



Customerization: The Next Revolution in Mass Customization

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In the digital marketplace, where products and services can be endlessly reconfigured, customers are becoming active participants in the product development, purchase, and consumption process. Garden.com, for example, allows a consumer to design a garden at a desktop computer, choosing from 16,000 plants according to local climate; the company then coordinates one delivery from over 50 suppliers. Similarly, priceline.com and DealTime.com have customized the price determination process.

These companies and a growing number of others are transforming the practice of marketing from being seller-centric to being buyer-centric, say authors Wind and Rangaswamy. They call this emerging paradigm “customerization” and describe it as “a call to the marketing profession to rise to a new standard of interacting with customers and building relationships with them.”

Combining mass customization with customized marketing, customerization allows firms to adapt one-to-one marketing and personalization strategies to the digital environment. In a sense, a firm becomes an agent of the customer—“renting” out to customers pieces of its manufacturing, logistics, and other resources, thus allowing them to find, choose, design, and use what they need. Such strategies often require little prior information about customers, and the product itself can be manufactured *after* customers tell the company what they want to buy.

In developing customerization strategies, however, companies face a number of challenges. These include obtaining information from customers, identifying intangible factors that may be crucial to customers, dealing with enhanced customer expectations, limiting the complexity of options, and pricing customized offerings.

In addition, while technology makes the implementation of customerization strategies easier and cheaper, strategic and organizational decisions are more complex and expensive, as the company determines what is the right information to send to each customer. To be truly successful at customerization, a company must bring together the value chains of the supply and demand sides of the market. In some cases, the entire company might be reorganized around a new order generation and fulfillment process as part of a customer-driven, integrated global supply chain.

Finally, managers face critical decisions about where and when to customerize and how to integrate this strategy with other marketing strategies. They must deter-

mine the optimal portfolio of mass marketing, direct marketing to target segments, and interactive customized marketing. In this new realm, success will depend on finesse—the ability to deploy effort into areas that generate higher customer value than the cost of adding that value—rather than on massive resources.

Where should a firm begin in implementing a customerization strategy? First, by increasing the digital content of its offerings and of the customer's shopping and consumption experience, and second, by positioning the firm to become the customerizer of the entire industry.

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Introduction

Mass customization is redefining marketing and business strategies. Many companies now offer highly customized products; the wide range of categories includes sneakers, coffee, dental products, newspapers, vitamins, bicycles, cars, golf clubs, eyeglasses, garden design, cosmetics, and greeting cards. Some companies, such as priceline.com and DealTime.com, have expanded the concept of mass customization by enabling a customized price determination process, letting customers specify their own prices and then try to locate providers who are willing to sell at those prices. As an example of expanded customization, Dell has established custom websites (called “premier pages”) for its business customers, whose employees can then order computer configurations that have already been approved by their IT departments. These companies are doing more than catering to new markets or delivering custom-made products at lower prices; they are transforming the practice of marketing from being seller-centric to being buyer-centric. We call this redesign of marketing from the customers’ perspective *customerization*.

Customerization begins with customers and offers them more control in the exchange process. However, companies can still decisively influence customer decision making and choice processes by providing relevant information, and by making it easier and cheaper for customers to deal with them than with competing firms. In fact, we can say that customerization is driven by a firm’s desire to redefine its relationship with customers. In some sense, a firm becomes an agent of the customer—“renting” out to customers pieces of its manufacturing, logistics, and other resources, thus allowing them to find, choose, design, and use what they need.

From Mass Customization to Customerization

We propose the term “customerization” to distinguish this new approach, which combines mass customization with customized marketing, from mass product customization. Hart (1996) defines mass customization as “using flexible processes and organizational structures to produce varied and often individually customized products and services at the price of standardized mass-produced alternatives” (p. 12). Cannondale (www.cannondale.com), for example, can configure over 8 million different frame and color variations in its bicycles. Likewise, Motorola’s Bravo pagers can be configured in millions of combinations varying in dimensions such as color and shape. But how do these companies translate this ability to produce numerous product options into customized shopping, purchasing, and consumption experiences for their customers? That requires customized marketing, not just mass customization. For example, a customer coming to the Cannondale site could be helped by a computer agent that asks for information about that customer’s gender, weight, height, etc., using which the agent recommends a small subset of bicycle configurations that is most likely to fit the needs of that customer.

Both mass customization and customerization are attempts to provide products and services that better match the needs of customers—and both are IT-intensive.

However, mass customization is IT-intensive on the production side, and customerization is IT-intensive on the marketing side. Also, customerization is inherently dependent on Internet and related technologies (particularly the World Wide Web) as a vehicle for implementing this concept in an economical way.

Unlike traditional mass customization, customerization does not require that a company have any manufacturing capabilities. Consider garden.com, which is transforming the nursery industry. Typically, nursery customers go to a local store and select from about 200-300 plants, which in most cases they have to transport back to their homes. In contrast, garden.com starts this process much higher on the value chain. Its customers start with a blank palette and design a garden on their desktop computers, customizing their gardens to the local climate (at the level of zip code). They can select from over 16,000 products and try out various landscaping options before deciding what their garden will be like. The site also contains an encyclopedia of information related to gardening, helpful hints for both amateurs and experts, and editorials, all designed to help customers in their decision process. Once customers design a garden, they can generate a “bill of goods” for the items in the garden with a click of the mouse. Garden.com then coordinates the supply chain for these products from its set of over 50 supplier partners and orchestrates the delivery of the products through FedEx, so that all of the items are delivered together in one shipment at the customer’s door. The interesting aspect of this business is that garden.com does not own any nurseries nor does it take delivery of the plants; in other words, it does not own a manufacturing process. Yet it is able to create a customized product and a unique shopping and purchasing experience for each of its customers.

Interestingly, customerization can be implemented with little prior information about customers, and the product itself can be manufactured *after* customers tell the company what they want to buy. For example, priceline.com sells a standardized product (airline seats), but customizes the price determination process, and (currently) requires no a priori information about the background of the individuals. As in the garden.com example, priceline.com can function effectively without any manufacturing facilities, by simply orchestrating the delivery of the chosen products and services.

Customerization versus One-to-One Marketing and Personalization

Customerization is an enhancement of one-to-one marketing and personalization, terms that are in wide use today. Peppers and Rogers (www.1to1.com) define one-to-one marketing as “marketing based on the idea of an enterprise knowing its customer. Through interactions with that customer the enterprise can learn how he or she wants to be treated. The enterprise is then able to treat this customer differently than other customers.” As implemented, one-to-one marketing is typically initiated by the firm (e.g., offering a smoke-free hotel room based on past preferences indicated by a customer). However, because one-to-one marketing is based on trying to predict what customers want, it may end up providing a customized product even when customers may not have a clear idea of what they want on a particular purchase occasion (e.g., a smoker may sometimes prefer to have a nonsmoking hotel room). Peppers and Rogers also define personalization as “customizing some feature

of a product or service so that the customer enjoys more convenience, lower cost, or some other benefit.” It enables companies to satisfy highly heterogeneous customer needs at low costs. Personalization can be initiated by the customer (e.g., customizing the look and contents of a home page as in NetCenter or Yahoo!) or by the firm (e.g., a real estate agent determining the set of houses to show to a customer; greeting a customer by name when the customer calls a support line).

To summarize, customerization is a buyer-centric strategy. It is under the control of customers and initiated by them. Its focus is to help customers to better identify or define for themselves what they want; it is a way for companies to adapt personalization and one-to-one marketing for the digital marketing environment. Customerization exploits a “build-to-order” mass customization process with low lead times to deliver a product or service that best fits the needs of the customers. In fact, the product is sold before it is produced!

In contrast, one-to-one marketing and personalization are not necessarily initiated by customers nor executed under their control. More importantly, these strategies do not closely integrate the production and supply chains with marketing. Instead they rely on modifying an established product or process at their periphery to fit the needs of specific customers. The main drawback of these strategies is that they could put a firm at a competitive disadvantage relative to nimble competitors, who are increasingly using more sophisticated customerization strategies.

Table 1. Differences Between Personalization, One-to-One Marketing, and Customerization

	Personalization	One-to-One Marketing	Customerization
Locus of control	Customer/Firm	Firm	Customer
Customer co-design	Low	Low	High
Prior data about customers	Low	High	Moderate
Links to production/supply systems	Low	Low/Moderate	High
Links to customer systems (especially B2B)	Low	Moderate	High
Does it require build-to-order system?	No	No	Yes

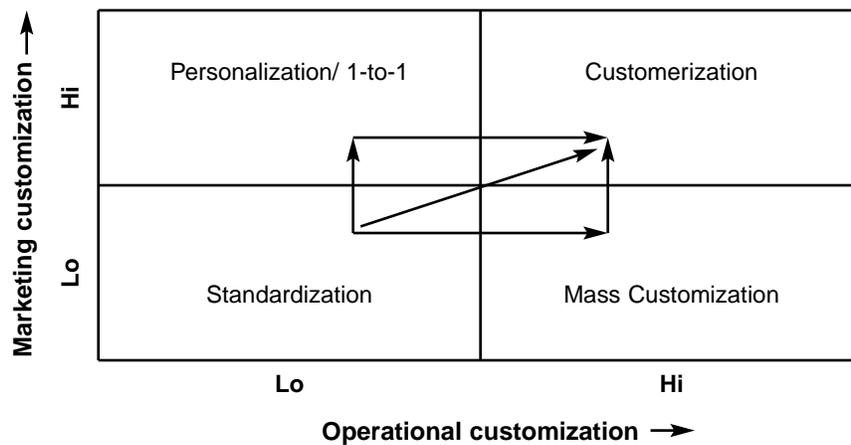
The distinctions between personalization, one-to-one marketing, and customerization are summarized in Table 1. These differences are particularly salient for business-to-business (B2B) companies. Companies like FreeMarkets and Chemdex are completely transforming channels and exchange relationships in B2B markets to be more buyer-centric. For example, FreeMarkets offers a bidding mechanism in which multiple suppliers bid online on well-specified products and services that are put out for bid by firms. Marshall Industries (www.marshall.com) helps design engineers in the electronics industry to use the information and tools available at its site to design new products. Designers can custom-design products using parts from various suppliers. B2B customers are also increasingly demanding deeper links into the production and organizational processes of their suppliers (e.g., for 24/7 access to order status, automatic inventory replenishment, remote diagnostics). To accommodate such customers, B2B companies need to offer more than customized prod-

ucts and services—they need to customize their internal processes and supply chain partnerships to more fully meet the differing needs of their customers.

The Road to Customerization

Figure 1 identifies alternative ways for customerization strategies to evolve in a company. The road to customerization is often through personalization and/or mass customization. Given the heterogeneity of products and market segments available to a company, an optimal strategy would often involve a portfolio of all four strategies identified in Figure 1.

Figure 1. Pathways to Customerization



In developing a strategy for customerization, a company should be guided not only by customers' wants and needs that are best satisfied by customized offerings, but also by its operational capabilities. At one extreme is the situation where targeted customers have no need for customized offerings, and the firm offers standardized products (e.g., salt will probably continue to be sold in this way). At the other extreme are offerings where customers desire a high level of customization *and* the production process allows the customization of the product and service offerings at reasonable costs. Products with a large amount of "digital content" (e.g., software, music, business cards) fall in this category. Here, customization can be done by the customer, the firm, or by an intermediary. Finally, there are many products where some customer segments have needs that are best satisfied by product customization, but there may be significant costs (relative to selling price) involved in satisfying those needs (e.g., cars, IC chips, cosmetics). Here both customers and firms face a tradeoff situation, and the costs and benefits of customerization have to be evaluated carefully. For example, Nike offers customized sneakers (with customized engraving up to eight letters), but charges \$10 for the customization.

In summary, a firm's decision to move from standardization to customerization is based on changing customer needs and desires, improved technology, and the business model it pursues. In this article, we use examples from leading-edge practice to

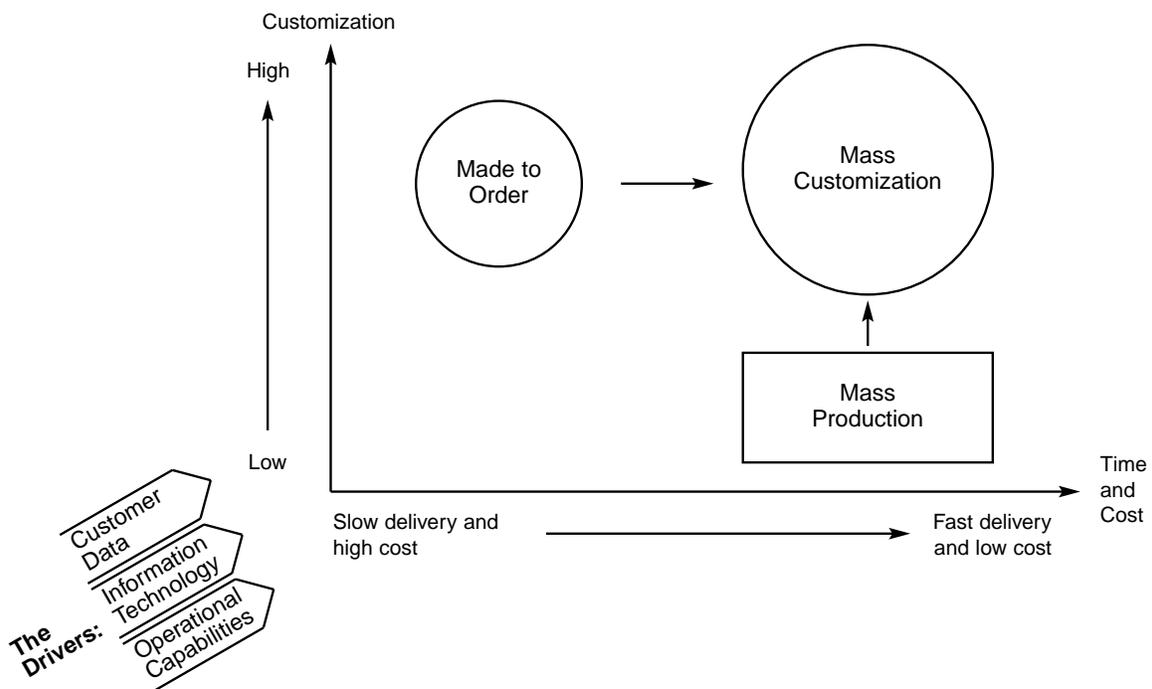
help managers frame their thinking about what customerization means for their own companies. We summarize the reasons for the growth of customerization, its potential benefits, and the challenges of implementing a customerization strategy. For this article, we used both library research and interviews with pace-setting companies to gain an understanding of how customerization is transforming the marketing function, and how managers can use customerization to build strong and lasting relationships with their customers and thus, grow and strengthen their businesses.

The Next Revolution in Customization

The impact of mass customization on manufacturing is well known. The technology and strategy of lean production significantly changed the tradeoffs between efficiency and customization, sending shock waves through manufacturing (see, for example, Nicholas [1998] and Delbridge [1998]). While much attention has been given to the impact of customization on manufacturing, we are just beginning to understand its impact on marketing.

Early customization efforts were in the form of “made to order” products and services (e.g., furniture), which, however, had long lead times and were not tied to flexible manufacturing systems. The recent advances in flexible manufacturing, coupled with the collection of detailed information about customers, and advances in database marketing and its associated analytics (e.g., CASA’s Adaptive Dynamic Marketing and Relationship Value Tags), enable firms to offer products tailored to customers’ needs but at costs that are almost the same as those for standardized production and mass marketing. This shift is illustrated in Figure 2.

Figure 2. The Mass Customization Paradigm



As shown in the figure, mass customization offered goods producers a new paradigm: they no longer had to trade off between tailoring a product to the needs of specific customers and delivering the desired product quickly and at low cost. Continuing innovations in flexible manufacturing, inventory management, and integration of global supply chains have provided further ability to deliver customized products quickly and at reasonable costs.

Mass customization can offer significant benefits both to customers and the firms offering them. These are summarized in Table 2. From the customer's perspective, the real benefit is the ability to find and or design products and services that meet their needs. There is some experimental evidence that customization increases satisfaction—customers allowed to specify their within-attribute preferences in selecting products were more satisfied (Huffman and Kahn 1998). For firms that adopt a customization strategy there could be several benefits. Among the most significant benefits to the firm are the substantial reduction in inventory, the opportunity to enhance customer loyalty and avoid the pitfalls of commoditization. For example, for 1999, Dell Computer Corporation (which uses a build-to-order system) had inventories of \$273 million on sales of \$18.2 billion whereas Compaq, which relies more on the traditional build-to-stock system, had inventories of \$2 billion on sales of \$38.5 billion. When asked, “Is it possible to mass customize products, deliver them rapidly, and at the same time reduce cost?” Hewlett-Packard answered yes, based on its experience in computers, printers and medical products (Feitzinger and Lee 1997).

Table 2. Potential Benefits of Mass Customization

The Experience to Date

For the Customers

- Better meets their needs and wants and solves their problems.
- For a significant segment, the benefits of customization is worth a premium price.
- Customer influences part of the design and production process.

For the Firm

- Reduces/eliminates inventory.
 - Provides opportunities for better value-added services.
 - Provides, for the portion of the business that is manufactured for inventory, more accurate market information on changing customer tastes and the actual tradeoffs they make in choosing products. Also offers opportunities for more accurate forecasting.
 - Helps redesign of operations and logistics, leading to processes that result in “better, cheaper, and faster” production and delivery of products and services.
 - Helps in developing and maintaining customer data bases and allows better utilization of IT to implement “segments of one” strategies.
 - Gets the customer to spend more on the products and services.
 - Builds relationship with customers, thus achieving higher customer satisfaction and loyalty.
 - Offers opportunity for better channel management.
 - Stimulates continuous innovation.
-

Increasingly, however, it is becoming evident that the customizability of marketing is a limiting factor for realizing further benefits from mass customization. For example, millions of manufacturing options are not exercised and less-than-satisfied customers stay with mass-produced products. One informal study determined that while an auto manufacturer ostensibly offered 20 million possible variations of a popular sports coupe, most customers chose from among the 20 or so models that were actually in stock at local dealers (Fisher, Jain, and MacDuffie 1995). (In contrast, Dell Computer Corporation was able to satisfy the needs of its customers better by producing 25,000 different computer configurations in 1999!)

In response, the auto companies have announced plans to customerize. For example, General Motors announced a build-to-order system that would enable customers to custom-design cars online, which are then to be delivered within as few as four days. Such a system requires a completing restructuring of the company—its order processing, manufacturing, and distribution. Cars must be redesigned to simplify manufacturing. Suppliers, factories, and dealers would be wired together via the Internet, helping the company to cut in half the \$40 billion in parts and unsold inventory the company carries at present (Simison 2000).

With the continuing sharp decline in the costs of computing and communication, and the growing customer acceptance of online shopping, other limitations of traditional mass customization are increasingly becoming evident. A remarkable aspect of the digital marketplace is that it is infinitely re-configurable. Each customer can be individually guided during the shopping and purchase process: Only products of interest to a specific customer can be displayed using search features. Customers who are looking only for special deals can be offered unique promotions (e.g., stay at the hotel for two days instead of one and we will offer an additional 10 percent discount); customers who want to know what other customers thought about a particular product could be offered testimonials from other customers, or guided to a chat area of the website. These are just some examples of how marketing can be further customized in new ways in the online environment.

Customerization offers both new opportunities and also vexing problems for the traditional marketers. It is really a call to the marketing profession to rise to a new standard of interacting with customers and building relationships with them. The customer has to be viewed as an active participant in the process of creating and marketing the product or service. In effect, what was once a DC marketing circuit has become an AC circuit, alternating between the marketer and the customer. Customers are driving the process, searching for information they need to make choices, creating their own products and services, setting their own prices, and self-selecting themselves into segments.

While traditional marketing environments (mass-produced products sold through mass markets) will continue to play an important role in the economy, and while an increasing number of companies experiment with mass customization and personalization, the new type of marketing characterized by customerization represents a growing and increasingly important segment of the business. It offers enormous opportunities for companies that are poised to take advantage of this new type of customization. In the online environment, marketers are able to better

identify customer preferences and either focus their messages and products and services on meeting the needs of each individual, or allow the customer to customize the message and products and services they desire. Both can be done with the efficiency with which they once met the needs of mass or segmented markets. In fact, firms are only limited by their imagination and resources in the extent to which they adopt customerization strategies.

Marketing Implications of Customization

Customization challenges everything we take for granted in marketing. This is illustrated in Table 3. What does a product line mean in an environment in which the customer designs the product? What should be the role of R&D? What pricing strategies are appropriate in a world in which customers set their own prices for airline tickets, hotels, mortgages, and automobiles? What does segmentation mean in a world in which every customer is a segment? A discipline that came of age in an era of mass markets and relied on traditional direct marketing methods to reach individual customers now has to devise strategies to take advantage of the potential offered by viewing the customer as an active participant in the exchange process and as a co-producer of the product and service offerings.

Table 3. The Changing Face of Marketing

	Old Model (Mass Marketing)	New Model (Customization)
Relationship with customers	Customer is a passive participant in the exchange	Customer is an active co-producer
Customer needs	Articulated	Articulated and unarticulated
Segmentation	Mass market	Customized segments of one
Product and service offerings	Line extensions and modifications. Marketing and R&D drive new product development.	Customized products, services, and marketing. Customer interactions drive new product development. R&D focuses on developing the platforms that allow customization.
Pricing	Fixed prices and discounting	Value-based pricing models; customer-determined pricing
Communication, education, and entertainment	Advertising and PR	Integrated, interactive, and customized marketing communication
Distribution	Traditional retailing and direct marketing	Direct (online) distribution and rise of third party logistics services
Basis of competitive advantage	Marketing power	Marketing finesse and “capturing” the customer as “partner”

Relationships: From Passive to Active Customers

Traditional marketing often views the customer as a passive participant in the exchange process until the time of the sale, and in many cases, even after the sale. Customization sees the customer as an active participant at every stage of the product development, purchase, and consumption process, and as the co-producer

of the product and service offering. Lighting manufacturer Lutron Electronics, for example, has changed its mantra from “What can we do for you?” to “What can you do with us?” This philosophy has helped the company become the worldwide leader in the design, manufacture, and marketing of residential lighting controls and systems.

Individually and collectively, customers now have the means to directly influence a company’s policies and strategies. For example, the growth of online product communities is profoundly altering the power structure in the exchange process. A compelling example occurred at Intel in 1994. Andrew Grove, CEO of Intel, was forced to issue an apology on the Internet and revamp a proposed product return policy to soothe irate customers who were unconvinced about the steps the company was taking to resolve concerns about a possible flaw in the Pentium chip. Various chat groups at that time were discussing both the flaw and the solutions being proposed by Intel (*Wall Street Journal*, November 29, 1994). Likewise, the reluctant adoption of the MP3 standard by the music industry, after vigorous attempts by the leading industry players to thwart its adoption, is a testament to the clout that online customers have in decisively influencing the direction of entire industries.

Customer Needs: Focusing on Unarticulated Needs

Mass marketing focuses on articulated needs as stated by customers, or the marketer’s perception of articulated needs. Customerization focuses on identifying both the articulated and unarticulated needs by guiding the customer through a design and discovery process. For example, companies have been notoriously inept at trying to figure out what customers want in interactive television. This product experience is so foreign that companies have to engage the potential consumer in a process of education and allow the customer to experience the new product or service as part of the design process.

Even some seemingly straightforward products such as windows or jeans are hard for customers to visualize, let alone explicate their wants and needs. They cannot say exactly what they want, but know it when they see it. Technology offers ways to give customers product use experiences before the company produces the product. Andersen Windows uses a program called “Window of Knowledge” to allow customers to “see” how various Andersen windows would look in their homes. If a customer wants to install a new bay window in her kitchen, the program shows her the options inside and outside, including the impact of lighting on the kitchen.

Tailoring the Offering

Database marketing offers alternative approaches by which firms can tailor individual offerings and products to increase customer loyalty, dollar volume of purchases, and repeat purchases. First, companies that have made a commitment to one-to-one marketing are good at managing this information and communications process. In this way, companies can actually offer customers fewer options than mass marketers, because only the relevant options are visible. Second, firms can use innovative software, such as Firefly, a collaborative filtering tool, to offer creative

recommendations to a purchaser of music, movies, books, etc., based on related products purchased by other customers who purchase the same product(s). Third, companies can ask customers to provide them information about their preferences, and then design products and services to conform to the stated preferences. Coffee manufacturer Millstone asks new customers what kind of salad dressing they like and whether they prefer the taste of dark or milk chocolate. The company uses the responses to these and similar questions to create a “Signature Blend” of coffee tailored to the taste of their customers and delivered directly to their homes. The customer’s name, rather than the manufacturer’s brand, is printed on each bag.

Peapod, an online grocery store, customerizes the grocery shopping process. Its customers can create personal lists, such as products purchased frequently, products purchased for weekend parties, and products for special occasions (e.g., Thanksgiving). Using this service, customers can greatly reduce their shopping time (frequent users can purchase \$200 worth of groceries in less than 10 minutes), eliminate product categories of no interest to them (e.g., pet food), keep running totals of purchases so that they can spend within their budgets, etc. Another way Peapod customizes the shopping experience is by helping customers to list items available on hand in their pantry and refrigerator, and then suggesting recipes where these items can be used. The company hopes that this process will identify a few missing items, which the customer would then order online.

New Products: The Real World Is the Laboratory!

New products no longer come fully formed out of the labs, but arise through an interactive process of working directly with the market. Each customized product is a result of a co-design and production process of the customers and the firm. When this process is repeated across a number of customers, new insights emerge about customer preferences. Attributes and offerings that are not attractive can be dropped and those that are frequently requested can be enhanced.

Customers are helping many companies to configure a wide range of products on demand, including computers (Dell and others), bicycles (National Bicycle and Cannondale), CDs (CDNOW), vitamins (Acumins), designer jeans (Levi’s), and newspapers (*Wall Street Journal Interactive Edition*). Brad Oberwager, founder of Acumins, which offers customized vitamins, says customers stop thinking about the company as a producer of products and begin to view it as a service provider. The service is to give customers access to the manufacturing facilities to design and produce their own products.

By combining customer configuration with a mass production strategy, companies can also use the insights from the customized products to shape their mass-produced line. Customer design choices may portend emerging trends. For example, National Bicycle in Japan uses its customized bicycle production to provide insights into hot colors or styles for its mass production line. In a similar vein, P&G’s reflect.com website for customized cosmetics can provide insights into preferred product characteristics that can be incorporated into its mass-produced cosmetics.

To take full advantage of customerization for product design, companies need to give R&D a direct pipeline into the market and “invite” customers into the laboratory. In fact, several hi-tech companies such as Microsoft, Netscape, and Texas Instruments (TI) have recognized the need to continuously engage the customer in the product design process. For example, TI posted the design specs for its new calculator (TI-92) at its website. This product is designed for use in schools and is targeted at schoolteachers as the primary purchase influencers. TI engineers then invited customer participation and feedback by sending e-mail to chat groups where high school teachers congregate on the Web. Thousands of teachers responded. A week later TI posted a revised prototype based on the responses. The design specifications were finalized only after several rounds of such interactions. Selling this product was much easier because it was tailored to customer needs and was “pre-sold” to customers who had played a role in creating it. The product became one of the most successful calculators sold by TI. Interestingly, when a competitor quickly came out with a copycat product, many customers were incensed that a “competitor stole *our* ideas.” The market owned the product, and therefore, the product owned the market!

All Prices Are Negotiable: The Global Bazaar

Pricing is becoming more fluid. Even before the advent of the online medium, industrial markets and Third World bazaars have long followed a customized pricing mechanism based on bargaining and discount schedules. The online medium has made it feasible to apply flexible pricing more broadly. Online prices can be tailored to specific users and raised or lowered instantly for assessing price elasticity at different prices. The ability to create truly fluid pricing is only limited by customer acceptance. Technology is now available to vary pricing in ways that were not possible in the past. New in-store technology allows supermarkets to customize pricing based on specific times of the day through digital price labels or even to tailor discounts and coupons to individuals based on their past purchasing patterns. As noted earlier, Dell has implemented a highly successful customized pricing mechanism through its “premier pages” program. It has set up password-protected custom websites for over 30,000 of its business customers by extracting the most relevant content from its public sites and then customizing each site with the specific volume-pricing agreement that Dell has concluded with each customer. The system is also designed to take into account the purchasing process and billing procedures specific to each client. Employees of a client firm can configure computer systems and directly obtain a price quote specific to that client.

A more radical form of pricing is the rise of customer-set pricing. The old mass-market model was that manufacturers and retailers set prices and customers paid them. Priceline.com and DealTime.com offer a reverse model of pricing, in which customers propose the prices (e.g., for such products as airlines, hotels, and mortgages) and producers determine whether they will accept them. This approach is more likely to work for noncustomized products, such as airline seats, where the customer can easily shop around for the lowest price on the same product from a variety of sources.

Online auction sites have greatly expanded the appeal of auctions by customerizing the auction process. Companies such as eBay and Onsale have built successful businesses on this model. Onsale founder Jerry Kaplan predicts that retail markets will operate more like stock exchanges in the future, with prices fluctuating based on demand. Another interesting transaction model in this vein is offered by mobshop.com. The basic idea is to leverage the Internet to dynamically form a group of potential customers of a product (a “buying circle”) to take advantage of quantity discounts. The time of sale is announced in advance. As more customers join the buying circle, the price of the product continues to fall for the entire group.

Due to the influence of the online medium, we expect that all firms will be called upon to completely revamp their pricing strategies. The fixed one-price strategy of the past has been completely eroded over the past few years. In the years ahead, “dynamic pricing” that takes advantage of instantaneous market conditions will become the norm. Interestingly, these developments do not necessarily mean that prices will decline. In fact, several research studies show this (e.g., Lynch and Ariely 1998; Shankar et al. 1999). The convenience, time-saving aspects, and product-matching features of online markets can increase the price a customer is willing to pay. For example, a Wharton School study found that by their fifth visit to Amazon.com, customers had shaved off 200 seconds from their purchase time, resulting in savings of about \$1.44 per visit, given income levels of the sample.

When customers become familiar and comfortable with a shopping site it reduces their incentive to shift to other sites for lower price. Further, if a company understands the customer (e.g., by tracking and understanding what customers do while visiting its website) and facilitates the creation of a co-production process to produce a product and service tailored to the customer’s need, there is relatively little opportunity or incentive for customers to comparison-shop based on price. Customerization of the product or service adds so much value and so strengthens the relationship that the price becomes a less important factor. (Of course, if the price is out of touch with reality, customers may begin to substitute less customized products.) For example, as the only producer of customized vitamins, price is relatively unimportant for Acumins customers. As competition increases from other companies, this situation may change, but to the extent that companies can form deep relationships (based on their understanding of individual customer needs) and create value-added customized products and services, they may be able to command a price premium.

From Broadcast Advertising to Interactive Edutainment

Education is a key part of facilitating customer decision-making, and many companies are beginning to grasp the full significance of providing detailed information and knowledge to enable customers to become sophisticated buyers. For example, Lutron created a display at the Ultimate Home Theater Experience in Innovations at Disney World’s Epcot, which showed customers how different lighting can be used to make a room feel larger or smaller, warmer or colder. Thus, millions of visitors directly experienced “the magic of lighting controls.” When Lutron introduces a new lighting product, its first priority is to educate the trade about such customer benefits through public relations, advertising, trade shows, and

training sessions. The company reasons that customers might be better able to convey the feel or function they want from their lighting system than to specify a particular dimming switch.

A growing number of companies are recognizing that the online medium provides an unprecedented opportunity to “mix what they *know* with what they have to *offer*” to provide true incremental value to their customers. For example, the value of a DuPont chemical is not just the chemical, but also the vast storehouse of knowledge that DuPont has about the potential applications of the chemical, its performance characteristics in various applications, the economic consequences of substituting that chemical in a particular process, etc. By making this knowledge become part of the customer decision process, both the customer and the company can win—the customer finds better products and may focus less on price and more on product benefits. Likewise, the potential success of garden.com depends critically on its ability to provide a supporting knowledge environment so that less price-sensitive “weekend warriors” spend more time and money over a lifetime in enjoying their gardening hobby.

Another challenge in the communication area is the move from passive one-way ads or PR messages from the manufacturer to the consumer, to a customized interactive communication in which customers can interact with the provider and receive the information relevant to them. Services such as PointCast (now EntryPoint) and customized publications are increasingly being used, and most advertising agencies are experimenting with some form or another of interactive advertising and communication. The customerization of the content, format, the educational component, and the entertainment/captivating power of the communication, its mode of delivery, and timing and place is becoming important to a segment of customers and will become an increasingly important part of the portfolio of communication activities of the firm.

Taking Distribution off the Shelf

Distribution used to mean retail shelf space, or in recent years, catalogs mailed to a large number of customers. However, as more customers go online and become more active participants in creating their products and services, it is becoming critical for firms to offer a direct channel to its customers. Of course, this has raised channel conflicts and many other complications for manufacturers who have relied heavily on their legacy distribution systems.

Close coordination with companies such as Federal Express enable manufacturers and distributors to move products from virtual inventory into the hands of customers without ever involving a retail store. Peapod offers home delivery of supermarket groceries. Digital products such as CDs, books, software products, and movies can be distributed electronically, eliminating the need for a separate physical distribution infrastructure, apart from the Internet. For example, Xerox is planning to become a big player in the book business. From a central digital repository, the company hopes to be able to print four-color books on demand in any quantity using specialized printers that are connected to a network. The interesting aspect of this business is that costs are linear for any quantity, thus allowing a high degree

of customization. If only 23 copies of a report are required for a board meeting, exactly that number can be printed at competitive prices.

In the future, the distribution channel will become more customerized. In particular, mechanisms such as “reverse portals” will evolve to aggregate and coordinate deliveries to the homes of customers from various suppliers. Already, FedEx and UPS are evolving in this direction. For example, when a customer places an order with garden.com for plants and other items for landscaping, FedEx coordinates the deliveries so that items from several different suppliers show up at the same time at the customer’s residence. In fact, we expect the entire “fulfillment process” to undergo major changes in the years to come to evolve into a process that is entirely driven to meet customer needs for convenience in order fulfillment. The milkman of past eras may not come back, but the functions served by the milkman will re-emerge in the digital economy.

Competitive Advantage: The Power of Finesse

Success used to depend on marketing power. Bigger was better and competitive strategies often resembled the “arms race” of the Cold War period: “You increase your sales force and I’ll double mine.” Increasingly, however, success depends much more on finesse, i.e., the ability to deploy effort into areas that generate higher customer value than the added cost of providing that value. While huge marketing campaigns and massive ad budgets may still work, they are no longer as important for success as they once were. Given the direct channels for reaching customers, the increasing number of strategic options available, and the increased acceptance of co-marketing and other forms of strategic alliances and outsourcing, finesse is more important than brute strength. Amazon.com has built a powerful online business, using new technologies that offer an “easy search and order” process for books, providing customized recommendations for its customers, and partnering with a large number of “Associates” who are given monetary incentives to direct traffic to its site. Within a short period of time, Amazon and MP3 have become widely recognized brands by spending just a fraction of the expenditures required to establish such well-known brands as AT&T. Companies that are savvy, flexible, willing to constantly experiment, and have finesse can gain an advantage over traditional giants with resources that are orders of magnitude larger.

If market capitalization is viewed as an indicator of perceived competitive advantage, firms with finesse in the online medium seem to have an advantage (Compare the market caps of Amazon.com versus Barnes & Noble; eToys versus Toys “R” Us; Schwab versus Merrill Lynch). As someone put it succinctly, “In the new competitive environment, the big will not eat the small. The fast will eat the slow.”

Integrating Marketing Strategies

As we explore the dynamics of customerization, it is important to understand that customerization, mass customization, personalization, and even standardization will exist side-by-side. The rise of the Internet does not replace standard broadcast advertising, but creates new two-way channels for interactively communicating with customers. Customerization is not a strategy that replaces traditional mass marketing, but rather offers additional competitive options in developing an overall marketing strategy. The challenge facing the firm is, therefore, how to design and manage a customerization process along with mass-produced products and services. In some sense, this process is easier for companies that were built from the ground up as e-businesses (e.g., Amazon.com or the new Internet bank WingspanBank.com) than well-established companies with considerable investments in legacy systems and processes (e.g., General Motors).

For example, a pharmaceutical company might use traditional direct-to-consumer advertising and mass advertising and links to other websites to encourage potential customers to visit an informational website on heart attacks. At the site, customers fill out a questionnaire and then receive a printed or electronic newsletter targeted to their specific concerns—say, quitting smoking or increasing exercise. The newsletter can offer customized messages and products customers need. This personalization strategy could be supplemented with a process allowing the customer to customize the information and the products and services they would like to receive. Likewise, Levi's invites potential customers to kiosks at its store. This gives customers a chance to experience the customization process without being intimidated by it, and with help available close by. The customer engages in a 40-minute fitting process that provides enough information about the customer to create a good-fitting pair of jeans.

While technology makes the implementation of customerization easier and cheaper, the accompanying strategic and organizational decisions are actually more complex and more expensive. For example, to avoid spamming customers with e-mail and for directing them to the appropriate offers at a website, the company must be able to determine the right information to send to each customer. Databases and data-mining techniques (Zahavi 2000) can help in this process. Using database technologies, Travelocity.com maintains customer profiles using information provided by the members themselves about the particular destinations and trips of interest to them. Whenever the fares change for any of the selected destinations or trips, Travelocity.com sends out a customized e-mail (about 2 million per week) with this information. Seybold and Marshak (1999) indicate that customers welcome this type of customized e-mail promotion, which is one of the most successful programs at Travelocity.com. Data mining is also critical in helping a company identify the customer segments most receptive to customerization.

Firms such as NetGenesis and E.piphany are developing software systems that combine data-mining technologies with customization strategies. These software

systems allow companies to decide how much customerization to implement in their customer-facing operations. The amount of customization can also be decided dynamically depending on what a company knows about a customer, or what the customer does while at its website. However, to successfully implement these types of technologies, the entire company might have to be reorganized around a new order generation and fulfillment process as part of a customer-driven, integrated global supply chain.

Decisions about where and when to customerize and integrate this strategy with the other marketing strategies is one of the most critical challenges facing marketers. Managers must determine the “optimal” portfolio of: (a) mass marketing, (b) direct marketing to target segments, and (c) interactive customized marketing at each step of the business cycle. Some of the diverse pathways are illustrated in Figure 3. As shown in this figure, there are alternative ways to bring customers through the process. Some companies will get the customer to enter through mass marketing, others will communicate through direct marketing to target segments, and still others will create an ongoing relationship through interactive customized marketing. Obviously, companies may also select any combination of these three approaches.

Figure 3. The Path to Customerization: Acumins’ Strategy

Approach →	Mass Marketing	Direct Marketing to Target Segments	Interactive Customized Marketing
↓ Objectives			
Entry How do you get the customer to enter the process?	1	2	3
Communication Once you interact with the customer, how do you educate, communicate, and influence?			
Delivery Once convinced, how do you design, produce, and deliver the product and service offering?			★

For example, Acumins Corporation (www.acumins.com) enables customers to create their own specialized mix of vitamins to meet their needs. A tool available at their website called “SmartSelect” queries customers about their lifestyles and health and creates a personalized nutritional supplement. The user can modify the recommended composition and place an online order for the customized nutritional supplement. Thus, instead of taking dozens of different pills, customers can

purchase a vitamin pill formulated to their individual needs. The company, as illustrated in Figure 3, brings customers in through mass marketing, direct target marketing, and interactive customized marketing. Regardless of how they come in, however, the company's goal is to move the customer into an interactive relationship as quickly as possible (the star) through communications by phone or Internet. The company also delivers its product and services through interactive customized marketing. Although most of Acumins' customers buy customized products, about 10 percent still buy off the shelf.

The Challenges of Customization

Customization also raises a number of challenges including issues related to obtaining information from customers, the identification of the intangible factors that can make or break an offering, enhanced customer expectations, the need for limiting the complexity of options, and pricing issues related to customized offerings. We discuss each of these in turn.

Knowledge Exchange with Customers

For customization to work effectively, there must be an exchange of information and knowledge between companies and customers. This requires the company to “open up” some of its internal processes and structures to its customers. It also requires customers to be willing to share their attitudes, preferences, and purchase patterns with the company on an ongoing basis. Currently, the “knowledge transfer” occurs because of the novelty of the new medium, and because to some extent both the customers and the company become better off with such knowledge transfer. However, with increasing online competition and concerns about privacy, companies need to carefully design privacy guidelines and incentive structures to facilitate the knowledge exchange between themselves and their customers.

First consider the privacy aspects. It is important to recognize that companies can obtain and provide information useful for customization without having to know the identity of the customer. For example, Acumins provides access to its SmartSelect customization program without asking for any information about the respondent’s identity. Second, consider the incentive aspects. Customers must feel that they benefit in some measurable way by providing information to the company. This is more likely to happen if the company puts in place a structure in which it brings all of its own knowledge in the service of its customers. For example, if DuPont knows more about lubricants than any other company, then customers must feel that this information is used to help them select the best lubricant for their applications, even if it sometimes means that DuPont suggests competitive products.

Identifying Intangible Dimensions

Customized products without customized marketing often fail by focusing on the product itself rather than on the customer perceptions of and preferences for desired product and service attributes and their associated benefits. A customized marketing approach would focus more on finding ways to understand the unarticulated needs of customers. For example, one of the reasons for the failure of Custom Foot, which offered mass customized footwear, is the subjective nature of fitting shoes. Two customers might be measured for a size 10 shoe, but one might prefer a tight fit while the other might prefer a loose one. Some aspects of the styling and feel of the fit may not be captured by simply measuring foot size. In a

shoe store, the customer tries on several pairs to find the right “feel,” using measurements only as a starting point.

Firms must find creative ways to customize the shopping and purchase experiences of their customers. For example, Custom Foot might send the customer three shoes of the same size but with different width and height and allow the customer to keep the one that “fits” best. Or it could devise a special measuring instrument that would allow customers to experience the feel of a certain shoe and then communicate the best fit back to the company. Maybe this would require an initial visit to a store or visit from a traveling representative. Once these data are obtained, the company would have the information on file for repeat purchases.

Higher Customer Expectations

Just as the expectations of the customer who buys a suit off the shelf are far lower than those of the customer who buys a custom-tailored suit, the customerization process creates higher expectations on the part of customers. They expect the product they receive to perfectly match their needs and wants. If it fails to meet these higher expectations, they will likely be far more disappointed and dissatisfied than if they had bought a standardized product.

Companies need to have the marketing and manufacturing capabilities to maintain a one-to-one relationship and to deliver efficiently what the customer wants. At the heart of Levi’s custom jeans business is the technology for dynamic pattern making. At the core of Dell’s customized computer sales is an assembly process that can rapidly deliver exactly what the customer requests. Yet these technological solutions have to be augmented with a marketing communication program aimed at managing customer expectations.

Limiting the Options Offered to Customers

The temptation in the customerization process is to give customers too many options, but this may lead to psychological shutdown. The trick is to offer just the right amount of variety so customers are presented with the right choices without being overwhelmed. When CDNOW first introduced its “Supersonic Boom,” offering customized CDs that can be assembled by selecting single tracks from a library, it provided customers with a search engine. Customers were overwhelmed by the choices. The company had better success when it used a banner ad to offer a customized Christmas CD during the holiday season. Sales took off when customers were presented with a more manageable set of options. CDNOW has also exploited opportunities for customized promotions by linking up with third parties. GM, for example, offers potential customers a free customized CD for test driving a car. It allows customers to choose from a set of 30 song titles to create the CD, which it orders in quantity through CDNOW. This is a great way to overcome pricing challenges (because the consumer doesn’t pay for the product) and limit options (so the consumer isn’t overwhelmed) while giving a substantial number of new consumers the experience of a customized CD.

Another way to limit options is to present standardized options packages, as in the automobile industry. However, while car manufacturers generally offer many

options, customers typically buy the cars on the lot. Thus, the options packages do not provide a starting point for more extensive customization, as ideally they would.

Similarly, priceline.com is also finding that without limiting the pricing options, many transactions go unrealized. According to Jay Walker, its founder, the company is able to convert only about 7 percent of the offers it receives into a successful transaction, and it realizes a profit of only \$5 to \$10 for each airline ticket it sells. The company is now encouraging customers not to bid below the lowest airfare offered by an airline.

Pricing

Mass-customized products do not always command a premium. Some customers seem unwilling to give up the price benefits of standard products when buying customized products. Levi's and CDNOW found that they could not charge a large premium for their customized products, but they could charge at the top end of the established price range for similar, standardized products. In the case of CDNOW, customers were reluctant to spend extra for music beyond the \$11.99-\$16.99 for a standard CD. In fact, a recent study shows that customers actually paid about 9 to 16 percent less when purchasing CDs and books online, as compared to offline purchases (Brynjolfsson and Smith 1999). This creates a challenge for companies who have to make additional investments to support customerization. A well-designed customerization strategy should offer opportunities for marketers to find creative ways to bundle products and services, thereby generating additional revenues through innovative "packaging," cross-selling, and up-selling. In this context, of critical importance is the expected increased loyalty of the customer who customizes the product and service offerings. These factors—bundled products and services and loyalty—offer the firm opportunities to focus not on the price of the products but on maximizing the lifetime value of the customer and by developing creative value-based pricing models.

Implications and Conclusion

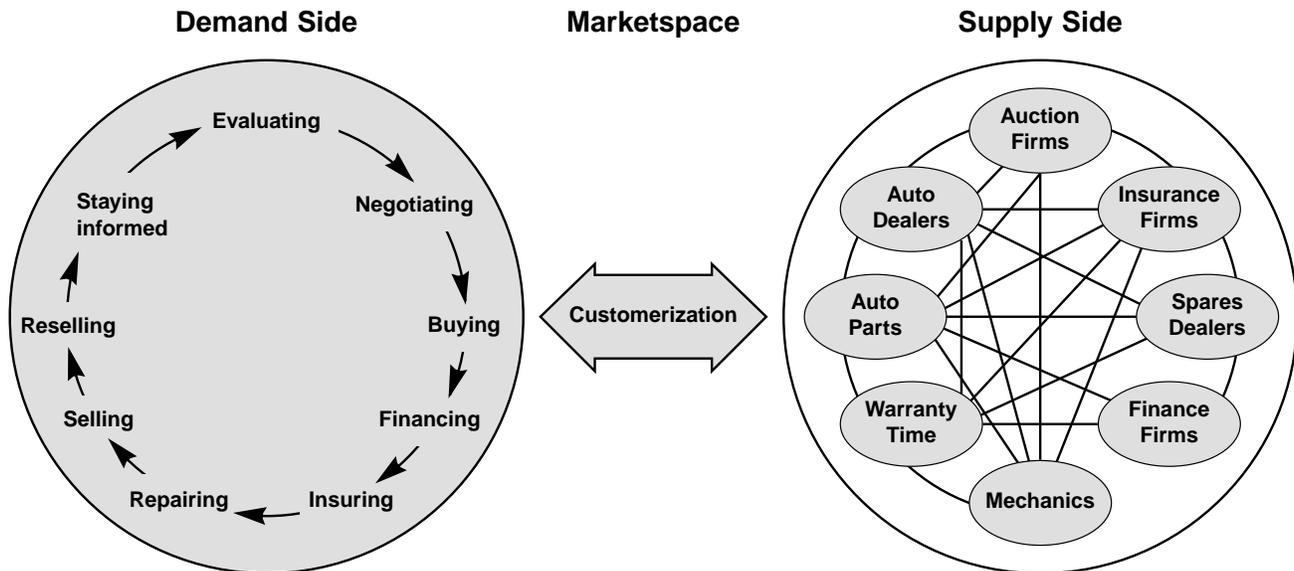
Customerization is a critical aspect of the emerging new marketing paradigm (Wind and Mahajan 2000), which has enormous implications for a firm's marketing strategy (as we discussed earlier), and more importantly, for the entire business strategy and operations of the firm. Fundamentally, customerization requires an effective integration of marketing, operations, and information, a reinventing of the firm's R & D orientation and process, and a change in the organizational architecture required to support this integration.

Where should a firm begin in implementing a customerization strategy? We offer two specific recommendations:

1. *Increase the digital content of everything the company does.* In particular, the firm should increase the digital content of its offerings, and of the customer's shopping and consumption experiences. Once these are digitized, it becomes easier to customerize. For purely digital products (e.g., music, news, etc.) and services (e.g., online stock trading), a firm is able to do this more easily. For digital products, there are inherently innumerable options for customers to choose from and customerization improves the fit between what the customer wants and what the firm can offer profitably. But, there are also big gains from customerization even in the case of non-digital products. Consider two diverse products—an automobile and a hot cup of cappuccino. It is now conceivable that we can digitize some elements of these products or their shopping and consumption experiences. Mercedes Benz recently introduced an online customizer—build your own E300 Turbo Diesel. The company is trying to digitize parts of the shopping experience. How about a cup of cappuccino? It is conceivable that a cappuccino machine could be designed to take into account the type of coffee beans, type and amount of milk, temperature, brewing time, etc., leading to a customized cup of cappuccino. Eventually, the cappuccino machine could become an Internet appliance that downloads the appropriate brewing instructions from the Internet, or is activated remotely over the Internet so that the coffee is ready when the customer comes home.
2. *Position the firm to become the customerizer of its entire industry.* To be truly successful at customerization, a company must bring together the value chains of the supply and demand sides of a market. A major opportunity for companies is to garner a central role in an industry by digitally focusing the forces of supply and demand to create a new exchange process for customers. Figure 4 illustrates how Edmunds.com is trying to do this. It brings together the varied functions performed by the different players in the auto industry and delivers a complete shopping/purchasing experience for the customer. Such online intermediaries can also facilitate the ranking of standardized branded products by price as well as on quality or other desired attributes. To the extent that the intermediaries are customer-centric and

allow the customer to customize the products and services, customer loyalty may switch from the manufacturer to the electronic intermediary.

Figure 4. Customerization in the Auto Industry: Edmunds.com



Source: Adapted from a chart developed by Professor Mohanbir Sawhney.

The travel industry is still organized by mode of travel (car, train, plane, etc.), places of stay (hotels, bed and breakfast, etc.), things to do (museums, restaurants), etc. But what many customers (especially business travelers) are looking for is a simple way to customize their travel plans, without having to purchase different things from different vendors. At the same time, when leisure travelers are thinking of a vacation, they are not thinking of planes, cars, and the like, but romance, adventure, and getting away from it all! This market is in need of a customerizer.

In conclusion, the new concept of customerization described in this paper, together with other major trends such as the growing influence of the Internet and globalization, have major implications for the business strategies of all firms. Business strategies that ignore the opportunities associated with customerization are unlikely to be aligned well with the demands of the marketplaces of tomorrow. The current turmoil in the computer industry, where Dell is setting new standards for customerization, suggests that companies that do not adopt this concept are at a competitive risk. We expect that many businesses will benefit from customerization—it is a win-win proposition for both customers and businesses.

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