2

Best Practices at the Dell Computer Corporation: Benchmarking a High-Speed Management Communication System

*We're in a world that is obsessed with speed. "Time"
has won the race to become our most valued resource. . . .
Time to market, that is, the elapsed time between product
definition and availability . . . is becoming a highly competi-
tive issue for U.S. companies, and . . . it may be the single
most critical factor for success across markets. . . . Speed to
market creates opportunities in market share, market leader-
ship, and profits.*

<div align="right">

(Versey, 1991:23-26)

</div>

Fraker, writing in *Fortune* described a new set of economic forces which were dramatically affecting organizational performance. These forces included (1) quick market saturation, (2) unexpected global competition, and (3) rapid technological breakthroughs. These forces taken collectively required a new management theory based on responding to rapid environmental change, shifting customer needs, and competitors' adaptation to those needs (Fraker 1984:62-68). Between 1984 and 1988 those economic forces gave rise to a new High-Speed Management Communication theory which focused on the use of computers, telecommunication, and extremely well-crafted messages to provide a rapid-response system adapted to customer needs and competitor products. Such a rapid-response system has placed pressure on research in organizational communication processes to more precisely and economically create message contents which were adapted to a specific audience and instantly intelligible. This new High-Speed Management Communication theory was presented in its most

complete form by the authors in 1995 and 1997 and by Cullin and Cushman in 1999. High-Speed Management includes new, well-developed theories of environmental scanning, value chain performance, continuous-improvement programs, leadership, marketing, and teamwork programs.

High-Speed Management is a communication theory rooted in two philosophic and empirically verifiable propositions.

First, reducing the cycle time an organization takes in getting its products or services to market yields several significant outcomes. More specifically, decreasing organizational cycle time yields increases in productivity, quality, market shares, profits, management, worker motivation and commitment, and customer satisfaction (Versey 1991; Dumaine 1989). For example General Electric reduced the cycle time it takes to deliver a washer or dryer to market from three weeks to three days, saving millions of dollars and yielding all the above mentioned benefits (Stewart 1991, 119).

Second, improving an organization's communication processes is the most significant ingredient for reducing organizational cycle time (Cushman and King 1995). Removing communication bottlenecks, standardizing information transfer, developing rapid-response systems, and improving message quality and adaptation to all an organization's stakeholders are the central outputs that yield decreased organizational cycle time. For example, General Electric put in place a rapid-response communication system between customers and managers which reduced the cycle time GE took in responding to specific customer needs from four weeks to 7 days, saving GE millions of dollars while increasing customer satisfaction (Cushman and King 1995, 1997; Cullin and Cushman, 1999).

The purpose of this inquiry is to benchmark the Dell Computer Corporation and its top two competitors in the PC computer market in order to discover how Dell achieved dramatic success in cycle time reduction through improved organizational communication processes. Our benchmarking case study will proceed in four stages: (1) an examination of the competition in the personal computer market, (2) a benchmarking of Dell's rapid-response systems, (3) an examination of the effect of Dell's rapid-response systems on Dell's customers and competitors, and (4) the drawing of come conclusions regarding the benchmarking of Dell's reduced cycle times and High-Speed Management theory.

Competition in the Personal Computer Market

*Making PCs has become, is, and will continue to be a nasty
business. It is a business in which companies cut prices literally
every week, where the product you make is obsolete just
months after you make it, where customers choose between
your boxes and similar boxes made by several rivals.*

(Serwer, 1998:59)

The computer industry represents fertile ground for our inquiry. The
market is highly visible, rapidly growing, and competitive, with several
well-managed dynamic firms seeking increased market shares. In 1998,
the $148 billion computer market had four main segments: main frames,
minis, workstations, and personal computers. PC sales represented 46
percent of total computer sales. Table 2.1 tracks the performance of the
top three computer firms in market shares in the PC market between
1996 and 2001 utilizing data from *Data Quest* and *International Data.*

Table 2.1
PC Market Shares

	1st Quarter 1996	1st Quarter 1997	1st Quarter 1998	1st Quarter 1999	1st Quarter 2000	1st Quarter 2001
Compaq	10.0%	11.5%	13%	14%	13.8%	13.3%
IBM	7.2%	7.3%	7.5%	7%	6.5%	6.0%
Dell Computer	3.4%	5.3%	11.8%	15%	19%	24.9%

Source: *Data Quest,* 1996–2002; International Data, 1996–2002

Between 1996 and 2001, Compaq's sales growth was +30 per-
cent, IBM's was –1.2 percent, and Dell's was +750 percent. However,
while market shares were increasing, average margins in the indus-
try were decreasing from +10 to -10 percent.

The PC market has three major components: laptops, desk-
tops, and servers. By November of 2001 Dell's rank and market
shares in each component of the U.S. PC market were number 2 in
laptops with 24 percent of the market, number 1 in desktops with
29 percent of the market, and number 5 in servers with 16 percent
of the market. This gave Dell 24.9 percent of the total PC market
and allowed Dell to pass Compaq as the number one producer of
PCs in the United States. Dell's financial performance over the past
six years is recorded in table 2.2.

Table 2.2
Dell's Six-Year Financial Performance Returns
(in billions of U.S. dollars)

	2001	2000	1999	1998	1997	1996
Sales	31.1	31.8	26	18.2	12.3	7.7
Profits	1.2	2.1	2	1.4	1.3	.7

Source: www.Dell.com Financial, 2, 2000:1

Dell Computer was and is the low cost, high value provider of PCs backed by world-class rapid-response, continuous-improvement, and service programs.

Benchmarking Dell Computer's Rapid-Response Communication System

Dell is a model cycle reduction time firm. Dell applies cycle reduction logic to every aspect of its operations with dramatic results.

(Serwer, 1998:62)

Dell Computer Corporation is one of the most visible success stories in the computer market. By selling personal computers directly to customers over the Internet, offering a build-to-order sales system, and then linking suppliers, workers, managers, customers, and service personnel together on the Internet Dell has built a series of rapid-response systems that have revolutionized organizational communication. Dell's rapid-response systems have led to fear, admiration, and attempts at imitation among its competitors and other e-businesses alike (McWilliams 1997, 132–136, 91–92; McWilliams and White 1999, 84).

Critical Success Factors

Dell employs four rapid-response systems. Each system uses the Internet to provide a real-time communication system for linking key organizational stakeholders together into a functional community. Each rapid-response system employs a backbone profiling system for precisely adapting the content of communication to each of an organization's stockholders. These profiles are then used to improve future communication and to maintain interpersonal relationships

between stakeholders. This in turn enhances the firm's organizational performance. Individually, these four rapid-response systems are necessary conditions for rapid and successful organizational communication and collectively they represent sufficient conditions along with their accompanying targets for successful organizational performance (Margretta 1998, 73–83; Stepanek 1998, 51–52).

First, Dell has a rapid-response sales link to its customers. This interactive online communication system allows customers to order and track their purchase through each stage of the manufacturing and distribution process. Employing mail catalogs and Internet home pages, customers interact directly with Dell and can customize their orders to meet their unique needs. Since 1998, this includes an Internet Superstore with thirty thousand computer parts. This Superstore provides everything from different types of chips to different types of add-ons. These interactive communication processes are tracked by Dell in order to build backbone customer and product communication profiles. The profiles of customer choice allow Dell to notify individuals of useful add-ons, key advances in technology, and new services which might meet the customer's previously indicated needs. The profile of product orders assists Dell in streamlining its value chain, dealing with suppliers, and monitoring product changes. In addition Dell offers customers online chat rooms for discussions with other customers, Dell managers, and Dell's maintenance staff. Once a week Dell hosts an online interactive lecture on various new advances in computer technology. These interactive communication processes help Dell maintain interpersonal relationships with its customers and to adapt its products rapidly to changing customer needs. The result is that Dell's laptop, desktop, workstation, and services have won awards as the top products in their classes in customer surveys conducted by *PC World,* Best Buy Stores, *Windows Magazine,* and *Fortune Magazine* (Ransted 1999, B1).

Second, Dell has a rapid-response system for providing customer service. This interactive real-time communication system can be accessed by telephone or computer for personal or automated technical and customer support in dealing with computer problems. This service is toll free 24 hours a day, seven days a week throughout the world in multiple languages. Dell monitors these service interactions in order to construct maintenance profiles on each piece of equipment and the appropriate instructions for its use, and to develop appropriate repair sequences for each type of problem for use by its live and automated repair processes. Such profiles allow Dell to warn customers of potential problems, develop clear problem

correction routines, and access equipment and worker performance in manufacture and assembly. This interactive customer service system has won Dell awards from *Fortune Magazine*, *PC World Magazine*, *Windows Magazine*, and Best Buy Stores as the number one computer firm in customer service.

Third, Dell has a rapid-response system for linking all suppliers, workers, managers, and customers to Dell's value chain. This interactive real time communication system is employed to order parts, manufacture and outsource computer modules, and coordinate assembly and distribution of products to customers. Managers employ this system for all human resource functions, workers and suppliers for all coordination sequencing and quality control processes, and customers to track manufacturing and distribution processes. Dell monitors each of these activities and develops performance profiles and report cards for immediate feedback to suppliers, managers, and workers on their performances. The company conducts interactive online training and workshop programs to improve stakeholder skills and also utilizes chat rooms for advanced learning and team coordination activities. Dell's real-time communication system for value-chain coordination sets the standard for excellence in response time and product quality in the PC industry.

Fourth, Dell has a rapid-response system for the continuous improvement of all organizational activities. Here again, all Dell's stakeholders are tied together in a real-time interactive communication system aimed at focusing teamwork on improving every aspect of Dell's performance. Such teams operate with and between units, outsourcers, suppliers, and managers and customers, aiming to improve Dell's productivity, quality, maintenance, and timelines by at least 20 percent per year. Each of these teamwork processes is monitored and profiled in order to locate innovative and ambitious project leaders and effective team members and to motivate stakeholders (McWilliams and White 1999, B4). This continuous-improvement process leads the PC industry in improved performance each year.

Dell's four rapid-response systems—sales, services, value chain, and continuous improvement—are all online real-time communication systems. Dell's profiling systems of customer choice, products, service, value chain, and continuous-improvement performance track the content of focused interaction aimed at improving the organizational performance and make up the critical success factors in designing effective messages and products in Dell's direct sales model.

Benchmarking Targets

By 1998, Dell's aggressive pricing of products and rapid-response communication systems had begun to cut significantly into Compaq and IBM's market shares and reduced the profit margins of these firms to zero. In an effort to combat these trends a benchmarking study of all three firms was undertaken to reveal what could be done to combat Dell's advance. Table 2.3 contains the critical success factors and targets benchmarked.

First, in 1998, 43 percent of Dell's sales were made over the Internet, and 57 percent by telephone. By 1999, 60 percent of Dell's sales were made over the Internet and 40 percent by telephone. In 1998 this amounted to $10 million in Internet sales per day and grew

Table 2.3
Benchmarking the Competitiveness of the
Top 3 PC Firms in the U.S. Market

Critical Success Factors	Dell	Compaq	IBM
1. Customer sales			
Web sales	43%	10%	20%
Online customization	Yes	No	No
Computer to customer/online	3 days	12 days	15 days
Computer to customers/stores	0	35 days	30 days
Average retailer costs	0	20%	20%
Average sales incentives	0	$1000	$1000
Convert sales to cash	1 day	30 days	25 days
2. Customer service			
Online tech support	24 hrs.	8 hrs.	8 hrs.
Online service support	24 hrs.	8 hrs.	8 hrs.
Computer networks installed	14 days	60–90 days	60 days
Chat rooms	Yes	No	No
Interactive lectures	Yes	No	No
Customer service costs	Free	Paid	Paid
3. Value Chain			
Parts inventory average	15 min.	7–10 days	10 days
Computer inventory average	3 days	30 days	25 days
Produce computer average	4 hrs.	15 days	12 days
Computer to customer average	3 days	30 days	25 days
4. Continuous Improvement			
% upgrade per year	20%	10%	10%
% of stakeholders involved	100%	40%	40%

to \$34 million by 1999. Ninety percent of Dell's sales were to institutions, 70 percent of which involve \$1 million in orders each year. In addition, 10 percent or \$1 billion of Dell's sales were to individuals (McWilliams 1999f, B4). In 1998 Dell was the only firm which could customize Internet PC sales. Direct electronic marketing allowed Dell to convert its sales to cash in one day. Marketing primarily through sales outlets, Compaq and IBM took an average 25 to 35 days from the day of sales at the outlet to receive payment. Compaq and IBM Internet sales were referred to sales outlets to fill orders. In addition these outlets held 35- to 120-day inventories before the sale of products. Since the dollar value of a computer drops at 1 or 2 percent per week, Compaq and IBM must pay retailers for weekly price erosions. In addition Compaq and IBM pay retailers a 20 percent commission on sales. When inventories in sales outlets reach beyond the 30-day limit, Compaq and IBM reduce the price of these computers through the use of sales incentives which average \$1000 per unit and add to their outlet costs (Margretta 1998, 73–84). Dell thus achieves significant time, fit, and cost advantage from direct electronic sales to customers.

Second, Dell requires all component manufacturers for its PCs, with the exception of those who manufacture monitors, to warehouse their components within 15 minutes of Dell's various production plants. Computer monitors are mailed directly from SONY to customers and coordinated by FedEx so as to arrive at the same time as the computers for assembly. This allows Dell to save \$30 in shipping costs per monitor. Compaq and IBM hold 7- to 10-day inventories of parts at manufacturing facilities and 25- to 120-day computer inventories at sales outlets, thus significantly increasing their inventory costs. Dell manufactures computers in 4 hours, Compaq and IBM in 15 and 12 days respectively, thus increasing their manufacturing costs. Dell gets a computer to its customers within 3 days, Compaq and IBM in 15 to 30 and 12 to 25 days respectively, thus increasing their distribution costs. Dell installs computer networks in 14 days, Compaq and IBM in 60 to 90 days, thus increasing their installation costs. Once again, Dell achieves a quicker, higher quality, lower price advantage over its competitors.

Dell can produce PCs at an average cost of 20 percent less than its competitors while retaining its 20 percent operating profit margins. This in turn allowed Dell to sell its PCs at 20 percent less than its competitors for comparable equipment, placing pricing

pressures on its competitors. If Dell's competitors place their equipment price above that of Dell, they lose significant market shares. If they match Dell's lower prices they lose their profit margins and operate in the red.

Third, Dell's free customer service system is open 24 hours a day, seven days a week. It offers both human and automated support as well as free online interactive chat rooms, lectures, and technical and customer support. Its competitors offer limited eight-hour telephone support for which they charge. With most large customers, like Boeing, which has 100,000 Dell PCs, Dell puts 30 technicians on site and they function as part of Boeing's Information Technology program. For small firms, Dell outsources service contracts and service centers (Margretta 1998, 78). By the beginning of 1999 Dell began a new push to improve customer service by providing several online service links directly to customers. These new online services include a conversation between customers and Dell managers called "Dell Talk." This program focuses on customer relevant topics like the year 2000 problem and trends in PC and server development. In addition, a new net program called "Ask Dudley" employs advanced artificial intelligence software which will allow Dell technicians to answer hundreds of service questions on the Internet. Finally, Dell is introducing another Web server feature called "My Dell Web Pages," instructing users on the latest advances in customized home pages for its customers. Today one-third of Dell's customer service force is involved in handling online inquiries. Since each toll-free telephone call costs Dell an average of $25 per call, shifting customers to these new direct-link websites will save Dell thousands of calls per week and millions of dollars (Stepanek 1998, 52). Dell's continuous-improvement programs are reducing its costs at 20 percent per year while Compaq and IBM achieve 10 percent cost reductions. Dell involves all its firm's stakeholders in online real-time interaction to reduce costs while Compaq and IBM do not.

Fourth, Dell's use of such backbone communication content processes as customer, product, value chain, maintenance, and continuous-improvement profiles along with stakeholder report cards on performance allow Dell to communicate with its stakeholders in powerful ways not accessible to its competitors. This in turn led customers in a *PC World* survey of customer satisfaction to rank Dell number 1 (Stepaneck 1998, 52) and as the most admired among PC firms by its competitors (Serwer 1998, 60).

The Effect of Dell's Rapid-Response System on Its Customers and Competitors

Speed kills—if you don't have it. Whether it's product develop-ment, marketing, or customer service.

(Elstrom, 1999:EB35)

Dell Computer's growth in sales, profits, market shares, and stock price has been remarkable. Over the past six years, sales have climbed from $5.2 billion to $32 billion (that is 50 percent com-pounded annual growth). Profits are up from $300 million to $2 bil-lion today (that's 80 percent annual growth). Dell's market shares have tripled in the past five years to 24.9 percent. Since 1990, Dell's stock has risen from 23 cents in 1990 to $29 per share, a rise of 1,000 percent (Dell Fact Sheet 2002). In 1998 Dell took its direct marketing model for desktop computers into five new markets—laptops, serv-ers, computers below $1000, large computer storage systems, and the network market, extending its reach beyond PCs. By the end of 2001, Dell's world-wide growth was at 18 percent in servers while Compaq was -17 percent in PCs and -4.9 percent in servers; IBM was -11.7 percent in PCs and +.05 percent in servers (Daniel 2002, 18).

To remain competitive with Dell in 1997 both Compaq and IBM cut prices dramatically to match Dell. They both watched their PC sales grow more slowly than Dell's. The result was that Compaq's earnings decreased and IBM lost $161 million dollars. In 1998, with Dell's sales growing, Compaq and IBM watched their inventories grow to 120 days. Both firms began a price war in an attempt to reduce inventories at outlets to 20 days in order to cut retailer costs. One result of this price war was that Compaq and IBM saw their 1998 PC profits drop dramatically. Compaq's profits dropped from a projected $510 million to $16 million even though sales grew 38 percent. On April 18, 1999, Compaq's CEO and CFO were forced to resign (Kehoe 1999, 21). In 1998 IBM's PC unit lost market shares and went $992 million in the red and the CEO of its PC unit was forced to resign (Kirkpatrick 1998).

Compaq's PC Strategy

Compaq's continuous-improvement program had slowed in 1998-1999. New, more competitive targets were introduced by management that aimed at revitalizing and improving the program. At the same time,

Compaq had decided to cut its prices again in order to become more competitive in the price war with IBM. Compaq, seeing its competitive disadvantage vis-à-vis IBM, namely IBM's larger service force and the ability to spread its escalating PC costs across all its other profit areas and still make money, decided to acquire the Digital Equipment Company. This would allow Compaq to move into the data storage, work station, mini, and mainframe markets, where margins were larger than in PCs. It also would allow Compaq to significantly bolster its service staff, the fastest growing and highest margin area in the computer industry (Hansell 1999, B1). By 2002 with Compaq's market shrinking in all categories, its CEO, under pressure from stockholders, proposed a merger with Hewlett Packard in an attempt to halt its decline (Daniel 2002, 18).

IBM's PC Strategy

Between 1994 and 1998, IBM's continuous-improvement programs had reduced the number of PC models from 3,400 to 150. The number of components was cut from 420 to 200. In addition IBM hired Dell's former head of procurement. He set up a new supplier pipeline where 60 percent of IBM parts can be delivered within 24 hours. Today 31 percent of IBM's PC components are assembled by sales outlets. In addition, IBM has opened a Web sales site. These changes have brought IBM closer to Dell than Compaq costs (Narisetti 1998, B1). In January of 1998, IBM's PC inventories were still high at retail outlets. In an attempt to reduce inventories from 120 down to 20 days, IBM began to cut PC prices dramatically, extending its price war with Compaq to a new level. However, by April 2002 IBM's PC unit losses still continued to mount, with losses of $500 million in 1999 and $1 billion in 2000 and 2001. IBM discontinued manufacturing and store sales of its desktop PCs (Daniel 2002, 18).

Dell's PC Strategy

Dell's high-speed management model between 1999 and 2002 had increased its U.S. PC market shares from 11 to 24 percent and ranked number one in U.S. market shares. Dell's continuous-improvement program had reduced its operating costs to 10 percent of sales while Compaq's costs were 18 percent of sales, with IBM withdrawing from the PC desktop market. Dell's CEO set a target of 40 percent market share by 2005. In addition Dell decided to take its high-speed management model into two new areas: computer storage, where

3Com held top market share, and networking, where Cisco holds top market share. In both areas the market leaders have 50 percent profit margins. Dell believes it can undersell both firms in such a manner as to take away their customers. 3Com and Cisco claim to welcome the competition, but so did IBM and Compaq in the beginning. In 2001 Dell held 13.3 percent of world PC sales, Compaq 11 percent, and IBM 6 percent. Dell plans to expand its 8 percent overseas sales in the next three years to 20 percent. Only time will tell if Dell continues its domination of these markets. However, as Compaq and IBM will testify, Dell is a formidable competitor with its High-Speed Management business model, which is difficult to imitate and hard to beat (Daniel 2002, 18).

Conclusions Regarding the Benchmarking of *Dell Computer and High-Speed Management Theory*

The direct [business] model turned out to have several other benefits that even Michael Dell couldn't have anticipated when he founded the company. "You actually get to have a relationship with customers and that creates valuable information, which, in turn, allows us to leverage our relationship with both suppliers and customers. Couple that information with technology, and you have the infrastraucture to revolutionize the fundamental business models of major global companies."

(Margretta 1998: 73–74)

Certainly our benchmarking of the Dell Computer Company's four rapid-response systems provides strong support for our High-Speed Management communication theory. Dell's best practices does support the *first proposition of High-Speed Management, namely that reducing the cycle time an organization takes in getting its products and services to market yields increases in productivity, quality, market shares, profits, management and worker motivation and commitment, and customer satisfaction*. Dell's best practices also provide strong support for *High-Speed management's second proposition, namely that improving an organization's communication is the most significant ingredient for reducing cycle time*. Removing communication bottlenecks, standardizing information transfer, developing rapid-response systems, and improving the quality and adaptation of messages to all organization stakeholders are central to reduced cycle time.

However, our benchmarking of Dell's best practices has revealed several important insights into effective organizational communication processes.

First, Dell's four rapid-response systems are critical success factors for achieving the organization's results because they place all of the organization's stakeholders in real-time interactive communication relationships with each other.

Second, Dell's four profiling activities are necessary backbone communication processes for guiding communication content, so it is precisely adapted to all Dell's stakeholders. The use of profiling and report cards makes sure that the content of interaction is focused on customer needs, product use, customer service issues, and value-chain performance targets. Without these backbone processes, speed of response would lose its focus on improved organizational performance.

Third, benchmarking targets are necessary to reveal what world-class performance is at a given point in time and how it is achieved. However, these targets are transitory; they change as customer needs, competitors' performance, and new implementing processes emerge. To be effective, targets must undergo significant updating to meet the above mentioned changes.

Fourth, a good continuous-improvement program is necessary to rework critical success factors and targets in order to stay ahead of competitors and in touch with stakeholders while improving performance.

Fifth, once again the power of direct and continuous interaction on the Internet with all a firm's stakeholders in real time indicates the appropriate use of technology for implementing interpersonal relationships among a firm's stakeholders and creating a community of interests in a firm's success.

Sixth, while our benchmarking of Dell's best practices provides strong support for High-Speed Management theory, this same research suggests that the theory needs to be modified or expanded. The theory needs to include profiling, report cards, and direct interaction among stakeholders in real time to guide the content of communication and to place communication within an interpersonal relationship. Only then will the results of this inquiry tightly fit the theory's prediction in regard to reducing cycle time through improved communication.

Finally, in May of 1999, fifteen executives of major firms, plus a few consultants and professors, spent a day holed up in the faculty lounge at Harvard University. The purpose of this one-day meeting

was to discuss the opportunities and threats posed by the rise of the Internet and e-business. This discussion centered on a benchmarking study of Dell, Compaq, and IBM PC units similar to the one provided above. As the discussion progressed, the participants began using the word "Dell" as a verb. They concluded that the CEOs of Compaq's and IBM's PC units had been fired in part because they had been "Delled," outflanked by low price, high quality products from an Internet integrated and digitized Dell. Ted Rybeck, Chair of Cambridge Consulting and Benchmarking Partners, Inc., and host of the meeting closed by suggesting, "You want to be the Deller rather than the Dellee of your industry" (Wysocki 1999, A1). Dell has thus pioneered the use of High-Speed Management using the Internet and its rapid-response capabilities to dominate the PC industry.

References

Altany, D.C. (1992). Benchmarkers unite. *Industry Week* 24 (February): 1–8.

Barrons, P. and Sager, I. (1989). PC makers think beyond the box. *Business Week*, April 19, 148–150.

Chowdhury, N. (June 21, 1999). Dell cracks China. *Fortune,* June 21, 120-121.

Cullin, R., and Cushman D. (1999). *Managing Governmental Competitiveness: Speed, Consensus, and Performance*. Albany: State University of New York Press.

Cushman, D. and King, S.S. (1995). *Communication and High-Speed Management*. Albany: State University of New York Press.

———. (1997). *High-Speed Management: The Role of Communication in Continuously Improving an Organization's Performance*. Albany: State University of New York Press.

Daniel, C. (2002). Dell seeks new routes for its lean machine. *Financial Times*, April 2, 18.

Dell. (2002). *Dell Fact Sheet*. www.Dell.com.

Dell Computer Corporation (1999).

Dell Home Systems Catalog, May.

Dumaine, B. (1989). How managers can succeed through speed. *Fortune*, February 12, 54–59.

Elstron, P. (1999). Advertisement. *Business Week*, March 22, EB35.

Fraker, S. (1984). High-Speed Management for the high tech age. *Fortune*, March 5, 62–69.

Hamilton, D. (1999). Computer industry's focus shifts to market for servers. *Wall Street Journal*, February 23, B4.

———. (1999). PC shipments rose in period; Compaq slips. *Wall Street Journal*, April 26, A3.

———. (1999). Dell surpasses Compaq in U.S. PC sales. *Wall Street Journal,* October 25, A3.

Hansell, S.C. (1999).Compaq says profit outlook is troubled. *New York Times*, April 10, B1.

Kehoe, L. (1999). Pfeiffer becomes a victim of his own success. *Financial Times*, April 20, 21.

Kirkpatrick, D. (1998). Houston, we have some problems. *Fortune*, June 23, 102–105.

McWilliams G. (1997). Whirlwind on the Web. *Business Week,* April 7.

———. (1999a). Dell Computer to launch workstation with two Intel chips, aggressive pricing. *Wall Street Journal,* March 3, B6.

———. (1999b). Dell Computer to increase sales of cheaper PCs. *Wall Street Journal*, April 9, B2.

———. (1999c). Compaq's stock skids on profit warning. *Wall Street Journal*, April 13, A3.

———. (1999d). Dell's new push: Cheaper laptops built to order. *Wall Street Journal*, July 9, B1.

———. (1999e). Dell fiscal third-quarter profits fell 25%. *Wall Street Journal*, November 22.

———. (1999f). Dell takes aim at home market with Web PC device. *Wall Street Journal*, November 30, B4.

McWiliams, G., and White, J. (1999). Dell to derail: Get into gear online. *Wall Street Journal*, December 1, B1.

Markoff, J. (1999). The PC industry shows strong growth. *New York Times*, October 6, C4.

Margretta, R. (1998). The power of virtual integration: An interview with Dell Computer's Michael Dell. *Harvard Business Review*, March/April, 73-84.

Narisetti, R. (1998). How IBM turned around its ailing PC division. *Wall Street Journal*, March 12, B-1.

Park, A., and Burrows, P. (2001). The conqueror. *Business Week*. September 24, 92–102.

Ramstad, K. E. (1999). Dell builds an electronic super store on the Web. *Wall Street Journal*, March 3, B1.

Rosenbush, S. (1997). Climbing Dell flexes new Internet Service. *USA Today*, July 7, B3.

Schmul, J. (1999). PC legend in the making. *USA Today*, December 6, 1B.

Serwer, A. (1998). Michael Dell rocks. *Fortune*, May 16, 59–70.

———. (2002). Dell does automation. *Fortune*, January 21, 7, 74.

Stepanek, M. (1998). What does Number One do for an encore? *Business Week*, November 2, 51–52.

Versey, J. (1991). The new competitors: They think in terms of speed to market. *Academy of Management Executives*, 2:23–33.

Wysocki, B., Jr. (1999). Corporate caveat: Dell or be Delled. *Wall Street Journal*, May 10, A1.