

By understanding the four basic approaches to customization, managers can tailor their products to meet their customers' unique needs at a low cost.

The Four Faces

of Mass Customization

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Virtually all executives today recognize the need to provide

outstanding service to customers. Focusing on the customer, however, is both an imperative and a potential curse. In their desire to become customer driven, many companies have resorted to inventing new programs and procedures to meet every customer's request. But as customers and their needs grow increasingly diverse, such an approach has become a surefire way to add unnecessary cost and complexity to operations.

Companies throughout the world have embraced mass customization in an attempt to avoid those pitfalls and provide unique value to their customers in an efficient manner. Readily available information technology and flexible work processes permit them to customize goods or services for individual

by James H. Gilmore and B. Joseph Pine II

customers in high volumes and at a relatively low cost. But

many managers at these companies have discovered that mass customization, too, can produce unnecessary cost and complexity. They are realizing that they did not examine thoroughly enough what kind of customization their customers would value before they plunged ahead with this new strategy.

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That is understandable. Until now, no framework has existed to help managers determine the type of customization they should pursue.

We have identified four distinct approaches to customization, which we call *collaborative*, *adaptive*, *cosmetic*, and *transparent*. When designing or redesigning a product, process, or business unit, managers should examine each of the approaches for possible insights into how best to serve their customers. In some cases, a single approach will dominate the design. More often, however, managers will discover that they need a mix of some or all of the four approaches to serve their own particular set of customers.

Defining the Four Approaches

Let's summarize what characterizes the approaches and the conditions under which each should be employed.

Collaborative customizers conduct a dialogue with individual customers to help them articulate their needs, to identify the precise offering that ful-

fills those needs, and to make customized products for them. The approach most often associated with the term *mass customization*, collaborative customization is appropriate for businesses whose customers cannot easily articulate what they want and grow frustrated when forced to select from a plethora of options.

Paris Miki, a Japanese eyewear retailer that has the largest number of eyewear stores in the world, is the quintessential collaborative customizer. The company spent five years developing the Mikissimes Design System (to be called the Eye Tailor in the United States), which eliminates the customer's need to review myriad choices when selecting a pair of rimless glasses. The system first takes a digital picture of each consumer's face, analyzes its attributes as well as a set of statements submitted by the customer about the kind of look he or she desires, recommends a distinctive lens size and shape, and displays the lenses on the digital image of the consumer's face. The consumer and optician next collaborate to adjust the shape and size of the lenses until both are pleased with the

Gaining Access to New Markets

As the concept of a mass market gained currency a century ago with the success of such giants as Sears, A&P, Coca-Cola, and Ford, all too many managers lost sight of a simple fact known for ages by every butcher, cobbler, and corner grocer: every customer is unique. Economies of scale in manufacturing and distribution brought down the price of mass-produced goods so much that all but the most well-to-do customers were often willing to forgo their individuality and settle for standardized—but very affordable—goods.

Still, the uniqueness of individual customers never went away; it was just subsumed in the averages of countless bell curves in every market-research study ever performed. The concept began coming back into view when companies discovered segmentation in the 1950s and niche marketing in the 1980s. The rise of mass customization in the 1990s has been both a response to and, with the pioneers' success, the impetus behind the now commonplace notion of *segments of one*: every customer is his or her own market segment with specific requirements that must be fulfilled. And

so it seems that we have come to the end of a 100-year progression.

Or have we? In fact, the journey does not end with every customer being his or her own market. The next

step, a widespread recognition that multiple markets reside within individual customers, will turn the entire notion of markets and customers completely inside out.

The idea that every customer is in different markets at different times and different places is not as heretical as it initially might sound. For instance, newspaper publishers have long recognized that most of their customers have more leisure time on Sundays to read the paper and accordingly have filled that edition with a

greater number and wider variety of stories. Similarly, airlines, hotels, and car-rental companies find that the desires of their clients differ greatly depending on whether they are traveling for business or for leisure—and differ yet again when they combine the two. One executive at a major airline remarked, "We've even found that the needs of business travelers differ depending on whether they are going to or coming from a



look. In similar fashion, consumers select from a number of options for the nose bridge, hinges, and arms in order to complete the design. Then they receive a photo-quality picture of themselves with the proposed eyeglasses. Finally, a technician grinds the lenses and assembles the eyeglasses in the store in as little as an hour.

Adaptive customizers offer one standard, but customizable, product that is designed so that users can alter it themselves. The adaptive approach is appropriate for businesses whose customers want the product to perform in different ways on different occasions, and available technology makes it possible for them to customize the product easily on their own.

Consider the lighting systems made by Lutron Electronics Company of Coopersburg, Pennsylvania. Lutron's customers can use its systems to maximize productivity at the office or to create appropriate moods at home without having to experiment with multiple switches each time they desire a new effect. Lutron's Grafik Eye System, for example, connects different lights in a room and

allows the user to program different effects for, say, lively parties, romantic moments, or quiet evenings of reading. Rather than repeatedly having to adjust separate light switches until the right combination is found, the customer can quickly achieve the desired effect merely by punching in the programmed settings.

Cosmetic customizers present a standard product differently to different customers. The cosmetic approach is appropriate when customers use a product the same way and differ only in how they want it presented. Rather than being customized or customizable, the standard offering is *packaged* specially for each customer. For example, the product is displayed differently, its attributes and benefits are advertised in different ways, the customer's name is placed on each item, or promotional programs are designed and communicated differently. Although personalizing a product in this way is, frankly, cosmetic, it is still of real value to many customers. (Witness the billions of dollars that consumers spend each year on such products as embellished T-shirts and sweatshirts.)

meeting." In the apparel industry, a given customer could be in the market for casual wear at one time and for business attire at another. And with "casual Fridays" becoming increasingly common, many people must at least on occasion enter that new market known as "business casual."

Indeed, acknowledging that individual customers constitute multiple markets gives new meaning to the term *market* that approximates its original conception: the bringing together of a customer and a provider to fulfill that customer's unique needs as they exist at the present time and under the current circumstances. Only those companies that take their approach to customization down to this level will gain access to the multiple markets within each of us.

How can companies tackle this task? If the technological wherewithal exists, the easiest approach would be to design a product that could adapt to whatever market its user happened to be in—such as a car transmission that can be sporty for tooling down the coast or smooth for taking the in-laws out to dinner. For fre-

quently purchased goods and services, a company could work with individual customers first to identify the markets they potentially could be in at different times and in different circumstances and then to

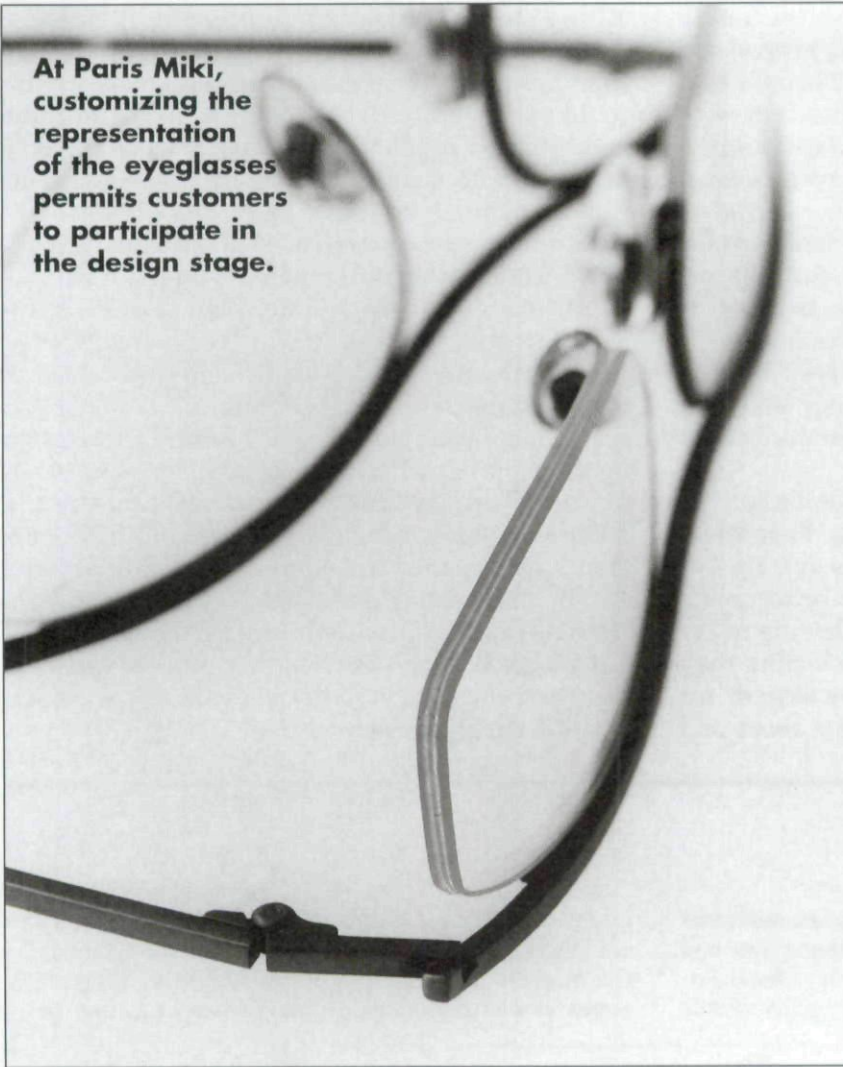
maintain a distinct profile for each possibility. News providers, for example, could collaborate with customers to understand how much news and what type each wanted to read depending not only on the day of the week but also on that day's particular events and on each customer's constantly rotating field of interest. An airline could likewise maintain subprofiles that highlight each customer's changing preferences (for instance, preferred drink when going to a meet-

ing—Pepsi with lime; preferred drink when coming from a meeting—Scotch on the rocks).

A real opportunity arises here because even the customers themselves may not realize these distinctions. Many people in many situations will discover things about themselves only in a collaborative dialogue with a trusted supplier. Together, customer and supplier will create the multiple markets within.



At Paris Miki, customizing the representation of the eyeglasses permits customers to participate in the design stage.



The Planters Company, a unit of Nabisco, chose cosmetic customization when it retooled its old plant in Suffolk, Virginia, in order to satisfy the increasingly diverse merchandising demands of its retail customers. Wal-Mart wanted to sell peanuts and mixed nuts in larger quantities than Safeway or 7-Eleven did, and Jewel wanted different promotional packages than Dominick's did. In the past, Planters could produce only long batches of small, medium, and large cans; as a result, customers had to choose from a few standard packages to find the one that most closely met their requirements. Today the company can quickly switch between different sizes, labels, and shipping containers, responding to each retailer's desires on an order-by-order basis.

Transparent customizers provide individual customers with unique goods or services without letting them know explicitly that those products and services have been customized for them. The transparent approach to customization is appropriate

when customers' specific needs are predictable or can easily be deduced, and especially when customers do not want to state their needs repeatedly. Transparent customizers observe customers' behavior without direct interaction and then inconspicuously customize their offerings within a standard package.

Consider ChemStation of Dayton, Ohio, which mass-customizes a product that most of its competitors treat as a commodity: industrial soap for such commercial uses as car washes and cleaning factory floors. After independently analyzing each customer's needs, ChemStation custom-formulates the right mixture of soap, which goes into a standard ChemStation tank on the customer's premises. Through constant monitoring of its 80-to-1,000-gallon tanks, the company learns each customer's usage pattern and presciently delivers more soap before the customer has to ask. This practice eliminates the need for customers to spend time creating or reviewing orders. They do not know which soap formulation they have, how much is in inventory, or when the soap

was delivered. They only know—and care—that the soap works and is always there when they need it.

Challenging the Mass-Market Mind-Set

Although each of the four companies has implemented a strikingly different customization strategy, all share an orientation that challenges the conventional concept of markets and products. As mass production took hold in the hearts and minds of managers during the past century, the definition of a market shifted from a gathering of people for the sale and purchase of goods at a fixed time and place to an unknown aggregation of potential customers. Today as markets disaggregate, the definition is changing again: customers can no longer be thought of as members of a homogeneous market grouping. In fact, the concept of markets needs to be redefined still further as customization becomes more commonplace. (See the insert "Gaining Access to New Markets.")

Instead of focusing on homogeneous markets and average offerings, mass customizers have identified the dimensions along which their customers differ in their needs. These points of *common uniqueness* reveal where every customer is not the same. And it is at these points that traditional offerings, designed for average requirements, create *customer sacrifice gaps*: the difference between a company's offering and what each customer truly desires.

To be effective, mass customizers must let the nature of these sacrifice gaps drive their individual approaches to customization. Paris Miki understood that consumers rarely have the expertise to determine which eyeglass design best fits their facial structure, desired look, and coloring, and therefore chose to collaborate with customers to help identify their largely unarticulated needs. Lutron adopted adaptive customization because it knew that no two rooms have the same lighting characteristics and that both individuals and groups use any given room in multiple ways. Planters realized that each of its retail customers varied in how it wanted to receive and merchandise standard peanuts, so cosmetic customization was its favored choice. And ChemStation understood that although each of its customers had unique formulation and delivery needs, none of them wanted to be bothered with either the day-to-day procedures or the formulation of such a mundane part of its business as soap.

Altering the product itself for individual customers provides the most clear-cut means of customization. But adept mass customizers realize that customizing the actual product is only one way to create customer-unique value. Customizing the *representation* of the product—or how it is presented or portrayed to the customer—can be effective as well. In fact, separating the product from its representation can provide a useful framework for considering which forms of customization are most appropriate for a given business. (See the exhibit "The Four Approaches to Customization.")

A cosmetic customizer changes only the representation of the product—the packaging in the case of Planters. Collaborative customizers change the product itself in addition to changing some aspect of the representation. Paris Miki changes both the eyewear and its digitized representation—the shape and placement of the eyeglasses on the customer's on-screen image, the display of information about the particular lens, and the adjectives used to describe the desired look. A transparent customizer uses a standard representation to mask the customization of the product. ChemStation's standard storage and dispensing tank, emblazoned with the

company's logo, conceals the fact that ChemStation customizes the soap and its delivery. Finally, adaptive customizers change neither the product nor the representation of the product for individual customers; instead, they provide the customer with the ability to change both the product's functionality and its representation to meet his or her particular needs. Each Lutron customer programs a lighting effect by adjusting bars that represent the intensity of each light in the room; the customer then can label the particular lighting effect.

Companies customize representations when they use design tools such as the Mikissimes Design System to alter their products' descriptions. The following components also can change the form of an offering for individual customers:

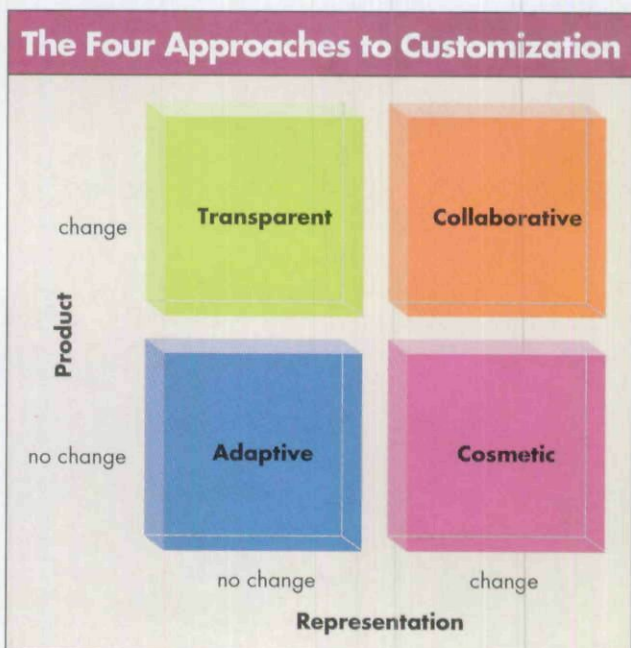
Packaging: containers for shipment; bar codes, labels, and other materials-handling information; instructions; and storage and dispenser features.

Marketing materials: sales brochures, flyers, videotapes, and audiotapes; and client references and customer testimonials.

Placement: where, when, how, and to whom the product is delivered; position while on display or in use; and delivery frequency and special handling procedures.

Terms and conditions: purchase price; payment and discount terms; promotions, warranties, and guarantees; ordering policies; and after-sale service procedures.

Product names: brand names; cobranding (the presentation of two brands together); club memberships; and privileges for frequent customers, such as frequent flier programs.



Stated use: advertised purpose and operability; and perceived advantages, conveniences, or other benefits to the user.

Choosing the Right Approach

The four companies that we focus on identified the critical customer sacrifice gaps in their businesses and then carefully identified not only what but also when to customize in an effort to create the greatest customer-unique value at the lowest possible cost. Paris Miki customizes during the design of eyeglasses, whereas Planters customizes on packing lines during production; ChemStation customizes during both production and delivery, whereas people customize Lutron's product during each individual use. Instead of taking a hit-or-miss approach, these four companies customized only where it counted.

Let's explore how to determine which types of customization are appropriate for a given business.

Collaborative Customization. The customer's inability to resolve trade-offs on his or her own has led Paris Miki and other companies in industries as diverse as apparel, windows, news services, and industrial valves to collaborative customization. Customers in these industries have to make one-time decisions based on difficult and multidimensional trade-offs – trade-offs such as length for width, comfort for fit, or complexity for functionality. This either/or sacrifice gap built into the onetime decision points toward the need to work directly with individual customers in order to determine together the customized goods or services they require. Customizing the representation permits customers to participate in the design stage and play with the possibilities available to them.

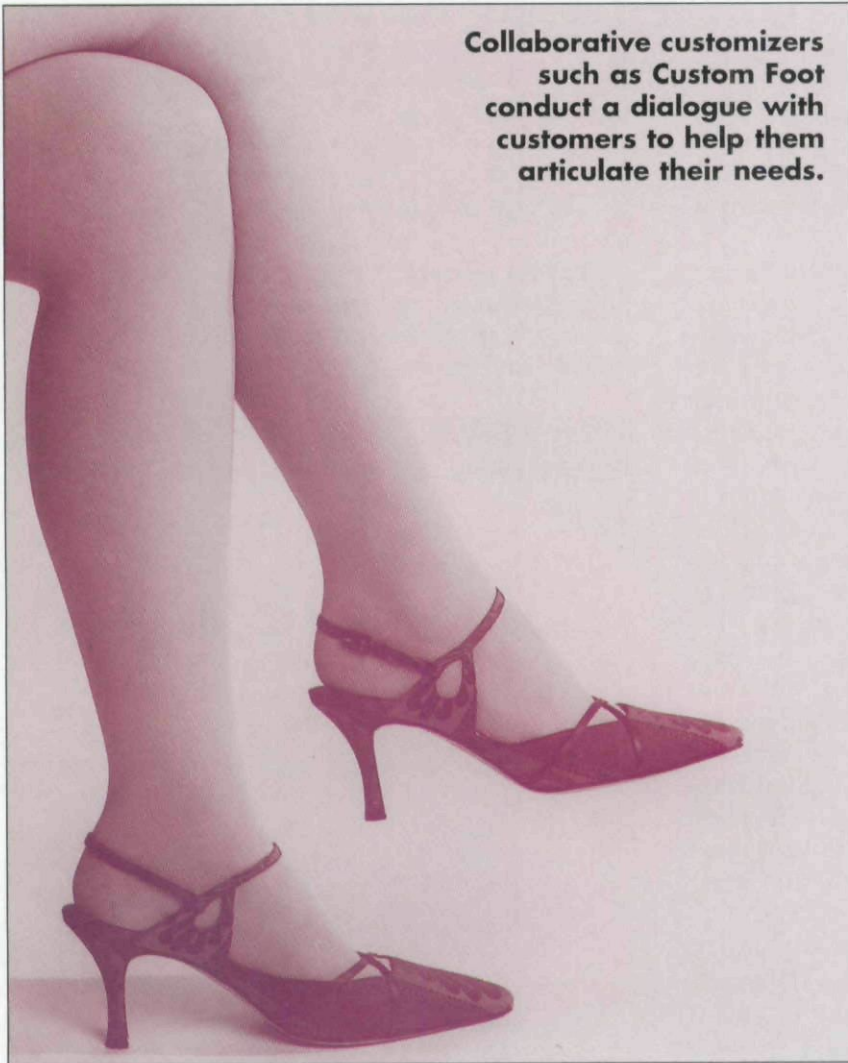
Take the customer's struggle to find the right eyeglasses. Paris Miki decided that the best way to help customers discover their unknown needs and resolve the inherent trade-offs associated with buying glasses was to allow each one to explore and

manipulate a digitized representation of the potential final product. With this sophisticated design tool, trained opticians now assist customers in discovering the perfect, unique look that they would not otherwise have identified or found.

Collaborative customization also works effectively in the shoe industry. Many buyers of mass-produced shoes have to sacrifice a perfect fit on one foot to avoid a fit that is too tight or too loose on the other. Furthermore, no matter how broad the selection is in a traditional shoe store, customers have to make trade-offs among a number of superficial design elements when selecting a pair of shoes – for example, one pair might have the rounded toe and high heel that the customer is looking for but does not come in the right width or has a rubber instead of a leather sole. Before opening the Custom Foot in Westport, Connecticut, in March 1996, founder Jeffrey Silverman realized that only a collaborative approach could address this customer sacrifice gap.

As in a traditional shoe store, the Custom Foot customer exam-

Collaborative customizers such as Custom Foot conduct a dialogue with customers to help them articulate their needs.



ines physical samples to determine which style he or she desires – but there the similarity ends. Instead of the usual process of having people try on several pairs to find one that fits adequately enough, results from a digital foot imager, measurements taken by hand, and one-to-one conversations with each customer yield a guaranteed fit for each foot. A salesperson then helps the customer choose from a few select design elements to determine the final specifications for the pair of shoes, which are custom-made primarily in Italy.

Mass producers frequently add new features that seek to improve the functionality of existing offerings, such as more types of fasteners on fabric, additional locks and latches on windows, and more gauges and gadgets on manufacturing equipment. Such features generally provide increased value to individual customers, but in many instances they are not enough. Companies – or, worse, customers themselves – are forced to modify the product: clothing is tailored, shoes have pads inserted, windows are remolded, and equipment is realigned. Collaborative customization replaces such back-end solutions with front-end specifications.

It is not surprising, then, that most collaborative customizers focus on design. The design stage, however, is not the only place in the value chain where companies can apply this approach. In the case of collaborative delivery services, customers specify exactly where, when, and how to place goods, which then drives the entire flow of work processes. The personalized placement of meals and groceries by such shopping services as Peapod of Evanston, Illinois, and Takeout Taxi of Herndon, Virginia, is a thriving business today. Unlike mass distributors, which attempt to optimize product supply by forcing customers to come to them, these collaborative customizers not only deliver the product to the customer but also customize that delivery. In effect, there is no supply chain anymore; instead, a *demand chain* is created.

Mass producers scatter a product among as many outlets as possible in the hope that enough customers at enough locations will find the product sufficiently acceptable for it to generate a profit. Inventory is built in anticipation of potential, yet uncertain, demand. Forecasting becomes the critical activity; but, as everyone knows, even the best forecasting models fall short. Even if most companies can accurately forecast their total finished-goods-inventory requirements, they always err in their projections of exactly which goods will be needed

at which locations and at what times. Collaborative customizers, in contrast, minimize costs by not keeping inventories of finished products. Instead, they stock raw materials or component parts and then make finished products only in response

Instead of taking a hit-or-miss approach, successful companies customize their goods and services only where it counts.

to the actual needs of individual customers. They transport a given product only to those places where they know it is needed.

Adaptive Customization. Rather than provide customized offerings, adaptive customizers create standard goods or services that can easily be tailored, modified, or reconfigured to suit each customer's needs without any direct interaction with the company. Each customer independently derives his or her own value from the product because the company has designed multiple permutations into a standard, but customizable, offering. It is the product itself, rather than the provider, that interacts with customers.

Sometimes the technology permits each user to adapt the product – such as the control panels and embedded microprocessors in Lutron's products that enable customers to create different lighting settings. In other instances, however, the technology automatically adapts the product for individual customers. When so-called fuzzy logic or other sensory agents are built into such products as razors, washing machines, and software applications, the embedded technology plays the active role.

If the intrinsic uniqueness of each customer's demands spans an enormous set of possibilities, some form of adaptive customization is imperative. Take the customers that Lutron serves. With the exception of cookie-cutter buildings such as franchise restaurants, every customer's environment is unremittingly different. Each room's shape, decor, and window placement vary. In addition, weather conditions that affect external light change from day to day and hour to hour, as does the composition of people in the room and the way those people use it. Companies that make adaptive mattresses, car seats, and stereo equipment similarly accommodate diverse users wanting to experience the offering differently at different times.

Adaptive customization is the approach of choice also when users want to reduce or eliminate the number of times they have to experiment with all the possible configurations to get the product to perform as they desire. After users of Lutron's Grafik Eye System have made the effort to program a variety of lighting settings, they can select any one of them quickly and effortlessly at any time. Similarly, Peapod has eliminated the "sort-through" sacrifice inherent in going to a physical grocery store filled with more than 30,000 products. Its PC software and on-line service allow customers first to store the personal shopping lists they use to select their purchases and then to access product information through various sorting methods (such as by price, brand, or nutritional content).

Collaboration is the right approach when each customer has to choose from a vast number of elements or components to get the desired functionality or design. But when the possible combinations can be built into the product, adaptive customization becomes a promising alternative for efficiently making many different options available to each customer. For example, Select Comfort of Minneapolis, Minnesota, designs and manufactures mattresses with air chamber systems that automatically contour to the bodies of those who lie on them. Users can select the level of firmness they desire, and couples can select different levels on each side of the bed.

In most cases, adaptive customizers transfer to customers the power to design, produce, and deliver the final goods or services. Electronic kiosks that permit customers to produce their own sheet music, labels, business cards, greeting cards, and other

investments in their portfolios, saving them considerable time as well as newsprint-stained hands.

Cosmetic Customization. A company should adopt the cosmetic approach when its standard product satisfies almost every customer and only the product's form needs to be customized. In doing so, the company visibly demonstrates that it understands the unique ways in which each customer likes the standard product to be presented. In some cases, companies can easily tailor their processes to include simple information about the customer—as simple, in fact, as his or her name—without the dialogue associated with collaborative customization.

Planters knows from daily interaction with its customers that the merchandising philosophies of a warehouse-club store or a convenience store differ from that of a supermarket. It knows that different retail chains' stores allocate a different amount of shelf space to a given product and locate that product differently on the shelf. It even knows which stores plan to feature peanuts on end-aisle displays on a particular weekend. Planters used these insights to develop a customized packaging capability—one that allows each retailer to order the particular product it wants to stock.

Planters understood that its customers had been sacrificing how they wanted to receive and display merchandise. Accordingly, it carefully identified the range of the retail chains' different packaging requirements and then installed new packaging lines that could tailor the package's size, promotional information, and other nonproduct features such as the number of cans wrapped in cartons.

Like Planters, most cosmetic customizers focus their efforts at or near the end of the value chain.

Hertz Corporation's #1 Club Gold Program effectively uses cosmetic customization to increase the value of its otherwise standard rental cars. After signing up for the service, Gold Program customers still receive the same basic vehicle, but they bypass the line at the counter and are taken by shuttle bus to a canopied area where they see their own name in lights on a large screen that directs

them to the exact location of their car. When customers arrive at the stall, the car's trunk is open for luggage, their name is displayed on the personal agreement hanging from the mirror, and, when the weather demands it (and local laws permit it), the car's engine is running with the heater or air conditioner turned on.

In creating its Gold service, Hertz excelled at identifying which of its existing processes it did

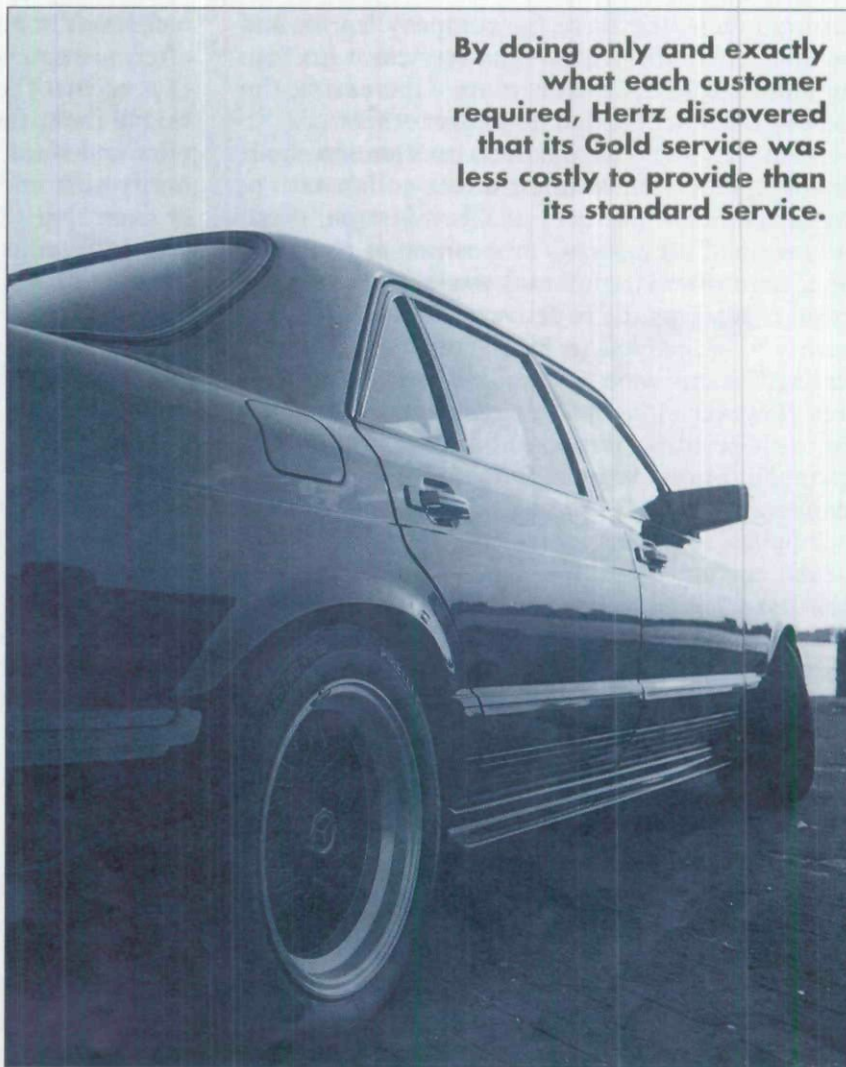
Adept mass customizers have identified the dimensions along which their customers differ in their needs.

printed materials on the spot illustrate how adaptive customization can put the power to design and manufacture the product directly into individual customers' hands. Similarly, America Online gives its subscribers the ability to create their own stock portfolios that list only the particular equities and funds they own or wish to track. In addition, it offers them a service that automatically delivers articles from various financial publications on the in-

not have to change, which new processes it had to add, and which existing processes it could eliminate. It changed reservations, car preparation, and returns. It added the processes for identifying Gold Program customers as they get on the bus, assigning vehicles while customers are en route, and preparing rental agreements automatically. And it eliminated extraneous counter interaction and the time-consuming processes that provided customers with instructions about their car's location. By doing only and exactly what each customer required, Hertz discovered that its Gold service was actually less costly to provide than its standard service.

When performed well, cosmetic customization replaces piecemeal and inefficient responses to customers' requests with a cost-effective capability to offer every customer the exact form of the standard product he or she wants. Both Hertz and Planters were careful not to add processes willy-nilly, which would have resulted in unnecessary complexity and costs. The same cannot be said of the way many mass producers have responded to fragmenting markets. For example, in response to warehouse-club stores' demand for, say, packages containing larger quantities of cereal or additional cans of tuna fish, more than one consumer goods manufacturer today ships cases of products to third-party companies, which in turn take the products out of the cases, shrink-wrap the items in the quantities desired by the club stores, repack the items in a case, and finally ship them on to the stores. The fact that cosmetic customization is easy to pursue does not mean that everyone implements it efficiently.

Transparent Customization. Transparent customizers fulfill the needs of individual customers in an indiscernible way—changing the product for them but in such a way that they may not even know that the product has been customized. Instead of requiring customers to take the time to describe their needs, transparent customizers observe behaviors over time, looking for predictable preferences. Of course, this attribute requires a business to have the luxury of time to deepen its knowledge



By doing only and exactly what each customer required, Hertz discovered that its Gold service was less costly to provide than its standard service.

of customers and to move progressively closer to meeting individual preferences. To become a transparent customizer, a business also must have a standard package into which its product's customized features or components can be placed. Transparent customization is the precise opposite of cosmetic customization, with its standard content and customized package.

Businesses ripe for transparent customization are those whose customers do not want to be bothered with direct collaboration. For example, to avoid annoying customers with an endless barrage of surveys on preferences, Ritz-Carlton established a less intrusive means of learning about individual needs. It observes the preferences that individual guests manifest during each stay—preferences for, say, hypoallergenic pillows, classical radio stations, or chocolate chip cookies. The company then stores that information in a database and uses it to tailor the service that each customer receives on his or her next visit. The more someone stays in Ritz-

Carlton hotels, the more the company learns, and the more customized goods and services it fits into the standard Ritz-Carlton room – increasing the guest's preference for that hotel over others.

ChemStation likewise gathers information about its customers without their direct collaboration. George Homan, president of ChemStation, originally defined his business proposition as eliminating a form of environmental waste: the 55-gallon drums that were used to deliver industrial soap and then were discarded in local landfills. After installing ChemStation tanks at numerous customer sites, however, Homan discovered that the real benefit to those customers was eliminating their concern about a necessary but peripheral aspect of their businesses: choosing the proper soap and managing its supplies.

Each customer's purchasing agent, of course, is told that ChemStation's chemists adjust such factors as pH level, enzyme concentration, foaminess, color, and odor to match the customer's particular needs. But ChemStation determines those needs through its own analysis rather than through collaboration with the customer, and ChemStation alone determines the scheduled frequency of delivery. Soap users develop their own particular habits. For example, customers' employees often use more soap than is necessary – adding that extra glob seems to be a universal habit. Rather than struggle

Many companies combine two or more approaches in order to meet individual customers' specific needs.

to educate every user about the proper quantity to use, ChemStation may install equipment that regulates the flow of active ingredients or that dilutes the mixture of detergent and water by the appropriate amount (while, of course, giving the purchasing agent the reason for the concomitant price reduction). Only ChemStation knows the precise formula each customer uses and the reasons for its selection, which has the added benefit of keeping customers from educating the competition.

The ChemStation tank is the standard package that contains the customized goods (the soap) and service (the delivery of the soap). Customers never think about the soap *getting* there, just about its always *being* there. By constantly monitoring inven-

tory levels in its tanks, ChemStation can learn how often customers will need more soap and can deliver it so that they always have the proper amount, saving them the bother of having to monitor supplies and place orders. Because there is no need to notify customers when deliveries are to be made or even that they have been made, ChemStation is able to construct very cost-effective delivery routes. The customer simply reviews its usage and pays the invoice at the end of each billing period.

Combining Multiple Approaches

Each of the four customization approaches used alone challenges the mass production paradigm of offering standard goods or services to all customers. Many companies, however, combine two or more approaches. For example, Lutron, predominantly an adaptive customizer, nonetheless collaborates with customers to match the color of its products to their walls or to integrate its lighting controls with their security systems. Similarly, Planters, primarily a cosmetic customizer, periodically collaborates with retailers to change the mix of nuts they receive.

The key is to draw on *whatever* means of customization prove necessary to create customer-unique value. Datavision Technologies Corporation, a San Francisco producer of marketing materials, effectively combines three of the approaches: collaborative, cosmetic, and transparent. The company takes input from multiple sources to mass-customize materials for marketing such products as financial plans, vacation packages, corporate health care programs, and cars. It draws from a vast library of materials in order to produce videos that are coupled with print information to create messages tailored to individuals' specific needs.


Datavision produces the customized videotapes with a computer-controlled process that employs laser disc players, graphics generators, and video recorders. A detailed profile of each customer's interests and past purchase history drives the process. The system links each element of the customer's profile with specific video, voice-over, music, graphics, and other text segments. It then automatically assembles the script and presentation modules. Each videotape is assigned an identification number that is used to print customized packaging materials, including cassette labels, mailing labels, and other printed materials accompanying the

videotape. The process can mass-customize individual videotapes in small quantities as well as in batches of tens of thousands.

Datavision has produced several marketing programs for automobile manufacturers. Whenever customers call a client's toll-free number for information on a specific car model, the telemarketing employee works with them to identify the car attributes they find most important and to learn what competing models they also are considering. This interaction carries over to the videotape that customers receive. The opening segment provides a checklist of the specific car attributes mentioned in the telephone conversation, complete with a voice-over reminding customers of their stated remarks. If Jane Jones mentions an advanced engine as an important attribute, then her video might include a computerized graphic of the engine with a high-tech music track and a voice-over on the engine. If Robert Smith regards the power train as an important attribute, his video might include a sports music track and information on the car's horsepower and torque.

Datavision's interaction with customers to identify the aspects of the product that matter most to them is collaborative customization. The selection of the video clips and their sequencing, the voice-over, and the music—all of which are based on what the company can easily glean from each conversation—are transparent customization. Datavision

uses cosmetic customization when the customer's name appears on the tape's label and in the opening titles: "This video presentation produced especially for Jane Jones." The customer's name is not spoken to avoid making mistakes in pronunciation; but as the name appears on the screen, the narrator says the tape was made "for you," "for you and your husband," or "for you and your wife," depending on the information the customer provided. It is the combination of the three approaches that produces an effective and relevant marketing message.

The four approaches to customization provide a framework for companies to design customized products and supporting business processes. They demonstrate the need to mix the direct interaction of collaborative customization, the embedded capabilities of adaptive customization, the forthright acknowledgment of cosmetic customization, and the careful observation of transparent customization into one's economic offerings. Customers do not value merchants who recite monolithic mantras on customer service; they value—and buy—goods and services that meet their particular set of needs. There is a time to conduct a dialogue with customers and a time to observe silently, a time to display uniqueness and a time to embed it. Businesses must design and build a peerless set of customization capabilities that meet the singular needs of individual customers. 

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