

Economics of Competitive Strategy

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Apple Computer Inc.: Digital Connectivity in the Age of the Maturing PC

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Brief Background

Apple Computer is a major developer, manufacturer, and marketer of personal computers and peripheral products for sale primarily to the business, creative, education, government, and consumer markets. Apple also sells operating systems, utilities, languages, developer tools, and database software.

California-based Apple Computer aims its colorful iMac (desktop) and iBook (laptop) computers at the consumer and education markets. It targets high-end consumers and professionals involved in design and publishing with its more powerful G4 portable and desktop computers. Apple also makes publishing and multimedia software, and offers Internet services such as Web page hosting. The company's FileMaker subsidiary makes database software.

Once the world's top PC maker, Apple Computer has been relegated to niche status in a market dominated by "Wintel" machines (computers using Microsoft Windows software and Intel processors). Macintosh computers (Macs) forgo the Intel Pentium for processors made by IBM and Motorola. Apple has offered unique designs such as the colorful iMac that distinguish its computers from their competitors. Looking to attract customers into "the era of the Digital Lifestyle," Apple has conducted a marketing campaign that casts Macs as the centerpiece for a host of digital devices such as cameras, video recorders, and music players.

Apple has traditionally maintained popularity in classrooms, Web design shops, and graphic arts studios. Although more than a quarter of its sales are to schools, Apple has felt increasing pressure in that market, particularly from Dell. In an effort to boost its appeal among consumers, the company has opened more than 25 Apple retail stores across the US.

PORTER ANALYSIS

Product: Personal computers, peripherals and operating systems.

Rivalry: The personal computer industry displays a high degree of rivalry, with firms constantly cutting prices. The product is a commodity and there is little to differentiate one pc from another in terms of features etc. Price is a key and a price war is on with margins further getting squeezed.

Supplier Power: The components suppliers like memory chips, disk drives, keypads etc are widely available at very competitive prices. The supplier power is low in such cases. However we have two key inputs: the microprocessor and the operating system. Intel (with AMD being the other significant player) dominates the microprocessor market for Wintel systems. Apple on the other hand, sources a totally different chip called the Power PC chip from Motorola, which comprises less than 5 % of the microprocessor market. So supplier power is high in the case of Intel compatible chips and medium for Power PC chips.

Microsoft dominated the PC operating system market following the launch of the IBM PC. Apple had its own operating system, the Mac OS, that was technically superior to Microsoft products. It is estimated that Microsoft Windows is loaded in more than 90% PCs shipped out. Supplier power was high.

Buyers Power: The main customers for PC and peripherals could be categorized as a) Business b) Government c) Education and d) Individual consumer. Apple products were sold primarily to the business (creative), education, government, and consumer markets. Due to its differentiated product Apple could command a premium in this market so the Buyer power was medium for its products.

The PC has increasingly become like a commodity with a plethora of players offering similar features with very little differentiation. Price is the key element and buyer power is sufficiently high.

Substitutes: Due to the high level of technological change in this industry there were many potential substitutes coming up to replace the PC. Some of the possible substitutes were Network computers, Hand held Palm tops, smart phones, game consoles, Internet Appliances, TV set –top boxes and other simpler personal computing devices etc.

There was also the possibility of eliminating the need for operating systems to be loaded on personal computers with stripped down versions being ‘net-booted’ from servers.

Threat of New Entrants: The high level of competition, combined with low margins makes this industry not very attractive for new entrants. The product was in the mature stage of its life cycle. However there was a trend of increasing convergence of this industry with the consumer electronics industry and thus the possibility of entry of major players like Sony etc in a big way.

Complementary Products: There are a host of complementary products available. The value of the PC and its operating system is tied to the quality and quantity of application systems available on that platform. Peripherals also constitute a complement e.g. media digital contents, Camcorders, digital camera, MP3 players, hand held devices and other software and hardware.

APPLE COMPUTER’S PRODUCT POSITIONING:

- Apple has had to demonstrate that in a world of networks based on industry wide standards, their computers are powerful enough and, in effect, compatible enough to do everything Windows PCs can.
- Apple has used a differentiation strategy for its Macs to warrant their premium prices.

- Apple has had to keep wooing its loyal customer base of Apple users by superior product design and features.

APPLE'S COMPETITIVE ADVANTAGES:

- A loyal customer base.
- Apple's engineering and software skills could make it a force to be reckoned with in the consumer electronics business long dominated by Sony and Matsushita.
- Apple's own engineers design much of the hardware and virtually all the key software for Macintosh computers. The result is a distinctive line of computers that are more stylish and reliable and easier to use than their Wintel PC counterparts, and that, despite Apple's small market share, often set the aesthetic and technical standards for what a PC should be.
- Apple has one of the best management teams in place.
- Regular technological breakthroughs by Apple's component suppliers has helped it keep pace in terms of performance with Windows PCs. Motorola, which makes the PowerPC microprocessor for the Mac – a RISC chip which technically delivers faster performance for less complex design - has finally managed to improve the performance of its chips to exceed the processing speed and power of Intel's Pentiums.
- Apple is the only vertically integrated computer company and thus can manage all aspects of the customer experience.

APPLE'S WEAKNESS:

- Apple is lagging behind in providing the kind of interoperability that corporate and educational buyers are concerned about: the network. Apple's computers don't mix well with Windows servers, This however, is due to Microsoft co-opting backend standards with their suite of server and application software – Outlook mail for instance. However, on open standard networks such as the internet, Apple' offerings have no difficulty integrating.
- Apple products have poor network compatibility. The education market, long a stronghold for Apple, is under pressure to abandon the company because of relatively low initial cost PCs. Dell for instance has been courting the education market very aggressively.
- Motorola's R&D efforts simply can't match the money and muscle Intel devotes to its products. "The economies of scale behind Intel's new Itanium products are

going to eclipse Apple. Long term, going to the Intel platform may be a correct strategy.

BEYOND THE MAC—APPLE'S FUTURE STRATEGY:

Apple needs to follow a two-pronged strategy:

- 1) Position itself as a niche player in the PC Industry and concentrate on the Professional segment.
- 2) To enter the digital entertainment market without the Macintosh as the hub in homes for coordinating digital devices such as cameras, music players, and handheld.

This offers Apple a strategy to position itself away from the current players and Microsoft in particular by concentrating on consumer electronics and limiting itself to the professional services in the PC industry.

The Professional & Education Market:

Apple has to consider how to leverage its small market share to its advantage. Total unit sales fell 4.6% in 2001 -- only the second decline in the market's history. Margins are falling along with sales. A bigger pie is meaningless if it's all crust and no filling, forcing Microsoft to push into new markets, such as video-game consoles. It may be inappropriate to focus on gaining share in a maturing market when Microsoft and Intel conquered the desktop PC with their Wintel combination.

The Mac's best features, better graphics, trendy design, and ease of use are what corporate purchasing managers value the least. The corporate market is basically looking for adequate functionality with minimum price. The fact that the Mac versions of Outlook, Word, or Excel don't offer much functional differentiation from their PC equivalents makes it even hard for Apple to compete in this market. Thus, these markets aren't worth a huge new investment, and Apple's could allocate these resources more effectively by focusing on it's leading position in schools, publishing, entertainment, and the arts.

Already, PCs and Macs have evolved into largely separate and distinct markets. PCs dominate corporate and home computing. Apple is the instrument of choice for writers, musicians, visual artists, and publishing. There's some competition for first time users, but the market is becoming increasingly saturated, and the network economics work greatly in the favor of PCs.

Apple has almost total dominance in the publishing market. Having created the market with their launch of the Macintosh in 1984 and the creation of the Apple LaserWriter,

with the help of, at the time Aldus PageMaker (now owned by Adobe), Apple Computer is the premiere platform for the publishing industry. With its graphics capability, fast system, voluminous specialist software packages and integration with printers, scanners and other peripherals, its' products are used from end to end: from the pre-production to the publishing side.

On the other hand, the education market represents 40% of its sales. After losing its market leadership to Dell in 2000, Apple has redeemed its leadership in the education market in less than a school year. In public schools nationwide, it has outsold Dell Computer by a margin of greater than two to one, according to Quality Education Data.

QED's latest figures show that Apple has between 2.7 million and 3.2 million computers in public schools. That's substantially greater than Dell's estimated 1.2 million to 1.6 million and Compaq's 1 million or so. The new education strategy has three core aspects. The first leg is AirPort, Apple's inexpensive and easy-to-use wireless network. With this product, students and teachers can share files, submit work, and tap the Net from classroom or cafeteria. The next leg was IceBook, Apple's latest portable computer. It's among the lightest computers the company has ever made. The third leg is PowerSchool, Web-based school-management software. PowerSchool uses the Net to automate such everyday jobs as grading, attendance, and meal planning. They can also be used to post newsletters and monitor Internet access.

Consequently the combination of smart, and easy to us hardware and software makes the system significantly attractive for administrators, teachers, and students. Since its inception, AirPort has become the No. 1 wireless technology used in schools. These sales have helped drive sales of iBooks as well as PowerSchool software. In less than six months under Apple, PowerSchool has expanded its customer base 50%, to 3,000 schools. Additions include such giants as the Chicago Public School system, the country's third largest.

On the other hand, Dell and other PC makers remain a constant threat for the company. Moreover, schools are becoming as cost conscious as corporations. Apple certainly has leverage in this market. Its future success depends on how fast it can preempt the competing Wintel solutions. There are two fundamental factors to maintain leadership in this market: Better solutions through extensive compatibility. Thus, Apple should preempt the competition from Wintel machines through innovation and create substantial lock-in through increasing switching costs by continuously providing better software solutions that make life easier in the education market.

Hanging on to the education market has deeper strategic implications for Apple. Other than generating 40% of the company's current revenues, schools can be seen as a longer-term investment for the future of the company in a sense that a person who uses a Mac throughout his education is likely to become an advocate of Apple products after graduation. Thus, by reaching out to the next generation of computer users, Apple gets the chance to entrench itself as a preferable choice for a substantial market.

On the other hand, it's crucial to understand that the information economy is driven by the economics of networks. People are described as being in the same computer network if they can use the same software and share the same files. The value of connecting to a network depends on the number of other people already connected to it. Niche strategies are inherently dangerous in markets with strong network externalities. A strategy based on broad appeal, along with a broad compatible product line is essential to win in network economies. Consequently, the critical issue for Apple is developing products that provide better integration with the larger PC network.

Digital Standards:

The key elements of Apple strategy would be to:

- Implement Apple's own standards to become Industry standards.
- Become the key supplier of digital software to the consumer electronics industry.
- Design high quality products for this industry.

Industry standards: The key thrust of Apples strategy would be that, IEEE1394, also known as FireWire, or iLink (Sony's trade name) becomes the most widely used industry standard to interconnect consumer electronics and personal computer devices. It would be critical that both the consumer electronics and the personal computer industries to adopt this powerful digital interface. Apple is already cooperating with Compaq Computer Corporation, Matsushita Electric Industrial Co., Ltd. (Panasonic), Royal Philips Electronics, Sony Corporation and Toshiba Corporation for establishing this standard.

Devices that currently use the standard include digital cameras, digital camcorders, VTR. Basically laying down the groundwork in building positive network effects. This offers Apple a strategy to position itself away from the current players and Microsoft in particular by concentrating on consumer electronics and limiting itself to the professional services in the PC industry.

Apple has been buying companies in that market and seems to solidify their position by also building alliances. The most recent alliance is with Ericsson and Sun to use Apple QuickTime as the mechanism to deliver digital content. QuickTime is a software layer created by Apple that can be used to create and view all kinds of media file formats, including sound, video, flash animation, streaming internet video, MPEG. It is very flexible and extensible.

Thus, this is another area where industry has not yet set a standard. By teaming up with Ericsson, a major telecommunications infrastructure builder, Apple is ensuring that their technology provides the media through which the next generation of 3G telecommunications will communicate.

To ensure the ongoing development of FireWire as an industry standard, Apple Computer has also acquired Zayante, Inc which provides the best tools for implementing FireWire on a myriad of devices, including Windows based PCs. Apple should increasingly work

towards such acquisitions or subsidizing development of companies which could support its standards. So industry standard development should focus on providing enough support for the standards as well as encouraging acceptance of the same.

Digital Content Creation:

In the greater realm of consumer electronics, of which PCs are but one small part, no single Windows-like operating system dominates. Apple is well positioned, given the worldwide recognition of its brand -- to wire all these myriad devices through one platform. It won't usurp giants like Sony. But even Sony has agreed to incorporate Apple software that enables the quick transfer of video and photos from its digital cameras.

First Mover advantage: A clear and compelling opportunity for Apple to play in the market -- and it's moving quickly to seize it. Software such as iMovie was the first move. Then came iTunes for music, iDVD for burning sound and video onto DVDs, and now iPhoto.

Digital technology keeps opening up new fronts, including handheld computers, camcorders, cameras, MP3 players, and TV set-top boxes. None of these devices is dominated by Microsoft's Windows operating system. The Palm OS runs more than 80% of handheld computers. Microsoft disbanded the unit that makes its Ultimate-TV set-top box.

That software is QuickTime and iMovie, which respectively enable the playing and editing of video. These programs exemplify what Apple is really selling: ease of use. No computer company is better at hiding the inherent complexity of electronic devices under a fun and easy-to-understand interface. And without such an interface, no consumer-electronics device will succeed in the mass market. Apple is well positioned to capture this market.

Apple, given that it excels in combining software, hardware, and industrial design to create elegant products that make digital entertainment seem fun -- instead of daunting. Already Apple's iMovie, iPhoto, and iTunes programs are the most intuitive way to manage content on a computer.

Such software is turning the Mac into a digital warehouse and routing station. It has become a device for users to send music from the Internet into MP3 players. Or transfer photos from a camera onto a Web page.

Apple's real challenge now is to move this strategy beyond the Mac, making it one leg of a larger platform. Sony is just one of a dozen different camera makers incorporating Apple software. Kodak will print digital files shipped electronically from iPhoto.

Apple could turn iTunes and iMovie into software usable on any platform. The promise is huge. Powered by iTunes, Apple's iPod digital-music player sold 125,000 units in the first two weeks after its release. Imagine what the iPod could do if it worked with PCs.

High Quality Digital Products:

With the Apple Standard being adopted as the Industry standard and Apple becoming the major supplier of digital software to the Consumer Electronics industry Apple is in a unique position to leverage its design and innovation capabilities to make high quality digital products for this market.

Apple can then use the differentiation strategy to command premium for its products based on the quality and features. They would then become a niche player in the upper and premium end of the digital products market.

"iApps" the strategy should drive sales of digital gadgetry, and Apple should work towards getting a share of this market. Camcorders and digital still cameras are within Apple's range but products like digital-music players are remarkably similar to computer peripherals, which are an area of strength for Apple. (The iPod is basically a portable hard drive.) Judging from the hundreds of millions of Walkman-type products in use, portable music devices have almost universal appeal.

Apple should develop portable devices, like its recent iPod, that will work in conjunction with a computer. Apple designs fantastic products and has a cult following, but the universe of consumers for those products is pretty small -- just 3 percent of the overall market for personal computers. Apple's iPods don't work with Windows machines -- at least not yet -- and Apple has to expand and ensure connectivity with wintels.

Apple with its great R&D team should work towards achieving connectivity without using the PC. An iPod could be connected to a digital camera to store photos, or connected to a PDA with a color screen to power a slide show, or even hooked up to a mini-screen to watch movies. In these scenarios, no computer needs to be involved. Each device can act as its own hub, and the mini-network starts looking like a peer-to-peer environment.

Apple can put together components that can act as a hard drive, a screen, a powerful processor, and an input device, and then what you've actually built is a PC. But this is an instance where the parts may be greater than the whole -- especially if those parts can be mixed and matched into different configurations that can do different things. The idea is to find a way to break up the PC into components while keeping all of its value intact.

Appendix: Exhibits

Apple's Market Position, Fall 1998			
Market	Apple's Installed Base	Share of Installed Base	Share of Unit Shipments
Consumers	10 million	17%	3%
Education	6 million	44%	25%
Design and publishing	6 million	36%	27%

Source: Data from Apple, cited in Jim Daves, "Apple's 5-Step Recovery Plan," Cnet News.com, October 23, 1998.

Worldwide Personal Computer Market, 1996-1998 (% of unit shipments)				
Firm	1996	1997	1998	
Compaq	10.4	13.4	14.4	
IBM	8.9	9	8.8	
Dell	4.3	5.9	8.6	
Hewlett-Packard	4.3	5.3	6.4	
Gateway	2.8	3.3	4	
Toshiba	3.9	4.1	3.5	
Apple	5.3	3.2	3.4	

Source: International Data Corp.

HOME MARKET

MAKER	1994	MAKER	1997	MAKER	1999
PACKARD BELL	32.4%	PACKARD BELL NEC	23.3%	COMPAQ	19.0%
APPLE	14.7	COMPAQ	18.8	H-P	16.1
COMPAQ	11.5	GATEWAY	11.1	GATEWAY	15.3
IBM	6.1	IBM	7.0	EMACHINES	11.0
GATEWAY	5.5	ACER	5.9	PACKARD BELL NEC	7.3
		APPLE	5.0	APPLE	7.1
OTHERS	29.8	OTHERS	28.9	OTHERS	24.2

BUSINESS MARKET

MAKER	1994	MAKER	1997	MAKER	1999
COMPAQ	14.2%	COMPAQ	15.7%	DELL	2.4%
IBM	10.1	DELL	12.8	COMPAQ	15.0
APPLE	6.4	IBM	9.5	IBM	9.2
DELL	5.9	H-P	8.0	H-P	6.0
GATEWAY	5.3	TOSHIBA	5.6	TOSHIBA	4.7
		APPLE	1.4	APPLE	1.3
OTHERS	58.1	OTHERS	47.0	OTHERS	41.4

EDUCATION MARKET

MAKER	1994	MAKER	1997	MAKER	1999
APPLE	47.0%	APPLE	27.2%	DELL	1.4%
IBM	8.5	COMPAQ	13.2	APPLE	16.5
DELL	4.3	DELL	10.7	GATEWAY	13.6
GATEWAY	3.3	GATEWAY	7.8	COMPAQ	9.2
COMPAQ	3.2	IBM	6.9	IBM	3.8
OTHERS	33.0	OTHERS	34.2	OTHERS	35.5

SOURCE: DATAQUEST INC.
From BusinessWeek 7/31/2000 issue

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