contact in B2B markets, be it for standardized or customized products. Jackson, Keith, and Burdick (1987) compare the use of various promotional elements (personal selling, trade shows, sales promotions, direct mail, technical literature, and trade advertising) for five different product categories on industrial markets covering both standardized and customized products. They show that sales people, working mostly on the basis of personal contact, are by far the most important promotional element in all product categories.

For R&D intensity, we observe a positive impact on Web site clarity, attractiveness and online business. We assume that, in R&D intensive companies, technological affinity and expertise are higher and that these skills also enable companies to use all dimensions of the Internet. This may be a type of Halo-effect: R&D intensive companies may be technology intensive in all domains.

Limitations and implications

The limitations of our study are at least threefold. First, it only involved companies from a limited number (i.e. 22) of countries and, hence, national cultures. We believe that our sample includes companies from many economically relevant countries in the world. These countries account for an important proportion of international trade. But, as a consequence, our findings may not be representative for all types of countries and, in particular, for smaller countries which are not well integrated into the world economy. Future research could extend this study to additional countries. Second, our sample of companies only represents selected industries. These industries cover different product types and R&D intensities. Nevertheless, they are not fully representative of all existing B2B sectors. In particular, we have not studied B2B services (such as consulting, training, banking, or market research). Again, this limitation represents an avenue for future research. Finally, we have only included three dimensions along which cultures may be described (i.e. power distance, individuality, and communication style) in our analyses. Other dimensions from the Hofstede framework or other concepts exist (Lee, Choi, Kim, and Hong 2007). In order to broaden our understanding of the topic they should be included in future studies on B2B Web site use.

We believe that despite these limitations, this study has several important theoretical and managerial implications. First, we conclude that currently a large majority of firms do not use the full potential B2B Web sites offer in the context of customer management. Many companies mainly exploit the one-way communication possibilities of the Internet but refrain from two-way applications. This result is surprising in light of the predictions made by early literature (Quelch and Klein, 1996; Samiee, 1998). On the other hand, depersonalized B2B Web sites may not be able to replace face-to-face relationship development as a customer management approach in all sectors. There may be a tacit agreement that personal relationships characterized by trust, flexibility and confidentiality are the basis for transactions, particularly in industries in which complex systems or projects representing important amounts of turnover are managed between supplier and customer.

Second, we observe that there are strong disparities between Web site design in companies from different countries. In the light of an increasing homogenization of many industrial companies' core offerings, factors allowing competitive differentiation are required in order to build and maintain long-term competitive advantage. The Internet is one potential avenue for companies to achieve differentiation by providing customers advanced opportunities for interaction. Firms from developed countries appear to have realized this potential more quickly – and maybe more fully – than competitors from developing countries. It is possible that, at least currently, cost advantages in developing countries are still sufficient in order to protect competitive positions and, hence, not invest into differentiation through Web pages. However, as increasing wages and commodity prices reduce the cost advantages of producers in many developing countries Internet-based differentiation may become a more relevant strategic concept for firms in such contexts. It is possible that a replication of this study in the future may lead to a less important gap between countries.

The impact of cultural dimensions on Web site design and use may prove to be a more substantial phenomenon. The "collective programming of the mind", although not absolutely static, changes less quickly than certain countries' levels of economic development. For interactions between high-context and low-context / individualist and collectivist, large and small power distance, two-way communication through the Internet for B2B supplies remains a challenge.

Conclusion

This study investigated four distinct research questions related to supplier company use of Web sites on business-to-business markets. Our first three research propositions received full support based on a content analysis of approximately 600 Web sites based on a diversifed sample of B2B companies in geographical, cultural, and industry terms. The fourth set of research questions concerning the relationship between firm characteristics and Web site design and use were only partially supported by empirical findings. This research adds to the extant body of comparative studies in marketing communication by focusing on Web site design and use in developed and developing countries, by showing how cultural differences affect Web site design, and by comparing different types of companies in the way they use Web sites to interact with business customers. Future studies will develop additional insights into why B2B companies tend to make strikingly little use of two-way communication features in their Web sites.

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Table 2: Coding categories and scales used for Web site items

Website aspect	Coding Category	Source	Operationalization	Scale (IR)
Accessibility	Accessibility	Lord & Collins (2002), Wilson & Abel (2001)	Ease of access to Web site with search engine	5-point ***
			Access to company site with 'companyname.com'	Yes/No ***
	Language	van der Merwe & Bekker (2003), Wilson & Abel (2001)	Number of languages other-than native available	7-point ***
			English language Web site (WS)	Yes/No ***
Product cues	Price	Lord & Collins (2002), Wilson & Abel (2001)	Degree of price information available online	5-point ***
	Online Buying	Lord & Collins (2002), van der Merwe & Bekker (2003), Wilson & Abel (2001), Deeter-Schmelz & Kennedy (2004)	Possibilities offered to order and pay online	5-point ***
	Information	Lord & Collins (2002), van der Merwe & Bekker (2003), Berthon & al. (2002), Chakraborty & al. (2003)	Amount and accuracy of product information	7-point ***
	Choice Assistance	Berthon & al. (2002),	5 dichotomous scales about providing or not customers with pieces of advice:	
			- Tips for product use	Yes/No ***
			- Tips for right product choice	Yes/No ***
			- Tips about product end-uses and applications	Yes/No ***
			- Software for assessing customer needs and guiding choice	Yes/No ***
			- Guiding visitors step-by-step in Web Site	Yes/No **
	Stock and Availability	van der Merwe & Bekker (2003), Puschmann & Alt (2005)	Level of information about stocks and product availability	5-point *
	Links	Lord & Collins (2002)	Number/organization of links to other Web sites for information or comparison purposes	5-point **
	Web Site Update	van der Merwe & Bekker (2003)	Quality and recency of Web site update	5-point *
Online Relationship	Customization	van der Merwe & Bekker (2003), Tse & Chan (2004), Chakraborty & al. (2003)	Possibilities offered to register online and have access to customized information after login	5-point ***
	Secure Transaction	van der Merwe & Bekker (2003), Barratt & Rosdahl (2002), Chakraborty & al. (2003), Wilson & Abel (2001)	Degree of customer privacy and security when performing transactions online	5-point ***
	Logistics	van der Merwe & Bekker (2003)	Logistics services offered by supplier	5-point ***
	After-sale services	van der Merwe & Bekker (2003)	Online services offered by supplier after purchase	5-point ***
Company Information	Company Information	Lord & Collins (2002), Berthon & al. (2002)	Corporate information about supplier	5-point *
	Supplier Financial Status	Lord & Collins (2002)	Information provided by supplier about its financial situation	5-point ***
	Standards and Certification	Håkansson et al. (1976)	Number of ISO standards for which supplier is certified	5-point ***
	References	Håkansson et al. (1976)	Information about relevant/exemplary deals	7-point ***
Contact	Distribution	Lord & Collins (2002)	Information about distributors and their location	5-point ***
	Contact	Lord & Collins (2002), van der Merwe & Bekker (2003)	4 dichotomous scales on possibility or not to reach supplier by (1) email, (2) phone, (3) fax, and (4) mail	Yes/No ***
	Interaction/Relation	Deeter-Schmelz & Kennedy (2004), Wilson & Abel (2001)	Possibility to have online interaction / relationship with supplier	5-point ***
Web site Interface	Graphics and Multimedia	van der Merwe & Bekker (2003), Chakraborty & al. (2003)	Four items on Web site design (Osgood scales)	
			- Web site looks appealing	7-point **
			- Web site is entertaining	7-point *
			- Web site is visually attractive	7-point *
			- Web site is easily readable	7-point ***
Web site Navigation	Logical Structure	van der Merwe & Bekker (2003), Chakraborty & al. (2003)	Web site is logically structured (Osgood scale)	5-point ***
	Search Engine	van der Merwe & Bekker (2003)	Presence and efficacy of Web site search engine	5-point **
	Web site works well	van der Merwe & Bekker (2003)	WS broken links and WS loading time based on ADSL connection	5-point *
Other Information	Community Activities	Lord & Collins (2002)	Information pages about supplier's CSR actions	5-point ***
	Job Opportunities	Lord & Collins (2002)	Details about job opportunities offered by supplier	5-point ***
	FAQ	Lord & Collins (2002)	Presence/Quality of Frequently-Asked-Questions	5-point ***

Intercoder Reliability (IR): * => .85 < IR < .90 ; ** =>.90 < IR < .95 ; * => IR > .95**

Table 3: Corporate B2B Web sites sample demographics

Region	Country of Origin	Number	%	Region	Country of Origin	Number	%
Asia	China	88	14,72 %	Europe	UK	53	8,86%
	India	49	8,19%		France	54	9,03%
	Taiwan	16	2,68%		Spain	18	3,01%
	Japan	2	0,33%		Italy	67	11,20%
	Malaysia	14	2,34%		Germany	40	6,69%
	Thailand	7	1,17%		Turkey	17	2,84%
	Hong Kong	1	0,17%		Czech Republic	8	1,34%
	Korea	9	1,51%		Scandinavian	15	2,51%
	Other Asia	23	3,85%		Belgium	12	2,01%
America	USA	34	5,69%		Other Europe	38	6,35%
	Canada	6	1,00%	Others	Rest of the World	27	4,52%

Number of employees	Number	%
< 5	22	3,75%
5 to 10	87	14,85%
11 to 50	208	35,49%
51 to 100	93	15,87%
101 to 500	123	20,99%
501 to 1000	27	4,61%
> 1000	26	4,44%

Product	Number	%	Product	Number	%
Printing Machinery	40	6,67%	Industrial lighting	50	8,33%
Integrated Circuits	20	3,33%	Computer Keyboards	20	3,33%
Sensors & Temperature Sensing Device	10	1,67%	Paper Machinery	40	6,67%
Fire fighting	50	8,33%	Intercoms	31	5,17%
Ink, Solvent and Pigment	28	4,67%	Shock absorbers	19	3,17%
Auto heating and air conditionnig	22	3,67%	Iron bars	20	3,33%
TV&Radio Broadcasting	40	6,67%	Bicyle parts	20	3,33%
Plastic Pipes	40	6,67%	Elevators and Lifts	20	3,33%
Diamond cutting tools	30	5,00%	Storage carts and trolleys	10	1,67%
Coating	50	8,33%	Agricultural fertilizers	40	6,67%

Table 4: Confirmatory factor analysis results

Construct	Item	Standard. loading	P level	Jöreskog's Rhô	Converg. Validity
Contact	Postal	.660	.000		
	Fax	.817	–	.841	.641
	Phone	.906	.000		
Clarity	Logical WS	.628	.000		
	Readable WS	.702	.000	.719	.460
	Step-by-Step WS	.703	–		
Attractiveness	Exciting WS	.914	.000		
	Entertaining WS	.929	.000	.945	.851
	Appealing WS	.825	–		
Corporate Information	Job Opportunities	.584	–		
	Distribution Info.	.529	.000	.548	.249
	Financial Status	.495	.000		
Personalization	Login-Transaction	.776	–		
	Login-Logistics	.830	.000	.783	.550
	Customization	.600	.000		
Online Business	Secured Transaction	.673	.000		
	Online Buying	.660	.000	.679	.415
	Prices availability	.596	–		