



# Maximizing customer value via mass customized e-consumer services

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## KEYWORDS

Internet commerce;  
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Mass customization;  
Product bundling

**Abstract** While the Internet provides an ideal marketplace for customized services, its strategic potential has yet to be fully realized. In particular, multi-seller (or “cross retail”) partnerships are the key to a largely unexploited Internet strategy for mass customizing bundles of goods or services as value-added solutions to individual customer needs. This article uses mass customization successes to advance cross retailing as a comprehensive strategy that frames current Web initiatives specifically in terms of customer value. Exploiting the strategy will necessitate an understanding of the enablers and dimensions of mass customized “e-consumer services” (i.e., e-tail services, as well as service-related consumer products, that are defined and sold via the Internet). The overall success of the broader Internet marketplace will be determined not just by industry-wide cooperation, but also by the development of rich standards that allow for the highly customized bundling of products. More importantly, service providers will be differentiated by their ability to employ powerful Web interfaces within a strategy that comprehensively supports and extends a customer-controlled customization process.

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## 1. Opportunity knocks

The Internet has advanced new profit initiatives by bringing technology-enhanced services directly to customers. As [Wise and Baumgartner \(1999\)](#) concluded, any shift toward services ultimately translates into the need for “creating new business models to capture profits at the customer's end of the value chain” (p. 133).

Such a directive can help to explain why Dell Computers would abandon their back-end, business-to-business Web hub while still supporting retail-level partnerships aimed at bundling peripherals with their computers. Dell's focus on the customer, however, is not one-dimensional. It is enabled by a larger framework of initiatives that also includes well-developed supply chain relationships and efficiencies. In general, while customer-focused initiatives may emphasize specific types of enablers, achieving an overall strategic position would benefit from a larger framework that can comprehensively organize the strategy.

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## 2. Strategic direction for e-consumer services

An organizing strategic direction and framework would be especially beneficial for ongoing Internet retail and online consumer service initiatives. Although online sales accounted for less than 5% of total retail activity in 2005, leading technology research firms like Forrester predict that this percentage will grow to 13% by 2010, with Internet travel services leading the way (Johnson, 2005). Such growth will be due not only to new buyers coming online, but also to a shift toward “customer experience” initiatives. According to Johnson (2005, p. 6), “Businesses are debating their online strategy. Many believe they became too focused on sales. Now they’re looking at their websites as a way to...increase their engagement with customers.”

Nonetheless, Johnson and Mulpuru (2006) argue that a shift from a sales focus to a customer focus will not be easy. Their most recent analysis indicates that low prices continue to drive online buying; at the same time, more mainstream consumers (with lower household incomes) are accounting for a larger portion of Internet retail sales. These trends are punctuated by the online dominance of retail giants whose scale perpetuates lower margins and volume pricing. Grosso, McPherson, and Shi (2005) report that amongst the 100 largest North American retailers, giant “efficiency machines” (e.g., Amazon and Dell) and “traffic drivers” (e.g., Target and Wal-Mart) collectively account for 60% of total Internet revenues. In essence, brick-and-mortar mass retailing has directly translated into Web-enabled “mass e-tailing,” with the majority of online sales being driven by mass-retail scale, efficiency, volume, margins, and pricing.

This article illustrates how mass e-tail limitations can be overcome by using the template of mass customization successes to advance cross e-tailing as a comprehensive Internet strategy that focuses new initiatives on creating customer value. Web-enabled cross e-tail partnerships would allow service providers to readily (and almost limitlessly) cross-sell each other’s goods and services. As the integrated Internet marketplace progresses toward cross e-tail partnerships, service providers and e-tail initiatives will be differentiated by an ability to develop powerful, customer-centric Web interfaces that support the bundling of products and services within a customer-

controlled customization process. Such differentiation will allow e-tailers to more effectively compete on factors other than price. Not only does this broaden existing mass e-tail strategies, but it ultimately allows e-tailers of all sizes to more profitably convert browsers into buyers (i.e., capture customers). As Freedman (2006) noted, “E-retail success is not just about conversions, it’s about profitable conversions” (p.73).

While the scale and price-driven dimensions of mass e-tail strategies do not provide a clear avenue for a shift toward the customer, the same dimensions can be compared to those of mass production, a comparison that in turn can offer insight into the problem. Specifically, mass production strategies achieved a successful and ultimately organized shift toward the customer by way of comprehensive mass customization strategies. Mass customization combined the efficiencies of mass production with the flexibility and value of customization. Likewise, as depicted in Fig. 1, mass e-tailing and online customization together offer a foundation for achieving the same efficiencies and value by way of mass customized e-consumer services.

E-consumer services include e-tail services, as well as service-related consumer products, that are defined and sold via the Internet. In essence, a mass-customized e-consumer services strategy emphasizes the custom bundled e-tailing of products and services to meet the specific needs of individual customers. Running parallel to mass production, the mass e-tailing foundations of the strategy are characterized by a highly automated environment that provides for the technology-enabled potential of e-consumer services. As Wells and Gobeli (2003) propose, the interaction between customizability and the online nature of a product offers an ideal opportunity to create customer value. Such potential can be better understood and pursued by analyzing the lessons of mass customization in the context of mass e-tailing, ultimately framing a value-added shift toward a customer-focused strategy.

## 3. Mass customization lessons

Consideration of parallel forces is especially fitting to mass customization where production and sales

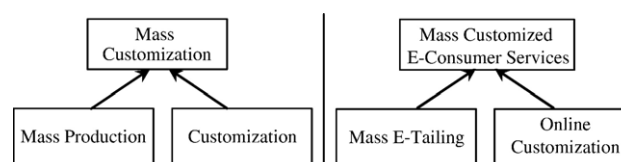


Figure 1 Parallel forces.

exhibit an inherent interdependency. On one hand, mass customization is a sales proposition; as Pine (1993) put it, “a company that better satisfies its customers’ individual wants and needs will have greater sales” (p. 44). On the other hand, it is a manufacturing proposition in that the advancement of mass customization has focused primarily on production processes and technologies as the key enablers of the strategy. Ultimately, an analysis of the well-established and interrelated enablers of mass customized production (i.e., computerization, interconnectivity, and modularization) can provide valuable insights into the building blocks, and the larger strategic basis, of a mass customized e-consumer services strategy.

Silveira, Borenstein, and Fogliatto (2001) thoroughly analyzed the body of mass customization studies and, indeed, found a well-established focus on computerization and interconnectivity as the key technological enablers of customized production processes. In short, while the computerization of design and manufacturing processes made possible greater product variety and shorter product life cycles, the interconnectivity offered by networks served to facilitate the exchange of information between production modules. The enabling role of production modules emphasizes an explicit link to advances in the modularization of product design and assembly. As Pine, Victor, and Boynton (1993) originally emphasized, increased modularization allowed components to be more efficiently mixed in various combinations so as to better meet individual customer needs.

The interrelated enablers of mass customized design and assembly are enhanced by what Milgrom and Roberts (1990) referred to as a complementary interaction between such enablers. Specifically, if computer aided design (CAD) allows for broader product lines and computer aided manufacturing (CAM) makes it more efficient to switch between

products, a value-added interaction exists that makes it more effective to adopt both technologies. In essence, the greatest value is achieved not by isolated efficiencies, but more so by the interactions of those efficiencies when they are employed together as a comprehensive system. Such a system of enablers favors a comprehensive approach to a mass customization strategy.

In the context of production, mass customization emphasizes the value-added and interrelated roles of computerization, modularization, and interconnectivity. Given the parallel between mass production and mass e-tailing, the same system of enablers can be used to inform and frame an e-consumer services strategy. Fig. 2 shows the translation of these production-related enablers into the context of e-tailing (or online selling), revealing the selling-related enablers of decision support, bundling, and cross e-tailing. By analyzing these selling-related enablers, as well as the effect of customization in the context of online selling, e-tail strategies can be comprehensively shifted toward the customer by way of mass customized e-consumer services.

#### 4. Applying the lessons to e-consumer services

By drawing a parallel between mass production and e-tailing (i.e., online sales), a parallel can also be drawn between the enablers of mass customization and mass customized e-consumer services. In the context of online sales, the production-oriented role of computer aided design is transformed into the sales-oriented role of Web-enabled decision support that assists customers with defining customized products or services. Such assistance is especially emphasized as the role of computer aided manufacturing takes the form of computerized models that allow for the definition of an almost

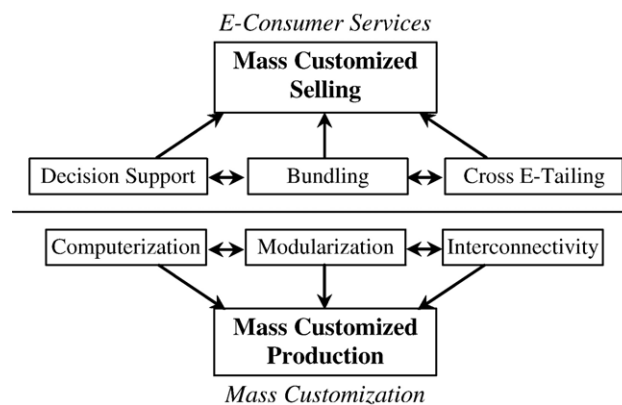


Figure 2 A mirror image: Enablers of mass customization as applied to e-consumer services.

infinite combination of features and pricing, thus taking customization and modularization to their limits. At the same time, Internet technologies provide for an interconnectivity that is unmatched in its ability to integrate and assemble any such combination of products and services, thus allowing for the most comprehensive customized solutions to be offered on an individual basis.

In a mass customized e-consumer services strategy, the relatively unlimited potential of customization, decision support, modularization, and interconnectivity is specifically relevant to the context of online sales. As such, the analysis of these enablers begins with an analysis of how selling is affected by customization. In turn, this can offer further insight into the roles of the enablers of a mass customization strategy as it applies to online selling. Next, we discuss customization in online selling and the inevitable transition to non-expert customers.

#### 4.1. Customization in the context of online sales

E-consumer service strategies pivot off the complexities of customized sales processes. Selling a customized product might be an easy task if a customer can simply specify a preference for each feature. When customer requirements do not translate directly into product specifications, however, things become more complicated. Even more challenging are situations in which customized products can be configured into countless variations. Such is the case of e-consumer services where providers use computerized models to custom combine a multitude of features so as to define and sell highly individualized solutions. This reality is exemplified by Freddie Mac's recent announcement of technology initiatives aimed at mass customizing mortgage products so that hundreds of loan characteristics can be combined without restriction. Ultimately, the reality of technology-enabled customizability presents challenges to the seller and purchaser alike.

The challenges of selling customized products can be analyzed from an evolutionary perspective. Mass customization has evolved from its traditional, pre-Internet origins to the present context of online buying. The former was the domain of the skilled salesperson; the latter is dominated by the expert customer. The past and future progression of these contexts has implications, as illustrated in Table 1.

Originally, expert salespeople served as the primary drivers of customized sales and thus were faced with the challenges of consultative selling.

These salespeople understood both the product and the configuration process, and used complex applications to assist the customer with defining custom solutions to their needs. In the era of the Internet, expert customers ably replaced the skilled salesperson, bringing with them a more personal understanding of their own needs. Now, as more mainstream (non-expert) users come online, the system will need to replace the salesperson and provide expertise concerning the product, as well as the configuration process.

##### 4.1.1. Moving from consultative selling to revelation buying

The challenges of selling customized e-consumer services can be characterized with respect to the challenges of consultative selling, in which a salesperson must advise consumers and assist with needs assessment and product selection. Rackham and De Vincentis (1999) describe the complexity of consultative selling by contrasting it with the simplicity of transactional selling, in which consumers understand the product as well as their own needs, and simply want to complete a purchase. Consultative selling can become even more complex when the control of the sale is transferred to the customer, a trend that is driven in part by the advent of the Internet and the escalation of online purchasing.

The trend toward making the customer part of the sales process is also driven by the evolution of

**Table 1** Toward customized e-consumer services for the non-expert

Pre-Internet customization controlled by sales person	Early/current-Internet customization controlled by expert customer	Future Internet customization controlled by non-expert customer
<ul style="list-style-type: none"> <li>• Experienced with product, process</li> <li>• Consultative selling</li> <li>• Salesperson provides expertise</li> <li>• Salesperson identifies needs</li> <li>• Salesperson defines configuration</li> <li>• Product configuration systems</li> </ul>	<ul style="list-style-type: none"> <li>• Experienced with product only</li> <li>• Revelation, Transaction buying</li> <li>• Customer provides expertise</li> <li>• Customer knows needs</li> <li>• Customer defines configuration</li> <li>• User-assisted systems</li> </ul>	<ul style="list-style-type: none"> <li>• Inexperienced with product, process</li> <li>• Self-consultative buying</li> <li>• System provides expertise</li> <li>• System identifies needs</li> <li>• System defines configuration</li> <li>• Solutions-driven systems</li> </ul>

selling techniques whereby push strategies are being replaced by pull strategies, something [Carter \(2003\)](#) describes as a move to “revelation buying.” When salesperson-driven consultative selling gives way to customer-driven revelation buying, customers must be provided with information so that they can self-discover their own need for a product. However, revelation buying assumes that customers are assisted by the expertise of the salesperson or that they are proficient enough to be capable of discovery on their own. The same assumption applies to customers being able to define the features of complex customizable e-consumer services. This presumes that customers not only understand their needs, but the complexity of the product or service as well.

#### 4.1.2. Moving from expert to non-expert buyers

When the complexity of customizable services combines with the customer-controlled purchase process of the Internet, the result tends to attract expert buyers. [Sichelman \(2002\)](#) highlighted this point by noting that a significantly higher percentage of online mortgage borrowers are homeowners who are refinancing, and thus are familiar with the lending process. Sichelman also referred to an industry professional's claim that this “typical online consumer” is “much better informed, and they understand the process and the product” (p. 18). The tendency of e-consumer services to attract expert users coincides with the ability to bypass the salesperson, the implications of which are conflicting. On one hand, since consumers have a greater familiarity with their own situations, they may be able to act in their own best interests. On the other hand, the non-expert consumer, who has a lesser understanding of the product, will present a challenge to an unassisted and complex sales process.

The challenge of selling to future non-expert buyers can require a strategic shift. In an analysis of next-generation marketing (or “Über Commerce”), [Watson, Berthon, Pitt, and Zinkhan \(2004\)](#) refer to strategies such as “attenuation marketing” that add value by reducing the need for customer interaction or decision-making. To this end, the e-commerce environment, with its Web-enabled information systems, can effectively manage knowledge for the customer and add value to the customized purchase process. This is particularly important as computerization continues to push the extent of customization; as it does, it likewise must be employed in response to the increased complexity of purchase decision-making. Decision support systems will be a key component of computerization that will help to mitigate the problems with complexity. Next, we describe the type of decision

support that can be used to deal with these complexity issues.

## 4.2. Computerization: Providing the customer with decision support

Web-enabled customer decision support is a key enabler of customized sales. A study by [Saeed, Hwang, and Grover \(2002\)](#) highlighted the value of website features that serve specifically to assist the customer with product requirement decisions. Such assistance can take many forms, from self-service to consultative service. Although consulting with a sales or service representative may seem like a return to the pre-Internet era of expert-controlled selling, when the online purchase process is placed in the hands of the customer, the nature of the process changes and the user interface must change with it. Ultimately, as customization is added to the self-service online purchase process, the non-expert customer will need assistance that tends to be associated with a full-service brick and mortar environment.

### 4.2.1. Assisted service: A return to full service?

“Assisted service” harkens back to the days of pre-Internet selling, when service representatives assisted customers with navigating the complexity of the customized sales process. Responding to the merging of self- and full-service assistance, [Landry and Taylor \(2004\)](#) emphasized the value-added role of online chat and other assisted service tools. Although older tools such as telephone and email can be well-used in assisting with online purchases, they feature drawbacks that will limit their future efficacy. Telephone use can be at odds with online interaction; further, its scalability is limited by its dedicated one-to-one contact and by a supply of experts, the latter of which is evidenced in the widespread use of prewritten customer service scripts. While email is more scalable and more compatible to the electronic medium, it may not provide for timely responses and can thus be flawed as a sales support tool. Attempts to make email communications more efficient have led mass e-tailers to use auto-responses based on analyses of the content of messages; however, incorrect interpretations can be problematic, especially with respect to sales support that requires immediate and helpful input.

Problems with using the telephone or email for sales support have, in part, been resolved by newer technologies. As emphasized by [Oliva \(2003\)](#), instant messaging has come of age as a business tool that is well-suited to pre-sales communications. The newer assisted service technologies are particularly important to enhancing online sales in the banking industry, where websites struggle to convert shoppers into

buyers when dealing with complex products such as mortgage and consumer loans. Landry and Taylor (2004) punctuate this point with a description of how Bank of America offers an opt-in for high-potential browsers to chat online with dedicated loan specialists. However, even though such an approach resolves the timeliness issue of email, it does not resolve the scalability issues of dedicated service (i.e., there is a limit to how many customers a service expert can handle in a given period of time).

#### 4.2.2. Self service: Informing the informed customer

Newer assisted service tools still require human interaction, and these services still are limited in scalability due to the need for expert representatives. The supply of expertise becomes even more problematic when a product or service is customizable and complex. As an alternative to human interaction, self-service tools and information can provide assistance with determining and configuring product requirements and features. This approach is one that is commonly used today on the Internet by expert consumers. Self-service customer assistance can take numerous forms including search and compare functionality, as well as access to information such as detailed explanations, user ratings and forums, and even expert recommendations. Consistent with the trend toward transaction-seeking expert consumers, online customization often relies on the user to supplement assistive tools with their own expertise. Even Dell, perhaps the best known customizer on the Web, continues to employ a user interface dominated by the step-by-step selection of components and peripherals. The selection process is assisted by preconfigured solutions, hyperlinked descriptions, and product comparisons, as well as by the user's ability to determine the best alternative. This type of approach, however, does not help customers who are unsure about their needs. Grenci and Todd (2002) contrast this type of self-service or "user-driven" interface to a less typical "solutions-driven" interface, in which a customer decision support system (CDSS) substitutes for the analytical capabilities of the expert user or salesperson. Such a CDSS identifies customer needs and the product configurations that meet those needs. For example, on its Small Business site, Dell now provides a Desktop Advisor that recommends a solution based on specific customer and usage characteristics.

#### 4.2.3. Assisted self-service: Expert systems for the non-expert

In order to become a mass customized e-consumer services provider to non-expert consumers, a firm

must use a solutions-driven CDSS, essentially applying the expertise of assisted service to a self-service approach. Many self-service interfaces are designed for customers who have some expertise, and that can translate into incomplete assistance. For example, American Express offers an online tool that, based on desired features, recommends the best credit card. The tool, however, compensates only for a lack of product knowledge, not for a lack of self-awareness of needs. In other words, it assumes that customers understand why they need the product or how best to use it. Conversely, self-help information often focuses only on usage or needs and not on product selection. For example, AdvanceAutoParts.com offers expertise in the form of know-how articles such as "Troubleshooting by Smell" (as well as sight and sound), but these articles are not linked to the identification of specific products and thus do not compensate for a lack of product knowledge.

As non-expert users can have a limited understanding of the product as well as their needs, a CDSS must offer expert assistance with respect to needs assessment, particularly when those needs are confused by the complexities of custom configurations. To this end, an expert system serves to replace a salesperson by translating customer characteristics or usage requirements into recommended product configurations, rather than relying on the user to determine needed features or benefits. The expertise for such recommendations can be obtained from various sources, including the knowledge of in-house experts who can provide rules for translating customer input into needs and, ultimately, into product features and configurations. Online recommendation systems can also use data mining, with sales trends or customer ratings producing expertise in the form of collaborative recommendations.

#### 4.3. Interconnectivity and modularization: Custom bundling for individualized solutions

Computerization has implications beyond replacing the salesperson with an online CDSS: it also contributes to the modularization of customized sales and services. E-consumer services are especially suited for modular assembly or bundling, thus allowing for the definition of customized bundles of products or services whereby complementary items can be combined into individualized solutions. For example, a line of credit may be particularly value-added if it serves as overdraft protection to a checking account that has large fluctuations in cash flow. Technology allows such combinations to be recommended and readily bundled so as to provide

value-added solutions on an individual basis. In this way, bundling can be effectively used in a mass-customized e-consumer services strategy. It should be noted, however, that bundling can take on various forms. The goal is to look beyond simple cross selling to a more comprehensive solutions-driven cross e-tailing approach.

#### **4.3.1. Moving from cross selling to solutions-driven custom bundling**

A basic form of cross selling can stop short of solutions-driven custom bundling. Cross selling often just exploits a customer base to sell another product, a tactic enhanced by Web interfaces and online selling. For example, online banking and insurance providers such as MetLife emphasize the benefits of a single interface as a selling point for customers to purchase other financial products. Even on the retail side, e-tailers such as electronics stores attempt to cross sell relevant accessories when an item is added to an online shopping cart. Similarly, online bookstores such as Amazon.com offer to bundle related books based on subject. Amazon also informs customers of books to consider, based on an examination of the previous purchases of their customers. This technique may not effectively exploit the data, however, as it can list books that are unrelated to the one being purchased. This problem could be remedied by the interjection of additional expertise.

A solutions-driven approach can move custom bundling beyond a simple form of cross selling. Progressing past the use of the Web as just an interface for cross selling, Brohman, Watson, Piccoli, and Parasuraman (2003) point to customer relationship management (CRM) and data mining tools as key technologies for effectively advising customers about their needs. These tools can enhance customer decision support and play a significant role in a more solutions-driven custom-bundling approach. With the amount of data collected online, CRM tools can help to identify even the most complex of bundled solutions. For example, mutual fund company Dreyfus Corporation significantly reduced its attrition rate by mining its databases so as to provide customized financial solutions to customers determined to be an attrition risk. Essentially, effective use of CRM tools can turn cross selling into a value-added customized solutions process.

#### **4.3.2. One step further: Cross retailing**

CRM-enabled custom bundling can be advanced even further by cross retailing strategies that modularize the sales process to the maximum extent possible. By replacing the salesperson with

a Web interface, Internet commerce has allowed the service provider to automate the selling process and thus pursue cross e-tail opportunities of selling each other's goods and services. In doing so, the seller would not be restricted with respect to the configuration of a customized bundle of goods or services, and ultimately would be better able to fully meet the needs of an individual. From the standpoint of product management and service, Carter and Sheehan (2004) analyzed the potential of e-coops as the next step in e-tailing strategies that seek to fulfill customer needs. In a similar vein, but from the standpoint of product offerings and sales, cross e-tailing can be combined with custom bundling to form an important basis of a mass customized e-consumer services strategy, particularly (but not exclusively) when dealing with the limitations of physical products and inventories.

As the complexities of product and inventory management can contribute to manufacturing and retail specialization, cross e-tail relationships can broaden product offerings and provide an added dimension of customer value with respect to physical goods. Customers can be offered more comprehensive solutions to their needs, while e-tailers can expand their sales to include complementary products. For example, by developing innovative order fulfillment relationships with other manufacturers, Dell was able to effectively offer customized packages that include third party peripherals such as monitors. The cross e-tailing of physical products is not specific to direct sellers/manufacturers. For example, partnerships with accessory sellers could allow e-tailers like Lands End (using their "virtual model") to go beyond clothing recommendations, so as to custom bundle a complete outfit that includes shoes, jewelry, etc. The comprehensiveness of a solution can even expand beyond the industry. For example, a buyer of tickets for an event or vacation could be offered an outfit or equipment to complement the occasion.

#### **4.3.3. Achieving cross e-tail interconnectivity**

Cross e-tail relationships are capable of tremendous growth due to the efficient interconnectivity inherent to Internet commerce. In particular, automated Web-to-Web transactions are being driven by de facto standards based on XML (extensible markup language), the Web's version of electronic data interchange (EDI) and perhaps the ideal technology for retail partnerships. As a back-end tool, EDI provided a standard format for automating the exchange of business-to-business transactions. However, as a user interface tool, the Web provides a platform for automating both business and consumer interaction, with XML

extending that platform by automating, in an EDI-like manner, the exchange of information between Web pages. In essence, XML allows the Web to be used as a combined front-end/back-end system that can simultaneously interact with a customer while exchanging business transactions between trading (or cross e-tail) partners.

As XML is merely a markup language for coding information, there is no set standard for what information gets coded or how it is coded. In order for XML to function, parties that exchange information must adopt and program the same codes. As such, specific standards are being advanced for various industries. The Independent Insurance Agents of America supports an industry-standard version of XML so that independent agents can easily compare policies and rates. Likewise, physical goods industries have embraced specific standards, such as the chemical industry's use of the Chemical Industry Data Exchange version of XML. In a broader scope, the Association for Retail Technology Standards has charged an International XML Retail Cooperative committee with standardizing XML messages for exchange between systems that support retail stores. Such a broad standard could provide the basis for cross e-tail partnerships. While broad cooperation will advance the usefulness of XML, as [Ferguson \(2002\)](#) explains, cross-industry standards still remain as the next stumbling block.

## 5. Implications and recommendations

The development of a mass customization framework provides both explicit and implicit direction for future Web initiatives. A comprehensive strategy for mass customized e-consumer services requires e-tailers and service providers to pursue initiatives that have implications for marketing, selling, customer decision support, and retail partnerships. This section expands upon the types of initiatives and considerations relevant to the direction provided by the framework. In particular, the challenge of selling customized products to non-expert customers lies in the ability of e-consumer service providers to determine customer needs and then configure and offer solutions that fulfill those needs. Such abilities require knowledge of the customer and their characteristics, emphasizing initiatives related to market and product analysis.

### 5.1. Segment your market

[Yankelovich and Meer \(2006\)](#) emphasize that, despite its advertising usage, a key purpose of segmentation is to develop new products to meet

customer needs. Customers can be segmented in various ways, but the goal for e-consumer service providers is to determine the characteristics (based on an analysis or mining of demographic, lifestyle, or other data) that ultimately match product configurations to individual types of customers. For example, at a very basic level, Dell uses generalized segments based on types of computer users (home, small business, etc.) to match product lines to customer groups. Just recently, Dell's Small Business site began employing sub-segments to help match specific computer models to specific customer types (e.g., traveler, professional, etc.). Detailed and thorough sub-segmentation would be quite useful for a mass customized e-consumer services strategy.

### 5.2. Create customer personas

Unlike Dell's use of generalized groups of customers, segments can also take on the form of personas whereby detailed, fictional descriptions of customers serve as models or test cases for product design. Personas are well-used in website design, as well as for marketing-related needs analysis. Daimler-Chrysler has gone as far as to create "persona rooms" (i.e., real living spaces for their personified customers) so as to help them "to empathize with their customers and to understand what moves and motivates them" ([Chon, 2006](#), p. B9). While focused on product design (and not Web-enabled product selection), personas can actually be very useful if employed as a decision support tool that allows customers to select the fictionalized characters to whom they most relate. In this manner, personas can be effectively used by e-consumer service providers for pull strategies, as well as for customer needs determination.

### 5.3. Account for expertise

As part of a CDSS, segments or personas need to be mapped to usage requirements and, ultimately, to specific products or configurations. [Grenci \(2004\)](#) describes how multiple levels of translation could assist customers who have different levels of expertise. For example, in addition to mapping computer models to the type of customer, Dell also maps models to the type of usage (e.g., gaming, word processing, etc.). Such translations of customer type or usage serve as solutions-driven determinations of customer needs, thus providing helpful assistance to non-experts. At the same time, a third level of information shows each model's computer performance ratings (e.g., speed, storage, etc.), and thus would be helpful to customers who already understand their needs. An online



customization interface that can assist all levels of expertise would be critical to supporting a comprehensive e-consumer services strategy.

#### 5.4. Segment profitability potential

E-consumer service providers should also analyze and segment by customer profitability. Ryals (2003) points out several methods of data analysis and mining in the context of identifying and retaining customer segments that offer the greatest potential (based on lifetime value calculations). The importance of such analyses is emphasized by Temkin's (2005) recent survey, which showed Web analytics software taking the top spot amongst customer experience initiatives. Analytics and profitability segmentation are especially important to an e-consumer services strategy that is enabled in part by an increased need for assisted service (such as online chat). With consultative selling, valuable or scarce resources must be deployed in an efficient and profitable way (i.e., with a primary focus on higher value customers).

#### 5.5. Analyze behaviors and events

In addition to employing customer profitability segmentation, e-consumer service providers can use buying behavior or other events to determine value and potential. Temporal event analysis is particularly significant in that it can identify triggers for "dialog marketing," a recent advancement that Kalyanam and Zweben (2005) refer to as "the highest rung on the evolutionary ladder that stems from database marketing" (p. 114). With dialog marketing, an analytics-based understanding of customers and the timing of their transactions (or lack thereof) can act as a trigger for initiating and extending personalized online interaction. Personalized and well-timed dialoging offers an important push-marketing tool for mass customized e-consumer services. Not only can customized solutions be offered on the basis of customer activities and histories, but solutions can be incrementally built and offered by way of interactive dialogs during the purchase (or even search) process.

#### 5.6. Optimize pricing

Behavior segmentation also has implications for customer-specific pricing. Cross and Dixit (2005) discuss a customer-centric pricing process that exploits buyer behavior and perceptions of value to capitalize on varied price sensitivity. In a mass customized e-consumer services strategy where

bundling allows for a multitude of custom configurations, this can translate into value-added pricing based on willingness to pay. As Grover and Ramanlal (2004) emphasize, product uniqueness increases a confounding effect, which in turn limits price comparisons and thus decreases pricing pressure. Bundled pricing can overcome the consumer's access to price (and even cost) information on the Internet, and can allow e-consumer services providers to price mass customized solutions in a more profitable way. If coupled with interactive dialoging, pricing can even be employed on an individualized basis.

#### 5.7. Enhance data collection

The compilation of demographic and personal information is critical to any analytics-based initiative. This is particularly true regarding mass customized e-consumer services strategy, given the complexity and specificity of the analyses needed. Service providers will need to collect very rich data in order to create connections between customers and solutions. While incentives are often used to motivate customers to submit information, such motivation may be limited. Several studies (Andrade, Kaltcheva, & Weitz, 2002; Ward, Bridges, & Chitty, 2005; Xie, Teo, & Wan, 2006) found that the offer of a reward had no (or even a negative) effect on the voluntary submission of demographic or personal information. Given possible limitations with the use of rewards, e-consumer service providers should consider the means for collecting rich data in terms of more incremental and perhaps interactive dialog-style methods.

### 6. Final thoughts

In analyses of Internet-enabled customer value, Wheeler (2002) argues that the key challenge of e-commerce is to convert enabling technologies into opportunities for creating customer value, and Wells and Gobeli (2003) propose that the interaction between customizability and online products provides an ideal opportunity to create customer value. While there exist numerous Internet strategies of technology-enabled value, the framework developed in this article emphasizes the extensive potential of mass-customized e-consumer services, and the challenges and opportunities of cross e-tailing in an integrated marketplace. Ultimately, as the Internet marketplace advances toward common standards driven by industry-wide XML initiatives, the ability to fully exploit cross e-tailing opportunities will depend, in large part, on the ability of e-

consumer service providers to effectively implement comprehensive strategies that facilitate the selling of mass customized solutions.

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