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# **Exploring the Concept of Web Site Customization: Applications and Antecedents**

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## **Abstract**

While mass customization is the tailoring of products and services to the needs and wants of individual customers, web site customization is the tailoring of web sites to individual customers' preferences. Based on a review of site customization applications, the authors propose a model with four different levels (standardization, adaptation, passive personalization, and active personalization). Each of these levels requires a different level of involvement of both the supplier and the customer. Based on an extensive review literature the authors then develop conceptual models of the determinants of site customization from both a customer's and a supplier's point of view. Both models contain the factors that determine the willingness of a party (customer or supplier) to get actively involved in web site customization. Some factors have a positive impact on the willingness to customize while others have a negative impact. Managers engaged in site customization projects should realized that site customization is not an undisputed topic. Its success will be context dependent. The presented conceptual models can be used to analyze the essentials of a particular context and to assess the potential of web site customization.

Keywords: Web Site Customization, learning organization, Internet, and innovation

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# **Exploring the Concept of Web Site Customization: Applications and Antecedents**

## **1. Introduction**

Increased competition, more diverse customer needs and wants, and advanced production methods have led to the popularity and implementation of mass customization. Mass customization is characterized by customer involvement in the design, production or delivery process before the actual sales transaction takes place (Kamali and Loker, 2003). With the advent of the Internet, even more applications of customization are expected (e.g., Swaminathan, 2001; Dewan et al., 2003; Papathanassiou, 2004). The ability of the Internet to digitize, standardize but also customize information in combination with the opportunities of mass customization is expected to strengthen customer relationships (e.g., Sheth and Parvatiyar, 1995; Srirojanat and Thrikell, 1998).

The Internet has increased the opportunities to apply the concept of mass customization to customer interaction by tailoring the content and structure of web sites to individual customer needs and wants. According to Papathanassiou (2004), managers consider the Internet as a major enabling technology for creating new and more sophisticated mass customization services. Bucklin et al. (2002) stresses that customization of web sites opens up new ways for acquiring customer knowledge and organizational learning. Recent academic research in this area includes studies of Montgomery and Srinivasan (2003) on different methods of learning or acquiring customer knowledge, Ansari and Mela (2003) on optimizing customized banners and e-mail, Schafer et al. (2001) on recommender systems, Vrechopoulos (2004) on software

tools and the customer purchase process, and Huizingh and Teerling (2004) on the various costs and benefits of site customization for both customers and suppliers.

Not only academics, but also practitioners are embracing site customization. A recent study of Jupiter Research found that 38 percent of the surveyed US companies already had invested in customization, while another 35 percent have planned personalization initiatives in the next twelve months (Surmacz, 2003). Liao et al. (2006) found that over 70% of the US Fortune 1000 companies are using cookies to collect users' profiles for customization. Teo (2005) reported considerable interest in customization features among Singapore firms, but also found a significant difference between its mean extent of use and perceived effectiveness. While customization is often associated with sellers of physical products, e.g., the well documented success stories of Dell and Amazon, it can also be applied for services, such as libraries (Frias-Martinez et al., 2006). Finally, recent publications of leading practitioners (Kasanoff, 2002; Nilson, 2002) underscore that site customization is widely recognized as a promising concept.

With this study we aim to review and synthesize the emerging literature on web site customization. More specifically, this research is focused on the following questions:

- What is web site customization?
- What different forms of customization can be found on web sites?
- What are the determinants of the willingness to use customized web sites? This question is addressed from both a customer's and a supplier's point of view.

Our contribution to the existing literature is as follows. Based on accepted definitions of mass customization, we define the concept of web site customization. Where mass customization most often concentrates on the product, web site customization focuses on the communication with a customer via a web site. We argue that there are also other means to

realize one-to-one communication through electronic media, and for these forms we introduce and define the broader concept of online customization. Secondly, based on stages models in the mass customization literature and an analysis of site customization applications, we propose a model with four different levels of web site customization. Each of these levels requires a different level of customer and supplier involvement. Thirdly, there is some evidence that the success of site customization is context dependent. Therefore, we develop a conceptual model with the antecedents of the willingness of both parties (suppliers and customers) to get actively involved in web site customization.

The remainder of this article proceeds as follows. The next section defines and reviews both online customization and web site customization. In section 3, we introduce a model of four web site customization levels. Section 4 discusses the both conceptual models with the determinants of the customer and the supplier to get actively involved in web site customization. The final section concludes and identifies areas for future research.

## **2. Customization in an online context**

Mass customization arrived on the scene of management theory and practice in the late 1980's (Da Silveira et al., 2001). A visionary definition describes it as the desire to provide customers with anything, anytime, anywhere, in any way they want it (Hart, 1995). More practically, Da Silveira (2001) defines mass customization as a system that uses information technology, flexible processes and organizational structures to deliver individually customized products and services at the cost near that of mass-produced items.

Similarly, customization in an Internet setting is described as the ability to tailor products, services and the transactional environment to individual customers (Srinivasan et al., 2002; Rowley, 2002). Wind and Rangaswamy (2001) introduce the concept of customerization, where a customized site is used to create a customized product or service. Angehrn and

Meyer (1997) define customization as the degree to which the Internet is used to provide individualized services to users. Finally, Ansari and Mela (2003) refer to e-customization as the tailoring of web sites (labeled as on-site customization), or banners or e-mail (labeled as external customization).

These definitions of customization focus on customization in an Internet setting. However, online customization is not restricted to the Internet; other electronic media can be used as well, see Meuter et al. (2000) for an overview of electronic self-service applications. Therefore, we define *online customization* as the tailoring of any digital or digitizable element of the marketing mix (product, communication, price and place) that is delivered through an electronic medium to individual customers. Downloading a ring tone for a mobile phone can be considered as online customization of the product. If this happens through a customized web site then both the product and the communication can be considered as online customization. More advanced online customization forms include contacting customers based on (GPS) satellite location analysis and individualized TV messaging (Evans, 2003).

Any medium with an online connection to a database, i.e., ATM's, mobile phones, web sites and e-mail, can be used to perform online customization at any level in the customer value hierarchy, e.g., at the basic product level up to the level of the augmented product (Harper and Levy, 1963). Moreover, online customization can be an ideal tool in providing customers with experiences instead of commodities (e.g., Pine and Gilmore, 1998). For instance, being able to check your credit balance through an ATM is an example of online customization.

Another example worth mentioning is John Deere, a large agricultural equipment producer that has been able to add value to individual customers via their equipment and the Internet in a unique manner. John Deere's equipment automatically sends online feedback concerning the harvest via a satellite to the company. While John Deere learns about how and in which

situations customers apply their equipment, customers can log on to John Deere's web site to get individualized feedback on when to harvest or how to fine-tune equipment.

When focusing on web sites, it is possible to customize both the product, if digitizable, as well as the communication. Ansari and Mela (2003) define (on-)site customization as the extent to which suppliers either customize the web site to appeal to users or enable the users themselves to customize the content. Following this definition, we define *web site customization* as the extent to which a web site contains pages that are tailored to or by individual customers. Web site customization can take many forms, including the John Deere example described above. In the next section we will more closely examine the different categories of web site customization.

### **3. Web site customization levels**

The mass customization literature contains various stages models that refer to different customization levels. For instance, Lampel and Mintzberg (1996) describe five customization stages, from pure standardization to pure customization. When reviewing numerous examples of web site customization, we also encountered highly different applications. We even found that these applications can vary within the same web site, i.e., many web sites contain standardized pages as well as customized pages. This reflects that some of the customers' information needs are homogeneous, e.g., the address and phone number of the supplier, while others are heterogeneous, e.g., product recommendations. Companies may also use different site customization levels to target different customer groups with the same site. Therefore, a model that distinguishes between different stages of web site customization should not be defined at the level of a web site, but at the level of a web page. In our model, we distinguish four levels of customization of web pages (see figure 1). In the following we

describe each of the four levels and illustrate them with examples. Subsequently, we discuss the conditions that determine the effectiveness of web site customization.

<< Insert figure 1 here >>

### 1. Standardization

Standardization reflects a web page with a fixed content that is the same for each customer at any visit. A collection of standardized pages forms a static web site where the page shown is determined only by the most recent page in the sequence and the link clicked on (Perkowitz and Etzioni, 2000). The key characteristic of standardization is that each visitor is presented with the same information. Still, the communication process is customized at a minimum level, i.e., it is the visitor who determines which pages are requested in what order. However, the content of each particular page is identical for each visitor and during each visit.

### 2. Adaptation

With adaptation, parts of the content of a web page are determined by previous actions of the visitor during the same web visit. The use of a search engine within a web site is an example of adaptation. In addition to explicit customer input, other information that a visitor implicitly provides to the supplier can also be used for adaptation. For instance, Google.com adapts its site automatically to the user's county of origin, based on the visitor's IP address. If Google.com notices that the user is from the Netherlands, it automatically displays a web page in the Dutch language, even when Google.com, the URL of the English version, is requested.



Another example of adaptation is collaborative filtering (e.g., Perkowski and Etzioni, 2000; Mild and Reutterer, 2003). Collaborative filtering provides customers with additional product suggestions based on the product they have selected and information collected about other customers. Amazon.com is one of the companies using collaborative filtering. Based on the selection of a particular book, Amazon provides the customer with product suggestions (*Customers who bought this book also bought*). These suggestions are based on the purchase data of other Amazon customers. For adaptation it is not necessary to store information about the visitor. Both standardization and adaptation focus on improving a single web site visit, the next two levels focus more on optimizing repeat visits.

### 3. Passive personalization

In the case of passive personalization the supplier collects, analyses and uses information about a specific visitor in order to tailor the contents of web pages to the observed needs of this customer, who is most often identified by using a cookie. This form of personalization is labeled passive since it requires no explicit (active) efforts of the visitor. The supplier observes the visitor and uses that information to customize web pages. The information usually concerns transactions and click stream data from previous visits. Nordstrom.com, for example, uses cookies to offer personalized features. Another example of passive personalization is the way in which Doubleclick rotates its banners on their customers' web pages. If a visitor has seen a particular banner, i.e., the visit is registered through a cookie, then on the next visit to the same page, Doubleclick will show another banner.

### 4. Active personalization

With active personalization, a web page is tailored to a customer's needs and wants based on information that is provided by the customer during the same visit or previous visits. The

customer explicitly offers the supplier (personal) information to enable the supplier to customize the web pages, for instance by providing preferences, interests, hobbies or the products the customer owns. Due to the active role of the customer we have labeled this level as active personalization.

An example of active personalization is the Landsend.com virtual model. Landsend.com provides customers with the opportunity to create a digital 'me'. With this digital version, clothes can be tried on before ordering. The customer provides Landsend with personal information with the explicit aim to get a customized service during subsequent visits, for Landsend it is a unique opportunity to learn about customers' body shapes and preferences.

The distinction between the last two levels, passive and active personalization, may seem minor. However, from a customer point of view, there is an important difference. Active personalization results from a deliberate action by the customer; the customer decides to provide the supplier with personal information to enable the supplier to provide customized pages. Passive personalization is both initiated and controlled by the supplier. Based on observations made during the current and previous visits the customer is provided with customized pages.

Burke (2002) empirically tested the distinction between active and passive personalization. His research shows that customers prefer options that give them control over acquisition, dissemination and use of their personal information, i.e., active personalization. Godek et al. (2002) found similar results, but they add that if the customer feels that another person, e.g., the supplier, can make a better decision, then passive personalization is preferred. Moreover, Nunes and Kambil (2000) have shown that combining passive and active personalization increases the satisfaction with the personalized elements over which the customer has less control.

Active personalization is the result of an exchange process (personal information for tailored information). With passive personalization the exchange process is more implicit, where customers are most often unaware of their part in the exchange. With active personalization, customers will expect to be provided with more value during subsequent site visits, but in many cases it may be difficult for them to predict the amount of added value. Customers can easily understand the effects of changing the background color of a web page. However, the added value of providing a supplier with one's preferences depends upon the sophistication of the web site, which may not so easily be predicted by customers.

#### *Customer value*

Figure 1 suggests that active personalization provides a better fit with the needs of individual customers than the other customization levels. This assumption only holds under the following conditions:

1. The customer needs and wants are heterogeneous. If all customers have the same needs (homogeneous needs) standardized pages will fit all needs.
2. The customer has a certain level of expertise, e.g., the customer knows what his/her needs are and how to use the customization feature in order to get the desired output. Passive personalization may provide more customer value than active personalization when customers are unable to self-explicate their preferences or if they feel that the company can do a better job (e.g., Godek et al., 2002; Ansari and Mela, 2003; Frias-Martinez et al., 2006).
3. The customer is willing to invest time and effort into the customization process. This refers both to the initial investment customers have to make as well as to subsequent investments to inform the supplier about changes in preferences. When a customer has

dynamic preferences, again passive personalization may provide more customer value than active personalization (Ansari and Mela, 2003).

#### **4. Willingness to customize**

After having identified the levels of site customization, we focus on the determinants of the willingness to get actively involved in web site customization. We explore this issue from both the customer's point of view and the supplier's point of view. The willingness of both parties to engage in web site customization is a prerequisite of successful web site customization (see figure 2). For both the customer as well as the supplier the willingness to customize depends on several factors. We identify and discuss both groups of factors as well as their hypothesized relationship with the willingness to customize.

<<Insert figure 2 here >>

#### **4.1 Customers' Point of View**

In the previous section we distinguished between four web site customization levels. The willingness of the customer to engage in the customization process is only relevant for the top-level, active personalization. At the other levels customers play a much more passive role, i.e., they do not need to invest in site customization. With active personalization the customer has to make an investment in the site and ultimately it is the customer who decides whether or not site customization is a valuable feature (Weinberg et al., 2003). Theoretically, the difference between the value of standardized information and customized information determines whether or not a customer is willing to customize (e.g., Klemperer, 1987). In practice, it is not realistic to assume that this difference will be positive for all customers (Frias-Martinez, 2006). Therefore, it is necessary to understand the factors that influence the

customer's willingness to customize. These factors and their expected impact (positive or negative) are shown in the conceptual model of Figure 3.

<<Insert figure 3 here >>

The uniqueness of the customers' needs and wants reflects the expected added value of customized pages compared to standardized pages. Customers with a high need for uniqueness search for goods and services that are customized or rare (e.g., Tepper et al., 2001; Broekhuizen and Alsem, 2002). The marketing literature contains evidence that customers tend to assign a high weight to preferences that they perceive as to be different from other consumers (Kivetz and Simonson, 2003). If a customer's needs are not unique a customized experience will not add (much) additional value compared to a standardized experience, and the customer will not be willing to use site customization. Accordingly, the following hypothesis is stated:

H1. The uniqueness of the customer's needs and wants is positively related to the customer's willingness to customize.

Customer involvement reflects the degree to which the web site, the product or topic is of personal relevance to the customer. More involved customers will be more willing to engage in web site customization (e.g., Mishra et al., 1993; Broekhuizen and Alsem, 2002). For instance, a purchase with a high monetary value or a theme in which the customer is highly involved will result in a higher willingness to customize. Considerable involvement is also necessary to outweigh the necessary customer input, the specification of the user preferences (Frias-Martinez, 2006). Therefore, we assume that:

H2. The customer's involvement with the web site, product or topic will have a positive effect on the customer's willingness to customize.

The expected number of future site visits also affects the willingness to customize. With active personalization, customers have to invest in the site in terms of time, effort and personal information. Most of the value they can gain from this investment is realized in subsequent visits and not in the initial visit. When customers do not expect many repeat visits, they will not gain much from their investment. When they expect a larger number of repeat visits, they will be more willing to engage in the site customization process since there is no formal limitation with regard to the amount of value customers can extract in the future. Also, in the context of mass customization customers with stable and well developed preferences that have good insight into their preferences are considered to be the most likely candidates for a customized offer (Simonson, 2005). Therefore, we expect a positive relationship with the willingness to customize:

H3. The more often and more extensively a customer expects to use the customized web pages, the larger the willingness of the customer to customize.

The next factor is the expected ability of the supplier to turn the provided personal information into meaningful information. In theory, by using web site customization customers can get more complete and more relevant information that can be accessed faster (e.g., Mishra et al., 1993; Hoffman et al., 1995; Burke, 2002, Reibstein, 2002; Barnes and Vidgen, 2002). In this way, web site customization facilitates and improves the customer's decision-making and buying process (e.g., Huffman and Kahn, 1998; Burke, 2002, Reibstein,

2002). Unlike theory, in practice the customer will first have to assess the supplier's capabilities on these matters. The higher these expected capabilities are, the higher the customer's willingness to customize will be.

H4. The higher the customer's expectations regarding the supplier's abilities to turn provided personal information into meaningful information, the higher the customer's willingness to customize will be.

The remaining three determinants have an expected negative influence on the customer's willingness to customize. The first one is the extent to which customers are concerned about having to use new technology. Learning to deal with new technologies can be confusing for customers (Burke, 2002). The learning process is further complicated by the fact that each web site has implemented the customization features in a different way, implying that the learning effects across sites will be relatively small. The more concerned customers are with regards to new technology, the less likely it is that they will adopt site customization. A measure to operationalize the customer's technology concerns is the technology readiness index. This index reflects the extent to which customers are willing to accept and use new technologies (Parasuraman, 2000). The more concerns customers have about using new technologies, the less likely it is that they will use site customization:

H5. The customer's technology concerns are negatively related to the customer's willingness to customize.

The customers' privacy concerns reflect the extent to which customers are concerned that their personal information will be misused. In order to establish a relationship with a supplier

through web site customization, the customer has to entrust the supplier with sensitive information. The customer faces the risk that the supplier abuses the personal information, e.g., sells it to other companies. Several studies found that customers have reservations concerning the collection and use of personal information in order to tailor marketing programs (e.g., Burke, 2002; Schafer et al., 2001; Schoenbachler and Gordon, 2002; Wolfinbarger and Gilly, 2003). We therefore hypothesize that:

H6. The customer's privacy concerns are negatively related to the customer's willingness to customize.

The final factor with an expected negative influence is the customers' exploitation concerns. Customers run the risk of being exploited by the supplier, when the supplier is using the acquired customer knowledge to create a win-lose situation instead of a win-win situation. Due to the improved customer knowledge, suppliers gain more control over customers. Sales and profit considerations may tempt suppliers to not fully inform customers or to not provide them with the best suggestions. For instance, if a supplier discovers that a customer is not price sensitive, the supplier may decide to refrain from offering this customer any discounts (i.e., Murthi and Sarkar, 2003). Sometimes it is more beneficial for the customer to remain anonymous. For instance, Amazon.co.uk provides first-time visitors, who are screened based on the existence of a cookie, with a coupon, while repeat visitors are not offered a discount. So, the customers' exploitation concerns will negatively impact the willingness of a customer to provide the supplier with the relevant personal information (e.g., Schoenbachler and Gordon, 2002; Wang et al., 2004):



H7. The stronger the customer's exploitation concerns, the lower the customer's willingness to customize.

#### **4.2 Suppliers' Point of View**

For suppliers, web site customization requires additional efforts at each level of customization, except standardization. For each of these levels, i.e., adaptation, passive and active personalization, suppliers have to make an investment in terms of time, software and knowledge to be able to relate customer characteristics to the content and structure of web pages. The supplier's willingness to customize depends upon six factors (see figure 4). Five of them have a positive influence on the supplier's willingness to customize and one has an expected negative influence.

<< Insert figure 4 here >>

The customer focus, i.e., the extent to which the supplier is aimed at building and maintaining relationships with customers, is the first factor with a positive influence. A customer intimacy strategy (Treacy and Wiersema, 1993) or customer relationship management (CRM) strategy focuses on providing customers with tailored products and services to fulfill individual needs and wants. Web site customization is a means to learn about individual customers and to tailor offerings, thus providing companies the opportunity to implement CRM strategies online. By offering a more individualized online experience, customer satisfaction with the supplier will improve (e.g., Bolton, 1998; Peppers and Rogers, 1999; Thompson 1999). Therefore, we hypothesize that:

H1. The greater the extent to which the supplier's strategy is aimed at establishing customer relationships, the greater the level of the supplier's willingness to customize.

Secondly, market pressure has a positive influence on the willingness to adopt web site customization. Market pressure reflects the site customization level used by competitors or the extent to which web site customization can be used as a form of differentiation (e.g., Broekhuizen and Alsem, 2002). It also reflects the supplier's expectations regarding the willingness to use customization by a large enough group of customers. While the fixed costs of developing a site with customization features may be high, the marginal costs of each additional customer using these features are low. Therefore, it may be necessary that a large number of customers is willing to use these features in order to justify the investment. This discussion suggests the following relationship:

H2. Market pressure has a positive effect on the supplier's willingness to customize.

The third factor is the extent to which a supplier considers web site customization as a useful tool to increase customers' switching costs. Web site customization may increase switching costs due to three effects, namely (1) when customers consider switching they will have to learn how to deal with a new web site (Johnson et al., 2003), (2) when customers consider switching they will have to provide their personal information again and (3) the supplier's offer may improve as a result from the knowledge the supplier has acquired about the needs of this specific customer. By increasing switching costs web site customization can lead to customer loyalty (e.g., Johnson et al., 2003).

H3. The more a supplier expects that site customization can raise switching costs, the higher the supplier's willingness to customize.

The fourth factor is the expected financial gains as a result from the implementation of web site customization. Suppliers can expect to gain from site customization if customers (1) buy more and more often, (2) recommend the site and/or the company to others and (3) need less customer service. According to Rangaswamy and Pal (2003) customization can improve the efficiency of company operations. With individualized online services suppliers can serve their customers with less involvement of personnel. Moreover, the collected information provides suppliers with more effective marketing programs (e.g., Bardakci and Whitelock, 2003). Web site customization can also lead to financial gains as a result from lower inventory levels, if customer demand can be forecasted more accurately (Berman, 2002).

H4. The greater the supplier's expectation of the financial gains, the higher the supplier's willingness to customize.

The final factor that has a positive influence on the supplier's willingness to customize is the organization's capabilities. Technological competence is essential for e-commerce success (Ozer, 2005). Important elements are the available resources and the organizational readiness (Broekhuizen and Alsem, 2002), especially its e-readiness (Mutula and Van Brakel, 2006). A recent study found that the costs of a customized web site are at least four times higher than that of a standardized web site (Surmacz, 2003). Web site customization also imposes additional requirements on product databases. In order to provide customers with product suggestions based on softer characteristics such as lifestyle and interests, this kind of information has to be linked to each product in the product database. Web sites trying to take

into account the dynamic nature of preferences will endure even higher maintenance costs. The technological skills required to develop and maintain web site customization will also be taken into account. As site customization focuses on the customized content of web pages, the costs of customizing the tangible product are not reviewed. Therefore, it is hypothesized that:

H5. The supplier's capabilities have a positive effect on the supplier's willingness to customize.

The only factor that has a negative influence is the information requirements. For site customization, suppliers need accurate, timely and relevant information about individual customers (Hanson, 2000). They need to determine the amount of individual customer information needed for site customization. According to Raghu et al. (2001) it is often not necessary to collect complete preference information due to the low information gain in the advanced stages of information gathering. The more information needed, the more sensitive and the less stable this information is, the less willing a supplier will be to add customized features to its site. Preference information may not remain current for a long time, due to dynamic preferences (i.e., Mobasher et al., 2000; Dou and Ghose, 2002). Therefore we expect that:

H6. The higher the expected information requirements, the less willing the supplier is to customize.

## 5. Conclusions

This paper reviews the emerging literature and the applications of site customization to increase our understanding of the concept and applicability of web site customization. Serving individual customers with a tailored product is the aim of mass customization. Similarly, we defined both online customization and web site customization. Online customization is the tailoring of any digital or digitizable element of the marketing mix to individual customers. Web site customization refers to the extent to which a web site contains pages that are tailored to or by individual customers. Similar to the stages models in the mass customization literature and based on a review of site customization applications, we have developed a model that distinguishes between four levels of customization of web pages (standardization, adaptation, passive personalization, and active personalization). By including all four levels in a web site, suppliers can actively target different types of customers, e.g., from single time visitors to loyal and committed customers.

Next, we identified for both customers and suppliers the factors that determine their willingness to participate in web site customization. Managers can either qualitatively or quantitatively apply both conceptual models to determine whether it would be beneficial to their organization to offer web site customization. The customer model may also function as a starting point to segment customers based on their willingness to engage in web site customization. Based on the supplier model managers can gain insight into whether or not implementation of web site customization is relevant for their company.

Researchers can apply both models to investigate the relative importance of the various factors in an empirical study. Which factors are the most important ones, and to what extent is the importance situation dependent? Under what circumstances is it economically beneficial to offer customization features in a web site? When should an organization focus on which level of web site customization? Should all web site customization levels be offered

to all customers or only to specific customer segments (as Dell does)? If so, how do we determine which groups of customer to provide with which level of web site customization? Implementing site customization requires companies to listen to customers, which is a crucial, though tricky part of innovation processes (Ulwick, 2002). More knowledge is needed about how companies can use site customization as an effective means to learn on a continuous basis from customers. The ultimate goal may be to extend the involvement of particular (groups of) customers into co-developing new products (Neale and Corkindale, 1998). Site customization can lead to the identification of the customers who meet the requirements to participate in innovation projects.

This study has focused on the antecedents of web site customization. Future research could also focus on the effects. What are the consequences of web site customization for both customers and suppliers? How useful is customization in speeding up and streamlining innovation processes? Given the existence of both anecdotal evidence of successful site customization applications, and market studies that stress the high costs of site customization (e.g., Surmacz, 2003), this kind of empirical research is particularly relevant. Empirical studies can focus on multiple possible effects, e.g., changes in web site stickiness, repeat visits, customer attitudes, purchasing behavior, or participation in innovation projects. Researchers could explore the existence of chains of effects, e.g., from repeat visits, to customer site attitudes (e.g., web site satisfaction) to repeat purchases.

Site customization provides suppliers with an important tool to tailor the online interaction with individual customers and to enhance organizational learning. Although web site customization is still in its infant stages, the growing body of research on this topic shows a promising array of research and business opportunities.

## References

1. Angehrn, A. & J.F. Meyer (1997). Developing Mature Internet Strategies. *Information Systems Management*, 14, 37-44.
2. Ansari, A. & C.F. Mela (2003). E-customization. *Journal of Marketing Research*, 40 (2), 131-145.
3. Bardakci, A. & J. Whitelock (2003). Mass-Customization in Marketing: The Consumer Perspective. *Journal of Consumer Marketing*, 20 (5), 463-479.
4. Barnes, S.J. & R.T. Vidgen (2002). An Integrative Approach to the Assessment of E-Commerce Quality. *Journal of Electronic Commerce Research*, 3 (3), 114-127.
5. Berman, B. (2002). Should Your Firm Adopt a Mass Customization Strategy?. *Business Horizons*, July-August, 51-60.
6. Bolton, R.N. (1998). A Dynamic Model of the Duration of the Customer's Relationship with Continuous Service Provider: The Role of Satisfaction. *Marketing Science* 17 (1), 5-65.
7. Broekhuizen, T.L.J. & K.J. Alsem (2002). Success Factors for Mass Customization: A Conceptual Model. *Journal of Market-Focused Management*, 5(4), 309-330.
8. Bucklin, R. E., J.M. Lattin, A. Ansari, S. Gupta, D. Bell, E. Coupey, J.D.C. Little, C. Mela, A. Montgomery & J. Steckel (2002). Choice and the Internet: From Clickstream to Research Stream. *Marketing Letters* 13 (3), 245-258.
9. Burke, R.R. (2002). Technology and the Customer Interface: What Customers Want in the Physical and Virtual Store. *Journal of the Academy of Marketing Science* 30, 411-432.
10. Da Silveira, G., D. Borenstein, & F.S. Fogliatto (2001). Mass Customization: Literature Review and Research Directions. *International Journal of Production Economics* 72, 1-13.

11. Dewan, R., B. Jing & A. Seidmann (2003). Product Customization and Price Competition on the Internet. *Management Science*, 49 (8), 1055-1070.
12. Dou, W. & S. Ghose (2002). From One-to-One Marketing to Continuous Marketing. *Quarterly Journal of Electronic Commerce*, 3 (1): 73-90.
13. Evans, M. (2003). The Relational Oxymoron and Personalization Pragmatism. *Journal of Consumer Marketing*, 20 (7), 665-685.
14. Frias-Martinez, E., G. Magoulas, S. Chen, & R. Macredie (2006). Automated user modeling for personalized digital libraries. *International Journal of Information Management*, 26, 3, 234-248.
15. Godek, J., K. Diehl, G. Zauberman, R.W. Hamilton, B. Sivakumaran, J.F. Yates, & Y. Yoon (2002). Special Session Summary: Personalization and Customization: Implications for Customer Decision Making and Behavior. *Advances in Customer Research*, 29, 155-157.
16. Hanson, W. (2000). *Principles of Internet Marketing*. South Western College Publishing, Cincinnati, United States of America.
17. Harper, W.B. Jr. & S. Levy (1963). New Dimensions in Consumer Analysis. *Harvard Business Review*, November – December, 129-40.
18. Hart, C.W. (1995). Mass Customization: Conceptual Underpinnings, Opportunities and Limits. *International Journal of Service Industry Management* 6, 36-45.
19. Hoffman, D.L., T.P. Novak, & P. Chatterjee (1995). Commercial Scenarios for the Web: Opportunities and Challenges. *Journal of Computer-Mediated Communications* 1, 1-20.
20. Huffman, C. & B.E. Kahn (1998). Variety for Sale: Mass Customization or Mass Confusion. *Journal of Retailing*, 74 (4), 491-513.



21. Huizingh, Eelko K.R.E. and M.L. Teerling (2004), Applying the Internet for Innovation: The Case of Web Site Customization, Proceedings of the XV ISPIM Annual Conference, Oslo, Norway, June 20-24.
22. Johnson, E.J., S. Bellman, & G.L. Lohse (2003). Cognitive Lock-In and the Power Law of Practice. *Journal of Marketing*, April, 62-75..
23. Kamali, N. & S. Loker (2003). Mass Customization: Online Customer Involvement in Product Design. *Journal of Computer-Mediated Communications*, 7, 1-21.
24. Kasanoff, B. (2002). Making It Personal: How to Profit from Personalization without Invading Privacy, Perseus Books Group.
25. Kivetz, R. & I. Simonson (2003). The Role of Effort Advantage in Consumer Response to Loyalty Programs: The Idiosyncratic Fit Heuristic. *Journal of Marketing Research*, 40, November, 454-467.
26. Klemperer, P. (1987). Markets with Customer Switching Costs. *The Quarterly Journal of Economics*. 102(2), 375-394.
27. Lampel, J. & H. Mintzberg (1996). Customizing Customization. *Sloan Management Review*, Fall, 21-30.
28. Liao, C., P-L. To & M-L. Shih (2006). Website practices: A comparison between the top 1000 companies in the US and Taiwan. *International Journal of Information Management*, 26, 3, 196-211.
29. Meuter, M.L., A.L. Ostrom, R.I. Roundtree, & M.J. Bitner (2000). Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters. *Journal of Marketing* 64, 50-64.
30. Mild, A. & T. Reutterer (2003). An Improved Collaborative Filtering Approach for Predicting Cross-Category Purchases based on Binary Market Basket Data. *Journal of Retailing and Consumer Services*, 10, 123-133.

31. Mishra, S., U.N. Umesh & D.E. Stem Jr. (1993). Antecedents of the Attraction Effect: An Information-Processing Approach. *Journal of Marketing Research*, 30 (August), 331-349.
32. Mobasher, B., R. Cooley, & J. Srivastava (2000). Automatic Personalization based on Web Usage Mining. *Communications of the ACM* 43 (8), 142-151.
33. Montgomery, A. L. & K. Srinivasan (2003). Learning about Customers without Asking. Working Paper Carnegie Mellon University, Pittsburgh, 1-33.
34. Murthi, B. P. S. & S. Sarkar (2003). The Role of Management Sciences in Research on Personalization. *Management Science* 49 (10): 1344-1363.
35. Mutula, S.M. & P. van Brakel (2006). An evaluation of e-readiness assessment tools with respect to information access: Towards an integrated information rich tool. *International Journal of Information Management*, 26, 3, 212-223.
36. Neale, M.R. & D.R. Corkindale (1998), Co-developing Products: Involving Customers Earlier and More Deeply, *Long Range Planning*, 31, 3, 418-425.
37. Nilson, T.H. (2002), *Customize the Brand: Make it more desirable and profitable*, John Wiley & Sons, Ltd.
38. Nunes, P. & A. Kambil (2000). When they want it done right: Creating customer valued web sites. Institute of Strategic Change at Anderson Consulting.
39. Ozer, M. (2005). Online business: tailoring your business environment in order to compete. *International Journal of Information Management*, 25, 2, 137-149.
40. Papathanassiou, E.A. (2004). Mass customisation: management approaches and internet opportunities in the financial sector in the UK. *International Journal of Information Management*, 24, 5, 387-399.
41. Parasuraman, A. (2000). Technology Readiness Index (TRI). *Journal of Service Research*, 2(4), 307-320.

42. Peppers, D. & M. Rogers (1999). Is Your Company Ready for One-to-One Marketing?. *Harvard Business Review*, 77 (1), 151-161.
43. Perkowitz, M. & O. Etzioni (2000). Towards Adaptive Web Sites: Conceptual Framework and Case Study. *Artificial Intelligence* 118, 245-275.
44. Pine II, B.J. & J.H. Gilmore (1998). Welcome to the Experience Economy. *Harvard Business Review*, July – August, 97-105.
45. Raghu, T.S., P.K. Kannan, H.R. Rao, & A.B. Whinston (2001). Dynamic Profiling of Customers for Customized Offerings over the Internet: A Model and Analysis. *Decision Support Systems* 117-134.
46. Rangaswamy, A. & N. Pal (2003). Introduction in *The Power of One: Gaining Value from Personalization Technologies*. Edited by N. Pal & A. Rangaswamy, eBRC Press, Penn State University.
47. Reibstein, D.J. (2002). What Attracts Customers to Online Stores, and What Keeps Them Coming Back?. *Journal of the Academy of Marketing Science* 30, 465-473.
48. Rowley, J.E. (2002). Reflections on Customer Knowledge Management in E-business. *Qualitative Market Research* 5, 268-280.
49. Schafer, J. Ben, Joseph A. Konstan, & John Riedl (2001). E-Commerce Recommendation Applications. *Data Mining and Knowledge Discovery* 5: 115-153.
50. Schoenbachler, D.D. & G.L. Gordon (2002). Trust and Customer Willingness to Provide Information in Database-Driven Relationship Marketing. *Journal of Interactive Marketing*, 16(3), 2-16.
51. Sheth, J.N. & A. Parvatiyar (1995). The evolution of relationship marketing. *International Business Review*, 4 (4), 397-418.

52. Simonson, I. (2005). Determinants of Customers' Responses to Customized Offers: Conceptual Framework and Research Propositions. *Journal of Marketing*, 69, 1, 32-45.
53. Srinivasan, S.S., R. Anderson, & K. Ponnayolu (2002). Customer Loyalty in E-commerce: an Exploration of its Antecedents and Consequences. *Journal of Retailing* 78, 41-50.
54. Srirojanant, S. & P.C. Thirkell (1998). Relationship Marketing and its Synergy with Web-based Technologies," *Journal of Market Focused Management* 3, 23-46.
55. Surmacz, J. (2003). The Personalization Myth.CIO.com.  
<http://www2.cio.com/metrics/2003/metric621.html>. October 2003.
56. Swaminathan, J.M. (2001). Enabling Customization Using Standardized Operations. *California Management Review* 43, 125-135.
57. Teo, T.S.H. (2005). Usage and effectiveness of online marketing tools among Business-to-Consumer (B2C) firms in Singapore. *International Journal of Information Management*, 25, 3, 203-213.
58. Tepper Tian, K., W.O. Bearden & G.L. Hunter (2001). Consumers' Need for Uniqueness: Scale Development and Validation. *Journal of Consumer Research*, 28(June), 50-66.
59. Thompson, M. (1999). Registered Visitor's are a Portal's Best Friend. *The Industry Standard*. <http://www.thestandard.net>
60. Treacy, M & F. Wiersema (1993). Customer intimacy and other value disciplines. *Harvard Business Review*, January-February.
61. Ulwick, A.W. (2002), Turn Customer Input into Innovation, *Harvard Business Review*, January, 91-97.

62. Vrechopoulos, A.P. (2004). Mass customisation challenges in Internet retailing through information management. *International Journal of Information Management*, 24, 1, 59-71.
63. Wang, S., S.E. Beatty & W. Foxx (2004). Signalling the Trustworthiness of Small Online Retailers. *Journal of Interactive Marketing*, 18(1), 53-69.
64. Weinberg, D., J. Cavalieri & T. Madonia (2003). Personalization in the Wireless World in *The Power of One: Gaining Value from Personalization Technologies*. Edited by N. Pal and A. Rangaswamy, eBRC Press, Penn State University.
65. Wind, J. & A. Rangaswamy (2001). Customerization: The Next Revolution in Mass Customization. *Journal of Interactive Marketing* 15, 13-32.
66. Wolfinbarger, M. & M.C. Gilly (2003). ETailQ: Dimensionalizing, Measuring and Predicting Etail Quality. *Journal of Retailing*, 79, 183-198.

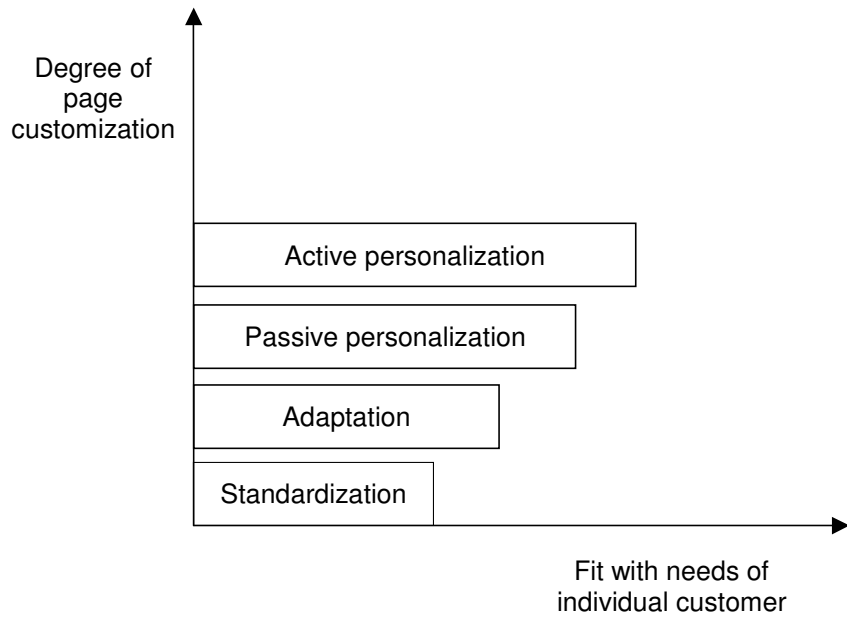


Figure 1. Four levels of customization of web pages



Figure 2. Elements contributing to the success of web site customization

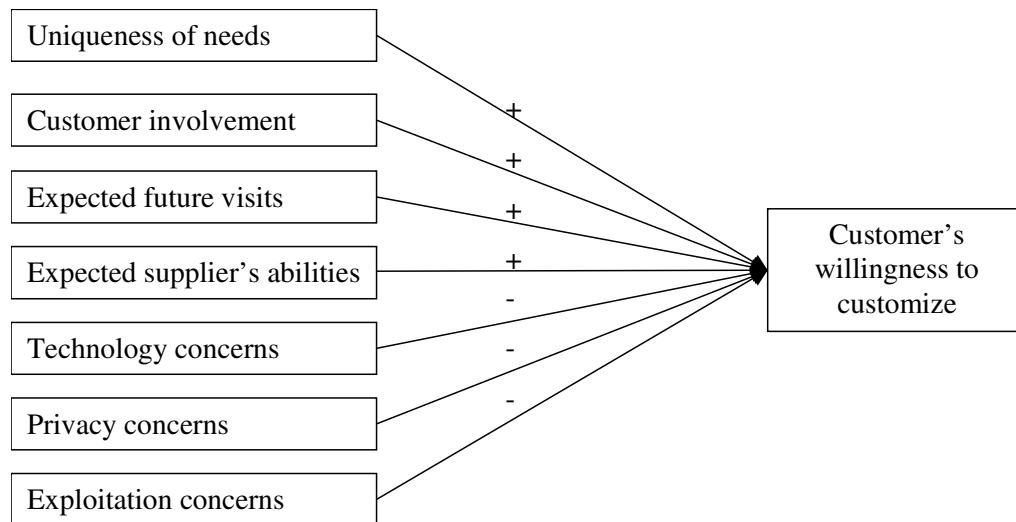


Figure 3. Antecedents of the customer's willingness to customize



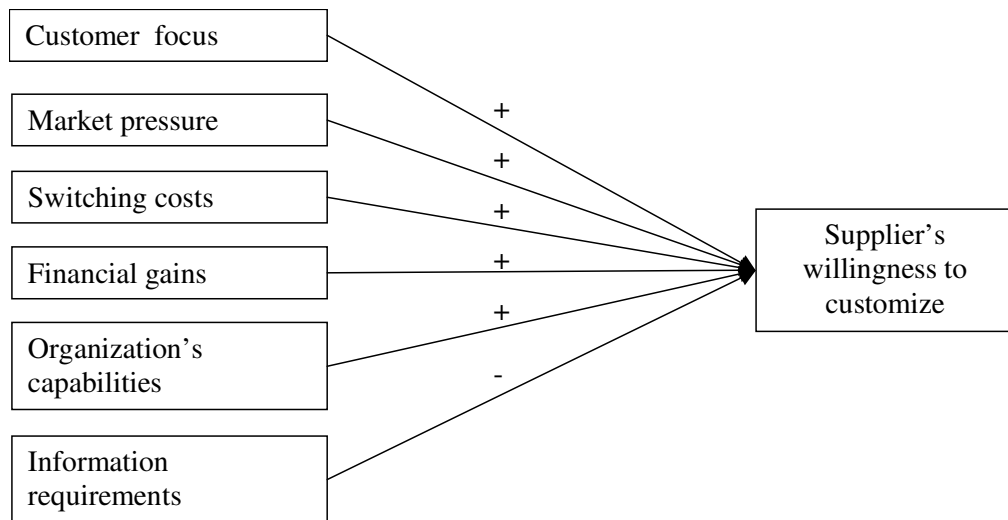


Figure 4. Antecedents of the supplier's willingness to customize