Technology's Proliferating Role in Creating Customer Loyalty

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One of the toughest challenges companies face is identifying and successfully commercializing valuable new products and services for existing and target customers. Many leading companies are addressing this challenge by deploying technologies across – and beyond – their organizations that allow their customers to participate directly in the creation and development process. Although this trend is not new, the ways in which companies are deploying technology are proliferating rapidly, as are the opportunities for customer involvement. Essentially, companies are using technology as a „bridge" that allows teams, departments, functions, *and* customers to carry an idea forward into a new product or service. By building these bridges with a select group of key customers, they are able to forge strong relationships with these customers and then exert substantial leverage across a wider customer base.

By directly integrating important customers into the process, these companies are blurring the traditional roles of key corporate stakeholders (owners, employees, and customers) and redefining the relationships among them, to their significant mutual benefit. However, a number of companies have also experienced serious organizational and cultural resistance when attempting such integration. Since customers can now present their wants and needs directly to product development teams, the process can threaten the authority of those who have traditionally represented the customer's voice – including marketing, sales, advanced-development, and customer-service staff. And companies must also address a number of business process issues and cultural concerns in order to ensure that their key customers can provide clear, unfiltered information.

Technology and the Customer: A Maturing Relationship

Business leaders have long understood the critical role technology plays in the customer-management model. Technology elements lie near the heart of almost all customer-driven strategies (see the article by Marc Rubin in this issue of *Prism)*. Business leaders also understand the need for customer input early and often in the development-and-delivery process. Manufacturing and logistics technologies have revolutionized the operational aspects of leading companies, while communications technologies are driving the trend toward customer-oriented cultures. Over the years, technology has contributed to creating profitable relationships with customers in four basic ways, which we refer to as the „better mousetrap," learning cycles, mass customization, and the customer-driven creation process (Exhibit 1).

Exhibit 1

Trends in Technology's Impact on Customer Management
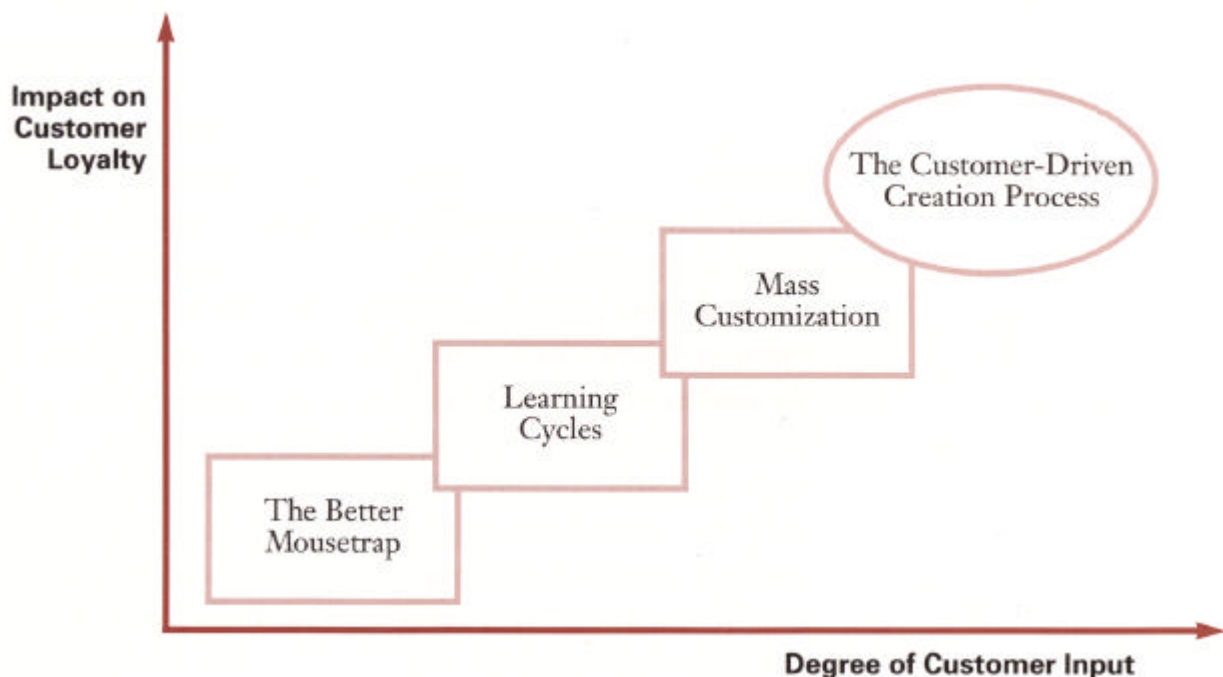
The Better Mousetrap

Not so long ago, technology and its practitioners were thought to create customer loyalty primarily by devel oping great products and services and then producing and delivering them rapidly and cost-efficiently. This simple formula still works in many industries today. In certain segments of the computer industry, for example, companies can establish strong networks of loyal customers by consistently providing new generations of the best-performing equipment (in terms of RAM, CPU speed, package configuration, display quality, battery life, etc.) at the right price points.

Increasingly, however, having the „better mousetrap" is only the first step toward long-term success. For years, companies have been developing comprehensive product strategies to help lock in the value of unique technologies. By packaging these „better" products within attractive product platforms, companies can create opportunities for repeat purchases and discourage switching to competitors' products or services. The razor/razor blade product family is the classic example. Others include Microsoft's Windows interface and family of software, Hewlett-Packard's printers and cartridges, and Black & Decker's hand tools and attachments. These platforms are critical not only for establishing an ongoing revenue stream, but also for allowing for much more efficient development activities. Properly created platforms reduce the work required for a new product, allowing more products to be developed faster and at lower costs.

Learning Cycles

More recently, customer-minded executives have been procuring information-technology expertise within their sales and marketing functions and using IT to identify customers and track their behaviors. Moving beyond simply collecting and analyzing data, companies are employing IT-based systems to create „learning cycles" with their customers, which allow them to adapt product and service offerings according to customer preferences. We've all participated in learning cycles – both with and without our awareness. For example, several Internet-based news-clipping services refine the content they send to customers based on customers' scoring of the relevance of the articles previously sent. The services continually build knowledge of a customer's preferences, thereby creating a switching cost for any customer who values the „personalized" service he or she has helped create. The Ritz-Carlton hotel chain's „guest preference pads" allow employees to record customer preferences they pick up through conversations and observation. (The process also relieves customers of the burden of filling out yet another survey!) The company's database now contains over half a million profiles that can be accessed by any Ritz-Carlton in the world.

Because learning cycles allow customers to help develop a product or service, they foster a sense of „ownership" that often translates into strong loyalty. On a larger scale, learning cycles can be used to foster a sense of community among the company and its customers, with powerful results.

For instance, using its intelligent-agent technology, Firefly has developed a sophisticated on-line commu nity in which users rate movies and music and, based on these ratings, receive recommendations for additional titles that might be of interest to them. The site, which recently won the Arthur D. Little/CommerceNet '96 Very Innovative Practice award for the most creative Web site, also allows users to meet other people on-line who have similar tastes and interests.

Mass Customization

Companies are also fostering customer loyalty by employing technology to produce and deliver fully tailored products and services. To mass-customize their output, companies are coupling information technology with a wide variety of manufacturing technologies, allowing customers to select among a myriad of predefined options that are automated within the production environment. The service companies noted above use information technology to capture and share information, with the actual „production" of the final service mass-customized through a very flexible manufacturing system – human beings. But, what about the „hard-wired" world of chemical processes, computer chips, and metal bending? In these fields, companies are now producing and delivering tailored goods at the same cost basis previously achieved under mass-production methods.

Motorola's process for developing pagers is a perfect example. The company uses a combination of technologies across the organization to create fully customized products on a mass scale. The process begins when a Motorola sales representative and a customer design a new pager on the representative's laptop computer, using pre-defined modular components that allow over 29 million possible combinations. The design is then e-mailed to the factory, where a flexible manufacturing system produces the pager within hours. The level of automation in this particular example is quite high. But automation is only one role technology plays in the mass-customization process. As noted by Pine, Victor, and Boynton in the *Harvard Business Review*, „for mass customizers, the promise of technology is not the lights-out factory or the fully automated back office. It is used as a tool to tap more effectively all the diverse capabilities of employees to service customers."[1] In other words, technology should be viewed as an enabler of revenue growth and not as simply a cost-reduction opportunity.

The Customer-Driven Creation Process

The ways described above for technology to generate customer loyalty will continue to be important long into the future. But in many markets such roles are fast becoming threshold capabilities that will soon offer little competitive differentiation. The emerging trend is to integrate into the creation process customers' needs and specific desires, especially those of „lead users."

In The *Sources of Innovation,* Eric von Hipple describes several ways in which lead users provide a wealth of ideas for creating and developing new products and services.[2] Given the right circumstances and tools, lead users are often willing to develop ideas on their own, thereby contributing substantially to the development of new applications that satisfy niche and even mass-market needs. Silicon Graphics, for instance, uses what it calls „lighthouse customers" as sources of new ideas.[3] Says CEO Ed McCracken, „We stay close to our best and brightest customers and learn how their changing technical demands should fundamentally change the computers we produce." The company's engineers spend a significant percentage of their time with movie-makers, who ask demanding questions that „push us to stay on the leading edge."

Companies have derived entire new product categories from sophisticated lead users by watching how they synthesize existing products and components to suit their needs. Although few lead users have the resources and technical capabilities to undertake such efforts, technology continues to lower the threshold for participation. Texas Instruments, for example, has found a simple way for lead users to modify its products. On its Web site, the company has created discussion forums that allow customers to suggest ways in which the company's calculators might be modified to better meet customer needs. The forums provide the company with a wealth of ideas for potential new product applications.

Companies are also turning to virtual reality (VR) technology to integrate customers into the development process. A recent Arthur D. Little Emerging Technologies Workshop highlighted the substantial impact VR is likely to have – literally putting customers „into the driver's seat" of the development process. In the near future, consumers will be able to sit in a virtual automobile and take it for a test drive. Based on carefully constructed „design rules," the VR program will allow customers to change certain aspects of the car – including the location and feel of the steering wheel, firmness and handling characteristics, location of accessories, and interior colors and fabrics – while they are „driving," and immediately experience the differences. The manufacturer will then use the insight and feedback gained from these virtual experiences in a mass-customization process. In addition, all customer feedback will be fed into a giant database that will accelerate the company's learning cycle, helping it to better anticipate customer needs. As customers come to speak for themselves in the development process, the number of development steps will be slashed, and the traditional roles held by participants in the process today – including engineering, marketing, sales, product support, and manufacturing – will change radically.

Consider the impact when, in a few years, manufacturers will be able to conduct nationwide focus groups, transmitting three-dimensional projections of products to customers in their homes. Imagine the sheer number of innovative users who will emerge, pointing the way to new products and services, when they can use virtual prototypes in a realistic environment, unconstrained by physical and technological barriers. Imagine the marketing consequences when our children are able to get their playthings from „Toys By You." Specialized in-store computers will someday let children create their own designs, which rapid prototyping technology will produce on demand. A combination of technologies will place the entire product development process in the child's hands.

Is such technology mere science fiction? Actually, much of it is already appearing in various guises around the world today. In Japan, for example, prospective house buyers can walk into an estate agent's office, specify how they want their new house designed, get an estimate of how much it will cost, look around inside a virtual reality visualization program, and have the high-quality finished product delivered six weeks later.[4]

Conclusion

The ways in which companies are using technology to integrate customers into the development process will continue to proliferate rapidly. Back in 1991, John Seely Brown, Director of Xerox Palo Alto Research Center (PARC), perhaps summarized the situation best when he referred to the customer as the „ultimate partner."[5] The logical end-point of this relationship, he stated, would be to „move outside of the company and work with customers to co-produce the technology and work systems they will need in the future." Six years later, for many companies, that logical end-point is here.

[1] „*Making Mass Customization Work,*" Harvard Business Review, *September 1993.*

[2] The Sources of Innovation, *Oxford University Press, 1988.*

[3] „*Mastering Chaos at the High-Tech Frontier,*" Harvard Business Review, *November 1993.*

[4] „*Japan: Building Supplement on Japan – Selection Boxes – Prefabricated Homes*" from Building, *March 24, 1995.*

5 „*Research that Reinvents the Corporation,*" Harvard Business Review, *January-February 1991.*