|  |
| --- |
| [masthead_dell2](http://www.dell.com/) |
|

# The How’s and Why’s of

# an International Success

[](file:///C:\us\en\gen\misc\segmenter_dimension-8100.htm)

## **Often Emulated but**

**Never Duplicated**

Welcome to our group effort

**On**

[masthead_dell2](http://www.dell.com/)

**Assigned as a requirement for**

**INFS 780**

**Information Technology Strategy and Policy**

**For**

**Dr. Richard T. Christoph**

# Dakota State University

**Madison, SD 57042**

# December 13, 2000

**Group Members:**

**Baixiang Liu**

**Wayne E. Pauli**

**C. Robert Schmid**

**Kevin L. Zylstra**

[masthead_dell2](http://www.dell.com/)

## Mission Statement

Dell's mission is to be the most successful computer company in the world at delivering the best customer experience in markets we serve. In doing so, Dell will meet customer expectations of:

* Highest quality

###### Leading technology

# Competitive pricing

* Individual and company accountability
* Best-in-class service and support
* Flexible customization capability
* Superior corporate citizenship
* Financial stability

#### Substantiation of this mission statement

### Part 1: Dell Computers – An Executive Summary

### Part 2: Dell Computers – A Historical Perspective

### Part 3: Dell Computers - Competitive Advantage (An Industry Perspective)

##### Part 4: Dell Computers – A SWOT Analysis

Part 5: Dell Computers – Strategies in IT

Part 6: Dell Computers - Source Listings

Dell computers– Executive Summary

About the Executive Summary

This summary represents the highlights of a research project completed by graduate students at Dakota State University of Madison, SD. Presentation materials are available at the following website: [http://students.dsu.edu/liub/Dell project/Dell.asp](http://students.dsu.edu/liub/Dell%20project/Dell.asp) . The group assignment was to research and prepare a paper and presentation on Dell Computer Corporation. Moreover, how has Dell used information technology in the marketplace, what gives it a competitive advantage over industry competition, a SWOT analysis, and what information technology strategies does Dell incorporate?

**Methodology Used**

An in-depth search was made of both Internet sources and printed medias to secure information that was relevant to our assigned task. A list of sources utilized in the preparation of this report are footnoted, and has been compiled and made part of the detailed report.

# Detailed Report

The detailed report of the group findings on Dell Computer Corporation is attached. Copies are available upon request, and group members may be contacted for presentation purposes.

**Report Highlights**

* **Dell timeline - maps and highlights rise to industry prominence**
* **Dell utilizes its “Golden Rule” in conducting commerce world-wide**
* **Computer industry analyzed using Porter’s Five Forces Model**
* **Industry comparisons using Compaq, Hewlett-Packard, Gateway, and IBM**
* **Dell’s value chain then and now compared**
* **Dell Computer Corporation analyzed using the SWOT method**
* **Analysis of Dell Financial statement**
* **Dell’s strategies in Information Technology**
* **Dell’s virtual integration**

**Results**

* **From humble 1984 beginnings, Dell goes public in 1988, capitalization is increased to $85 Million Dollars from $1,000.00 in 1984**
* **Dell has posted only 1 quarterly operating loss in company history**
* **By 1996, Dell has become the 3rd largest hardware vendor in the world**
* **Dell unveils Metric 12 production line, and drastically changes the way they manufacture hardware**
* **In less than 13 years of operation, Dell becomes the number 1 seller of personal computers in the United States, and number 2 world-wide. All of this accomplished without any storefronts.**
* **Over 50% of all company sales are conducted via e-Commerce, ranking Dell as the #5 e-Tailer overall**
* **Dell begins to divide its attention between the mature PC market and new and innovative forms of business in order to increase profitability**
* **Virtual integration enables Dell to meet customers’ needs faster and more efficiently**
* **Information technology for Dell has not been one large step, but rather a series of small steps that over time has added up to a large competitive advantage**

**Recommendations**

Success is measured by liquidity, profitability, and growth. A company must have liquidity in order to withstand the ups and downs of the business cycle. A company must be profitable in order to maintain the confidences of the investors. A company must grow, not only in their current market place, but also in new and innovative markets, as technology dictates. The ability to succeed in these areas will prove advantageous, when competing within your industry, when analyzing your strengths and weaknesses, and when changing the way you are doing business, based on changes in the internal strategies of information technology.

The ability to recognize and utilize cutting edge information technology strategies (the means) will lower transaction costs, thereby increasing profitability, liquidity, and allow the company to grow within its market and industry (the end).

**To this end, Dell has utilized many IT strategies, namely: E-Tailing, E-Commerce / Procurement, Just-In-Time Manufacturing, E-Commerce / Distribution, and an ultra-modern customer database.**

Can the success of Dell be duplicated? The answer is no, but it can be emulated to a large degree, furthering the success of your business pursuits. Michael Dell has some simple observations for success, you must be - high quality, leading edge, competitive, customer driven, financially stable, and willing to learn.

**Contacts**

Baixiang Liu – Graduate Student – Dakota State University [liub@pluto.dsu.edu](mailto:liub@pluto.dsu.edu)

Wayne E. Pauli – Graduate Student – Dakota State University [wayne.pauli@dsu.edu](mailto:wayne.pauli@dsu.edu)

C. Robert Schmid – Graduate Student – Dakota State University [schmidc@pluto.dsu.edu](mailto:schmidc@pluto.dsu.edu)

Kevin L. Zylstra – Graduate Student – Dakota State University [zylstrak@pluto.dsu.edu](mailto:zylstrak@pluto.dsu.edu)

**Dell Computers – A Historical Perspective**

|  |  |
| --- | --- |
| **1984** | With $1000.00 in startup capital, Michael S. Dell registers his business Dell Computer Corporation DBA PC’s Limited. They are the first company to sell custom-built computers directly to end-users, thereby bypassing the normal retail channels of using resellers to sell their products. |
| **1986** | Dell pioneers the industry’s first 30-day money back guarantee. |
| **1987** | Dell establishes its first International subsidiary in the United Kingdom. Eleven more would follow in the next four years. |
| **1988** | Dell goes public, raising $30 million in its first offering, bringing capitalization to $85 million from $1000 in 4 years. |
| **1989** | Dell accumulates excess inventory of memory components, which results in write downs, and cancels a development program named “Olympic”. |
| **1990** | Dell becomes the first to sell through retail stores such as CompUSA and Best Buy, later they also become the first to leave this retail segment. |
| **1992** | Fiscal year ending January 1993 shows sales of $2 billion, an increase of 127%. |
| **1993** | Dell cancels second stock offering, and posts its only quarterly loss in company history. “Liquidity, profitability, and growth” become the company credo, signifying its shift from a focus on growth alone to a focus of more balanced priorities. |
| **1994** | Dell severs ties with German ERP software company SAP, citing mistakes in company direction, and the lack of desire to dilute company leadership from its Texas base. |
| **1996** | Dell introduces Power Edge server line; in less than 2 years, Power Edge takes Dell from the 10th position in market share to 3rd largest vendor in the world.  Dell begins selling custom-built computers over the Internet.  Dell introduces the first custom-made web links for customers, named “Premier Pages”. |
| **1997** | Dell changes the way its makes PCs, unveiling the Metric 12 production line. Metric 12 combines just-in-time manufacturing concepts with the custom-made building of computers, thereby avoiding the need to warehouse inventory. |
| **1998** | Dell expands Premier Pages to more than 9000 customers and establishes web-based connections with suppliers to speed the flow of inventory and quality information.  Dell opens an integrated sales, manufacturing, and support center in China, it is modeled after the successful Metric 12 plant in Texas. |
| **1999** | Dell moves past Compaq into the number 1 position of PC sales in the United States. |
| **2000** | Amid 3rd and 4th quarter recalculations of profits, Dell stock price drops over 53% from values reported on the NASDAQ one year earlier.  Dell captures the No. 1 position worldwide for sales of personal workstations.  Dell announces the formation of an alliance with Intel and Microsoft aimed at expanding the Dell E Works program to assist customers doing business on the web.  Dell announces a strategic technology alliance with Toshiba one of the world's largest suppliers of semiconductors, electronic components and storage products. This technology alliance creates opportunities for both companies to focus their business initiatives, share their respective expertise and offer a broader selection of industry-leading products to Dell customers. |

**Dell Computers – Competitive Advantage (An Industry Perspective)**

### Dell’s golden rule

1 Disdain inventory

**2 Always listen to the customer**

**3 *Never sell indirect*** (1)

Michael Dell founded Dell Computer in 1984 with $1,000 and a plan for selling custom-built PCs directly to the customer. Today, Dell Computer Corporation (just called Dell throughout

this presentation) is a leading hardware vendor and employs over 36,500 people in dozens of countries. Michael successfully implemented his direct-marketing approach online, where

Dell currently averages $40 million a day in sales.

Dell designs, develops, manufactures, services and supports a range of computer systems including, desktops, notebooks, and enterprise systems (including servers, workstations, and storage products). Dell also markets software, peripherals, services and support programs. “The Company’s direct model offers in-person relationships with corporate and institutional customers, as well as telephone and Internet purchasing, built-to-order computer systems, telephone and online technical support and onsite product service.

The company sells its products and services to large corporate, government, healthcare and education customers, small-to-medium business and individuals.” (2)

Address:

One Dell Way

Round Rock, TX 78682

Phone: 512-338-4400

Industry: computer Hardware

Sector: Technology

Employees: 36,500 (3)

Main competitors: IBM, Compaq, Gateway and Hewlett-Packard (These four competitors will be mentioned in numerous comparisons throughout this report). Figure 1 shows the relative size of Dell from a gross Revenue (sales) comparison and its main competitors.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Figure 1 |  | Revenue |  |  | |  |  |  |  |  | |  | 1997 | 1998 | 1999 | 2000 | | Dell | 12,327 | 18,243 | 25,265 | 23,214\* | | IBM | 78,508 | 81,667 | 87,548 | 62,780\* | | Hewlett-Packard | 42,895 | 39,419 | 42,370 | 48,782\* | | Compaq | 24,584 | 31,169 | 38,525 | 30,840\* | | Gateway | 6,294 | 7,467 | 8,645 | 7,010\* | |
| Revenue in $ Million (4) |
| \*Represents 3 quarters of year |

Dell/Porter 5 forces model

Threat of entry by other competitors

Economies of scale - for Dell’s potential competitors entering the computer PC business are very high. For a small firm cost of goods sold would be much higher. Because the number of units they sell is lower, they need to have higher gross margins to survive.

An example of economies of scale is Ideasign, a small computer company in Sioux Falls. Ideasign started operation in the mid to late 1980’s purchasing computers and components, adding value by increasing memory and adding software etc. much the way Dell started. The major difference is Ideasign remained small; as a result they became a classic example of economies of scale. According to their former accountant, their cost for components had gone up so much that they were paying almost the normal retail cost of the computer components. With the increased transaction cost they were forced to significantly raise their prices to the point they were no longer competitive with the market. Ideasign went out of business about five months ago. (5)

Product differentiation – was quite high in the late 80’s but is becoming less. Currently product differentiation for Dell is moderate. All of the main competitors are IBM compatible with the industry standard Wintell platform (Microsoft windows operating system and Intel microprocessor) as it foundation. Speed, ram, storage capacity are all-similar. Dell’s difference here is their ability to build-to-order. (6)

Capital Requirements – are high, large financial resource (technology necessary, inventory, employees) will be required in order for a competitor to enter. However with using outsourcing for assembly of computer and servers (much like Cisco does with servers), and use of E-business to sell them a competitor could lower capital requirements significantly.

**Switching costs**- for potential customers purchasing IBM compatible PC’s, switching cost is quite low. For example within our group we own three different manufacturers machines (Gateway, Hewlett-Packard, and Compaq) all running the same types of software.

Access to distribution channels- Both Dell and Gateway are examples of alternative distribution solutions. Direct via telephone or E-commerce. This barrier could certainly be overcome.

**Intensity of rivalry among existing competitors.**

Several equally balanced competitors are currently in the market, see figure 1 (on page 8) and figure 2 below.

|  |  |
| --- | --- |
| Figure 2 | Top PC Makers - 1999 |
| Compaq | 16.10% |
| Dell | 14.80% |
| Gateway | 9.30% |
| Hewlett-Packard | 8.60% |
| IBM | 8.00% |
| Others | 43.20% |

Market shares are shown for the first quarter of 1999. (7)

As can be seen on the above chart Dell and its main competitors control close to 60% of the market and they are relatively balanced.

Slow growth- Growth in PC sale is slowing.

|  |  |  |
| --- | --- | --- |
| Figure 3 | Computer Sales by Price | |
|  | 1998 – Actual | 2003 - Projected |
| $0 to $599 | 3.00% | 27.00% |
| $600 to $999 | 31.00% | 38.00% |
| $1,000 to $1,999 | 51.00% | 34.00% |
| $2,000 and over | 15.00% | 1.00% |

(8)

Figure 3 demonstrates that competition will be pushing prices for PC’s down dramatically. Even though units shipped might show substantial growth the dollar volume generated will not have as much growth. Continued price pressure is expected to slow PC dollar growth to less than 7%, while the growth of shipments was forecast to average 19 %. Also this trend will cut into profit margins. Price competition is particularly severe in low-end PC’s, enabling more people to replace old systems or purchase more than one computer for a household. Increased use of the Internet and continued expansion of corporate Intranets will be the principal forces driving demand for computer equipment over the next 5 years. (9)

Fixed costs or storage cost – The traditional supply chain structure of computer equipment manufacturers is changing rapidly. Shortened life cycles of today’s products compared with the costs of development and manufacturing new technology, computer equipment companies have balanced their assets carefully to shorten their products’ time to market while keeping overhead and operational cost down. Outsourcing of the manufacturing process keeps fixed cost down and build-to-order keeps inventory costs down. Outsourcing of production enables computer equipment manufacturers to devote more time to developing the next-generation products and keep up with high technology trends. However using a more traditional business model of manufacturing all of the products in house and the distributing them through dealers the fixed costs and storage costs would be significantly higher. (9)

Lack of Differentiation or switching costs- Currently there is little difference between a

Dell PC and a Gateway PC, however Dell has the ability to custom build equipment to the customer’s specifications. So, switching cost is very minimal, almost non-existent.

**Pressure from substitute products**

Although currently light, future sales will be heavily based on Internet connection. PC manufacturers will face growing challenge from producers of information appliances ranging from smart telephones, palm pilots, television set-up boxes, E-machines/internet appliances. The advent of higher bandwidth will accelerate the mobile computing age, providing users with more flexible ways of accessing shared information. (9)

**Bargaining power of buyers**

No one single buyer to be concerned about, possibly large corporate and government buyers. Low switching cost and shortened product life cycles, as indicated earlier, require that to remain competitive in this industry a company must continuously be developing the next generation products. Customers will buy a product even at a higher price if it is perceived that the product is better than other products available. Price is important, but not as important as having a state of the art, quality product. (9)

**Bargaining power of suppliers**

As mentioned earlier small companies like Ideasign will fall victim to bargaining power of suppliers. Small companies with small volume do not get preferred pricing on the components they buy like the large volume companies do. With this in mind it would be very difficult for a small company to start up, much like Dell and Gateway did, and compete with them. As outsourcing becomes more common the power of suppliers will be increasing along with it.

**Other industry factors –**

The computer industry seems to be headed into a recession period, or at a minimum a period of deep correction concerning stock prices and financial performance.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Figure 6 | Stock Prices | | | |
|  | 52 wk High | 52 wk low | 11-1 close | 11-30 close |
| Dell | 59.69 | 21.25 | 30.44 | 19.19 |
| IBM | 134.94 | 86.94 | 98.56 | 94.56 |
| Hewlett-Packard | 77.75 | 32.63 | 44.44 | 32.81 |
| Compaq | 34.88 | 18.63 | 30.04 | 21.00 |
| Gateway | 84.00 | 22.25 | 50.95 | 18.75 |

(4)

Notice that the stock prices have fallen for all of the Big 5 computer manufacturers significantly. The average 52-week High Low decline was 53.6%. The average 30-day decline was 26.8%.(4)

In addition the NASDAQ has fallen from a high in February of over 5000 to a low currently of below 2500,(10) which is a decline of over 50%. According to the Wall Street Journal 11-27-00, Market-capitalization-weighted price-to-earnings multiples for the Technology sector of the S&P 500 went from a March peak of 83 to the current 37. This represents a 55.5% decline.(11) All of these factors demonstrate that the investors are very wary and indicate a recession in technology related industries.

**Dell’s Value Chain**

The value chain now in place at Dell is vastly different and superior to the original one that the company started with in the mid 1980’s. The value chain has been retooled with the use of Information Technology, and is state-of-the-art.

What follows is a brief outline of Dell’s mode of operation at start up in the 1980’s and the current MO that Dell put in place with the Metric 12 plant at their Texas facility in 1997, and copies that are now at numerous Dell plant sites world-wide.

Dell’s value chain in the mid 1980’s Dell’s current value chain

Dell purchases components for products from suppliers. Dell’s suppliers share information and interact with Dell through a website called valuechain.dell.com

Purchase “gray market” PC computers from IBM dealers with inventory overstocks.

Dell manufactures and assembles products it designs.

Add value in the form of additional memory, software, etc. to the customer’s specifications.

Dell’s business strategy is based on a direct business model selling direct to end-users. Dell uses catalog/telephone, website (Customers enter using dell.com) Dell auction.

Using a direct business model Dell sold products direct to the end user

(2)

Competitors in the mid 1980’s were Dell’s current competitors are:

IBM, Tandy and Apple. IBM, Gateway, Compaq and

Hewlett-Packard.

# Dell’s competitive advantage

Dell’s inventory control has progressed from 1993 with $2.9 billion in sales and $220 million in inventory to 1997 with $12.3 billion in sale and $233 million in inventory to today with projected sales of 30.9 billion and inventory is less than eight days and they are starting to measure it in hours. (1)

Dell’s direct model eliminates the need to support an extensive network of wholesale and retail dealers, thereby avoiding dealer markups; also Dell avoids the higher inventory costs associated with the wholesale/retail channel and the competition for retail shelf space; and reduces the high risk of obsolescence associated with products in a rapidly changing technological market. Tighter inventory control and direct model translates to lower transaction costs. In addition, the direct model allows Dell to maintain, monitor and update a customer database that can be used to shape future product offerings and post-sale service and support programs. (2)

Dell’s use of E-commerce, in the form of the company’s efficient procurement, manufacturing and distribution processes, has lowered transaction costs, and allows the company to be more profitable at a lower overall margin.

|  |  |  |  |
| --- | --- | --- | --- |
| Figure 4 | Profit Margins for Dell and major competitors | | |
|  |  |  |  |
| Company | Gross Margin % | Operating Margin % | Profit Margin % |
| Dell | 20.62 | 8.97 | 7.46 |
| IBM | 36.38 | 12.39 | 8.64 |
| Hewlett-Packard | 28.53 | 7.97 | 7.30 |
| Compaq | 23.18 | 5.50 | 3.86 |
| Gateway | 22.81 | 7.97 | 5.67 |

(4)

Note that Dell’s gross margin is the lowest, but that their profit margin is second to IBM’s. IBM starts with a substantially higher gross margin due, we believe, to greater degree of manufacturing of the component parts rather than buy the components. (IBM makes circuit boards, chips, wiring harnesses etc.)

Compared to Dell’s other competitors only IBM leads Dell in E-commerce Revenues.

Figure 5

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **The Top 50 e-Commerce Revenue Generators** *(Posted 11/14/00)*     |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | RANK | | COMPANY | ONLINE | OVERALL | BUSINESS | | ’00 | ’99 | Company | Revenue (000) | Revenue (000) |  | | 1 | 1 | [Intel](http://www.intel.com/) | $23,800,000 | $31,820,000 | Information and semiconductor technology | | 2 | 3 | [IBM](http://www.ibm.com/) | $17,000,000 | $86,570,000 | Computing equipment | | 3 | 2 | [Cisco Systems](http://www.cisco.com/)\* | $15,000,000 | $16,733,000 | Networking equipment | | 4 | 9 | [Nortel Networks](http://www.nortelnetworks.com/)\* | $15,000,000 | $26,520,000 | Data networking equipment | | 5 | 4 | [Dell Computer](http://www.dell.com/)\* | $13,500,000 | $27,000,000 | Computing equipment | | 6 | N/R | [General Electric](http://www.ibm.com/)\* | $7,500,000 | $122,970,000 | Multinational corporation | | 7 | 7 | [America Online](http://www.aol.com/) | $6,484,000 | $6,886,000 | Online service | | 8 | 8 | [Ingram Micro](http://www.ingrammicro.com/) | $6,000,000 | $29,630,000 | Computing equipment | | 9 | N/R | [WorldCom](http://www.wcom.com/) | $6,000,000 | $31,550,000 | Telecommunications services | | 10 | 6 | [United Parcel Service](http://www.ups.com/) | $5,354,000 | $28,660,000 | Delivery services | | 11 | N/R | [Lucent Technologies](http://www.lucent.com/) | $5,000,000 | $39,400,000 | Networking equipment | | 12 | 5 | [Federal Express](http://www.fedex.com/)\* | $4,500,000 | $18,000,000 | Delivery services | | 13 | 10 | [Tech Data](http://www.techdata.com/) | $4,200,000 | $19,010,000 | Software and services | | 14 | N/R | [BellSouth](http://www.bellsouth.com/) | $3,138,000 | $26,342,000 | Telecommunications services | | 15 | N/R | [3Com](http://www.3com.com/) | $2,640,000 | $3,300,000 | Networking equipment | | 16 | 15 | [Charles Schwab & Co.](http://www.schwab.com/)\* | $2,270,000 | $4,190,000 | Financial services | | 17 | 19 | [Gateway](http://www.gateway.com/) | $2,200,000 | $9,100,000 | Computer hardware | | 18 | 12 | [Amazon.com](http://www.amazon.com/) | $2,183,000 | $2,183,000 | Specialty retailer | | 19 | 14 | [Compaq Computer](http://www.compaq.com/)\* | $1,970,000 | $39,320,000 | Computing equipment | | 20 | N/R | [Hewlett-Packard](http://www.hp.com/)\* | $1,960,000 | $46,890,000 | Computing equipment | | 21 | 11 | [Arrow Electronics](http://www.arrow.com/) | $1,826,000 | $10,792,000 | Electronics distributor | | 22 | N/R | [National Semiconductor](http://www.national.com/) | $1,300,000 | $2,139,900 | Information and semiconductor technology | | 23 | 18 | [E\*Trade Group](http://www.etrade.com/) | $1,170,000 | $1,170,000 | Financial services | | 24 | 16 | [TD Waterhouse Group](http://www.tdwaterhouse.com/) | $1,000,000 | $1,470,000 | Financial services | | 25 | N/R | [Southwest Airlines](http://www.swa.com/)\* | $1,000,000 | $5,130,000 | Travel services | | 26 | 31 | [Priceline.com](http://www.priceline.com/) | $987,000 | $987,000 | Retailer | | 27 | 40 | [CMGI](http://www.cmgi.com/) | $898,000 | $898,000 | Internet holding company | | 28 | 21 | [Yahoo!](http://www.yahoo.com/) | $854,700 | $854,700 | Content provider | | 29 | 29 | [Delta Air Lines](http://www.delta.com/) | $850,000 | $14,600,000 | Travel services | | 30 | 20 | [buy.com](http://www.buy.com/) | $760,500 | $760,500 | Specialty retailer | | 31 | 24 | [Fidelity Investments](http://www.fidelity.com/)\* | $750,000 | N/A | Financial services | | 32 | N/R | [MicroAge](http://www.microage.com/)\* | $736,000 | $3,680,000 | Computing equipment | | 33 | 13 | [Micron Electronics](http://www.micronpc.com/)\* | $721,000 | $1,390,000 | Computing equipment | | 34 | N/R | [Mary Kay](http://www.marykay.com/) | $660,000 | $2,000,000 | Personal care products | | 35 | 26 | [MicroWarehouse](http://www.warehouse.com/)\* | $600,000 | N/A | Computing equipment | | 36 | 117 | [Office Depot](http://www.officedepot.com/) | $582,100 | $10,900,000 | Business supplies | | 37 | 33 | [Ameritrade](http://www.amaeritrade.com/) | $572,000 | $572,000 | Financial services | | 38 | 28 | [EarthLink](http://www.earthlink.com/)\* | $504,000 | $542,500 | Internet services | | 39 | N/R | [Oracle](http://www.oracle.com/) | $500,000 | $10,100,000 | Software and services | | 40 | N/R | [The Principal Financial Group](http://www.principal/) | $500,000 | $6,000,000 | Financial services | | 41 | 34 | [Egghead.com](http://www.egghead.com/) | $454,100 | $454,100 | Computing equipment | | 42 | 52 | [Datek Online Holding](http://www.datek.com/)\* | $400,000 | N/A | Financial services | | 43 | N/R | [Quixtar](http://www.quixtar.com/) | $400,000 | $400,000 | Internet consumer products | | 44 | N/R | [RoweCom](http://www.rowe.com/) | $393,700 | $393,700 | Web-based purchasing services | | 45 | N/R | [1-800-flowers.com](http://www.1-800-flowers.com/) | $385,200 | $385,200 | Flowers and gifts | | 46 | 48 | [DoubleClick](http://www.doubleclick.com/) | $376,700 | $376,700 | Advertising | | 47 | N/R | [United Airlines](http://www.united.com/) | $357,000 | $18,990,000 | Travel services | | 48 | 59 | [Cheap Tickets](http://www.cheaptickets.com/) | $329,900 | $329,900 | Travel services | | 49 | 32 | [DLJdirect](http://www.dljdirect.com/) | $329,900 | $329,900 | Financial services | | 50 | 35 | [Excite@Home](http://www.home.net/) | $325,000 | $537,100 | Internet services |   \*Amount listed is an [estimate](mailto:estimateSource:Inter@ctive) (12) |

**Dell Computers - SWOT Analysis**

***The reason Dell Computer is so successful, says its founder Michael Dell, is because it has completely bypassed middlemen and deals directly with customers. "Much of what we have learned has come from our customers," says Dell.*** (13)

Strengths

### Brand Name

According to the November 1999 issue of MC that is published online at [www.marketingcomputers.com](http://www.marketingcomputers.com), Dell is ranked number one in brand name of all technology based companies. When comparing Dell to their perceived competition we find the following rankings: Gateway #7, IBM #10, Hewlett Packard #12, and Compaq did not make the top twenty listed. MC online used information from all of the following firms in order to make their rankings:

\* Information Technology 100, Business Week

\* America's Most Admired Companies, Fortune

\* 1999 Fortune 500, Fortune

\* Standard 100, The Industry Standard

\* Corporate America's Most Powerful People, Forbes

\* Dynamic 100 Companies, Forbes ASAP

\* InformationWeek 100, InformationWeek

\* Most Influential Companies, PC Magazine

\* Best Corporate Reputations Study, Harris Interactive

In order to make the consolidated list of Brand names, a company had to be on the top 20 lists in at least 6 of the 9 above firms. A composite list was then formed based on that data. (14)

Market Position

During 1999, Dell surpassed Compaq to the number 1 position in U.S. PC sales for the first time. Its market share rose to 16% compared to 12.7% in 1998. On a worldwide basis, Dell increased PC market share from 7.9% in 1998 to 9.8% in 1999, securing the number 2 spot, displacing IBM. These statistics are according to Dataquest. (15)

The rise to number one has been accomplished by way of a multifaceted marketing approach to many different markets. The intriguing idea behind this vault to number 1 in U.S. PC sales is that Dell does it without any storefronts, without any retail outlets, without any unnecessary bricks and mortar expenses.

Sales are finalized in the customer’s office, or telephone, or even more importantly via the Internet. According to Michael Dell, "The fact that we deal directly with our customers means that we have perfect information about what they want to buy." Only 40 percent of all businesses in the United States have tried selling their product online and most are still wrestling with an Internet strategy. (13)

Manufacturing and Inventory Control

Prior to April 1997, Dell had in place a fairly standard assembly-line process for making servers and PCs. Computer chaises would roll down with one person after another adding on a bolt here, a processor there. In this progressive-build system, it took up to 25 people to build one machine. "Our goals were to reduce the number of worker touches per machine to reduce time and costs," says Larry Brown, one of Dell's visionaries as vice president of Worldwide Process Technology and Quality.

What Brown, and the IS team came up with was a plan for Metric 12: a new plant designed by combining just-in-time manufacturing, the concept of avoiding the need to warehouse inventory by having only what you need when you need it, with the already-famous customized Dell approach. The plan called for giving assembly line workers more responsibilities and components so that each one could build more of a machine by themselves. Because fewer people were going to touch each machine, building errors could be cut exponentially. That gave the line workers a greater sense of involvement and ownership of their work. Instead of simply adding a bolt here and a chip there, workers in very small teams would now build the complete machines following precise order guidelines and using the components in the carefully indicated racks in front of them.

After undergoing this change and implementing these systems in the Metric 12 plant in Austin, Dell started carrying this approach to all of its manufacturing centers. Plants that have opened in the last 12 months in Brazil and Nashville, Tenn., are modeled closely on the Metric 12 facility.

Dell also achieved what it really set out to do. It has increased its manufacturing speed and throughput by 150 percent and raised the uptime of its manufacturing lines by more than 95 percent. Dell officials also say that reducing the repetitiveness of assembly line jobs reduced employee turnover.. All with an IT investment of just over $1.6 million.

That simple request lead to Dell now cranking out 1 million machines from Metric 12 every three months and brought along some encouraging financial results too: Dell cleared $1.5 billion in profits last year. (16)

Value Chain

"Our projections showed a dramatic increase in demand," says Terry Kelley, vice president of Worldwide Operations I/T at Dell. "We could have tried to build more factories to keep up, but it would have been very expensive and difficult to do. We decided instead to make some fundamental changes in how we built the machines."

Metric 12 was completed the following April in four months due to a combination of hard work and simplicity of the final designs. Was it imperative that they build the plant quickly? The answer from Dell executives is a resounding yes, partly because they had to meet the public's demand for more and more new systems and partly because they realized just what an advantage their new processes would give them over their competitors.

By tying it to work-in-progress stockrooms, the order-level material checking system keeps track of which materials need replenishing and makes sure the racks are filled with the proper components.

In planning the system, Dell realized they needed to rework two key pieces of the manufacturing process they had planned: how component materials came in and where in the system decisions were made.

Dell consolidated their supply chain, reducing the number of suppliers used. And because speed was so important, the decision-making process was removed from the factory. By consolidating its number of suppliers, Dell was able to keep component supplies moving into the plant smoothly without any bottlenecks backing up at the incoming supply loading dock.

The PC maker also encouraged suppliers to locate their facilities nearby so that Dell's component orders could be filled quickly.(16) Today, over 90% of the suppliers are hardwired into Dell, and they access the system by way of the website. [www.valuechain.dell.com](http://www.valuechain.dell.com) . These suppliers make the decision as to when, what and where their components need to be delivered to the manufacturing plant.

Annually Dell gives special recognition to their best-performing suppliers at their supplier's conference. Dell also conducts quarterly reviews of its suppliers. The suppliers are measured in the areas of quality, cost, continuity of supply, field service, and technology leadership.(17)

This is where the term Dellocity comes from. ***Dellocity*** is the art of operating in permanent fast-forward mode. The company squeezes maximum efficiency out of everything it does, from manufacturing personal computers to shipping orders within two weeks to delivering instantaneous customer service via the World Wide Web. (18)

Company financial picture

Looking at Company revenues for Dell and their competitors found in figure 1 of this report, there is a story behind the numbers, and even with the downturn in stock prices over the past two quarters; Dell shows great strength from a financial standpoint. Gross sales have increased greatly, in fact more than doubling from 1997 to 2000 (projected). What is amazing about these figures is that Dell conducts approximately 50% of their sales online, followed by IBM at 19.64%, Hewlett- Packard at 4.01%, Compaq at 4.79%, and Gateway at 23.53%. (12) This tells you a great deal about transaction costs, which come to the forefront when we examine profit margins of the four companies.

Please note that Dell’s gross profit margin is the lowest of the four, most probably due to the fact that they do not manufacture components, and that in their supply chain they rely on the best suppliers, they are not necessarily the cheapest suppliers. (See figure 4)

Operating profit margin is where Dell really shines, retaining 43.5% of it Gross profit, compared to 34.05% for IBM, 23.72% for Compaq, and 34.94% for Gateway.

There are some very significant increases in the balance sheet over the past two years. This demonstrates growth and profitability. Certainly a strength of Dell’s, as they have been a model of manufacturing efficiency. Their operating costs as a percentage of revenue are about 50% lower than its nearest rival, that being Compaq, according to Paul McDougall of Information Week online. Dell’s cash as a percentage of total assets has increased from 7.56% in 1999 to 33.2% in the Year 2000. This will lead to more discussions later in this paper, especially in the Opportunities section of this analysis.

|  |  |  |  |
| --- | --- | --- | --- |
| Balance Sheet | Jan 00 | Jan 99 | Jan 98 |
| Cash | 3,809,000,000 | 520,000,000 | 320,000,000 |
| Net Receivables | 2,608,000,000 | 2,094,000,000 | 1,486,000,000 |
| Inventories | 391,000,000 | 273,000,000 | 233,000,000 |
| Total Current Assets | 7,681,000,000 | 6,339,000,000 | 3,912,000,000 |
| Total Assets | 11,471,000,000 | 6,877,000,000 | 4,268,000,000 |
| Total Current Liabilities | 5,192,000,000 | 3,695,000,000 | 2,697,000,000 |
| Long-Term Debt | 508,000,000 | 512,000,000 | 17,000,000 |
| Total Liabilities | 6,163,000,000 | 4,556,000,000 | 2,975,000,000 |
| Total Equity | 5,308,000,000 | 2,321,000,000 | 1,293,000,000 |

(19)

Specialization and Customization

According to Michael S. Dell, “The Internet is disrupting established business practices and fueling tremendous changes in how companies operate, and certainly, consumers behave. I believe one of the fundamental reasons for these changes is the huge increase in information available for business and consumers to make informed decisions. The Internet is the most effective channel to disseminate large amounts of information in a unique, organized and efficient way.

Therefore, a key to success is understanding how to harness and use information and the Internet to your advantage. The Internet eliminates steps in the traditional sales cycle and fuels massive efficiencies for business and faster satisfaction for customers.

Our customers enter dell.com through unique pages tailored to their needs, and all have access to web-enabled service tools. We strive to ensure the web experience is superior to any experience in the physical world.” (2)

Known for its phenomenal success with mass customization and for possessing one of the world's most advanced IT infrastructures, Dell is, in some cases, adopting a surprisingly low-tech approach when it comes to getting closer to its customers. In fact, Dell's interest in making it easier to unpack a new computer is part of its Customer Experience strategy, which puts the customer at the heart of everything the company does.

Some refer to this strategy as customer relationship management (CRM). Others, like Dell, simply coin their own corporate phrases. Regardless of what you call it, it's a strategy that is steadily gaining popularity—and producing impressive results.

Michael S. Dell ignited his own revolution within the PC industry by creating a company that let customers build their own computers. Customers now hop on the company's Web site and choose from thousands of hardware and software options to configure their dream machines. The possibilities are almost endless, with customers able to specify everything from the size of the PC's memory to the version of a software application. And it's all made possible by a powerful, sophisticated IT structure that integrates the company's back-office and front office functions.

The payoff has been impressive: satisfied customers, a significant chunk of market share and a supply chain envied by its competitors. "Every PC that we manufacture is already sold," says Dell Senior Vice President and CIO Jerry Gregoire. (20)

## **Weaknesses**

Ability to change

The Internet will soon change drastically. Over the next four years, telecommunications companies plan to spend $400 billion worldwide improving network infrastructure, bringing high-speed data transfer to a vast majority of businesses. "I believe its (the internet) glory days are over; I hate to say it, but it's old technology, technology investors do not invest in what is old, they are now more interested in fiber optics, telecommunications and semiconductors," according to Stephen Baker of PC Data.

There is a current undercurrent that handheld devices and broadband technology could make personal computers obsolete. And even though PC sales are up about 10 percent from last year, that pales in comparison to the 20 percent to 30 percent growth the industry saw a few years ago. "It's a maturing marketing," Baker says. "Things are getting tough." Will Dell be able to change to handle this perceived shift in technology?

Stockholder uneasiness

Over the past six months with the hits that the technology industry has been taking on the stock market, stockholders are beginning to feel uneasy about the future. Coupling this with the fact that Michael Dell has personally sold in excess of $2.5 Billion dollars of Dell stock does have the penchant for causing concern. The amount of this sale, while sounding extremely large still only represents a very small percentage of the Dell stock owned by Mr. Dell. He still owns over 300,000,000 shares worth an estimated $13.9 Billion. The trading patterns of CEOs such as Dell are closely watched because their actions suggest sentiments about their company’s prospects. (21)

Opportunities

Increased Customer Relationship Management

  The company's driving interest in the customer has also led to the creation of Customer Experience Council. (Its eight members represent finance, sales, product development, manufacturing, corporate communications and IT.) The council tracks data such as the number of times a system develops problems within the first 30 days of purchase and the amount of time it takes the company to fix those systems via phone or onsite support. (22)

In addition, Dell will be applying more company resources into the continued further development of their online applications.  Dell.com recently added two new services, Web hosting and a small-business center. The company also has an impressive global presence, with unique sites for 80 countries in 23 different languages. (23)  
Alliances

As the leader of online marketing and sales of computer hardware, Dell is in a perfect position to act as the catalyst in the forming of new alliances with suppliers and competition alike. In fact, Dell has started developing and in some areas is up and running with a consulting partnership with Arthur Anderson and Gen3 partners. This is a bold and first time move for a PC maker. In addition, Dell has set aside an undisclosed amount of company capital to develop and enter the venture-capital funding market, which will certainly build further alliances. (23) (24)

New Products and Services

During the summer of 2000, Dell unveiled new strategic initiatives targeting Internet businesses including dot-coms, ISPs, ASP, and hosting companies. They include: Internet-access services, service provider program, and a new line of Internet appliances. Although not a firm number, it is estimated that dot coms and hosting providers will invest up to $370 Billion Dollars to build up their Internet infrastructure capabilities services by 2003. (23) (24) These are some serious dollars that Dell hopes to attract with these new initiatives.

Threats

Continued strength of the U.S. Dollar Vs. foreign currencies

As mentioned earlier, the growth of new PC sales has slowed from previous annual reports. This is not only true for Dell, but for the entire PC Industry. The sales to foreign countries are even slower than U.S. sales. Lagging sales can be attributed in part to the strength of the U.S. dollar in trading with foreign currencies. The “softness” of the Japanese Yen, and the Euro is quite evident as its value is compared with the Dollar. The more recent conversion rates as supplied to the Wall Street Journal by J.P. Morgan demonstrates that the Yen is almost 15% behind in value of where it was last year in comparison with the U.S. Dollar. The Euro is in even worse shape, showing a decrease in purchasing power that is approaching 20% from November of 1999.

PC makers and retailers definitely need the foreign market in order to reach sales projections that have suffered, and have directly affected stock prices over the past three months.

Dell Chairman Michael Dell says that “softness is pretty much uniform across its product lines.” He went on to say that its weakness was concentrated among small and mid-sized business clients, and especially in Europe. The PC maker said its European customers are slowing purchases in part because of the decline of the Euro value to the U.S. Dollar. (25)

Economic Downturn in U.S.

Overall softening of the U.S. economy is a threat to Dell. As the threat of a recession becomes much more prevalent each day. The NASDAQ is now at a level that is approximately 50% of its all-time high, and the Dow Jones has stagnated.

If the recession materializes, it will be the first one that technology companies such as Dell will have to suffer through. There is no track record of how management will react to a recession, and also since the last recession that was almost 10 years ago, the investor has changed. How will the new age investor act during a time where money is much tighter?

A bigger question yet is what will a tighter money supply do to the personal PC market? Will first time buyers be as anxious as prior to purchase? Will technology savvy users be as prepared to trade up to new hardware? Price will become a bigger issue to all purchasers. Dell is not the price leader in the PC market, that label belongs to Compaq. Dell had better be prepared to revisit their pricing structure in order to make sure that they are competitive in the market

The biggest risk that Dell has to deal with, should a recession materialize is how they will handle the accounts receivables that they are carrying on their balance sheet. By referring to the information enclosed in this report, it is evident that receivables have increased by over $500,000,000 during the past calendar year, and an increase of over $1,000,000,000 from two years prior. The Year 2000 receivables amount to 22.74% of company total assets. A large amount of the receivables are for equipment that has been sold to small and mid-sized firms. These firms are the ones that would have the most difficult time surviving a recession.

**Dell Information Technology Strategy (Virtual Integration)**

Dell Computer is using information technology to remove the traditional boundaries in the value chain between suppliers, manufacturers, and customers. In doing so, Dell Computer is evolving in a direction that Michael Dell calls virtual integration. The individual pieces of the strategy – customer focus, supplier partnerships, mass customization, and just-in-time manufacturing – may all be familiar. But Michael Dell’s insight into how to combine them is highly innovative: technology is enabling the coordination across company boundaries to achieve new levels of efficiency and productivity, as well as extraordinary returns to investors. Virtual integration harnesses the economic benefits of two very different business models. It offers the advantages of a tightly coordinated supply chain that have traditionally come through vertical integration. At the same time, it benefits from the focus and specialization that drives virtual corporations. Virtual integration, as Michael Dell envisions it, has the potential to achieve coordination and focus and specialization. If it delivers on that promise, it may well become a new organizational model for the information age. (26)

To illustrate the virtual integration of Dell Computer and how it has improved the effectiveness of directly selling personal computers to customers, the comparison of purchasing a personal computer from Dell Computer and purchasing a submarine sandwich from Subway is made. The two companies have similar strategies for customer focus, supplier partnerships, mass customization, and just-in-time manufacturing.

### Customer Focus

When a customer walks into a Subway restaurant, he or she approaches the counter or storefront at the end in which the order is placed and has access to the menu. The virtual counter or storefront for Dell Computer is the website www.dell.com. The company receives in excess of 2.6 million visits per week to www.dell.com, where it maintains more than 80 country-specific sites. Company sales generated through the Internet reached nearly 50% of revenue and averaged $40 million per day by the end of fiscal year 2000. Through, www.dell.com, customers and potential customers can access a wide range of information about the company’s product offerings, can configure and purchase systems online and can access volumes of support and technical information. (2)

The selling processes of the two companies start in a similar manner. The sandwich artists at the Subway restaurants and the WebPages at the Dell Computer websites offer an opening, identify a need, and qualify a purchase. The sandwich artists present the features and benefits of the available toppings and receive the reactions of the customer. The WebPages present the features and benefits of the available hardware and software and receive the reactions of the customers.

Michael Dell states, “I am only half joking when I say that the only thing better than the Internet would be mental telepathy. Because what we’re about is shrinking the time and resources it takes to meet customers’ needs. And we are trying to do that in a world where those needs are changing.” (26)

The interaction with the customers during the customization of submarine sandwiches and personal computers is one-to-one and provides both value chains the opportunity to get know the customers. From an object-orientated approach the customers have attributes and behaviors that are equally apparent to the sandwich artists and the WebPages. The sandwich artists and WebPages know the customers and use this knowledge to understand, predict, and satisfy the needs of individual customers.

The information technology used by Dell Computer enables the company to track each personal computer sold to its customers. The database contains information about customers and is used to assess advertising effectiveness and purchasing trends. This information supports marketing activities that are specific to the particular types of customers. The database is unique to the direct model of selling personal computers and allows the company to measure customer satisfaction and test new products and new services before introduction to customers. (2)

The selling processes of the two companies end in a similar manner. The sandwich artists at the Subway restaurants and the WebPages at the Dell Computer websites present a trial close, address customer objections, and close a purchase. The sandwich artists at the Subway restaurants will offer a deal with the submarine sandwich as a first trial close that the customer may have objections to and require the sandwich artist to make a second trial close that will close a purchase. The WebPages at the Dell Computer websites will offer a price for the personal computer as a first trial close that the customer may have objections to and require the customer to select options and update the price that will close a purchase.

Neither of the selling processes involve a middleman, lowering the cost of the transaction. One difference between the two selling processes is when the commitment is made by the customer to purchase a submarine sandwich or a personal computer. With a Subway customer it is when he or she approaches the counter or storefront. With a Dell Computer customer it is when he or she closes the purchase.

Dell Computer has developed custom Internet sites, called Premier Pages for various corporate and institutional customers, allowing these customers to simplify and accelerate procurement and support processes. Through these custom Internet sites, the company offers the customer paperless purchase orders, approved product configurations, global pricing, real-time order tracking, purchasing history and account team information. The company currently provides more than 40,000 Premier Pages worldwide. The company also provides an online virtual account executive for its small business customers. And, for all domestic customers, the company provides a spare-parts ordering system and a virtual help desk featuring natural-language search capabilities and directs access to technical support data. (2)

### Supplier Partnerships

The inventory of components, needed by Subway and Dell Computer to competitively produce customized submarine sandwiches and customized personal computers, must move quickly in order to avoid obsolescence. Subway customers do not want submarine sandwiches made with a bun that is two months old and Dell Computer customers do not want a personal computer with a processor that is two years old. Dell Computer is focused on how fast inventory is moving rather than how much inventory there is.

Michael Dell states, “In our industry, if you can get people to think about how fast inventory is moving, then you create real value. Why? Because 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 market 69 days sooner.” (26)

With virtual integration, external suppliers are partners and treated as if they are inside the company like the internal suppliers by sharing information with them in real-time. The same sharing of information across boundaries normally does not take place because the buyers are so busy trying to protect themselves that sellers can not add value. Dell Computer tells its external suppliers the daily production requirements.

Michael Dell states, “The technology today really boosts the value of information sharing. This speeds the time to market – often dramatically – and creates a lot of value that can be shared between buyer and supplier. So technology enhances the economic incentives to collaborate.” (26)

### Mass Customization

Subway and Dell Computer offer customized submarine sandwiches and customized personal computers in millions of different configurations. The desktop system unit sold to consumers by Dell Computer is offered in four models that can be configured from two processor options, ten memory options, three hard drive options, one operating system option, one bundled software option, four video card options, three CD-ROM drive options, four DVD-ROM drive options, one floppy drive option, three zip drive options, two sound card options, three modem options, and two networking options for a total of 414,720 possible configurations.

Michael Dell states, “We believe the customer is in control, and our job is to take all the technology that’s out there and apply it in a useful way to meet customer’s needs.” (26)

The product development efforts of Dell Computer are focused on designing and developing competitively priced computer systems that adhere to industry standards and incorporate the technologies and features that the company believes are most desired by its customers. To accomplish this objective, the company evaluates, obtains and incorporates new hardware, software, storage, communication, and peripheral technologies that are primarily developed by others. The company’s product development team includes programmers, technical project managers and engineers experienced in system architecture, logic board design, sub-system development, mechanical engineering, manufacturing processing and operating systems. This cross-functional approach to product design has enabled the company to develop systems with improved functionality, manufacturability, reliability, serviceability and performance, while keeping costs competitive. The company takes steps to ensure that new products are compatible with industry standards and that they meet cost objectives based on competitive pricing targets. (2)

### Just-In-Time Manufacturing

The Subway restaurant is designed to effectively facilitate the assembly of a submarine sandwich by one or two sandwich artists. Inventory control is performed visually at the point of assembly and provides what is needed to satisfy the needs of the customer. The needed components of a customized submarine sandwich are manually arranged at the counter or storefront in containers manually that are periodically replenished. Subway is able to competitively assemble a customized submarine sandwich with a lot size of one.

The Dell Computer factory is designed to effectively facilitate the assembly of a personal computer by a small work group. Inventory control is performed electronically at the point of assembly and provides what is needed to satisfy the needs of the customer. The needed components of a customized personal computer are automatically delivered at the workstation in baskets and racks that are systematically replenished. Dell Computer is able to competitively assemble a customized personal computer with a lot size of one.

Michael Dell states, “So looking for value shifts is probably the most important dimension of leadership. Then there’s the question of managing such a tightly coordinated value chain – and there it is all about execution.” (26)

Close customer relationships have allowed Dell Computer to dramatically extend the value delivered to customers from the factory. Today Dell Computer routinely loads the software of its customers in the factory. Eastman Chemical, for example, has a unique mix of software. Normally, they would get their personal computers, take them out of the box, and then someone would come to each employee’s desk to hook the system up and load the software. This costs $200 to $300. The solution was to create a massive network in the Dell Computer factory with high-speed 100-megabit Ethernet. The Eastman Chemical software is loaded onto a Dell Computer server. Then when a workstation comes down the assembly line and is identified, a few hundred megabits of data come through the network onto the hard drive of the workstation. What happens to the money Dell Computer’s customer is saving? The customer gets to keep most of it. Dell Computer charges $15 to $20 and makes the products and services more valuable. (26)

Michael Dell states, “The whole idea behind virtual integration is that it lets you meet customers’ needs faster and more efficiently than any other model. With vertical integration, you can be an efficient producer – as long as the world isn’t changing very much. But virtual integration lets you be efficient and responsive to change at the same time – at least that is what we are trying to do.” (26)

The goal of Dell Computer is to be one or two steps ahead of the change, and in fact to be creating or shaping it, to some extent. That is why Dell Computer spends so much time with its customers.

Michael Dell states, “Often it is a lead customer that says, “Hey, can you put an asset tag on my personal computer?” And the first reaction is “Gee, we’ve never done that before, but why not? Let’s give it a try.” And then you do it for one customer, then for ten, then for a hundred, and eventually it becomes a standard offering” (26)

The virtual integration made possible by the use of information technology at Dell Computer, is in part, a series of small innovations that over time has added up to a large competitive advantage in the industry.

Source listing

1. Direct from Dell, By Michael Dell
2. Annual Report, 2000 Dell Corp.
3. Research conducted on <http://www.dell.com>
4. Research conducted on <http://www.fool.com>

(5) Research conducted by interview with Joe Hurley former accountant for Ideasign Computer Co.

(6) Research conducted in Hoovers Handbook of American Business

(7) Investor’s Business Daily, April 28 1999, p.26

(8) Forbes, May 31,1999 p.50

(9) Research conducted in U.S. Industry and Trade outlook 2000, Magraw-Hill

(10) Research conducted in the Wall Street Journal 11-30-00

(11) A Shrinking Gap, Wall Street Journal, 11-27-00

(12) The Top 50 e-Commerce Revenue Generators, [www.digitrends.net](http://www.digitrends.net), staff

(13) Michael Dell Has Some Advice For Old-Line Manufacturers: Change Your Business Model, [*www.manufacturingnews.com/news/00/0613.html*](http://www.manufacturingnews.com/news/00/0613.html), staff

(14) Top 20 CEO Brands, <http://www.marketingcomputers.com/issue/dec99>, Chris Black

(15) Dell: A History of Growth, <http://www.informationweek.com/shared/del2.html>*,* Paul McDougall

(16) Fine Line, [*www.cio.com/archive/020100\_dell\_content.html*](http://www.cio.com/archive/020100_dell_content.html), Stewart Deck

(17) Dell Awards Top Suppliers Based On Quarterly Reviews, [*www.techweb.com*](http://www.techweb.com), Lynne McKeefry

(18) Michael S. Dell: Nerdy Like a Fox, <http://www.businessweek.com/>*,* staff writers

(19) Dell Computer Corporation, [*www.hoovers.com/annuals/3/0,2168,13193,00.html*](http://www.hoovers.com/annuals/3/0,2168,13193,00.html)

(20) Know Your Customer, [*www.cio.com/archive/081599\_customer\_content.html*](http://www.cio.com/archive/081599_customer_content.html), Louise Fickel

(21) Why is Michael Dell Cashing Out, [*www.salonmag.com/business/feature/2000/08/31/dell*](http://www.salonmag.com/business/feature/2000/08/31/dell), Diane Seo

(22) Internet Winners, [*www.cio.com/archive/070100\_gains\_sidebar1\_content.html*](http://www.cio.com/archive/070100_gains_sidebar1_content.html), Polly Schneider

(23) Strategic Play, [*www.techweb.com*](http://www.techweb.com), Jennifer Hagendorf

(24) Dell: Beyond The Box?, [*www.informationweek.com*](http://www.informationweek.com), Paul McDougall

(25) Dell Stock Slips After Warning About Revenue, *Wall Street Journal*, Gary McWilliams

(26) The Power of Virtual Integration: An Interview with Dell Computer’s Michael Dell, Harvard Business Review, Joan Magretta