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HARVARD | BUSINESS | SCHOOL

9-708-480
REV: SEPTEMBER 8, 2008

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Apple Inc., 2008

In January 2007, three decades after its incorporation, Apple Computer shed the second word in its name and became Apple Inc.[1] With that move, the company signaled a fundamental shift away from its historic status as a vendor of the Macintosh personal computer (PC) line. Mac sales remained vital to Apple's future, but they now accounted for less than half of its total revenue. A year and a half later, in June 2008, the company posted results that ratified the success of its leap beyond the PC business: In its third quarter, Apple earned a net profit of $1.07 billion on $7.46 billion in revenue, for a 38% increase on year-ago quarterly sales. Annual results were also impressive. Sales in the 2007 fiscal year topped $24 billion, up 24% from the previous year. (See **Exhibit 1a**—Apple Inc.: Selected Financial Information, plus **Exhibit 1b** and **Exhibit 1c**.) Investors, meanwhile, sent Apple's stock to new heights: Despite a sharp drop in early 2008, its share price had risen more than 15-fold since 2003 and now hovered near its all-time high. (See **Exhibit 2**—Apple Inc.: Daily Closing Share Price.)

Non-PC product lines drove much of Apple's financial performance. The company's iPod line of portable music players, together with its iTunes Store, had upended the music business. With the iPhone, a multifunction handheld device released in June 2007, Apple aimed to do the same for the mobile phone market. The launch of the iPhone 3G, in July 2008, involved major changes to the offering—a revamped pricing model, a new retail channel advanced, and a platform for third-party applications, along with 3G network service—that promised to make it still more competitive.

"Apple Inc." was thriving to a degree that was seemingly far beyond the capacity of "Apple Computer." Yet critical aspects of the company's strategic profile had changed rather little. Although Mac sales had surged in recent years, for example, Apple's share of the worldwide PC market consistently failed to rise above a 3% ceiling. (See **Exhibit 3**—Apple Inc.: Worldwide PC Share.) CEO Steve Jobs, therefore, faced a new variation on an old question: Was Apple's recent success just another temporary "up" in its up-and-down history, or had he finally established a sustainable strategy for the company?

Apple's History

Steve Jobs and Steve Wozniak, a pair of 20-something college dropouts, founded Apple Computer on April Fool's Day, 1976.[2] Working out of the Jobs family's garage in Los Altos, California, they built a computer circuit board that they named the Apple I. Within several months, they had made 200

Professor David B. Yoffie and Research Associate Michael Slind prepared this case. This case was developed from published sources. This case derives from earlier cases, including "Apple Computer 2002," HBS No. 702-469, by Professor David B. Yoffie and Research Associate Yusi Wang, and "Apple Computer, 2006," HBS No. 706-496, by Professor David B. Yoffie. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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sales and taken on a new partner—A.C. "Mike" Markkula, Jr., a freshly minted millionaire who had retired from Intel at the age of 33. Markkula, who was instrumental in attracting venture capital, was the experienced businessman on the team; Wozniak was the technical genius; and Jobs was the visionary who sought "to change the world through technology."

Jobs made it Apple's mission to bring an easy-to-use computer to market. In April 1978, the company launched the Apple II, a relatively simple machine that people could use straight out of the box. The Apple II sparked a computing revolution that drove the PC industry to $1 billion in annual sales in less than three years.[3] Apple quickly became the industry leader, selling more than 100,000 Apple IIs by the end of 1980. In December 1980, Apple launched a successful IPO.

Apple's competitive position changed fundamentally in 1981, when IBM entered the PC market. The IBM PC, which used Microsoft's DOS operating system (OS) and a microprocessor (also called a CPU) from Intel, seemed bland and gray alongside the graphics- and sound-enhanced Apple II. But the IBM PC was a relatively "open" system that other producers could clone. By contrast, Apple relied on proprietary designs that only Apple could produce. As IBM-compatibles proliferated, Apple's revenue continued to grow, but its market share dropped sharply, falling to 6.2% in 1982.[4]

In 1984, Apple introduced the Macintosh, marking a breakthrough in ease of use, industrial design, and technical elegance. Yet the Mac's slow processor speed and a lack of compatible software limited its sales. Between 1983 and 1984, Apple's net income fell 17%, leaving the company in crisis. In April 1985, Apple's board removed Jobs from an operational role. Several months later, Jobs left Apple to found a new company named NeXT. Those moves left John Sculley, the CEO whom Apple had recruited from Pepsi-Cola in 1983, alone at the helm. Sculley had led Pepsi's successful charge against Coca-Cola. Now he hoped to help Apple compete against dominant players in its industry.

The Sculley Years, 1985–1993

Sculley sought to make Apple a leader in desktop publishing as well as education. He also moved aggressively to bring Apple into the corporate world. Apple's combination of superior software, such as Aldus (later Adobe) PageMaker, and peripherals, such as laser printers, gave the Macintosh unmatched capabilities in desktop publishing. Sales exploded, turning Apple into a global brand. By 1990, Apple's worldwide market share stabilized at about 8%. In the education market, which contributed roughly half of Apple's U.S. sales, the company held a share of more than 50%. Apple had $1 billion in cash and was the most profitable PC company in the world.

Apple controlled the only significant alternative, both in hardware and in software, to the then-prevailing IBM-compatible standard. The company practiced horizontal and vertical integration to a greater extent than any other PC company, with the exception of IBM. Apple typically designed its products from scratch, using unique chips, disk drives, and monitors, as well as unusual shapes for its computers' chassis. The company also developed its own proprietary OS, which it bundled with the Mac; its own application software; and many peripherals, including printers.

Analysts generally considered Apple's products to be more versatile than comparable IBM-compatible machines. IBM-compatibles narrowed the gap in ease of use in 1990, when Microsoft released Windows 3.0. But in many core software technologies, such as multimedia, Apple retained a big lead. In addition, since Apple controlled all aspects of its computer, it could offer customers a complete desktop solution, including hardware, software, and peripherals that allowed customers to "plug and play." By contrast, users often struggled to add hardware or software to IBM-compatible PCs. As a result, one analyst noted, "The majority of IBM and compatible users 'put up' with their machines, but Apple's customers 'love' their Macs."[5]

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This love affair with the Mac allowed Apple to sell its products at a premium price. Top-of-the-line Macs went for as much as $10,000, and gross profit hovered around an enviable 50%. However, senior executives at Apple realized that trouble was brewing. As IBM-compatible prices dropped, Macs appeared overpriced by comparison. As Sculley explained, "We were increasingly viewed as the 'BMW' of the computer industry. Our portfolio of Macintoshes were almost exclusively high-end, premium-priced computers. . . . Without lower prices, we would be stuck selling to our installed base." Moreover, Apple's cost structure was high: Apple devoted 9% of sales to research and development (R&D), compared with 5% at Compaq, and only 1% at many other IBM-clone manufacturers. These concerns led Dan Eilers, then vice president of strategic planning at Apple, to conclude: "The company was on a glide path to history."[6]

Sculley was a marketer by training. Nonetheless, in March 1990, he took on the post of chief technology officer (CTO). As CEO and CTO, Sculley strove to move Apple into the mainstream by offering "products and prices designed to regain market share."[7] That meant becoming a low-cost producer of computers with mass-market appeal. He also sought to maintain Apple's technological lead by bringing out "hit products" every 6 to 12 months. In October 1990, Apple shipped the Mac Classic, a $999 computer that was designed to compete head-to-head with low-priced IBM clones. One year later, the company launched the PowerBook laptop to rave reviews. And in 1993, Apple introduced the Newton, a high-profile "personal digital assistant" (PDA). Despite Sculley's high hopes for the Newton, it ultimately failed.

In 1991, meanwhile, Sculley made a bold move to forge an alliance with Apple's foremost rival, IBM. Apple and IBM formed a joint venture, named Taligent, with the goal of creating a revolutionary new OS. At the time, it cost around $500 million to develop a next-generation OS; subsequent marginal costs were close to zero. The two companies also formed a joint venture, named Kaleida, to create multimedia applications. Apple committed to switching from the Motorola microprocessor line to IBM's new PowerPC chip, while IBM agreed to license its technology to Motorola in order to guarantee Apple a second source. Sculley believed that the PowerPC could help Apple to leapfrog the Intel-based platform. Meanwhile, Apple undertook another cooperative project, this one involving Novell and Intel. Codenamed Star Trek, it was a highly secretive effort to rework the Mac OS to run on Intel chips. A working prototype was ready in November 1992.

Under Sculley, Apple worked to drive down costs—by shifting much of its manufacturing to subcontractors, for example. But these efforts were not enough to sustain Apple's profitability. Its gross margin dropped to 34%—14 points below the company's 10-year average. In June 1993, the Apple board "promoted" Sculley to chairman and appointed Michael Spindler, the company president, as the new CEO. Five months later, Sculley left Apple for good.

The Spindler and Amelio Years, 1993–1997

As head of Apple, Spindler tried to reinvigorate its core markets: education (K-12) and desktop publishing, in which the company held 60% and 80% shares, respectively.[8] Meanwhile, Spindler killed the plan to put the Mac OS on Intel chips and announced instead that Apple would license a handful of companies to make Mac clones. Those companies would pay roughly $50 per copy for a Mac OS license. International growth became a key objective for Apple during the Spindler years. (In 1992, 45% of its sales came from outside the United States.) Spindler also moved to slash costs, cutting 16% of Apple's workforce and reducing R&D spending. Yet despite Spindler's efforts, Apple lost momentum: A 1995 *Computerworld* survey of 140 corporate buyers found that none of the Windows users would consider buying a Mac, while more than half the Apple users expected to buy an Intel-based PC.[9] (See **Exhibit 4**—Shipments and Installed Base of PC Microprocessors.) Like Sculley, moreover, Spindler had hoped that a revolutionary new OS would turn the company around, but

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prospects for a breakthrough faded. At the end of 1995, Apple and IBM parted ways on Taligent and Kaleida. After spending more than $500 million, neither side wanted to switch to a new technology.[10] Then, in its first fiscal quarter of 1996, Apple reported a $69 million loss and announced further layoffs.[11] Two weeks later, Gilbert Amelio, an Apple director, replaced Spindler as CEO.

Amelio sought to push Apple into high-margin segments such as servers, Internet access devices, and PDAs. Soon after he arrived, he proclaimed that Apple would return to its premium-price differentiation strategy. In addition, while Amelio saw the pressing need for a new OS, he canceled development of the much-delayed next-generation Mac OS. In December 1996, Amelio announced that Apple would acquire NeXT Software and develop a new OS based on work done by NeXT. He also announced that the founder of NeXT, Steve Jobs, would return to Apple as a part-time adviser. Meanwhile, Amelio led the company through three reorganizations and several deep payroll cuts.[12] Despite these austerity moves, Apple lost $1.6 billion on his watch, and its worldwide market share dropped from 6% to 3%.[13] The Apple board forced Amelio out, and in September 1997 Steve Jobs became the company's interim CEO.

Steve Jobs and the Apple Turnaround

Steve Jobs moved quickly to shake things up. In August 1997, he announced that Microsoft had agreed to invest $150 million in Apple and had also reaffirmed its commitment to develop core products, such as Microsoft Office, for the Mac through August 2002. Jobs also brought the Macintosh licensing program to an abrupt end. Since the announcement of the first licensing agreement, clones had reached 20% of Macintosh unit sales, while the value of the Mac market had fallen 11%.[14] Convinced that clones were cannibalizing Apple's sales, Jobs refused to license the latest Mac OS. In addition, Jobs consolidated Apple's product range, reducing the number of its lines from 15 to 3.

Jobs's first real coup was the launch of the iMac, in August 1998. The iMac lacked a floppy-disk drive but incorporated a low-end CPU, a CD-ROM drive, and a modem, all housed in a distinctive translucent case that came in multiple colors. It also supported "plug-and-play" peripherals, such as printers, that were designed for Windows-based machines. (Previous Macs had required peripherals that were built for the Apple platform.) Roughly three years after its launch, the iMac had sold about 6 million units, compared with sales of 300 million PCs during the same time frame.

Under Jobs, Apple continued its restructuring efforts. It outsourced the manufacturing of Mac products to Taiwanese contract assemblers and revamped its distribution system, eliminating relationships with thousands of smaller outlets and expanding its presence in national chains. In November 1997, Apple launched a website to sell its products directly to consumers for the first time. Internally, Jobs worked to streamline operations and to reinvigorate innovation. Under his watch, Apple pared down its inventory significantly and increased its spending on R&D. (See **Exhibit 5**—PC Manufacturers: Key Operating Measures.)

Another priority for Jobs was to reenergize Apple's image. The company began promoting itself as a hip alternative to other computer brands. For Jobs, Apple was not just a technology company; it was a cultural force. Not coincidentally, perhaps, Jobs retained his position as CEO of Pixar, an animation studio that he had cofounded in 1986. In collaboration with Disney, Pixar produced such major films as *Toy Story* and *Monsters, Inc*.[15] (In 2006, Disney bought Pixar. Jobs, who had become Disney's largest shareholder, assumed a seat on the Disney board.[16])

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The Macintosh Business in the 21st Century

In 2008, the sale of Macintosh computers remained a pivotal business for Apple, notwithstanding the company's name change. "We think PCs are more important than they were five years ago," Jobs said in 2007.[17] That year, Mac sales accounted for 43% of Apple's total revenue.[18]

Apple put a high premium on creating machines that offered a cutting-edge, tightly integrated user experience. Apple charged premium prices as well. Its top-of-the-line model, the Mac Pro, cost $2,799. While it had a sleek metal case and featured high-end graphics capability, it did not come with a monitor. For $599 to $1,799, users could buy an Apple Cinema Display to accompany the Mac Pro. At the low end of its product line, Apple offered the Mac mini; ranging in price from $599 to $799, the mini required users to purchase a keyboard, a mouse, and a monitor separately. Notebook models accounted for the lion's share of Mac sales. They included the MacBook ($1,099 to $1,499), the MacBook Pro ($1,999 to $2,799), and ultra-thin MacBook Air ($1,799 to $2,598).[19]

In marketing its Mac products, Apple highlighted features that differentiated them from other PCs while also emphasizing their interoperability with other machines. Attractive Apple design factors ("Design that turns heads"), ease of use ("It just works"), security ("114,000 Viruses? Not on a Mac"), and high-quality bundled software ("Awesome out of the box") were among the qualities that distinguished the Macintosh line. At the same time, Apple trumpeted the Mac as an "Everything-ready" device that worked well with other devices.[20] Over time, the Mac had become a less closed system, incorporating standard interfaces such as the USB port. Owners of a Mac mini could use a non-Mac keyboard, for example, and users of a non-Mac PC could attach it to an Apple display.[21]

Technology and Innovation

Under Jobs, the seeds of earlier efforts to engineer Macintosh products for the Intel platform at last came to fruition. In June 2005, Apple announced that it would abandon its longstanding use of PowerPC chips in favor of Intel microprocessors.[22] Apple began shipping two products built with Intel Core Duo chips in January 2006, and the entire Macintosh line ran on Intel chips by early 2007.[23]

Driving the leap to Intel was Jobs's frustration with the PowerPC chip line. The makers of that line, IBM and Freescale Semiconductor (a spin-off from Motorola), had failed to match Intel's performance, especially in low-power applications. High energy use drained batteries, created excess heat, and blocked advances in laptop performance. The latter point was crucial. Portable machines made up an increasingly large share of Apple's PC revenue—61% in 2007, up from 45% just two years earlier.[24] Intel's dual-core technology, which in effect allowed two chips to occupy one piece of silicon, enabled Apple to build laptops that were both faster and less power-hungry.[25] With "Intel inside," the Mac also became a machine that could easily run Windows and other third-party operating systems: By loading a software package such as VMware Fusion or Parallels Desktop, Macintosh users could operate both Windows- and Mac-based applications.[26] That capability offset a longstanding disadvantage to choosing a Mac—the relative lack of Macintosh software.

On the operating system front, Apple introduced a fully overhauled OS in 2001. Called Mac OS X and based on UNIX, the new operating system offered a more stable environment than previous Mac platforms.[27] Apple issued upgrades of OS X every 12 to 18 months, with the aim of generating not only extra revenue, but also new interest in the Mac and greater loyalty among existing Mac users. In October 2007, it launched its sixth major OS X release, called Leopard. Just two months later, Jobs called Leopard the "most successful" OS X release ever: With sales totaling 4 million copies, it had already reached 20% of the Macintosh installed base.[28]

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Proprietary, Apple-developed applications made up a growing segment of the company's efforts to support the Macintosh line. Instead of relying on independent software vendors (ISVs), Apple built programs such as those in the iLife suite (iPhoto, iTunes, iWeb) on its own. In 1998, when Adobe Systems rejected Jobs's request to create a video-editing program for the Mac, Apple launched an internal project to create Final Cut Pro.[29] Such moves required Apple to assume significant development costs.[30] Meanwhile, the company continued to depend on the cooperation of key ISVs—especially Microsoft. In 2003, after Apple developed the Web browser Safari, Microsoft announced that it would no longer develop Internet Explorer for the Mac. Apple did receive assurances in 2005 that Microsoft would develop its Office suite for Macintosh for at least another five years.[31] Full interoperability with Office products was critical to Apple's market viability. Microsoft benefited from this arrangement as well. By one estimate, it raised up to $1 billion by selling Office to Mac users. (In January 2008, Microsoft released Office:Mac 2008.) All the same, Jobs hedged his bets by developing iWork productivity applications, including Pages, Keynote, and Numbers.[32]

Distribution and Sales

Apple opened its first retail store in McLean, Virginia, in May 2001.[33] As of June 2008, it operated 215 stores, and its retail division accounted for 19% of total revenues. Although most of the stores were in the United States, the chain also included outlets in Australia, Canada, China, Italy, Japan, and the United Kingdom.[34] Observers viewed Apple's retail strategy as a huge success: One analyst said that the company had become "the Nordstrom of technology."[35] By mid-2008, its stores had logged more than 350 million visits; during a single quarter in 2007, they drew 31 million visitors.[36] The Apple retail experience gave many of those visitors their first exposure to the Macintosh product line, and the company estimated that "new to Mac" consumers bought half of the 1.4 million Macs sold in Apple stores during the 2007 fiscal year.[37] (Apple boosted its presence in other retail venues as well. In late 2006, for example, it entered a partnership with Best Buy, and by the end of 2007 customers could shop for Mac products in 270 Best Buy outlets.[38]) A key factor in bringing people into the stores, most analysts believed, was the popularity of the iPod. More generally, observers speculated that an iPod "halo effect" had benefited Apple's Mac business.[39]

Macintosh sales were indeed robust. In the fiscal year 2007, Mac revenues came to $10.3 billion, for a year-over-year increase of 40%. Unit sales exceeded 7 million, up from 5.3 million in the previous year.[40] (See **Exhibit 6**—Apple Inc.: Unit Sales by Product Category.) Mac sales thus grew three times as fast as the overall PC market, which increased by about 14% in 2007.[41] By mid-2008, Apple had become the third-largest PC maker within the U.S. market, with a market share of 8.5%.[42] Yet Apple's share of the worldwide PC market had edged up only slightly in recent years; it remained in the 2% to 3% range, where it had languished for nearly a decade.[43]

The Evolving Personal Computer Industry

From its earliest days in the mid-1970s, the industry had experienced explosive growth. Although Apple pioneered the first usable "personal" computing devices, IBM was the company that brought PCs into the mainstream. IBM's brand name and product quality helped it to capture the lion's share of the market in the early 1980s, when its customers included almost 70% of the Fortune 1000. IBM's dominance of the PC industry started to erode in the late 1980s, as buyers increasingly viewed PCs as commodities. IBM tried to boost its margins by building a more proprietary PC, but instead it lost more than half of its market share. By the early 1990s, "Wintel" (the Windows OS combined with an Intel processor) had replaced "IBM-compatible" as the industry standard. Throughout the 1990s, thousands of manufacturers—ranging from Compaq and Dell to no-name clone makers—built PCs around building blocks from Microsoft and Intel.

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In 2008, by one estimate, the number of PCs in use around the world would top 1 billion.[44] In 2007, worldwide PC shipments totaled 269 million units.[45] The U.S. market and the Asia/Pacific market (which excluded Japan) each accounted for about 26% of total shipments, Latin America for 9%, and Japan 5%. The largest regional market, EMEA (Europe, Middle East, and Africa), absorbed 34% of worldwide PC shipments.[46] Annual PC unit growth had averaged roughly 15% from the mid-1980s through 2000. After leveling off sharply early in the following decade, growth resumed at a 10% to 15% rate annual over the next several years. A rising share of that growth occurred in Asia and in other emerging markets. In the United States, where an estimated 60% of households already owned a PC, the PC market grew by only about 3% per year.[47]

Revenue growth, meanwhile, did not keep pace with volume growth—largely because of strong downward pricing pressure. By one estimate, the average selling price (ASP) for a PC declined from $1,699 in 1999 to $1,034 in 2005, or by a compound annual rate of 8% per year.[48] During that period, prices for key components (CPUs, memory, and hard disk drives) dropped even faster, by an average annual rate of 30%.[49] PC pricing then leveled off somewhat, partly because consumer demand shifted toward powerful machines that could run media and gaming applications, and partly because demand shifted from desktop units to more-expensive notebook models. In 2007, the ASP for notebook PCs was about $1,000, while the desktop ASP ran at roughly $700.[50] For PC vendors, the upshot of these pricing trends was persistently low profitability: The average profit margin on a PC in 2007 was less than 5%.[51]

PC Manufacturing

The PC was a relatively simple device. Using a screwdriver, a person with relatively little technological sophistication could assemble a PC from four widely available types of components: a microprocessor (the brains of the PC), a motherboard (the main circuit board), memory storage, and peripherals (the monitor, keyboard, mouse, and so on). Most manufacturers also bundled their PCs with an operating system. While the first PC was a desktop machine, by 2008 there was a wide range of forms, including laptops, notebooks, sub-notebooks, workstations (more powerful desktops), and servers (computers that acted as the backbone for PC networks).

In 2008, using off-the-shelf components, it cost roughly $400 to produce a mass-market desktop computer that would retail for $500. The largest cost element was the microprocessor, which ranged in price from $50 to more than $500 for the latest CPU. The other main components of a basic machine—motherboard, hard drive, memory, chassis, power, and packaging—together cost between $120 and $250. A keyboard, mouse, modem, CD-ROM and floppy drives, and speakers totaled $50 to $140; a basic monitor cost about $75; and Windows Vista and labor added about $70 and $30, respectively, to the final cost. A PC maker could push its retail price down to $300 by using a less powerful CPU, cutting back on hard drive capacity and memory, and offering lower-quality peripherals. Alternatively, by tailoring a machine for computer gaming enthusiasts, a manufacturer could build a PC whose sale price topped $3,000.[52]

As components became increasingly standardized, PC makers cut spending on research and development. In the early 1980s, the leading PC companies spent an average of 5% of sales on R&D. By the early 2000s, Dell Computer—then the industry leader—devoted less than 1% of its revenue to that purpose. Rather than invest heavily in R&D, companies such as Dell looked to innovations in manufacturing, distribution, and marketing to give them a competitive edge. Many firms, for example, turned to contract manufacturers to produce both components and entire PCs. At first, these contractors focused on handling simple manufacturing tasks at flexible, high-volume plants in low-cost locations. Over time, they moved into more complex areas, such as design and testing.

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Buyers and Distribution

PC buyers fell into five categories: home, small- and medium-sized business (SMB), corporate, education, and government. In 2007, home buyers purchased about 42% of the world's computers, while SMB customers accounted for roughly 32% of the PC market, large corporations for 12%, education for 8%, and government for 6%.[53] (In recent years, the home share of the market had risen by a few percentage points; the business share had gone down slightly, partly because of slowing corporate PC upgrade cycles.[54]) The criteria that guided PC purchases varied by market segment. Business customers made decisions according to a combination of service and price. Education buyers focused on a combination of price and software availability. The consumers who made up the home market, traditionally very sensitive to cost, had begun in recent years to value stylish product design, as well as mobility and wireless networking capability.

In the 1980s, most PC buyers were business managers with relatively little technological sophistication. In general, they bought no more than a few PCs at a time, placed great emphasis on receiving service and support, and preferred to buy established brands through full-service dealers. In the early 1990s, however, as customers became more knowledgeable about PCs, alternative channels emerged. Corporate information technology managers and purchasing departments, often operating under tight budgets, began to buy large numbers of PCs directly from vendors or their distributors. Superstores (Wal-Mart, Costco) and electronics retailers (Best Buy, Circuit City) catered to the consumer and SMB markets. Web-based retailers, which sold PC merchandise at steep discounts, also saw a sharp increase in demand. By the early 2000s, the so-called "white box" channel—which featured generic machines assembled by local entrepreneurs—had become the largest channel for PC sales. Although branded PC makers had recaptured a portion of overall market share in recent years, white-box PCs still made up 37% of worldwide shipments as of 2006, and their share of key emerging markets remained particularly large.[55]

PC Manufacturers

In 2007, the four top PC vendors—Hewlett-Packard, Dell, Acer, and Lenovo—accounted for more than 50% of worldwide PC shipments. Below this top tier were various PC brands, but none of them could claim more than a 5% share.[56] (See **Exhibit 7**—PC Manufacturers: Worldwide Market Shares.) Even as these companies continued to consolidate the PC market, their fortunes were very much in flux. (See **Exhibit 8**—Apple Competitors: Selected Financial Information.)

Hewlett-Packard (HP), following a rough period in the wake of its acquisition of Compaq Computer in 2002, had staged an impressive comeback. In 2006, HP overtook IBM to become the world's largest technology company (with sprawling operations in imaging and printing, software and services, and data storage); it also surpassed Dell as the world's leading PC maker. Under CEO Mark Hurd, HP rebuilt its PC business around the company's strong presence in retail channels (where sales via 110,000 outlets worldwide made up 40% to 45% of its PC revenue) and around a "decommoditization" strategy. That strategy (exemplified by the slogan "The Computer Is Personal Again") emphasized product design, stepped-up R&D spending, and aggressive consumer marketing.[57] Dell, meanwhile, had stumbled. In the early 2000s, it had been the leading PC vendor, in terms of both market share and profitability. Its distinctive business model, which combined direct sales and build-to-order manufacturing, made for significant cost savings and enabled its products to become the favorite of corporate IT managers. In 2007, more than 80% of its revenues came from the corporate market. Yet Dell did not adapt quickly to the changing needs of the PC marketplace. In January 2007, three years after handing control of the company to a successor, founder Michael Dell returned as CEO and initiated a far-reaching transformation plan. Under his new strategy, the company doubled its investment in design and began releasing consumer-friendly products,

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including a notebook PC that came in eight colors. More important, it moved into retail distribution for the first time since 1994. By January 2008, Dell had made deals to sell its PCs through Wal-Mart, Best Buy, and Staples, as well as through major chains in Europe, China, and Japan. Boosting international sales was another high priority for Dell, which had long focused on the U.S. market.[58]

Two Asian companies, Acer and Lenovo, focused much of their activity on emerging markets. But they also benefited from acquisitions of high-profile U.S. PC brands. With its purchase in August 2007 of Gateway, the number-three U.S. PC brand, Taiwan-based Acer became the third-largest PC vendor in the world. As part of that deal, Acer also acquired Packard-Bell, a PC maker with a strong presence in Europe (where Acer also was a leading brand). Given the strength of all three brands in retail channels, Acer was poised to target the growing consumer market. Similarly, its emphasis on producing notebook PCs (worldwide, it sold almost as many notebooks as Dell) aligned the company with current trends.[59] China-based Lenovo vaulted into the front ranks of PC vendors in 2005, when it acquired IBM's PC business for $1.75 billion. Although Lenovo would retain the right to use the IBM logo on ThinkPad notebooks and ThinkCentre desktop PCs until 2010, it was phasing out its reliance on the IBM brand, whose reach did not extend far beyond the slow-growing corporate market. Lenovo's greatest asset was its position in China, where it commanded a 35% market share. Under its CEO (a former Dell executive named William Amelio), Lenovo pursued a broad global strategy, operating headquarters both in Beijing and in Raleigh, North Carolina.[60]

Suppliers, Complements, and Substitutes

Suppliers to the PC industry fell into two categories: those that made products (such as memory chips, disk drives, and keyboards) with many sources; and those that made products—notably microprocessors and operating systems—that had just a few sources. Products in the first category were widely available at highly competitive prices. Products in the second category were supplied chiefly by two firms: Intel and Microsoft.

Microprocessors Microprocessors, or CPUs, were the hardware "brains" of a PC. In 2006, microprocessor sales totaled $33.2 billion.[61] For many years, Intel was the dominant producer of PC-compatible CPUs. But that market became more competitive in the 1990s, when companies like AMD (Advanced Micro Devices) and Transmeta challenged Intel with directly competitive products. Still, Intel remained the market leader by virtue of its powerful brand and its large manufacturing scale. In 2007, despite inroads by AMD into Intel's share of the microprocessor market, Intel continued to supply more than 80% of all PC CPUs.[62] Since 1970, CPU prices (adjusted for changes in computing power) had dropped by an average of 30% per year.[63]

Operating systems An OS was a large piece of software that managed a PC's resources and supported its applications. After the launch of the IBM PC, Microsoft dominated the PC OS market, in part because it offered an open standard that multiple PC makers could incorporate into their products. During the 1980s, Microsoft sold a relatively crude OS called MS-DOS. In 1990, Microsoft started to challenge Apple's technical supremacy by introducing Windows 3.0, an OS that featured a Macintosh-like graphical interface. Although Windows was generally inferior to the Mac OS, users—and corporate IT managers, in particular—eagerly adopted it. During the 1990s, Microsoft issued a new, highly profitable release of Windows every few years. Windows XP, released in October 2001, sold 17 million copies in its first eight weeks on the market. Developed at a cost of $1 billion, XP initially garnered Microsoft between $45 and $60 in revenue per copy, according to analysts' estimates.[64] The latest edition of Windows, Vista, fared less well in its early going. Released in January 2007 after numerous delays, Vista received low marks for its sluggish performance, and users were reluctant to upgrade to it from XP. In response to user complaints, Dell even revised its Vista-only offer on new PCs and began offering PCs with XP preloaded on them.[65] Meanwhile,

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Microsoft reportedly aimed to issue its next upgrade, Windows 7, in 2010.[66] In 2007, 85% to 90% of all PCs in the world ran on some version of Windows.[67]

Application software The value of an OS corresponded directly to the quantity and quality of application software that was available on that platform. The Apple II, for example, was a hit among business users because it supported VisiCalc, the first electronic spreadsheet. Other important application segments included word processing, presentation graphics, desktop publishing, database management, personal finance, and Internet browsing. Throughout the 1990s and into the next decade, the number of applications available on PCs exploded, while average selling prices (ASPs) for PC software collapsed. Microsoft was the largest vendor of software for Wintel PCs and, aside from Apple itself, for Macs as well.[68] However, ISVs wrote the majority of PC applications.

Alternative technologies By 2008, PCs were far easier to use than they had been two decades earlier. They had also begun to enter the price range of consumer electronics (CE) products. As a result, the "digital convergence" of PC and CE products had become a significant factor in the PC marketplace. Various alternative devices—ranging from handheld PDAs to smartphones, from TV set-top boxes to game consoles—had begun to supplement or even to replace PCs. Advanced game devices like Sony PlayStation3, for example, allowed consumers to not only run traditional video games, but also to play DVDs and CDs, surf the Web, and play games directly online.

Beyond Macintosh

A fast-increasing portion of Apple's core operations involved non-Macintosh business areas that were less than a decade old (iPod, iTunes) or, indeed, less than a year old (Apple TV, iPhone). These product lines set Apple on a path toward becoming a full-fledged digital convergence company.

The iPod Phenomenon

Apple launched the iPod, a portable digital music player based on the MP3 compression standard, in November 2001.[69] Thanks to its sleek design, it soon became "an icon of the Digital Age," in the words of one writer.[70] In 2008, Apple offered a full line of iPod devices, ranging in price from $49 to $499. At the low end was the 1GB iPod shuffle, which randomly played up to 240 songs. Apple also offered the iPod nano, which stored up to 2,000 songs or up to 8 hours of video content; the iPod classic, whose 160GB version could hold 40,000 songs or 200 hours of video; and the iPod touch, which stored up to 7,000 songs and offered many new features, including WiFi connectivity.[71] ASPs for products in the iPod line ran $50 to $100 higher than that of other MP3 players.[72]

The economics of the iPod were stellar by CE industry standards, with gross margins that ranged from 30% to 35%.[73] In 2007, analysts estimated that Apple paid a bill of materials (BOM) of $127 for an 80GB iPod classic, which retailed for $249. The largest expense in the BOM was for the hard drive, which cost $78.[74] In the case of the iPod nano, which used flash memory instead of a hard drive, margins were higher: An 8GB nano (which retailed for $199) had a BOM of $83, with flash components accounting for $48 of that sum. As the cost of flash memory dropped, Apple built an increasing share of its iPod line around flash drives.[75] Maintaining relationships with key suppliers—ranging from Samsung, which manufactured the iPod's video-audio chip, to Toshiba, which made many of its hard disk drives—was crucial to Apple's strategy for the device. Forging deals with flash manufacturers was especially important. In November 2005, the company agreed to pay $500 million up-front to Intel and Micron to secure "a substantial portion" of the output from a new flash-memory joint venture. It made similar deals with Hynix, Samsung, and Toshiba.[76] In mid-2007, Apple was on track to command roughly 25% of all flash production for use either in iPod products or in the iPhone, which also relied on flash memory.[77]

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As of mid-2008, Apple had sold more than 150 million iPods. According to most estimates, the device commanded 70% or more of the U.S. market for portable music players.[78] Rivals in the MP3 player market included Creative, Samsung, and Sony. The most prominent challenge to the iPod came from Microsoft, which introduced its Zune line of music players in late 2006. At the hardware level, Zune players roughly matched comparable iPod models and included features—wireless music-sharing capability, an FM tuner—that the iPod lacked. According to some reviewers, though, Zune software and the Zune Marketplace content store were inferior to iTunes offerings.[79] Most iPod competitors had converged on the use of Microsoft's WMA standard.[80] (See **Exhibit 9**—iPod Competitors: Comparison of Models and Prices for MP3 Players.)

Initially, the iPod could sync only with Macs. But in August 2002 Apple introduced an iPod for Windows.[81] In other ways, too, the company's approach to developing and marketing the iPod was less closed than its longtime approach to deploying the Macintosh. In this regard, the iPod accessory market was particularly important. By 2007, that market—consisting of 1,000-plus advertised items—generated more than $1 billion in sales. For every $3 dollars spent on an iPod, according to one analyst, consumers spent another $1 on iPod add-on products. And Apple, through a program that licensed its "Made for iPod" logo, earned an estimated 5% of the retail price of such items.[82]

The iTunes System

One key element of the iPod system was the iTunes Music Store, an online service that Apple launched in April 2003. For 99 cents per song, visitors could download music offered by all five major record labels and by thousands of independent music labels. Users could play a downloaded song on their computer, burn it onto their own CD, or transfer it to an iPod. Initially available only to Mac users, the iTunes store became Windows-compatible in October 2003. Within three days of the launch of that service, PC owners had downloaded 1 million copies of free iTunes software and had paid for 1 million songs.[83] By mid-2007, users had downloaded more than 500 million copies of the Windows version of iTunes.[84] The first legal site that allowed music downloads on a pay-per-song basis, iTunes became the dominant online store of its kind. By June 2008, it had sold more than 5 billion songs, and it claimed a 70% share of the worldwide digital music market. It was also the largest U.S. music retailer of any kind, having surpassed Wal-Mart and Best Buy in music sales earlier that year.[85]

The introduction of iTunes had a galvanic impact on iPod sales. Before the advent of iTunes, Apple sold an average of 113,000 iPods per quarter; by the quarter that ended December 2003, iPod sales had shot up to 733,000 units—and then continued to rise.[86] (See **Exhibit 10**—iPod and iTunes: Quarterly Unit Sales.) In 2007, combined iPod and iTunes sales accounted for 45% of total revenue at Apple.[87] The direct impact of iTunes on Apple's profitability was far less impressive. Of the 99 cents that Apple collected per song, as much as 70 cents went to the music label that owned it, and about 20 cents went toward the cost of credit card processing. That left Apple with only about a dime of revenue per track, from which Apple had to pay for its website, along with other direct and indirect costs.[88] In essence, Jobs had created a razor-and-blade business, only in reverse: Here, the variable element served as a loss leader for a profit-driving durable good.[89]

Central to the iTunes model was a set of standards that guarded both the music labels' intellectual property and the proprietary technology inside the iPod. An Apple-exclusive "digital rights management" (DRM) system called FairPlay protected iTunes songs against piracy by limiting to five the number of computers that could play a downloaded song. FairPlay enabled Jobs to coax music executives into supporting the initial iTunes venture. It also helped fuel iPod sales, since no competing MP3 player could play FairPlay-protected songs.[90] Observers called iTunes a "Trojan horse" that allowed iPod-specific standards to invade users' music libraries and, in effect, to lock out other music players.[91] The iPod, meanwhile, could play content recorded in most standard formats.

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Despite the success of iTunes, Apple had a tense relationship with music companies, which balked at its dominance of the digital music market and objected in particular to its fixed pricing structure. In July 2007, after Apple refused to renegotiate its flat 99-cent-per-song price, Universal Music Group declined to renew its annual contract with iTunes and instead opted to license content to Apple on an at-will basis. Other big labels, yielding to the power of the iTunes market share, renewed their iTunes contracts largely on Apple's terms.[92] At the same time, they pursued other outlets for selling digital music. Napster, Rhapsody, Wal-Mart.com, and Zune Marketplace, among other online music stores, each had distribution deals with all four remaining major labels (EMI, Sony BMG, Universal, and Warner Brothers). These stores sold individual song downloads at 99 cents or less per track, and a few of them also offered subscription plans that allowed unlimited listening for $5.99 to $14.99 per month. Most of these services used Microsoft's WMA format. Meanwhile, mobile telephony companies such as AT&T and Verizon also sold digital music, mainly through subscription services.[93] In April 2008, the social network site MySpace announced plans to open an online music store in partnership with major music labels.[94]

A new competitive threat to iTunes emerged in September 2007, when Amazon.com began distributing DRM-free copies of music from the four big labels. To secure rights to that music, Amazon agreed to use variable pricing, with song prices ranging from 89 cents to more than $1 apiece.[95] By mid-2008, most major online music retailers—including Napster, Rhapsody, and Wal-Mart—offered DRM-free songs, variable pricing, or both. Apple, for its part, had signed a deal with EMI in May 2007 that allowed it to sell DRM-free songs under its new "iTunes Plus" offering. Other labels, however, had so far refused to license their content to Apple for DRM-free distribution. [96]

The Apple TV "Hobby"

Starting in 2005, Apple moved to adapt its digital music model to digital video. That year, it created a video iPod device that could play movies, TV shows, and music videos.[97] By 2008, all iPods other than the shuffle model could play video files, and users could download TV shows (for $1.99 or more per episode) and movies (for $9.99 or more apiece) from iTunes.[98] In addition, Apple launched a video rental offering in early 2008. Fees ($2.99 to $3.99 for a 24-hour rental) were comparable to those of other rental services, and the movie selection included titles from all six major film studios.[99] By mid-2008, iTunes users were buying or renting more than 50,000 movies per day, and iTunes had become "the world's most popular online movie store."[100] Nonetheless, as Jobs conceded, Apple's digitial video business fell short of the standard set by its music offerings.[101] Lack of cooperation from content providers was largely to blame: In August 2007, for example, NBC Universal announced that it would stop licensing its TV shows for sale on iTunes.[102]

In a related effort, Apple took steps to bring digital video content directly into consumers' living rooms. In March 2007, the company released the Apple TV, a device that enabled users to stream movies and TV shows to a television set—after downloading that content from iTunes via PC. High pricing and limited functionality kept early sales of the device low. In July 2007, Jobs referred to the Apple TV as "a hobby," suggesting that it was of lower priority than Apple's three main businesses (Macintosh, iPod-iTunes, iPhone).[103] But in January 2008 he released "Apple TV, take two," which featured increased memory, lower pricing, and improved functionality. Apple TV users could now acquire content for their TV directly from iTunes, while bypassing their PC entirely.[104]

The iPhone Gamble—Version 1.0

Apple and its distribution partner, the mobile operator AT&T Mobility (formerly called Cingular Wireless), began selling the iPhone in late June 2007. The iPhone was Apple's bid to unite the iPod with a mobile phone service. But the company's real goal for the product, Jobs said, was to "reinvent

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the phone."[105] The iPhone was a multifunction communication device—"the Internet in your pocket," in Jobs's words—that shared many qualities with smartphones.[106] It featured e-mail capability, Web access, and text messaging; a calendar, an address book, and other PDA functions; and a 2-megapixel camera.[107] The entire system ran on a specially adapted version of Apple's OS X platform.[108]

Buyers of the iPhone, during its first year of availability, paid $399 for an 8-GB model and $499 for a 16-GB model. In a departure from standard industry practice, AT&T did not cushion those prices with a subsidy.[109] The iPhone therefore stood out in a worldwide market where handsets that cost $300 or more accounted for only 5% of total sales.[110] (In the U.S. market, where operator subsidies were particularly generous, an estimated 80% of handset transactions were for less than $100 apiece.[111]) Service plans for the iPhone, available exclusively from AT&T, required a two-year contract and started at $59.99 per month. While that fee was $20 per month more than AT&T's standard wireless package, it covered both voice and data service.[112]

AT&T, the largest U.S. mobile operator, made concessions to Apple that no handset maker had previously received in a carrier distribution agreement.[113] (Verizon Wireless, the second-largest operator, reportedly turned down a similar deal with Apple.[114]) In exchange for a five-year exclusivity period in the U.S. market, AT&T gave Apple near-complete control over the development, and branding of the iPhone.[115] Apple also barred AT&T from distributing the iPhone through third parties, such as Best Buy and Radio Shack. Most important, instead of subsiding iPhone sales, AT&T agreed to share service revenue with Apple. According to reports, Apple received 10% of all subscription fees paid by iPhone users, or an average of about $10 per month per subscriber.[116]

Before July 2008, data service for the iPhone relied on AT&T's relatively slow Edge network (also known as a 2G or 2.5G service). A 3G (third-generation) network was the fastest available wireless solution; Jobs initially opted against equipping the iPhone for such a network because 3G usage severely taxed the device's battery charge.[117] Meanwhile, iPhone users could also tap into WiFi hot-spots, which generally offered much faster service than the Edge network.[118]

When Jobs first announced the iPhone, in January 2007, he said that Apple aimed to sell 10 million units of the device by the end of 2008.[119] By June 2008, consumers had bought about 6 million iPhones. As impressive as that figure was, it left Apple with a likely share of the worldwide mobile handset market of less than 1%. (Consumers in 2007 bought an estimated 1.1 billion handsets.[120]) The iPhone's position within the smartphone market was somewhat better. Jobs, for example, cited data showing that the iPhone gained a 19.5% share of the U.S. smartphone market during its first quarter of availability.[121] (Worldwide, users bought about 120 million smartphones in 2007.[122])

Unit sales told only part of the iPhone story, however. As many as 1 million of the 3.7 million iPhones sold by the end of 2007 fell into the worldwide "gray market," in which consumers bought unlocked iPhones from unauthorized resellers and used them on unsanctioned mobile networks. Most of those units ended up in China, Russia, and other markets with no legal iPhone distribution. (As of June 2008, Apple had signed agreements to distribute the iPhone only in the United States and in five European countries. Deals were slow in coming, partly because Apple demanded a share of service revenue that ran as high as 40%.) Even so, by an estimate made in early 2008, the resulting loss of service-share revenue was on track to cost Apple $1 billion over a three-year period.[123]

The iPhone Gamble—Version 2.0

In July 2008, just a year after launching the iPhone, Apple reinvented it.[124] The new offering, called the iPhone 3G, came not only with faster network service, but also with an entirely new pricing model and with a new platform for adding third-party applications to the device.

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As the product name implied, a key difference between the iPhone 3G and its predecessor was that it supported 3G network coverage. The device's battery life had improved enough to allay Jobs's concerns. In tests, the 3G service enabled downloading of data that was two or three times as fast as the Edge service. All the same, users complained about the limitations of AT&T's 3G coverage area.[125] In August 2008, users also began reporting frequent connection failures while using the 3G network; one report suggested that the iPhone's 3G chipset, rather than AT&T service, was to blame.[126]

The iPhone 3G was also cheaper than the first iPhone—at least with respect to the initial purchase price for the device. U.S. consumers could buy an 8-GB iPhone 3G for $199 or a 16-GB model for $299. Those prices reflected a subsidy from AT&T. To take advantage of it, users had to join one of AT&T's service plans, which now started at $69.99 per month ($10 higher than before). AT&T still required users to enter a two-year contract.[127] Meanwhile, the carrier also signaled that at some point it would offer an unsubsidized iPhone for $599 (8-GB) to $699 (16-GB).[128]

A restructured agreement between Apple and AT&T—one that was closer to the U.S. mobile industry norm for such deals—underlay the reduction in consumer pricing for the iPhone. Apple gave up its claim to a share of iPhone subscription revenue, and in exchange it received from AT&T a fixed premium for each iPhone sold.[129] According to one report, AT&T paid Apple an average of $466 for every iPhone bought by a consumer (an average that covered sales of both 8-GB model and 16-GB models). That figure, the same report suggested, included a $100 bounty that AT&T paid to Apple each time an iPhone buyer signed up for AT&T service through an Apple retail outlet.[130] AT&T, as part of its revised agreement with Apple, was also able to extend its period of exclusivity for selling the iPhone by one year.[131] In another notable step away from the initial iPhone deal, Apple opened up a new retail channel for the device: Best Buy announced in August 2008 that Apple had agreed to let it begin selling iPhones in its nearly 1,000 stores.[132]

The chief benefits of the iPhone 3G essentially matched those of the first iPhone, and they reflected Apple's prowess in designing user interface (UI) technology. Unlike most mobile phones, the iPhone had no embedded keyboard. Instead, it featured a 3.5-inch "multi-touch" widescreen display that took up most of its surface area. Critics raved about this UI, which allowed users to manipulate content on the screen by tapping, pinching, and dragging their finger on it. The device also featured "accelerometer" technology, which enabled it to sense when users were moving and to adjust its screen orientation accordingly. Its screen quality, meanwhile, marked a big step forward for iPod video functionality.[133] Partnerships with Google and YouTube allowed Apple to provide customized search, mapping, and video features. In addition, users could buy music for the iPhone directly from the device, via the iTunes Wi-Fi Music Store.[134]

In conjunction with launching the iPhone 3G, Apple introduced a new benefit for iPhone users: a platform for third-party applications. An updated software package, called iPhone 2.0, enabled users to install programs distributed through Apple's new online App Store. Users could visit the store and download applications directly from their iPhone. Offerings ranged from popular games (Scrabble, Sodoku) to business programs developed by Oracle and salesforce.com. The first iPhone did not support such applications. But now even users of the older model, as well as iPod touch owners, could download iPhone 2.0 software (for a $10 fee) and equip their device for the new platform. As of July 2008, the App Store distributed more than 800 different programs—90% of them priced at less than $10.[135] By mid-August 2008, customers had downloaded more than 60 million applications, and sales came to an average of $1 million per day. Jobs speculated that the App Store might become "a $1 billion marketplace at some point in time." Apple, which had to approve each application before it went on sale, kept 30% of the retail price for every product and let developers keep the rest.[136]

Drawbacks to the iPhone included its low storage capacity, in comparison with other music players, and its lack of memory expandability; its relatively low-resolution camera, which lacked

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video capability; and a level of GPS functionality (introduced in the iPhone 3G) that fell short of what other smartphones offered. Its battery lasted as little as five hours during routine 3G use (or ten hours during 2G use); more important, the battery was non-replaceable and had a predicted life of roughly one year. To attract enterprise customers, the second iteration of the iPhone added features that the first iPhone lacked, such as advanced email security and support for the Microsoft Exchange email platform. Yet the iPhone 3G, while it could display Microsoft Office documents, lacked the ability to run or synchronize with them. For high-volume email users, its lack of a physical QWERTY keyboard and its failure to provide a cut-and-paste tool were also serious limitations.[137]

Apple launched the iPhone 3G simultaneously in 22 markets (including Australia, Japan, Mexico, and many European countries), and the device would be available in roughly 70 markets worldwide (including India, as well as numerous Latin American countries) by the end of 2008.[138] On the whole, pricing structures and distribution agreements in those markets matched those in the U.S. market, with carriers subsidizing iPhone sales. By moving away from the revenue-sharing model, Apple was able to sign deals with carriers rapidly. The company also moved away from offering iPhone exclusivity to carriers. As yet, Apple had no deal to sell the device in China, the world's largest mobile phone market. Negotiations with China Mobile, that country's dominant carrier, broke down in early 2008 over Apple's demand for a share of service revenue, but they resumed later that year.[139]

The economics of the iPhone 3G tilted strongly in Apple's favor. Falling component costs and design improvements, for example, reduced the iPhone's cost structure. According to one analysis, the cost of materials for an 8-GB model was about $174, while materials for the first iteration of that model had cost $227.[140] Meanwhile, lower consumer pricing and wider international distribution helped fuel promising early sales for the iPhone 3G. Over the first weekend of its availability, worldwide shipments of the device totaled 1 million units. At that pace, Apple was on track to exceed its initial goal of selling 10 million units before 2009.[141]

In 2008, would-be "iPhone killer" products were rapidly appearing on the market. Mobile operators, in collaboration with handset makers, rushed to offer touchscreen devices: Sprint-Nextel distributed the Samsung Instinct, for example, while Verizon Wireless sold the LG Dare; both products hit the U.S. market in July 2008.[142] Blackberry (which had a market-leading 45% share of the U.S. smartphone market) released a 3G device called the Bold in May and would release an advanced touchscreen phone called the Thunder by the end of the year.[143] Other iPhone competitors included the Palm Centro; the Nokia N95; and the Diamond Touch, a 3G touchscreen handset that HTC Corp. introduced in May 2008.[144] Most of these devices ran on closed platforms such as Windows Mobile OS or Nokia's Symbian OS. Meanwhile, Google had created an open mobile OS called Android; mobile operators and handset makers could use it at no cost and without restriction.[145] In August 2008, T-Mobile announced that it would distribute an HTC-made Android phone in the U.S. market sometime before the end of the year. Called "the Dream," that device would feature a touchscreen UI, would support 3G service, and would retail for $150 (with a two-year contract).[146]

"New Rules"?

Apple underwent profound changes during the first decade of the 21st century—from its migration to a new microchip architecture to its expansion into whole new business lines. Steve Jobs, noted one analyst at mid-decade, "has created a fusion of fashion, brand, industrial design and computing. . . . [I]f he is to successfully revamp Apple, [Jobs] will ultimately win not by taking on PC rivals directly, but by changing the rules of the game."[147] Could Apple truly "change the rules" of the game in computing and in next-generation devices? And could it retain its innovative edge even after Jobs—the man who had "changed the rules" for the company, again and again—was no longer at its helm? Those questions animated discussion of Apple Inc. and its future.

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Exhibit 1a Apple Inc.: Selected Financial Information, 1981–2008 (in millions of dollars, except for number of employee and stock-related data)

	1981	1986	1991	1996	1998	2000	2002	2004	2005	2006	2007	*1Q08–3Q08*
Net sales	334	1,902	6,309	9,833	5,941	7,983	5,742	8,279	13,931	19,315	24,006	*24,584*
Cost of sales	170	891	3,314	8,865	4,462	5,733	4,021	5,871	9,738	13,525	15,568	*15,859*
Research and development	21	128	583	604	310	380	447	489	534	712	782	*811*
Selling, general, and administrative	77	610	1,740	1,568	908	1,546	1,557	1,910	2,393	3,145	3,745	*3,573*
Operating income (loss)	66	274	447	(1,383)	261	620	46	349	1,650	2,453	4,409	*4,833*
Net income (loss)	39	154	310	(816)	309	786	65	276	1,335	1,989	3,498	*3,698*
Cash, cash equivalents, and short-term investments	73	576	893	1,745	2,300	4,027	4,337	5,464	8,261	10,110	15,386	*20,774*
Accounts receivable, net	42	263	907	1,496	1,035	955	707	1,050	1,312	2,845	4,029	*3,245*
Inventories	104	109	672	662	78	33	45	101	165	270	346	*545*
Net property, plant, and equipment	31	222	448	598	348	313	621	707	817	1,281	1,832	*2,177*
Total assets	255	1,160	3,494	5,364	4,289	6,803	6,298	8,050	11,551	17,205	25,347	*31,709*
Total current liabilities	70	138	1,217	2,003	1,520	1,933	1,658	2,680	3,484	6,443	9,299	*9,218*
Total shareholders' equity	177	694	1,767	2,058	1,642	4,107	4,095	5,076	7,466	9,984	14,532	*19,622*
Cash dividends paid			57	14								
Employees	2,456	5,600	14,432	13,398	9,663	11,728	12,241	13,426	16,820	20,186	23,700	NA
International sales/sales	27%	26%	45%	52%	45%	46%	43%	41%	41%	41%	41%	NA
Gross margin	49%	53%	47%	10%	25%	28%	30%	29%	30%	35%	35%	*35%*
R&D/sales	6%	7%	9%	6%	5%	5%	8%	6%	4%	4%	3%	*3%*
SG&A/sales	23%	32%	28%	16%	15%	19%	27%	23%	17%	16%	16%	*15%*
Return on sales	12%	8%	5%	NA	5%	10%	1%	3%	10%	10%	15%	*15%*
Return on assets	24%	15%	10%	NA	7%	12%	1%	3%	12%	14%	14%	*12%*
Return on equity	38%	25%	19%	NA	22%	19%	2%	5%	18%	24%	24%	*19%*
Stock price low	$1.78	$2.75	$10.28	$4.22	$3.28	$7.00	$6.80	$10.64	$31.65	$50.57	$83.27	*110.15*
Stock price high	$4.31	$5.47	$18.19	$8.75	$10.75	$36.05	$13.06	$34.22	$74.98	$91.81	$199.83	*198.08*
P/E ratio at year-end	27.7	16.8	21.9	NA	17.5	6.1	79.6	90.7	46.1	37.4	50.4	*31.5*
Market value at year-end	1,223.7	2,578.3	6,649.9	2,598.5	5,539.7	4,996.2	5,146.4	25,892.5	60,586.6	72,900.8	173,426.9	*147,618.9*

Sources: Standard & Poor's Compustat® data; Datastream.

Notes: Apple's fiscal year ends in September. All data here reflect fiscal-year results, except for share price data, which reflect calendar-year results. All data for the 1Q08–3Q08 period pertain to the nine months ending June 30, 2008.

NA = Not Available or Not Applicable.

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Exhibit 1b Apple Inc.: Net Sales Data by Product Category, 2002–2008 (in millions of dollars)

	2002	2003	2004	2005	2006	2007	*1Q08–3Q08*
Power Macintosh[a]	1,380	1,237	1,419	NA	NA	NA	NA
iMac[b]	1,448	1,238	954	NA	NA	NA	NA
Desktops[c]	NA	NA	NA	3,436	3,319	4,020	*4,240*
PowerBook	831	1,299	1,589	NA	NA	NA	NA
iBook	875	717	961	NA	NA	NA	NA
Portables[d]	NA	NA	NA	2,839	4,056	6,294	*6,416*
Total Macintosh Net Sales	4,534	4,491	4,923	6,275	7,375	10,314	*10,656*
iPod	143	345	1,306	4,540	7,676	8,305	*7,493*
Other music products[e]	4	36	278	899	1,885	2,496	*2,508*
iPhone and related products	NA	NA	NA	NA	NA	123	*1,038*
Peripherals and other hardware[f]	527	691	951	1,126	1,100	1,260	*1,231*
Software[g]	307	362	502	NA	NA	NA	NA
Service and other net sales	227	282	319	NA	NA	NA	NA
Software, service, and other sales[h]	NA	NA	NA	1,091	1,279	1,508	*1,658*
Total Net Sales	5,742	6,207	8,279	13,931	19,315	24,006	*24,584*

Source: Apple financial statements; casewriter calculations.

Note: Apple's fiscal year ends in September. All data here reflect fiscal-year results.
NA = Not Available or Not Applicable.

[a]Includes Xserve product line.

[b]Includes eMac product line.

[c]Includes iMac, eMac, Mac Mini, Mac Pro, Power Mac, and Xserve product lines.

[d]Includes MacBook, iBook, MacBook Pro, and PowerBook product lines.

[e]Includes sales from iTunes Music Store, iPod-related services, and iPod-related accessories.

[f]Includes sales of Apple-branded and third-party displays, wireless connectivity and networking solutions, and other hardware accessories.

[g]Includes sales of Apple-branded operating system, application software, and third-party software.

[h]Includes sales of Apple-branded operating system, application software, third-party software, AppleCare Services, and Internet services.

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Exhibit 1c Apple Inc.: Operational Data by Segment, 2002–2008 (in millions of dollars)

	2002	2003	2004	2005	2006	2007	*1Q08–3Q08*
Americas							
Net sales	3,131	3,181	4,019	6,658	9,415	11,596	*11,001*
Operating income	278	323	465	970	1,899	2,949	NA
Depreciation, amortization, and accretion	4	5	6	6	6	9	NA
Segment assets	395	494	563	705	896	1497	NA
Europe							
Net sales	1,251	1,309	1,799	3,073	4,096	5,460	*5,899*
Operating income	122	130	280	465	627	1,348	NA
Depreciation, amortization, and accretion	4	4	4	4	4	6	NA
Segment assets	165	252	259	289	471	595	NA
Japan							
Net sales	710	698	677	924	1,211	1,082	*1,189*
Operating income	140	121	115	147	208	232	NA
Depreciation, amortization, and accretion	2	3	2	3	3	3	NA
Segment assets	50	130	114	165	181	159	NA
Retail							
Net sales	283	621	1,185	2,278	3,246	4,115	*4,597*
Operating income (loss)	(22)	(5)	39	396	600	875	NA
Depreciation, amortization, and accretion	16	25	35	43	59	88	NA
Segment assets	141	243	351	589	651	1,085	NA
Other[a]							
Net sales	367	398	599	998	1,347	1,753	*1,898*
Operating income	44	51	90	118	235	388	NA
Depreciation, amortization, and accretion	2	2	2	2	3	3	NA
Segment assets	67	78	124	133	180	252	NA

Source: Apple financial statements; casewriter calculations.

Note: Apple's fiscal year ends in September. All data here reflect fiscal-year results.
NA = Not Available or Not Applicable.

[a]"Other" segments include the Asia-Pacific region and Apple's FileMaker business.

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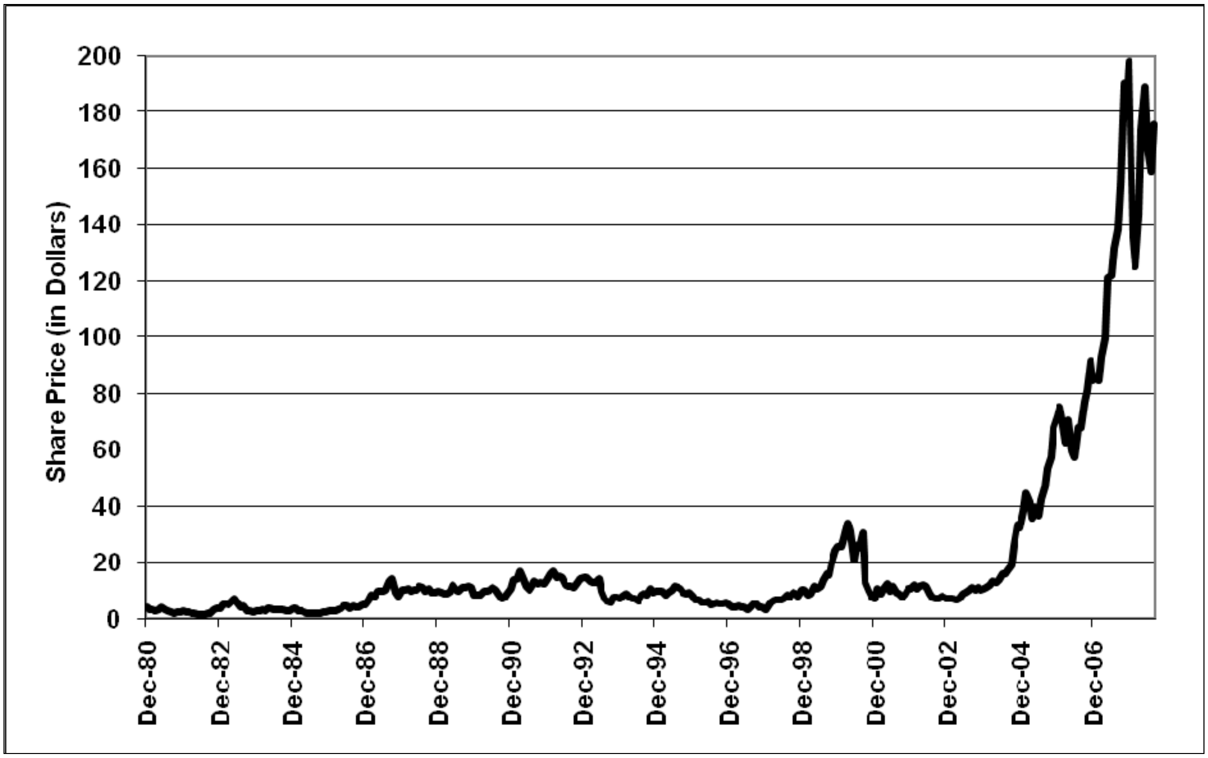
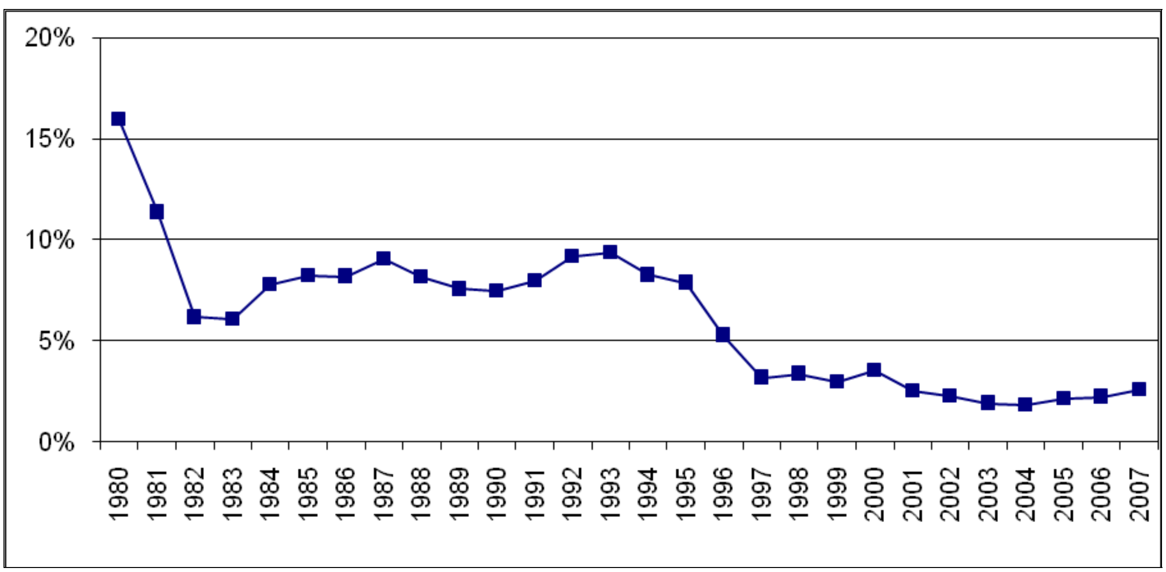
Exhibit 2 Apple Inc.: Daily Closing Share Price, December 1980–August 2008



Source: Thomson Datastream, accessed January 2008; OneSource Global Business Browser, accessed August 2008.

Exhibit 3 Apple Inc.: Worldwide PC Share, 1980–2007



Source: Adapted from InfoCorp., International Data Corp., Gartner Dataquest, and Merrill Lynch data.

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Exhibit 4 Shipments and Installed Base of PC Microprocessors, 1992–2007 (in millions of units)

Total Shipments	1992	1994	1996	1998	2000	2002	2003	2004	2005	2006	2007
Intel Technologies											
PC units shipped	30.6	47.8	76.0	105.0	156	126	152	170	200	230	261
PC installed base	122.2	211.4	347.5	542.5	839	1,111	1,263	1,433	1,633	1,863	2,124
Mac units shipped	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.7	7.6
Motorola (680X0)											
Units shipped	3.9	3.9	0.8	0.2	NA	NA	NA	NA	NA	NA	NA
Installed base	16.5	24.9	26.8	27.5	NA	NA	NA	NA	NA	NA	NA
PowerPC											
Units shipped	0	0.8	4.0	3.5	4.7	3.1	3.3	3.5	4.7	NA	NA
Installed base	0	0.8	7.8	14.1	22.2	29.4	32.9	36.2	40.9	NA	NA

Source: Adapted from Gartner Dataquest, InfoCorp., International Data Corp., Merrill Lynch, and Credit Suisse data.

Notes: Between 5% and 10% of total microprocessor shipments go into non-PC end products. In any given year, roughly 30% to 45% of microprocessors in the total installed base involve older technologies that are probably no longer in use. The figures for PowerPC shipments exclude microprocessors destined for Sony PlayStation and Xbox 360 machines. Figures for "Mac units shipped" cover Macintosh calendar year sales.

NA = Not Available or Not Applicable.

Exhibit 5 PC Manufacturers: Key Operating Measures, 1997–2007

	1997	2000	2003	2004	2005	2006	2007
Gross Margin (%)							
Apple	21%	28%	29%	29%	30%	30%	35%
Dell	23%	21%	19%	19%	18%	17%	19%[a]
Hewlett-Packard	38%	31%	29%	27%	25%	26%	24%
R&D/Sales							
Apple	12.1%	4.8%	7.6%	5.9%	3.8%	3.7%	3.3%
Dell	1.2%	1.5%	0.8%	0.9%	0.8%	0.9%	1.0%[a]
Hewlett-Packard	7.2%	5.4%	5.0%	4.4%	4.0%	3.9%	3.5%

Source: Compiled from company financial reports; Hoover's, Inc., www.hoovers.com.

Note: All information is on a fiscal-year basis. The fiscal year ends in September for Apple, in January for Dell, and in October for Hewlett-Packard.

[a]For Dell, 2007 figures cover the three quarters ending November 2, 2007.

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Exhibit 6 Apple Inc.: Unit Sales by Product Category, 2004–2008 (in thousands of units)

	2004	Y/Y Change	2005	Y/Y Change	2006	Y/Y Change	2007	*3Q08–3Q08*
Desktops[a]	1,625	55%	2,520	(3%)	2,434	12%	2,714	*2,776*
Portables[b]	1,665	21%	2,014	42%	2,869	51%	4,337	*4,328*
Total Macintosh Unit Sales	3,290	38%	4,534	17%	5,303	33%	7,051	*7,104*
Net Sales per Unit Sold	$1,496	(7%)	$1,384	1%	$1,391	5%	$1,463	*$1,500*
iPods	4,416	409%	22,497	75%	39,409	31%	51,630	*43,776*
Net Sales per Unit Sold	$296	(32%)	$202	(3%)	$195	(17%)	$161	*$171*
iPhones	NA	NA	NA	NA	NA	NA	1,389	*4,735*

Source: Apple financial statements; casewriter calculations.

Note: Apple's fiscal year ends in September. All data here reflect fiscal-year results.

NA = Not Available or Not Applicable.

[a]Includes iMac, eMac, Mac Mini, Mac Pro, Power Mac, and Xserve product lines.

[b]Includes MacBook, iBook, MacBook Pro, and PowerBook product lines.

Exhibit 7 PC Manufacturers: Worldwide Market Shares, 2000–2007

	2000	2001	2002	2003	2004	2005	2006	2007
Hewlett-Packard[a]	7.8%	6.9%	16.0%	16.2%	15.8%	15.6%	16.5%	18.8%
Dell	11.4%	12.9%	15.1%	16.7%	17.9%	18.1%	16.6%	14.9%
Acer				3.1%	3.6%	4.7%	5.8%	7.9%
Lenovo[b]					2.3%	6.2%	7.1%	7.5%
Toshiba	3.0%	2.8%	3.2%	3.1%	3.6%	3.5%	3.9%	4.1%
Fujitsu Siemens	5.1%	4.5%	4.2%	4.1%	4.0%	4.1%		
IBM[b]	7.1%	6.2%	5.9%	5.8%	5.9%			
Compaq[a]	13.0%	11.2%						
Packard Bell NEC	4.5%	3.5%	3.3%					
Apple	3.5%	2.5%	2.3%	1.9%	1.9%	2.2%	2.3%	2.6%
Total shipments	128.5 million	121.8 million	136.9 million	154.7 million	177.5 million	208.6 million	235.4 million	269.0 million

Source: "PC Market Still Strong in Q4 With Solid Growth Across Regions, According to IDC" (press release), International Data Corp., January 16, 2008; IDC data, as cited in Scott H. Kessler, "Computers: Hardware" (industry survey), Standard & Poor's, April 26, 2007, p. 7, and in previous editions of that survey; Apple Inc. annual financial reports; and casewriter estimates.

Note: Market share data for Apple are derived from Macintosh unit sales, as reported in the company's annual reports. The sampling of market shares for other companies comes mainly from annual listings of the top five PC makers, as measured by IDC. Absence of a figure indicates that a company placed below the top five in a given year.

[a]Hewlett-Packard acquired Compaq in mid-2002. The 2002 market share figure for HP incorporates Compaq sales for the first part of that year.

[b]Lenovo acquired IBM's PC business in mid-2005. The 2005 market share figure for Lenovo incorporates IBM sales for the first part of that year.

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Exhibit 8 Apple Competitors: Selected Financial Information, 2000–2007 (in millions of dollars)

	2000	2002	2004	2005	2006	2007
Acer						
Total revenues	1,164	3,107	6,746	9,898	11,343	*5,878*[a]
Cost of sales	1,052	2,643	5,878	8,790	10,114	*5,258*[a]
R&D	3	7	13	14	12	NA
SG&A	70	412	689	810	944	*462*[a]
Net income	31	250	210	264	314	*230*[a]
Total assets	413	3,191	3,908	5,217	5,781	*6,194*[a]
Total current liabilities	173	938	1,883	3,106	3,373	*3,902*[a]
Total stockholders' equity	165	1,929	1,908	2,001	2,271	*2,150*[a]
Gross margin	10%	15%	13%	11%	11%	*11%*[a]
R&D/sales	0%	0%	0%	0%	0%	NA
SG&A/sales	6%	13%	10%	3%	8%	*8%*[a]
Return on sales	3%	8%	3%	3%	3%	*4%*[a]
Market value at year-end	286	1,860	3,423	5,603	4,829	4,573
Dell						
Total revenues	31,888	35,404	49,205	55,908	57,420	61,133
Cost of sales	25,205	28,844	39,856	45,227	47,433	49,462
R&D	482	319	463	463	498	693
SG&A	3,675	3,505	4,761	5,499	6,346	7,538
Net income	2,177	2,122	3,043	3,572	2,583	2,947
Total assets	13,435	15,470	23,215	23,109	25,635	27,561
Total current liabilities	6,543	8,933	14,136	15,927	17,791	18,526
Total stockholders' equity	5,622	4,873	6,485	4,129	4,439	3,735
Gross margin	21%	19%	19%	19%	17%	19%
R&D/sales	2%	1%	1%	1%	1%	1%
SG&A/sales	12%	10%	10%	9%	11%	12%
Return on sales	7%	6%	6%	6%	4%	5%
Market value at year-end	45,630	68,968	104,689	70,488	56,995	54,927
Hewlett-Packard						
Total revenues	48,782	56,588	79,905	86,696	91,658	104,286
Cost of sales	33,709	40,134	58,540	64,718	67,727	79,670
R&D	2,646	4,105	3,543	3,492	3,643	3,801
SG&A	10,029	12,345	14,530	14,674	14,857	15,837
Net income	3,697	(903)	3,497	2,398	6,198	7,264
Total assets	34,009	70,710	76,138	77,317	81,981	88,699
Total current liabilities	15,197	24,310	28,588	31,460	35,850	39,260
Total stockholders' equity	14,209	36,262	37,564	37,176	38,144	35,526
Gross margin	31%	29%	27%	25%	26%	24%
R&D/sales	5%	7%	4%	4%	4%	4%
SG&A/sales	21%	22%	18%	17%	16%	15%
Return on sales	8%	-2%	4%	3%	7%	7%
Market value at year-end	62,431	52,973	63,327	81,242	112,070	129,929

[a]For Acer, 2007 figures (except for "market value at year-end") cover the half-year ending June 30, 2007.

[b]For Lenovo (see p. 23), 2007 figures (except for "market value at year-end") cover the two quarters ending September 30, 2007.

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Exhibit 8 (continued)

	2000	2002	2004	2005	2006	2007
Lenovo						
Total revenues	3,491	2,978	2,894	13,329	14,590	*8,358*[b]
Cost of sales	3,051	2,189	2,437	11,463	12,337	*7,107*[b]
R&D	15	40	49	192	227	*(120)*[b]
SG&A	284	221	NA	1,338	1,613	*(874)*[b]
Net income	110	130	144	22	161	*172*[b]
Total assets	1,276	866	1,158	5,057	5,449	*6,653*[b]
Total current liabilities	648	321	445	3,199	3,526	*4,473*[b]
Total stockholders' equity	617	537	667	1,049	1,134	*1,335*[b]
Gross margin	13%	16%	16%	14%	15%	*15%*[b]
R&D/sales	0%	2%	2%	1%	2%	NA
SG&A/sales	8%	8%	NA	10%	11%	NA
Return on sales	3%	5%	5%	1%	1%	*2%*[b]
Market value at year-end	4,696	2,501	2,236	3,923	3,463	8,049
Intel						
Total revenues	33,726	26,764	34,209	38,826	35,382	38,334
Cost of sales	9,429	8,389	9,591	15,777	17,164	18,430
R&D	4,006	4,054	4,778	5,145	5,873	5,755
SG&A	8,986	8,543	9,466	5,688	6,096	5,401
Net income	10,535	3,117	7,516	8,664	5,044	6,976
Total assets	47,945	44,224	48,143	48,314	48,368	55,651
Total current liabilities	8,650	6,595	8,006	9,234	8,514	8,571
Total stockholders' equity	37,322	35,468	38,579	36,182	36,752	42,762
Gross margin	72%	69%	72%	59%	51%	52%
R&D/sales	12%	15%	14%	13%	17%	15%
SG&A/sales	27%	32%	28%	15%	17%	14%
Return on sales	31%	12%	22%	22%	14%	18%
Market value at year-end	202,321	103,836	147,895	150,484	116,762	155,881
Microsoft						
Total revenues	22,956	28,365	36,835	39,788	44,282	51,122
Cost of sales	2,334	4,177	5,899	5,316	6,660	9,287
R&D	3,775	4,307	7,779	6,184	6,584	7,121
SG&A	8,925	10,604	18,560	16,946	19,051	21,905
Net income	9,421	7,829	8,168	12,254	12,599	14,065
Total assets	52,150	67,646	92,389	70,815	69,597	63,171
Total current liabilities	9,755	12,744	14,969	16,877	22,442	23,754
Total stockholders' equity	41,368	52,180	74,825	48,115	40,104	31,097
Gross margin	90%	85%	84%	87%	85%	82%
R&D/sales	16%	15%	21%	16%	15%	14%
SG&A/sales	39%	37%	50%	43%	43%	43%
Return on sales	41%	28%	22%	31%	28%	28%
Market value at year-end	231,290	276,412	290,720	278,358	293,538	333,054

Sources: Standard & Poor's Global Vantage and company financial reports. (In the case of Dell, Intel, and Lenovo, 2007 data come from company financial reports. All other data come from S&P Global Vantage. Variations may result from differences in how S&P Global Vantage and some companies tabulate reported data.)

Notes: All information is on a fiscal-year basis, except for "market value at year-end," which is on a calendar-year basis. The fiscal year ends in December for Acer, in January for Dell, in October for Hewlett-Packard, in March for Lenovo, in December for Intel, and in June for Microsoft.

NA = Not Available or Not Applicable.

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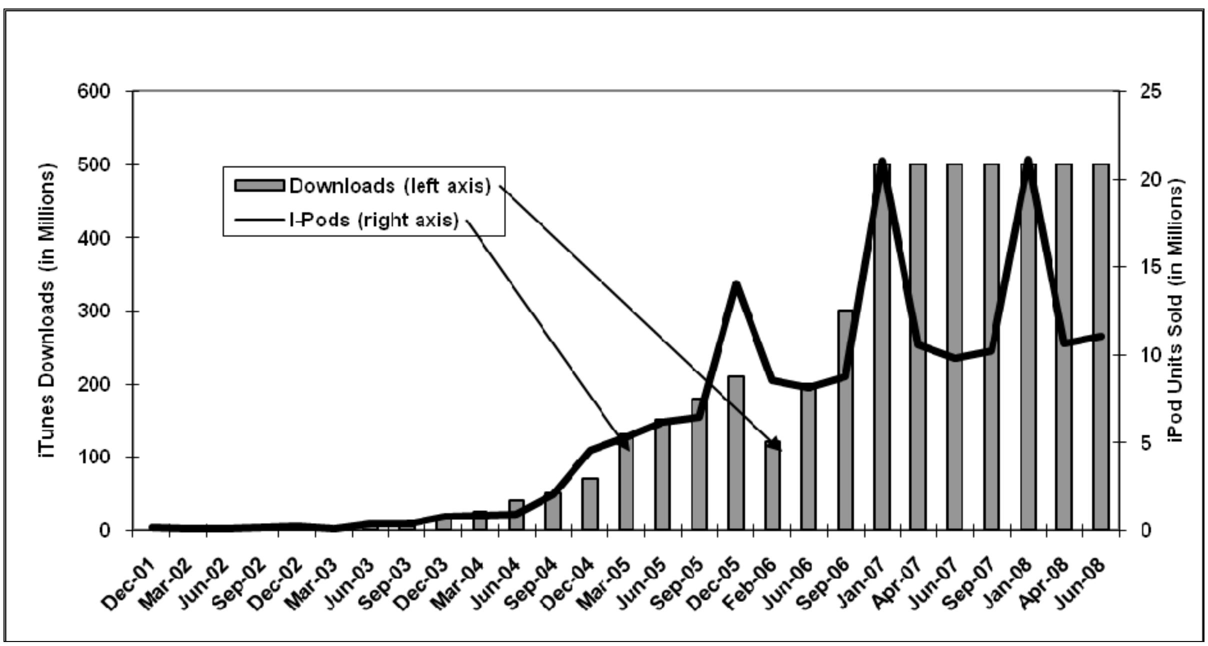
Exhibit 9 iPod Competitors: Comparison of Models and Prices for MP3 Players (August 2008)

	1 GB – 2 GB	4 GB – 16 GB	30 GB – 160 GB	8 GB – 32 GB (multi-touch)
Apple	iPod shuffle (1 GB) $49 iPod shuffle (2 GB) $69	iPod nano (4 GB) $149 iPod nano (8 GB) $199	iPod classic (80 GB) $249 iPod classic (160 GB) $349	iPod touch (8 GB) $299 iPod touch (32 GB) $499
Creative	Zen Stone (1 GB) $35 MuVo V100 (2 GB) $30	Zen (4 GB) $90 Zen (16 GB) $180	Zen (32 GB) $250 Zen X-Fi (32 GB) $280	NA
iRiver	T60 (1 GB) $70 T60 (2 GB) $90	E100 (4 GB) $100 CLIX (8 GB) $240	NA	NA
SanDisk	Sansa Clip (1 GB) $40 Sansa Express (2 GB) $70	Sansa Fuze (4 GB) $80 Sansa View (16 GB) $200	Sansa View (32 GB) $350	NA
Sony	Walkman (1 GB) $45 Walkman (2 GB) $60	Walkman (4 GB) $100 Walkman (16 GB) $300	NA	NA
Microsoft	NA	Zune (4 GB) $130 Zune (8 GB) $180	Zune (30 GB) $200 Zune (80 GB) $250	NA

Source: Company websites, accessed August 2008.

Note: Pricing information reflects retail prices as listed on each company's website or, in a few cases, on Amazon.com.

Exhibit 10 iPod and iTunes: Quarterly Sales (of iPod Units and iTunes Songs), 2001–2008



Source: Compiled from Apple financial reports, Apple press releases, and casewriter estimates.

Note: Because Apple does not report iTunes song downloads on regular quarterly basis, some information in this chart reflects casewriter adjustments to reported data.

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