



DELL DIRECT¹

In 1995, a manager from a leading Japanese computer company was recounting his company's plans to conquer the US Personal Computer (PC) market: "We have a strong brand name in consumer electronics, and what's most important, we build many of the components that are needed in the PC ourselves: monitors, audio equipment, CD-ROM, DRAM, and so on. This will give us a tremendous advantage over American competitors, who have to buy everything outside" [1].

Several years later, it looks like the competitive weapon of this and other Japanese electronics giants had misfired. Hitachi, Sony and Fujitsu have spent vast resources trying to crack the US PC market, but had only captured a marginal share—and they had lost money doing it. At the same time, Texas-based Dell Computer Corporation, founded by 19-year-old Michael Dell in a university dormitory room, was growing rapidly, sustaining a much larger portion of the PC market than all Japanese vendors combined. And while the Japanese PC manufacturers were unable to earn any money in the US market, Dell, which produces no PC components, was highly profitable, grew by more than 50% each year over the 1995-1998 period, and saw its stock grow about 30,000% in a decade (see Exhibit 1 for Dell financial summary).

Dell does not manufacture any components, but it can produce custom-built PCs in a matter of hours. How does Dell do it? Why did it succeed where the Japanese PC manufacturers floundered — along with the rest of the PC industry? How does Dell use the Internet to achieve competitive advantage?

¹ By Haim Mendelson, Graduate School of Business, Stanford University, Stanford, CA 94305, haim@stanford.edu. References (in numbered brackets) are listed at the end of the case.

I. Dell Background

The Personal Computer

In 1976, Stephen Wozniak and Steve Jobs sold their worldly possessions (a programmable calculator and a Volkswagen) so they could start Apple Computer, a manufacturer of Personal Computers (PCs). The Apple PC became popular with the invention of VisiCalc, a spreadsheet program that made inroads in corporations. By 1980, IBM realized that the PC business was rapidly developing, and decided that it must ship its own PC within a year. To meet this challenge, IBM opted for an open architecture, using off-the-shelf components and software that were purchased from outside vendors like Intel (the 8088 microprocessor), Microsoft (the DOS operating system) and Tandon (the disk drive). Moreover, IBM went beyond its own sales organization and used computer retailers like Computerland and Sears Business Centers to sell the IBM PC. The result was that the IBM PC met its one-year, August, 1981 deadline—a first for IBM. By 1983, IBM commanded a 42% share of the PC market, with Apple's share being driven down to 20%.

The PC fundamentally changed the structure of the computer industry from a collection of vertically-integrated corporations to a collection of horizontal “slices,” each focused on a distinct segment of the industry's value chain. Intel's Chairman, Andrew Grove, who based his company's strategy on this transformation, described it as follows:

The model of what I call the Old Computer Industry as it used to exist before the personal computer consisted of corporations like IBM, DEC, NCR, NEC and Wang, who would compete in vertical blocks against each other. Each corporation would develop their own silicon components, build a computer platform around that silicon implementation, develop their own system software, and then either develop their applications running on their system software or have those applications developed by third parties. They would then have their own wing-tipped sales people sell those computers to corporate accounts.

Each of these vertical blocks then competed against the other vertical blocks. This is how the computer industry and the business of the computer industry was pursued throughout its existence, until the mid-80s. In the mid-80s, the Personal Computer drove a bulldozer across the scene and created a horizontally structured industry. This New Computer Industry is largely based on a common silicon platform, upon which various companies build a very standard computer platform, upon which you put systems software that is largely common throughout the industry, upon which you sell packaged applications, applications that you buy, like records or CDs, at a store. Whoever has a storefront, telephone or warehouse can get into the distribution business.²

This horizontal structure enabled IBM-PC “clones” like Compaq, a host of start-ups and established computer firms like Hewlett Packard to enter the market and manufacture their

² See Computer History Website by Haim Mendelson and Anne Korin at http://gobi.stanford.edu/Computer_History/.

own, IBM-compatible PCs. The cutthroat competition among PC makers shifted the bulk of the profits to two highly-concentrated industry “slices”: the operating system, where Microsoft had a virtual monopoly, and the microprocessor, which was dominated by Intel. One of the manufacturers of IBM-PC “clones” was Dell.

Dell: Birth and Childhood (1983-1990)

In 1983, Michael Dell was a college freshman, who upgraded IBM-compatible PCs in his spare time in his dorm room at the University of Texas at Austin. Dell quickly realized that instead of upgrading older machines, he could buy components and assemble the entire PC more cheaply by himself. Then, he would sell the PC with his name on it directly to customers at a 15% discount to established brands.

Dell soon started advertising in trade magazines—and orders kept coming. Within a year, Dell had to drop out of college to attend to his business full time and on May 3, 1984, his dorm-room business officially became Dell Computer Corporation. As a result, Dell was able to fund his initial growth internally—something the company is still trying to do. In its first few years, Dell introduced support services such as a 24-hour hotline and guaranteed shipment of replacement parts. Dell’s efficient, low-cost operations were attractive to technology-literate customers, who looked for quality at a reasonable price. The results were impressive: Dell grew from nothing to \$6 million at the beginning of 1985 and to \$70 million by year-end. At the same time, Dell set up in-house teams for marketing and sales support. More and more local area businesses started coming to Dell, and soon, large corporations and government agencies came calling. Business was booming.

In 1987, Dell became the first PC company to offer next-day, on-site service. International expansion began with a subsidiary in the United Kingdom. Dell went public in 1988. By 1990, sales had grown to over \$500 million, and the company opened a manufacturing plant in Limerick, Ireland to serve the European, Middle Eastern and African markets. Dell had a broad product line of desktop and portable computers using state-of-the-art Intel microprocessors, and had established a strong reputation for its products and services. To Ross Perot’s chagrin, Michael Dell had become the richest

person in Texas. Yet, both Dell and his company maintained their spartan approach, emphasizing simplicity, efficiency and agility.

Profitless Growth (1990-1994)

Other low-overhead mail-order vendors, notably Gateway 2000, imitated Dell's model and entered the PC market, threatening to undercut Dell's prices by 15%-30%. As one computer industry analyst commented, "Everyone is piggybacking Michael Dell's distribution concept. He forged the trail and everyone else is just following."³

In 1991, to reach out to the growing segment of small businesses and individual customers who preferred a face-to-face, physical-access sales process, Dell entered the retail channel through agreements with CompUSA, Staples, BestBuy, Sam's Club, Price Club/Costco, Business Depot and PC World. These retailers sold the product for Dell, providing service and support after the sale. Dell introduced two new brands to serve these new segments. These moves resulted in sales growing from \$890 million in 1991 to over \$2 billion in 1992, surpassing the company's target by half a billion dollars. In 1993, Dell introduced four new product lines, catering to the increased sophistication of its customers. Sales grew by 40%, and Dell joined the ranks of the top-five PC makers worldwide.

This rapid growth caught Dell in a cash crunch, and the company recorded its first operating loss in 1993.⁴ Dell's stock dropped \$7 a share to \$25, and there was talk of the end of the Dell miracle among industry observers.⁵ One sign of weakness was the lack of senior management guiding the firm to maturity. To solve this problem, Michael Dell hired Mort Topfer of Motorola to help him manage the company.

However, the major problem area was Dell's foray into the use of indirect channels. Dell's operating model and spartan approach did not mesh well with the retail channel. Further, Dell sold standard PCs through the retail channel, where it could not take advantage of its customization capabilities. Whereas the use of retail channels

³ Financial World, March 17, 1992.

⁴ Dell posted profits of \$27.2, \$50.9, and \$101.6 million in 1990, 1991, and 1992, respectively, while it posted a loss of \$35.8 million in 1993.

⁵ The New York Times, May 28, 1993, p. D1.

contributed to growth, Dell was not making any money on these sales. Dell pulled out of the retail market in mid-1994. Says Michael Dell:

The benefit of exiting retail was not just the change in our financial condition... The real value was that it forced all of our people to focus 100% on the direct model. That singlemindedness was a powerful unifying force [2].

Explosive Growth (1994-1999)

Going back to basics and focusing on the direct model, Dell experienced phenomenal growth beginning in 1994. Sales grew at an annual rate of 49%, jumping from \$3.5 billion in 1994 to over \$25 billion in 1999, while profits increased at an astonishing 62% annual clip (see Exhibit 1). Six years after posting its first and only loss, Dell recorded net income of \$1.7 billion in 1999.

Over this period, Dell consolidated its position, becoming the top US PC manufacturer. From a meager 3% US share in 1994, Dell climbed up the rankings to become number one with a 16% US share in 1999. Dell also became a major player in the global market. With the opening of a manufacturing facility in Penang, Malaysia in 1996, the company increased its penetration into the Asian market. To cope with surging demand in Europe, another plant was added to Dell's Limerick site. Worldwide, Dell became the second largest PC manufacturer, with a 9.8% share in 1999 (see Exhibit 2)

Over the same period, competition in the PC industry continued to intensify, with vendor margins falling from 35-40% in the early 90s to 15% or less in the late 90s. The industry experienced a trend of consolidation (see Exhibit 2).

Dell is the No. 2 and fastest-growing among all major computer system companies worldwide, with over 26,000 employees. The Dell line of computer systems includes the Dimension and OptiPlex desktop computers, Latitude and Inspiron notebook computers, PowerEdge network servers, Precision workstations and PowerVault storage products. Dell continues to offer its customers value-added services such as DellPlus, which enables Dell to install commercial and proprietary software to customer's specifications; DellWare, which complements the company's system offerings by providing customers with low-priced computer hardware, software and peripherals; and Dell Asset Management, where Dell helps customers with leasing options.

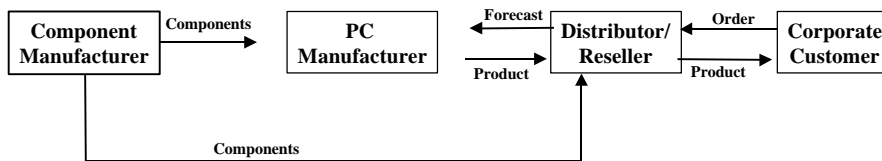
Corporate Structure

Dell's corporate headquarters are located in Round Rock, Texas, near Austin, which is also home to Dell Americas, the regional business unit for both North and South America. Dell has three additional regional headquarters: Dell Europe, Middle East and Africa in Bracknell, U.K., Dell Japan in Kawasaki, Japan, and Dell Asia-Pacific in Hong Kong. Each of these regional business units reports to the Office of the Chairman. The company has four manufacturing facilities: Round Rock for the Americas; Limerick, Ireland for Europe, the Middle East and Africa; Penang, Malaysia for Asia-Pacific and Japan; and Xiamen, China for China. In 1999, Dell had sales offices in 33 countries and sold its products in more than 170 countries and territories. Dell is organized by customer segment (see Section III). Each segment has its own sales, marketing, operations, human resource and legal departments⁶ [5].

II. The Dell Direct Model

Indirect Channels

Figure 1: Corporate PC Sales through Indirect Channels



PC manufacturers were using indirect sales channels since the inception of the IBM PC in 1981. The general approach to selling PC's to corporations through indirect channels is shown in Figure 1. Under this approach, a distributor/reseller such as MicroAge, Vanstar, CompuCom or InaCom purchased PCs directly from the manufacturer and distributed them to corporate customers. The reseller customized the PC to the customer's

requirements, installed components or software as necessary and often provided additional service and support.

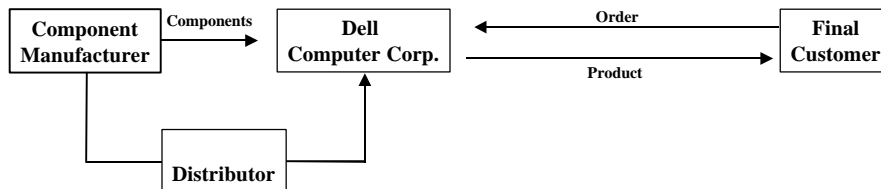
There were a few variations on this theme. For example, retail sales followed a similar supply chain to that shown in Figure 1, except that the PCs were shipped from the manufacturer to the retailer, who sold them to consumers (in most cases, these sales were not triggered by orders). The retail channel was dominated by national chain stores like Circuit City and CompUSA.

The Direct Model

Dell's direct model, based on direct sales from the PC manufacturer to the corporate customer or to consumers, is shown in Figure 2. The model was driven by the "slicing" of the computer industry that took place in the mid-eighties. Michael Dell explains:

As a small start-up, Dell couldn't afford to create every piece of the value chain... We concluded we'd be better off leveraging the investments others have made and focusing on delivering solutions and systems to the customers... If you've got a race with 20 players that are all vying to produce the fastest graphics chip in the world, do you want to be the twenty-first horse, or do you want to evaluate the field of twenty and pick the best one? [3]

Figure 2: The Dell Direct Model



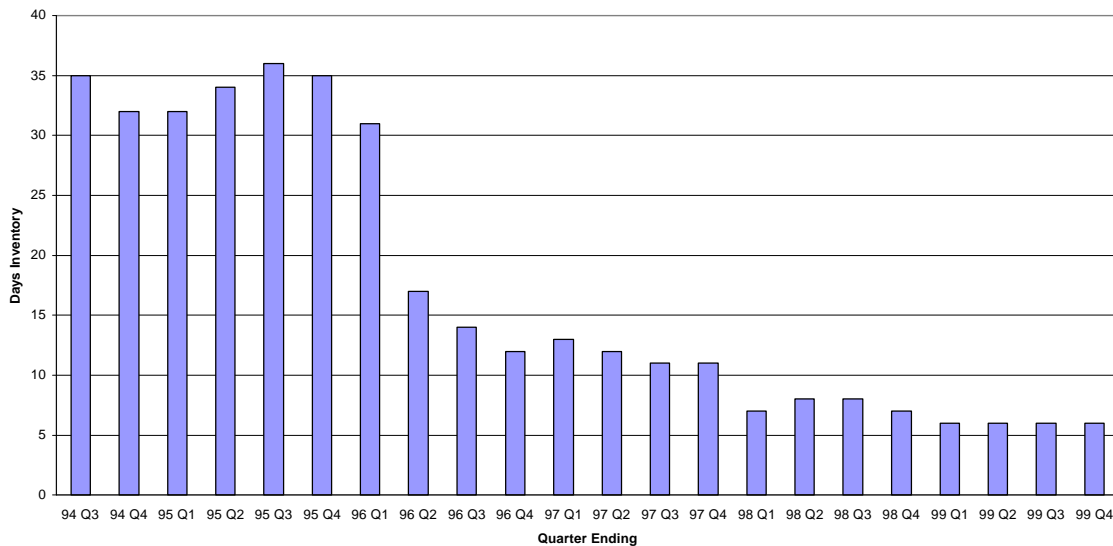
Dell pioneered a new business model that focused on speed of execution and minimum inventory. To this end, the company bypassed the dealer channel, selling products directly to customers over the phone. This eliminated the reseller's markup and the costs and risks of carrying large finished good inventories. The Dell direct model was characterized by

⁶The Asian and European units are divided into country level operations, each having a functional organization, but are transitioning to the customer segment structure of the Americas.

high-velocity, low-cost distribution, direct customer relationships, build-to-order, Just-In-Time manufacturing, and products and services aimed at specific market segments.

The direct model had several key advantages. By eliminating the intermediaries, Dell could dramatically reduce its channel costs: Exhibit 3 shows that channel costs amount to 2% of product revenue under the direct model compared to 13.5%-15.5% for indirect sales. Since every Dell system was built to order, customers got exactly what they asked for. Dell used the knowledge it gleaned from this direct contact to tailor its service and support—as well as future offerings. Since materials flowed faster in Dell factories, latest technology was introduced faster than through the slow-moving indirect channels. As Dell remarks, “If I’ve got 11 days of inventory and my competitor has 80, and Intel comes out with a new 450-megahertz chip, that means I’m going to get to market 69 days sooner” [3]. Figure 3 shows how many days of supply Dell had in inventory over 1994-99.

Figure 3: Days of Supply in Dell's Inventory



Dell relies on information Technology (IT) to tightly control its value chain and achieve a high degree of coordination. With its suppliers, Dell sets quality measures and builds data links to monitor in real time how material is flowing throughout the chain. Suppliers are told exactly what the daily production requirements are. As Michael Dell explains, “So it’s not, ‘Well, every two weeks deliver 5,000 to this warehouse, and we’ll put them on the shelf and then we’ll take them off the shelf.’ It’s, ‘Tomorrow morning we

need 8,562, and deliver them to door number seven at 7 A.M” [3]. This requires tight human and computer-based informational links between Dell and its partners, and speeds time to market. Most of Dell’s suppliers keep components warehoused less than 20 minutes away from Dell’s factories. Suppliers assign engineers to Dell’s design teams, who are stationed in Dell plants during new product introductions.

Dell strives to accelerate every facet of its business by managing information to increase velocity. Using the weekly updates of inventory level for each product component, Dell works with both customers and suppliers to determine the right levels of component inventory. Data on margins, average selling price and overhead are tracked closely by customer segment, by product and by geography. In this way, the company is instantly aware of problems with the mix of products being sold in a particular country or segment, for example.

Dell utilizes information to get its suppliers in sync with its high-velocity model. This is achieved either directly, by improving the logistics, or indirectly, by enhancing quality. For example, when a defective part is identified, Dell lets the supplier know what was wrong with the part, so it can quickly redesign the part and the poor quality problem is fixed immediately. A key feature that makes this model work is the relatively small number of suppliers that Dell chooses to partner with. To be able to sustain tight links with its suppliers, Dell reduced their number from 204 in 1992 to 47 in 1997.

Manufacturing Process

Dell puts a strong emphasis on its operations. Every PC manufactured by Dell is specifically configured to a customer’s order, and the facility has no warehouse space and no inventory other than work in process. Components arrive from suppliers just in time for manufacturing through the factory’s cargo doors. Manufacturing is synchronized to avoid storing parts or finished systems. Teams build systems from start to finish. Team members have profit-sharing incentives, and hourly data on their performance are posted in large monitors on the factory floor, so each team knows how it is doing vis-à-vis its goals. There is no finished goods inventory: as soon as a system is complete, it is taken out of the factory’s east-side doors.

This process is enabled by Dell's close relationship with its suppliers. Once Dell picks a reliable supplier, it focuses on reducing inventory levels and increasing speed. For example, Dell trusts Sony to provide high-quality monitors, so it is unnecessary to truck them to Round Rock, test them and then ship them (with the rest of the PC) to the customer. "That's a big waste of time and money, unless we get our jollies from touching monitors, which we don't," says Dell [3]. Similarly, Dell trusts Caliber and UPS to manage the logistics so the PC and the monitor are properly matched even though the former comes from Round Rock, and the latter—from Sony's factory in Mexico. Trust is cemented by the informational links between Dell and its partners. The supplier has real-time sales data. The short time lag between demand and supply mitigates the undesirable effects of variability, and the fact that Dell has a single manufacturing plant in each region reduces complexity.

Customer Service

In 1986, Dell held a brainstorming session with computer industry experts in the San Francisco Bay Area to determine the company's future direction. The key realizations that emerged were

The first: to really grow our business, we would have to target large companies. The second: to land large companies, we would have to offer the absolute best support in the industry. That was how we came up with the idea to provide the industry's first on-site service for PC's... If a customer called us with a problem, we'd say, "We'll be out tomorrow to fix it" [2].

Since that time, Dell places a strong emphasis on service and support. It employs more than 1,300 technical support personnel, accessible by phone 24 hours a day. Dell's systems extend customization to postshipment service, with the system identifiers used in manufacturing becoming post-sales service IDs. The system configuration is displayed on service reps' screens when a customer calls for an upgrade or needs help. In 90% of calls, the service reps can solve technical support problems on the phone by walking the customer through standard troubleshooting procedures.

Dell employs third-party maintenance providers like Unisys, Wang, Decision One Consulting and Digital Equipment (until it was acquired by Compaq in 1998), who send

out technicians to tackle problems that require on-site support. These problems are usually solved within 24-48 hours. Even though field service is contracted out, Dell maintains accountability for customer service.

By creating tightly coordinated relationships with its suppliers, vendors and maintenance providers, Dell made its customers feel they were dealing with just one large company. “The supplier effectively becomes our partner. The rule we follow is to have as few partners as possible. And they will last as long as they maintain their leadership in technology and quality,” remarks Michael Dell [3]. This relationship also enabled Dell to have instant access to the new technologies its suppliers developed.

In *Computerworld*'s 1998 survey of corporate PC buyers, Dell ranked first in user satisfaction, followed closely by Gateway. What clearly set the two companies apart was the direct model. According to *Computerworld*, “traditional systems vendors still depend too heavily on resellers, and that prevents them from reacting quickly to customer needs, because the resellers may place their own interests first.” In contrast, for Dell and Gateway, “the feedback loop is very short. You have someone who is charged with making sure their accounts are happy... Dell and Gateway also have the advantage of strong internal systems that help them to quickly tell a customer about an order status or to answer a pricing query... Dell manages their accounts really well without someone else's business being in the way.”⁷

III. Customers and Segmentation

Figure 4 shows Dell's customer segments. They can be classified as “transactional” or “relationship.” Forty percent of customers, mainly large corporate accounts, are classified as relationship, 30%—consisting mainly of consumer and small businesses—as transactional, and the remaining 30% as a mix of the two. This customer segmentation drives the organizational structure of the company.

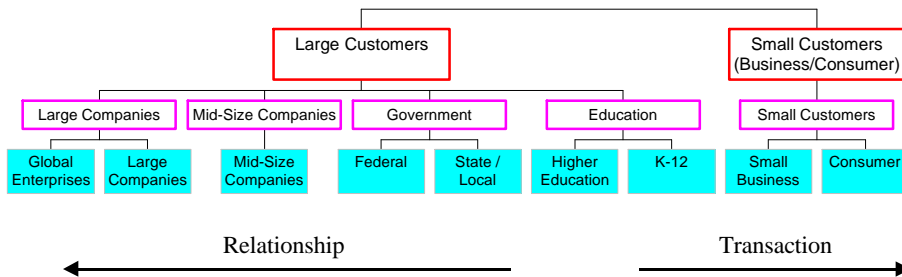
Transactional customers are individuals or businesses who make transaction-by-transaction buying decisions. These customers focus on the economics of the purchase, looking at factors such as performance, specifications, features, reviews and awards. On

⁷ Computerworld, November 16, 1998.

the lookout for the best PC for a particular application, they shop from a variety of vendors and use an array of information sources, including reviews, editorials, advertising, and word of mouth in making their purchasing decision.

Dell does best with more experienced computer buyers; first-time buyers tend to be in the market for low-priced PCs, have more intensive service needs, and feel more comfortable with a salesperson. Consequently, Dell focuses on computer-literate customers.

Figure 4: Dell Customer Segments, 1999



Relationship customers, in contrast, treat computer purchases in the context of the system’s “Total Cost of Ownership” over the life cycle of its use, where price is only a secondary concern.⁸ Most of these are business, government or education accounts in medium-to-large scale organizations. These customers focus on attributes such as service, reliability, vendor reputation and product standardization. Dell’s main competitors for this customer type are Compaq, IBM, HP, and national resellers.

The indirect channel offers a wide range of hardware from PCs to peripherals, with a large selection of services and packaged or customized software, placing Dell at some disadvantage. However, Dell alleviates these problems by first focusing on the economics

⁸ Studies show that the total cost of ownership of a PC over its life cycle is 5-10 times its purchase cost.

of the overall account. Dell uses the cost advantage gained by its direct model to win new accounts and expand sales in existing accounts. Further, Dell has become more than just a hardware vendor and developed value-added services such as DellPlus, that installed items from network cards to customers' proprietary, in-house software applications right on the manufacturing line, as well as leasing options and asset recovery services, including Dell Financial Services, all of which are designed to drive down the customer's total cost of ownership and make Dell the single source for customers' computing needs.

Dell's ability to nurture its relationship customer base was a key reason for its success. Historically, large customers did not sign exclusive purchase agreements with a single vendor. However Dell managed to capture 25% of Fortune 500 companies as exclusive accounts. Dell has been increasing its penetration into the medium-to-small business segments as well.

Cash Flow

Transactional customers typically pay by credit card or are charged in full upon delivery. Relationship customers use purchase orders, credit cards or lease agreements and have longer payment cycles. The velocity of generating cash from its orders is another example of Dell's operational efficiency. In 1998, Dell's average customer payment took 40 days, compared to 56 days for Dell's payables outstanding.⁹

Segmentation

Dell's customer segmentation was a direct result of its business model. Dell targeted customer segments where it could grow its revenues faster than its expenses. This was a lesson the firm learned the hard way with its entry into the retail market in the early nineties without really understanding the profitability of the segment. After that experience, realizing that it couldn't reach its profit objectives in the consumer segment, Dell let its competitors introduce low-margin PCs for first-time users. Michael Dell recounts:

⁹ This includes relationship accounts. Dell converts payments for transaction accounts into cash in less than 24 hours, compared to about two weeks for rival Gateway.

We figured they [Dell's competitors] could be the ones to teach consumers about PCs while we focused our efforts on more profitable segments. And then... we noticed something interesting. The industry's average selling price to consumers was going down, but ours was going up. Consumers who were now buying their second or third machines—who wanted the most powerful machines and needed less hand-holding—were coming to us. And... we had a billion-dollar consumer business that was profitable [3].

Over time, Dell cut its market into finer and finer segments (see Figure 4). Segmentation makes it easier to know the customer and identify unique opportunities. Finer segments are also more manageable and give the company better attention and focus. Says Dell:

Segmentation brings us closer to our customers. It enables us to understand their needs and operating environment in a deeper way, providing information that is paramount to our company's strategy. The more we segment, the sharper our focus, so that we can tailor products, services, and support specifically to each segment [2].

Dell recognized large corporate accounts, with Dell sales of \$5-\$10 million annually, as “gold” accounts, and its largest account (with Dell sales in excess of \$10 million) as “platinum” accounts. In addition to forums for information exchange between Dell and its customers, Dell runs periodic, regional (e.g., in Japan, the US and Europe) “Platinum Councils” designed for discussion and interaction with Dell's platinum accounts. According to Michael Dell, who spends three days in each of the Platinum Councils, “the purpose of these Platinum Councils is clearly for us to listen. We also have self-discipline built in, in that we tell our customers: This is what you told us last time, and this is what we did about it. We just think that it is the right thing to do to take care of the customers” [4].

For example, Dell learned from the Platinum Councils that its best customers were not looking for just the best-performing systems. They were saying: “Yeah, performance is important. But if I'm trying to run a bank or an airline, I don't care if the computer is 2% faster or 3% slower. What I really need is stability—a product that doesn't change from year to year” [2]. Dell responded by putting together products with intergenerational consistency over many years.

Demand Management

Dell's close relationship with its customers improves its demand forecasts. Dell tries to understand the future computing needs of large accounts by discussing their company's needs and jointly planning the company's infrastructure. With transaction accounts, the telephone sales reps try to steer the customer toward product configurations that are readily available. For example, if a customer requests a certain configuration on the phone, the sales rep may suggest that for a small incremental payment, the customer will get a component with significantly higher quality—and faster, because the component is already in stock. In some cases, the sales rep will even match the price of the lower-quality configuration to keep the parts moving. Sales reps' commissions are based on gross margins. Dell designed its information systems so the gross margin is calculated for each system and displayed on the sales rep's screen.

Sales Organization

Dell's sales organization consists of teams of field Account Executives and telephone sales reps. Account Executives are responsible for selling products and services tailored to the needs of customers in their geographical area. The telephone sales reps are responsible for processing orders and handling sales calls. Relationship accounts are assigned to both Account Executives and telephone sales reps. Transactional customers are handled solely by telephone sales reps. The role of the sales rep varies with the customer segment served. For example, customers in the consumer segment rely on the sales rep for technical advice, so they can impact the purchase decision. On the other hand, when dealing with large firms, whose purchasing departments predetermine system configurations, the sales rep's role is reduced to order-entry.

IV. WWW.DELL.COM

Michael Dell got interested in the Internet in the early nineties. Listening to industry “buzz” and noting that he could order T-shirts online, it struck him that a customer could order anything over the Internet—including a computer. Says Dell:

We think about Internet commerce as a logical extension of our direct model... I'm only half joking when I say that the only thing better than the Internet would be mental

telepathy. Because what we're all about is shrinking the time and the resources it takes to meet customers' needs. And we're trying to do that in a world where those needs are changing [3].

Dell had a number of natural advantages for selling on the Internet. Corporations and computer-literate customers that were willing to buy over the phone were among the first to be ready to make purchases on the Internet. Further, unlike rivals Compaq, HP and IBM, Dell did not have an existing indirect channel that would feel threatened by direct Internet sales, and the discipline imposed by tracking campaigns and direct telephone sales was applicable to Internet sales as well.

Developing www.dell.com

In 1995, Dell started designing its Web storefront. Dell discovered that few vendors could put together an effective storefront, and turned to in-house development with 30 Dell employees. Michael Dell emphasized the importance of early Internet leadership. From the very beginning, he believed it was more valuable to be in front with an imperfect Internet implementation than to be a late-comer with the “perfect” Website. Dell’s storefront at www.dell.com was launched in July 1996. By December 1996, Dell’s sales on the web reached \$1 Million a day. Dell’s Web-based sales continued to grow, and by May 2000, the company’s on-line sales generated \$40 Million in daily revenue—about 50% of total sales (see Figure 5).

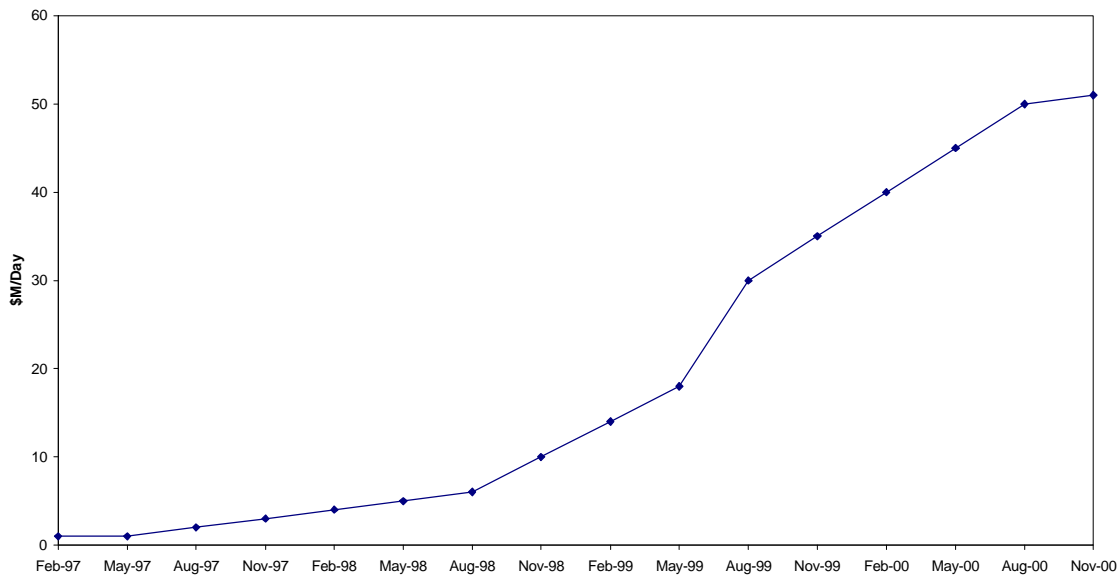
The web pages on www.dell.com mirrored Dell’s segmentation strategy, with the business unit in charge of each customer segment having the autonomy to deliver the content for its segment. The same applied to international customers: More than three dozen regional Dell Websites were customized for particular countries or regions. The Dell Online group focused on delivering tools and technologies for the Internet storefront. It was responsible for creating a Web strategy, coordinating worldwide Internet efforts, managing the infrastructure and the applications and setting the standards for www.dell.com so the business segments had the same “look and feel” [5].

The technical implementation of the web storefront was not the only challenge. Michael Dell had to “sell” both customers and employees on the benefits of the Web.

Initially, many of Dell's employees feared that moving to the Internet would automate away their jobs. However, this was not the case. To the contrary, they would mostly benefit from having most of the routine, time consuming jobs being carried out on-line, while they could focus on higher-value activities.

The Storefront

Figure 5: Dell Direct - Daily Internet Sales (\$M)



Dell's Website was initially geared to its transaction customers, who were enthusiastic about making purchases by clicking a button for ordering the configuration they had just put together. Once an order was received over the Internet, it was sent to a manual order processor who sent it to a special e-mail "box" for the segment the customer came from.¹⁰ The e-mail order was then checked for completeness by a sales rep and forwarded to Dell's build-to-order system.¹¹ After ordering the system, customers could use the Website to track order status from entry through manufacturing to shipping. Once the system was shipped, customers' queries were linked to the tracking systems of Dell's shipping partners, showing the order en route. In addition, the site included service and support functions.

¹⁰ In the initial few months, the process was fully manual, with order processors retyping each order as it was received through the Website. The process was later automated.

Web customers could access the same technical support manuals used by Dell's own technical support staff, including FAQs, troubleshooting information and configuration diagrams. In addition, software upgrades and new device drivers could be downloaded directly by the customer from the Website.

The Internet proved to be a natural, but much more efficient, extension of Dell's direct model. "I couldn't imagine a more powerful creation for extending our business," says Dell [2]. The Internet enabled Dell to decrease the direct costs of configuration, ordering, tracking and support for its transactional business by about 15%.

Part of these savings came from the increased efficiency of the sales process. Under the traditional direct model, Dell would mail out catalogs to prospective buyers. On average, about 10% of the catalogs mailed would lead to sales calls, with about 20% of calls resulting in actual sales. About 0.5% of site visits to www.dell.com resulted in actual sales through the Internet channel, and about 5% resulted in telephone calls (these statistics were available to Dell because the Website listed separate toll-free numbers, enabling tracking). Because customers who called after browsing the Website already had the necessary information and were more inclined to buy, the time to close a sale was shorter and, in addition, the probability of a sale was almost twice as high. As a result, sales reps working phone orders that originated from Web browsers were about 50% more productive than Dell's pure telephone-based sales reps [5].

The Internet also increased Dell's service efficiencies. For example, customers who wanted to track their shipments called Dell about three times on average to find order status. Dell's Web-based order-tracking system replaced more than two-thirds of these phone calls. On the other hand, more customers were tracking their shipments due to the ease of doing so. Similar savings—associated with larger usage—came from Dell's Web-based technical support, and the ability to obtain information and download software, device drivers and patches directly from the Website [5].

¹¹ If the order was incomplete (e.g., missing credit-card number), the sales rep would call the customer to complete the order.

Premier Dell.Com

At the beginning, convincing large corporate customers to buy through the Web was a challenge, and some customers felt Dell was asking them to radically change the way they purchased computers. To overcome this resistance, Dell studied how large customers evaluated and acquired systems, discovering a diversity of practices with no “one size fit all” solution. Additionally, most customers wanted different levels of access for different users—one with general information about approved configurations, order status, and pricing for all employees; one for the customer’s purchasing staff with sales data and management reports; and one for the company’s internal IT support staff, with more detailed technical information and access to Dell’s personnel assigned to the account.

Thus, Dell designed customized Websites called “Dell Premier Pages” (later renamed “Premier Dell.com”) for its corporate customers. These pages would not only allow the customer to carry out standard transactions such as configuration, price quotes and purchasing, but they would also allow them to track orders and inventory in systematic detail and provide them with on-line asset management support. This did not mean the end of personal touch, though: the Account Executives and sales reps were still in charge of the customer relationship, but now, they could focus on higher value-added tasks while the customers themselves carried out most routine procedures online.

Initially, Dell focused on its largest “platinum” accounts, then adding the “gold” accounts and moving down. In Fall 1997, Dell developed Premier Pages that could scale by the thousands using software tools that allowed a sales team to develop a new customized Premier site in less than a day. This enabled Dell to extend the program to medium-and small-sized businesses. By September 2000, Dell had more than 50,000 customized Premier sites. Dell is planning to offer a Premier Dell.com site for every customer who has an agreement with Dell.

Valuechain.dell.com

The Web also helped Dell cement relationships with suppliers. Michael Dell believes that

The real potential lies in its [the Internet’s] ability to transform relationships within the traditional supplier-vendor-customer chain... and to create value that can be shared across organizational boundaries. The companies that position themselves to build information partnerships with suppliers and customers and make the Internet an integral part of their

strategy—not just an “add-on”—have the potential to fundamentally change the face of global competition [4].

To support its partnership with suppliers, Dell developed an Extranet, called valuechain.dell.com, with customized supplier Web pages. The Extranet allows suppliers to share real-time information with Dell on their capacities, inventories, quality metrics and costs, while Dell provides them with information on customer demand, product quality and technical customer requirements.

The supplier extranet was phased in gradually. One of the first suppliers to come on board was Intel, who shared inventory and demand information with Dell. This enabled Intel to provide Dell the right quantities of the newest components on time, and Dell – to use “fresh” components, a must when the technology changes so rapidly. In June 2000, most suppliers became electronically linked to Dell, gaining visibility into Dell’s processes.¹²

Additional Benefits

Internally, Dell benefited from efficiency of the Internet in additional ways. The company moved most of the information related to its day-to-day operations, from performance reports to new product information, to its Intranet. This increased the speed of information flows and made information transparent for the entire organization. Says Dell:

The Internet—and the company's internal Intranet—let us shrink the amount of time it takes for the organization to get up to speed on a new topic or to share best practices across the company. It eliminates the physical forms of information that take more time and cost more money to deliver [2].

Moreover, the Internet enables new ways to track customer response. According to Michael Dell:

The ability to measure customer response in a scientific way is just remarkable... on the Internet you can do real-time experiments. You can present an offer to customers and within two hours you know whether that offer is successful. You can even change the offer slightly and compare the results of the different offers in real-time, then switch to whichever one seems to be the most effective—literally within minutes. There's a tremendously rich feedback loop with the Internet. The adjustments and refinements that go into traditional marketing are based on the course corrections that might occur every month or every couple of months. On the Internet, course corrections happen much, much

¹² Until June 2000, Dell’s interaction with most suppliers was by phone, fax or e-mail through Dell’s procurement staff.

faster. Consequently, the cost of conducting an experiment has gone down considerably, and it costs almost nothing to make a correction [2].

When Dell started using the Internet, it intended to make it easier to do business with Dell and to reduce costs for both Dell and its customers. However, the Internet also changed the ownership of information within the company and in its relationship with customers and suppliers, erasing the informational boundaries that caused inefficiency within and outside of the company. Says Dell:

Because we viewed the Internet as a central part of our IT strategy, we started to view the ownership of information differently, too. Rather than closely guarding our information databases, which took us years to develop, we used Internet browsers to essentially give that same information to our customers and suppliers—bringing them literally inside our business. This became the key to what I call a virtually integrated organization—an organization linked not by physical assets, but by information. By using the Internet to speed information flow between companies, essentially eliminating inter-company boundaries, it would be possible to achieve precision and speed-to-market for products and services in ways not dreamed possible before. It would be the ultimate business system for a digital economy [2].

V. Conclusion

With the success of Dell's direct model and its Internet application, many other PC firms were moving towards a build-to-order model. As one industry observer noted,

The runaway success of Dell Computer's direct sales model and the trend toward Internet ordering are forcing many of the world's major PC companies to rethink how they do business... The distribution and manufacturing models that most have favored since the industry's inception in the early 1980s—a combination of internally built products and outside distributors, dealers, resellers, and retailers—is being unpicked. In its place comes a fluid model under which manufacturing is spread across outside contractors, distributors, dealers, and the company itself, with more emphasis placed on selling directly to the customer.¹³

In July 1997, Compaq announced a new build-to-order manufacturing process. It formed direct sales teams and call centers, and later started shipping direct to customers through the Web. In addition, Compaq acquired Tandem computer in 1997 and Digital Equipment in 1998, adding new product lines and trying to become an enterprise computing superpower. Compaq ended up being overpowered by the resulting complexity, coupled with conflicts between its traditional indirect sales channels and its

¹³ *Computer Business Review*, June 1, 1997.

attempt to increase direct sales. Compaq's board forced its CEO to resign, and its past CIO turned COO, Michael Capellas, became the new CEO in July 1999.

IBM and HP transferred part of their PC assembly to distributors and resellers, hoping to reduce inventories. For example, IBM's Authorized Assembly Program allowed certified distributors and resellers to assemble IBM PC's following IBM's assembly and testing procedures. NEC took more drastic steps, changing its distribution model from indirect to direct, but it was unsuccessful. An NEC spokesperson said: "The 'be like Dell' model is not working for us. It did not do as well as we expected."¹⁴

Commentators argued that just imitating Dell at its own game was not enough: For Dell, the Web was a natural extension of an existing business model, whereas its competitors had to put together an entirely new delivery system. Furthermore, unlike its competitors, Dell did not have to worry about channel conflicts. Michael Dell summarized his company's advantage as follows: "These companies that are very good at indirect, can they be great at direct? Can the world's best baseball team beat the best basketball team at basketball?"¹⁵

Merrill Lynch analyst Steve Milunovich recommended Dell as a "long term buy." In a November 1998 report entitled "Great Company, Good Stock," he wrote:

Dell's model probably looks alluringly simple to indirect competitors. Compaq, IBM, and HP are finding they must adopt direct selling to some degree to compete. [But this is]... unlikely to slow Dell, in our view. Behind the simple proposition of direct selling is a complex infrastructure that Dell has developed over 15 years. In addition, Dell's service advantage may be a greater differentiator than its 10-15% cost advantage. Dell has everything we like in a tech company. Especially focus. Dell does nothing but PCs. Direct selling (the nail) is the tactic that management has driven home with its strategy (the hammer). Dell doesn't even need the best product or price anymore, because it is starting to own the PC space in buyers' minds. The company has never done an acquisition, choosing a virtual approach instead... Finally, the Internet is the nail in the indirect coffin. Dell is likely right in believing that the benefits of the Internet will offset any success the indirect vendors have in narrowing the company's lead.

¹⁴"New reality forcing direct pressure," News.com, March 5, 1999.

¹⁵ News.com, March 5, 1999.

Dell Timeline

- 1984 Michael Dell founds Dell Computer Corporation
- 1985 First Dell designed PC is introduced: the Turbo, featuring Intel 8080 processor
- 1987 Dell is first PC company to offer next-day, on-site service
Subsidiary in United Kingdom opened
- 1988 Organization around customer segments
IPO
- 1990 Manufacturing center in Limerick, Ireland
- 1991 Dell's first notebook PC
- 1993 Dell among the top-five PC makers worldwide
Subsidiaries in Australia and Japan mark entry into Asia-Pacific market
- 1996 Manufacturing center in Penang, Malaysia
Launch of dell.com
Dell added to S&P 500 index
- 1997 Introduction of first workstation systems
- 1998 Manufacturing center in Xiamen, China
First enterprise storage product

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- [5] *Dell Online*, HBS Case # 9-598-116, April 15, 1998.

**Exhibit 1: Dell Computer Corp. Financial Data,
1986-1999**

(in \$ millions)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Net revenue	69.5	159.0	257.8	388.6	546.2	889.9	2,013.9	2,873.2	3,475.3	5,296.0	7,759.0	12,327.0	18,243.0	25,265.0
Cost of sales	53.6	109.3	177.3	279.0	364.1	607.7	1,564.4	2,440.4	2,737.3	4,229.0	6,093.0	9,605.0	14,137.0	20,047.0
Gross margin	15.9	49.7	80.5	109.6	182.1	282.2	449.5	432.8	738.0	1,067.0	1,666.0	2,722.0	4,106.0	5,218.0
Operating expenses:														
SG&A	10.3	27.4	51.0	79.7	115.0	182.2	268.0	422.9	423.4	595.0	826.0	1,202.0	1,788.0	2,387.0
R&D	1.5	5.1	6.6	17.0	22.4	33.1	42.4	48.9	65.4	95.0	126.0	204.0	272.0	568.0
Total operating expenses	11.7	32.5	57.7	96.7	137.5	215.3	310.3	471.8	488.8	690.0	952.0	1,406.0	2,060.0	2,955.0
Operating income	4.1	17.2	22.8	12.9	44.6	66.9	129.1	(39.0)	249.3	377.0	714.0	1,316.0	2,046.0	2,263.0
Net income	2.2	9.4	14.4	5.1	27.2	50.9	101.6	(35.8)	149.2	272.0	531.0	944.0	1,460.0	\$1,666.0
Percentage of net revenue														
Cost of sales	77.1%	68.7%	68.8%	71.8%	66.7%	68.3%	77.7%	84.9%	78.8%	79.9%	78.5%	77.9%	77.5%	79.3%
Gross margin	22.9%	31.3%	31.2%	28.2%	33.3%	31.7%	22.3%	15.1%	21.2%	20.1%	21.5%	22.1%	22.5%	20.7%
Operating expenses:														
SGA	14.8%	17.2%	19.8%	20.5%	21.1%	20.5%	13.3%	14.7%	12.2%	11.2%	10.6%	9.8%	9.8%	9.4%
R&D	2.2%	3.2%	2.6%	4.4%	4.1%	3.7%	2.1%	1.7%	1.9%	1.8%	1.6%	1.7%	1.5%	2.3%
Total operating expenses	16.8%	20.4%	22.4%	24.9%	25.2%	24.2%	15.4%	16.4%	14.1%	13.0%	12.3%	11.4%	11.3%	11.7%
Operating income	5.9%	10.8%	8.8%	3.3%	8.2%	7.5%	6.4%	-1.4%	7.2%	7.1%	9.2%	10.7%	11.2%	9.0%
Net income	3.2%	5.9%	5.6%	1.3%	5.0%	5.7%	5.0%	-1.2%	4.3%	5.1%	6.8%	7.7%	8.0%	6.6%
Net revenue by geographic region														
Percentage of net revenue														
Americas	100.0%	96.3%	84.6%	77.3%	65.7%	72.8%	72.5%	70.9%	69.1%	66.0%	68.0%	69.0%	68.0%	71.0%
Europe	0.0%	3.7%	15.4%	22.7%	34.3%	27.2%	27.5%	27.2%	27.4%	28.0%	26.0%	24.0%	26.0%	22.0%
Asia-Pacific and Japan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	1.9%	3.5%	6.0%	6.0%	7.0%	6.0%	7.0%

Source: Dell Annual Reports

Exhibit 2: PC Market Shares

Panel A: Worldwide Market Shares for Top-5 PC Manufacturers

	1994	1995	1996	1997	1998	1999	2000*
Compaq	10.0%	10.0%	10.1%	13.1%	13.8%	13.2%	12.7%
IBM	8.2%	7.9%	8.6%	8.6%	8.2%	7.9%	6.8%
Dell				5.5%	7.9%	9.8%	10.6%
HP				5.3%	5.8%	6.4%	7.6%
NEC**	4.1%	4.8%	4.5%	5.1%	4.3%	5.2%	4.6%
Apple	8.3%	7.9%	5.3%				
Packard Bell	5.2%	5.3%	4.3%				
Others	69.4%	69.4%	71.5%	62.4%	60.0%	57.5%	57.7%
Total units (in millions)	47.9	60.0	70.8	80.7	93.0	113.5	127.4

* Based on first three quarters

** Includes Packard Bell from 1997 on

Sources: *Computer Industry Forecasts; Dataquest*

Manufacturers not in the top-5 are included in "Others"

Panel B: US Market Shares for Major PC Manufacturers

	1994	1995	1996	1997	1998	1999	2000*
Compaq	10.0%	12.2%	13.0%	13.1%	16.1%	15.7%	15.5%
Dell	3.0%	4.6%	7.0%	8.7%	12.7%	16.0%	18.5%
Gateway 2000	N/A	5.1%	6.0%	6.8%	8.4%	9.1%	9.0%
IBM	9.0%	8.3%	8.0%	8.4%	8.0%	7.2%	5.3%
HP	3.0%	4.5%	5.0%	6.2%	7.5%	8.7%	11.3%
Packard Bell	5.0%	11.3%	11.0%	6.9%			
Apple	8.0%	11.1%	6.0%	4.1%	4.3%	4.4%	4.4%
Others	62.0%	42.9%	44.0%	45.8%	43.0%	38.9%	36.2%
Total units (millions)	18.7	22.5	26.8	31.7	34.9	43.8	48.0

* Based on first three quarters

Source: *Computer Industry Forecasts; IDC; Dataquest; author's estimates*

Exhibit 3: Channel Economics: Direct vs. Indirect Channels

	<i>Indirect</i>	<i>Direct</i>
Channel mark-up	4-6%	0%
Co-op Marketing	3%	0%
Financing	1%	1%
Price protection*	4%	0%
Obsolescence	1.50%	1%
Total	13.5%-15.5%	2.00%

Source: Presentation of Mike Winkler, Senior VP, Compaq Computer

* Price protection is a scheme whereby the PC manufacturer protects Resellers from losses on unsold computers when their price is reduced.

