

# ACER

## A Competitive Assessment Report

July 2001



*Signature Research*



### Global Industry Analysts, Inc.

A Worldwide Business Strategy and Market Intelligence Source

# ACER INC.

## A COMPETITIVE ASSESSMENT REPORT

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COUNTRY: TAIWAN

TICKER: FFACE

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## ACER - THE RENAISSANCE

### Objectives.....

Strengthen competitive position in the PC market with emphasis on Asia and Europe.  
Focus on and establish itself as a leading player in the Internet Appliances market.  
Promote direct business model in high-growth markets.  
Augment competitive edge by tapping and optimizing new business opportunities.  
Shift from a diverse operational base to a more customer-centric company.  
Develop and pioneer innovative technologies and services.

### ...Their Accomplishment

#### Reengineering Acer

Acer Inc is well on its way to a second reorganization in a span of three years. In a bid to control escalating costs and mounting losses, the company implemented a multi-pronged strategy that involved reengineering operations in several phases. Acer intends to reduce exposure in the United States after a bitter experience in the "own brand" operations and loss of over \$60 million across North America, Europe and South America in 2000. First phase of the restructuring plan witnessed Acer split its previously consolidated OEM and branded business into two separate business units - Design and Manufacturing Services unit (DMS) and Acer Brand Operations unit (ABO). Separation of Acer's OEM and branded business is expected to help the company adopt a focused and forward-looking approach that is indispensable with its ability to adapt to changing market needs.

The company's two main operations, the DMS as well as own-brand operations were not in sync with each other mainly concerning outsourcing interests. This resulted in many companies that contracted work to Acer shying away as Acer's products directly competed with their products. IBM outsourced notebook manufacturing only to find them competing with Acer's brands, which held a distinct price advantage. This necessitated the company to split its "own-brand" operations and DMS operations into two distinct business units to avoid conflicting interests. DMS now will focus on diversifying its customer base through additional expertise and value added manufacturing, design and research & development

services. ABO on the other hand is expected to enhance global competitiveness by building up brand equity. Splitting of operations further helps the company to streamline end-to-end implementation, target major customer segments and build innovative customer support services.

Additionally, Acer shifted focus to China, which is emerging as a key market with significant growth potential. The company plans to manufacture as well as market various products in Asia's largest markets, China featuring prominently among them. Acer Sertek changing manufacturing base from Taiwan to China is the first in a series of strategic shifts aimed at transferring production base to low-cost centers. In addition, Acer's European operations will be moved to low cost centers located in Eastern Europe.

The hurdle in the company's path to restructured nirvana is Taiwanese Law, which prohibits a listed company to split further into two listed companies. Acer has been able to work around the legislation by spinning off operations and establishing the new entity as an unlisted company. Other issues bogging down Acer's performance include a diverse product portfolio with minor variations among key models in desktops as well as notebooks lines. Consequently, the company trimmed product lines and standardized production processes retaining only about ten most popular variants.

#### Addressing the Needs of a New Economy...

Acer as part of a broader business initiative to reposition itself as a customer-centric organization, shed its old corporate identity for a new one. The new identity epitomizes its commitment to move in sync with changing industry and customer requirements. Acer's new

“soft” logo is an appropriate reflection of the new philosophy of being globally competitive by maintaining flexibility to counter market challenges. Acer is now positioned on the forefront of providing high technology software and hardware together with a touch of more human-centric services. The new identity emphasizes building of vibrant customer relationships through innovative technologies, products and value added services. The company additionally launched a teaser campaign to encourage employees to associate with the new identity and brand values.

### Changing Gears...

In a move aimed at jumpstarting growth, Acer shifted focus from contract manufacturing to marketing own-brand products. The company disbanded five subgroups and consolidated operations into three subgroups and one independent unit. Triggered by a wave of canceled and delayed orders by major OEM partners - IBM and Dell, the restructuring addresses a long-standing conflict-of-interest issue between the company's own-brand and contract manufacturing businesses. Further, downturn in personal computer industry coupled with growing saturation in the US market prompted Acer to switch focus from US to Europe and Asia, particularly Eastern Europe & China.

### Short-term Losses.....But Long-term Gains

In a significant departure from tradition, Acer announced intentions not to forecast current year targets considering the highly volatile nature of the global IT industry. Despite potential recessionary trends, the company retains a positive outlook for 2001. However, with a gloomy economic scene still in the picture, the company seeks to remain focused towards core markets and phase out non-core businesses. The ABO division aims to establish a strong presence in Greater China and Asia by achieving higher growth and optimizing Acer's brand advantage. For the DMS division, the outlook is impressive with rapid strides made in increasing time-to-market cycle and cutting down costs. The HIB division seeks to target core business management, primarily by watering down overlapping investments.

### En route to Recovery....

Acer is expected to post substantial growth in the high-end segment from the third quarter of 2001, as the market is likely to witness potential improvement in for high-tech products. The industry is expected to bounce back with firming of orders from customers as well as suppliers. The company aims to boost performance by foraying into services and software, and developing more products with greater profitability potential.

### New Areas of Focus...

Consistent with its strategy to focus on emerging markets, Acer is currently targeting the 3Es - Education, Entertainment and E-commerce, which offer tremendous scope for new product innovations, increase market share, and expand presence in new markets such as communications, consumer electronics and

semiconductors. In addition, Acer announced plans to spin off software and game businesses into separate entities by the third quarter of 2001.

The company, faced with declining sales and general slump in the industry, decided to exit from the retail consumer PCs business. The move enables the company to curtail operating costs in the slow-moving US market for PCs and focus on high-margin corporate PC operations. Following Acer's withdrawal from the desktop-PC segment, IBM plans to regain lost ground by forging alliances with contract electronics manufacturers such as the one with SCI.

Acer plans to foray into the 1394 chip market dominated by Texas Instruments, which holds about 80% share. Another Taiwan based supplier of LAN chips, Realtek Semiconductor Corp., also simultaneously announced plans to enter the market posing a potential threat to foreign IC rivals. Acer released a low-cost 1394 serial I/O bus chip designed to function as both cable-connected and backplane bus. The company released an IEEE 1394 Open Host Controller Interface Link Layer chip, called the M5251, designed for mobile and desktop PCs. Acer intends to promote price as its USP to maintain a foothold in the market dominated by strong foreign players.

### An Established Brand in Asia...

Acer is a well-recognized and established brand in Asia holding 10% share of the PC market. The company offers a comprehensive portfolio of branded products including multimedia PCs, high-end servers, notebooks and semiconductors. Acer's price penetration strategy has enabled the company to establish a strong brand name in Asia. Acer ranks 8th among leading fifty Asian brands.

Factors driving growth include demand for low-priced PCs and growth in notebooks, XCs and desktop PCs. Internet Appliances and PC notebooks are expected to drive Acer's growth in future. The global Internet appliance market is estimated to cross the 90 million-unit-mark by 2004 from the current 30-40 million units. Major players in the Internet appliances market include National Semiconductor Corp, Acer and Merinta.

### XCs - High Growth Potential...

As worldwide PC penetration, with the exception of certain regions still remains abysmally low, the company is presented with tremendous opportunities for growth. Reflecting its overall strategy to aggressively promote new products, Acer unveiled the pioneering concept of 'XCs or X-Computer', a next generation personal computer designed for specific applications. The company predicts an extremely favorable response to XCs, which are expected to outnumber consumer PCs in the ratio of 10:1 by 2010. The new devices will be initially introduced for the 3E market segments - entertainment, education and electronic commerce, and later to service providers and component and software suppliers.



## ACER - FACTS AT A GLANCE

Credentials	: World's leading PC manufacturer, Top-of-the-mindset brand in PCs, Leading player in mobile computers, network servers and desktops. Pioneer in microprocessors.
2000 Revenues	: NT\$ 102.7 billion
Focus Areas	: Personal computers, Internet and ancillary services, digital services, venture capital businesses, software development, & production of technologically advanced products.
Business Lines	: PCs, Peripherals, Semiconductor & Others
Products	: Personal computers, desktops, notebooks, servers, workstations, motherboards, peripherals, semiconductors and Internet devices.
Key Brands	: Aspire, AcerEntra & AcerPower (Desktops) Extensa & TravelMate (Notebook Computers) AcerAltos (Servers), Acer ProStation (Workstations)
Geographical Reach	: North America, Europe, Asia-Pacific, Latin America
Strengths	: Innovative thinking, product portfolio, technical expertise, production capabilities, network of sales & marketing and customer support
Weakness	: Significant exposure to emerging markets and moderate brand recognition in North America
Major Competitors	: PCs: Compaq Computer, Dell Computer, IBM, Apple Computer and Hewlett-Packard Notebooks: Toshiba, IBM Corp., Compaq, Hewlett Packard, NEC, Fujitsu, Dell, Apple, Hitachi, Gateway and Sharp
Promotion Mix	: TV, print, direct marketing and Internet banner ads
Strategies	: Client-Server Organizational Structure, Fast-Food Business Model
Employees	: 3,800
Fiscal Year	: Ends in December

## BUSINESS PROFILE

### An Ace in Computers

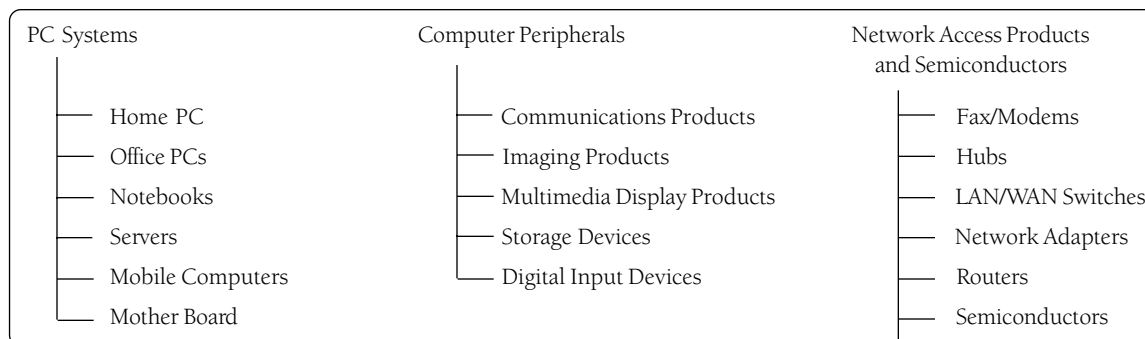
Operating on the forefront of cutting-edge technological markets, Acer manufactures a broad selection of globally recognized branded products ranging from notebooks and servers to a wide range of consumer electronic appliances. The company's roster includes industry-leading, high-end multi-user servers, multimedia PCs, notebooks, computer components, and communications devices. Acer is the largest private company and the largest importer/exporter in Taiwan. The company is an OEM supplier of PCs and other hardware products for companies such as IBM, Compaq, and Fujitsu, in addition to well-established own-brand suite of products. Further, Acer intends to strengthen its competitive position in the Internet appliance market – a family of next-generation devices primarily designed to manage home and business functions through the Internet.

Acer is one of the top ten brands in 13 countries and is ranked amongst top five brands in more than 30 countries worldwide. Established in 1976, the Acer Group is also engaged in research, manufacturing and marketing of semiconductors and consumer

electronics. The Group operates through a number of companies - classified as Strategic Business Units (SBUs) or Regional Business Units (RBUs). Benefiting from skilled personnel and unmatched technological expertise, the SBUs design and manufacture high-tech components and products. RBUs are primarily responsible for regional and local sales and marketing operations.

The latest restructuring effort, aimed at streamlining operations and enhancing efficiencies in core competence areas, highlights Acer's commitment to improve its competitive position. With most of Acer's \$9.5 billion revenues in 2000 being generated in Asia—where the company has established a powerhouse brand by selling top-of-the-class computers at economical prices to cost-conscious Asian customers, mainly at the expense of Western competitors IBM and Compaq—the move expands Acer's geographic reach to include new markets in Asia-Pacific, Latin America and Germany. In a survey conducted by Readers Digest in 2001, Acer was accorded the gold number one super computer brand award in Asia for the third consecutive year.

## PRODUCT PORTFOLIO



## ACER—HISTORICAL PERSPECTIVE

Phase	Period	Objective	Year	Major Developments
One	1976-1985	Build Foundation	1976	Established as Sertek
			1979	Designs Taiwan's first mass-produced computer
			1981	Introduces MicroProfessor-I: Company's first branded product
			1982	Introduces MicroProfessor-II: Taiwan's first 8-bit home computer
			1983	First company in Taiwan to introduce PC/XT
			1984	Establishes Acer Peripherals Inc and Multiventure Investment Inc
			1985	Establishes AcerLand, Taiwan's first and largest franchised computer retail chain
			1985	Establishes Acer Laboratories Inc
Two	1986-1995	Globalization	1987	Acquires Counterpoint Computers "Acer" name is created
			1989	Establishes TI-Acer DRAM - A joint-venture with Texas Instruments
			1990	Acquires Altos
			1991	Introduces ChipUp - World's first 386-to-486 single-chip CPU upgrade solution
			1992	Develops world's first 386SX-33 chip set Develops recycled cardboard packaging technology to replace polystyrene
			1994	Introduces world's first dual-Pentium PC
			1995	Revenues top US\$5 billion
Three	1996-Present	Brand Awareness	1996	Signs reciprocal patent licensing agreement with IBM, Intel, and TI Introduces AcerBasic - A low-cost computer
			1997	Acquires Texas Instruments' notebook computer subsidiary; Ranked world's fifth largest notebook maker
				Establishes Acer Softech (Shanghai) Inc. in Mainland China Introduces X Computer concept
			1998	Acquires Texas Instruments' interest in TI-Acer venture
			1999	Establishes a JV with Computer Associates to develop ACCPAC business management software

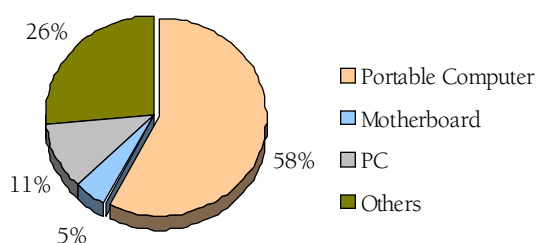
## PERFORMANCE REVIEW

### Brief Review of Five-months Ended May 31, 2001

Acer's revenues for the first five months of 2001 totaled NT\$29.98 billion (Approx. US\$880.39 million) a fall of 35% from NT\$9.23 billion or US\$1359.94 million recorded for the first five months of 2000. The company's revenues amounted to US\$556.7 million in the first quarter of 2001, compared to US\$887 million in the corresponding quarter of 2000, representing a decline of 37.23%. Revenues experienced a sharp decline owing to continued slowdown in the global economy. Revenues slumped to NT\$18.1 billion, a fall of 37% over previous year's NT\$28.84 billion. The company's Acer-brand operations reported modest results owing to European operations turning profitable. In a bid to counter dwindling revenues and a depressing economic scenario, Acer laid-off approximately 8% of workforce in the first quarter of 2001.

Operating Revenues by Product Category: 2000 (NT\$ in '000s)

Product	2000	% of Total
Portable Computer	62,019,186	57.60
Motherboard	5,301,650	4.92
PC	11,930,078	11.08
Add-on Card	692,872	0.64
CD-ROM	-	0.00
Others	22,811,820	25.76
<b>Total</b>	<b>102,755,605</b>	<b>100.00</b>



Product-wise Domestic and Foreign Revenues for 2000 and 1999 in Units

Product	2000 Sales Units			Change in %			1999 Sales Units		
	Domestic	Foreign	Total	Domes.	Foreign	Total	Domestic	Foreign	Total
Portable Computer	74384	1665657	1740041	6.98	8.89	8.81	69533	1529678	1599211
Motherboard	23780	1745605	1769385	-46.28	-35.65	-35.83	44266	2712874	2757140
PC	11347	573001	584348	68.03	-29.51	-28.71	6753	812919	819672
Add-on Card	411922	1733411	2145333	497.52	-41.69	-29.47	68939	2972869	3041808
CD-ROM	---	---	---	-100	-100	-100	322	248	570
<b>Total</b>	<b>521433</b>	<b>5717674</b>	<b>6239107</b>	<b>174.71</b>	<b>-28.78</b>	<b>-24.08</b>	<b>189813</b>	<b>8028588</b>	<b>8218401</b>

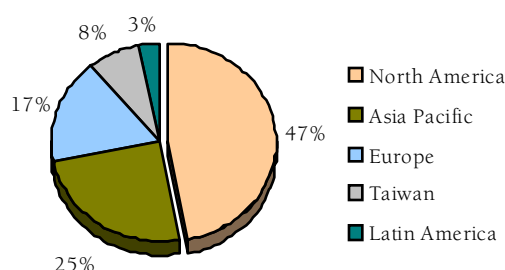
Domestic and Export Revenues as a Percentage of Total Revenues for 2000 and 1999

Product	2000		1999	
	Domestic	Foreign	Domestic	Foreign
Portable Computer	4.50	95.50	4.27	95.73
Motherboard	2.46	97.54	1.51	98.49
PC	1.86	98.14	0.84	99.16
Add-on Card	6.96	93.04	2.49	97.51
CD-ROM	-	-	35.99	64.01
Others	10.27	89.73	10.38	89.62
<b>Total</b>	<b>5.61</b>	<b>94.39</b>	<b>5.14</b>	<b>94.86</b>



Sales Breakdown by Geographic Region: 2000 (US\$ in million)

Region	Revenues	% Share
North America	4,465	47
Asia Pacific	2,375	25
Europe	1,615	17
Taiwan	760	8
Latin America	285	3
<b>Total</b>	<b>9,500</b>	<b>100</b>



### An Overview of the Year Gone By – 2000

Acer under-performed during the year 2000 owing to the general slump in the global economy as a whole, and the PC industry in particular. Demand for PCs plummeted sharply bringing down revenues and profits for the industry in its entirety, with few players escaping unscathed. Acer's revenues registered a 19.87% decline over the previous year reaching NT\$102.756 billion, much below anticipated revenues. The huge deficit is attributable to a downturn in the PC market and loss of key OEM customers.

To counter stiff challenges posed by a difficult operating environment, the company is in the process of implementing rapid restructuring initiatives with renewed focus. In furtherance of this refocused strategy, the company structured operations into three distinct entities: Acer Brand Operations (ABO); Design, Manufacturing and Services (DMS); and Holding & Investment Business (HIB). The strategy is aimed at infusing a customer-centric approach so as to sustain competitiveness in the global market driven mainly by service and innovation philosophy. The new organizational structure further seeks to eliminate long-standing conflicts between the OEM and brand business.

As part of cost-cutting efforts, Acer laid off about 8% of the workforce, curtailed operating expenses drastically and divested certain non-core business interests. In consequence, the company's overall operational placing was on an upswing at the end of the year. Restructuring also addressed several of the company's management concerns resulting in noticeable improvement.

Spurred by a robust PC market and entry into the Internet Appliances and network peripherals market, Acer's sales grew at rates higher than that of the industry in 1999. Sales soared from \$6.7 billion in 1998 to \$8.4 billion fueled by strong performance in core business areas. Aggressive promotional activity for new products such as Veriton FP2 and TravelMate 350 not only boosted sales but also proved to be a major brand-building exercise. Steady demand for desktop and notebook computers and popularity of low-priced PCs worldwide helped strengthen bottom line. Additionally, PC shipments increased as new products incorporating advanced features such as Cyber TV, Internet telephones and small mobile phones, hit the market. Sales of peripherals remained steady while semiconductor sales, particularly the TI-Acer DRAM business, witnessed a downturn on account of a slump in the semiconductor industry in general and the DRAM market in particular.

## GROWTH STRATEGIES

### Innovative Thinking – Acer's Core Competence

Acer's success is primarily attributed to innovative thinking and a pro-active approach towards changing customer needs. The company strives to identify new opportunities and gives shape to creative pioneering concepts. Acer calls it "a fresh perspective" - a way of thinking that is reflected in everything it does. The company is packaging its i-solutions into three basic categories - i-enabling products; i-enabling technology and i-enabling content & services. In addition, the new 'X computer' concept and Aspire Park project exemplify this perspective.

### Strategic Alliances: Enhancing Growth Prospects

One of Acer's core growth strategies is to form strategic alliances that accrue synergies to the company and its partner. Consistent with this strategy, Acer licensed Palm Inc's Palm OS platform to design and develop the first Acer Mobile Device. The move is part of Acer's Mobile Data Strategy aimed at providing easy wireless access and exchange of enterprise and personal information via a handheld computer. The alliance provides a head start to Acer's long-term business plan as a major player in the mobile data industry — not only in the device market but also as a single-source infrastructure and end-to-end mobile solutions provider.

Additionally, the partnership widens the reach of Palm's industry-leading handheld platform to a new population of customers and developers in the Asia Pacific region. As part of the agreement, the two companies will jointly develop traditional and simplified Chinese language versions of the Palm OS platform for the Asia Pacific region.

The company signed a seven-year agreement with IBM. Under the terms of the agreement, Acer will outsource IBM's microelectronics, hard disc drive and networking technology while IBM's components and technology will be incorporated in Acer's desktops, notebook computers and servers. In 1999, the company entered into an agreement with Cisco to promote Internet Protocol Technology Solutions.

### Client-Server Model: A Solid Foundation

Acer operates on a client-server model wherein the parent operates a network of individual companies jointly sharing technology, marketing experience, global sales channels and financial and other resources. The structure enables the company to improve operational flexibility, efficiency and productivity. The parent company acts as the 'server' for the Group's diverse base of 'client' business units. Major benefits of the 'client/server' structure include autonomy, flexibility, and responsiveness to customer needs.

### Product Development Strategy

The company's product development strategy primarily focuses on designing and developing revolutionary products by cashing in on its technological expertise. The strategy also facilitates blending of complementary technologies to develop and produce products for the ever-expanding commercial and consumer markets. Apart from OEM sales, which account for about 50% of consolidated revenues, the company offers products under a host of other well-recognized brand names.

With the recent growth in 3E markets, the company revamped its product portfolio by forging new ventures in the areas of semiconductors, communications, and consumer electronics. Addition of new products - such as set-top box digital Internet access devices, GSM digital cellular phones and wireless communications equipment - enhanced the company's technological expertise and augment the development of mainstream PC products.

### Fast-Food Business Model

The fast-food business model facilitates Acer to be more responsive and adopt a pro-active approach to market changes. Acer's strategy to assemble products at the local RBU's using components supplied by the SBUs enables efficient management of inventory consequently reducing time to market. The company has envisioned itself to adapt to the environment by delivering newer products and adopting a more efficient production strategy to maintain lower levels of inventory. Customer orders are executed afresh instead of following

a policy of continuously running assembly lines and maintaining inventory. Moreover, by placing SBU production facilities closer to key markets, Acer considerably shortened the time frame for component production to final product delivery process.

### Countering the PC Slump

To counter challenges posed by declining market for PCs worldwide, Acer has implemented several measures designed to improve its standing in the marketplace. Acer adopted aggressive organizational re-structuring program that entailed division of OEM and brand businesses into separate units - Design, Manufacturing and Services (DMS) and Acer Brand Operation (ABO) respectively. DMS division plans to develop profitable product lines such as PDAs and IAs, as well as innovative desktop and mobile PCs. The move is aimed at attaining economy of scale through mass production.

ABO's revived marketing strategy focuses on allocating resources with increased flexibility and effectiveness, aimed at attaining right admixture of products and markets. The Mainland Chinese market will be considered as a primary target and impetus will be given on provision of e-solutions and e-business to customers worldwide. The company heavily relies upon OEM supply of key raw materials such as CPU, Disk Drive and DRAM, and liquid crystal display (LCD) sourced from foreign sources including USA, Japan and Singapore. Only power supplies and printed circuit boards are domestically sourced from Taiwan. To counter increased dependence on unreliable import of key components, the company has forged strategic alliances with CPU and disk drive suppliers thereby ensuring reliable outside sourcing.

Acer's overall business strategy is aimed at providing highly innovative products and services and emerging as a major contributor to the burgeoning global digital economy. The company plans to achieve leadership positions in each of its individual areas of operation. In case of non-core businesses, the company intends to shift to more profitable avenues or entirely exit from the segment through mergers with other companies within the Acer Group or outside.

### Increased Thrust on Marketing

Acer America is expected to place increased emphasis on marketing activities in the US to counter competition from technology powerhouses such as IBM, Dell and HP. The company endeavors to develop next-generation Internet appliances (IAs) and foray into new businesses. The brand strategy is aimed at moving up the ladder from the current position to the top five in the high-tech chain, which is characterized by an overwhelming domination by Dell, IBM, Compaq, HP and Gateway.

Acer aspires to take on networking giants in the US market with the formation of two new business units Acer Nuweb and Acer Nexus, which are likely to be spun off in the near future. While

Nuweb focuses on marketing of wireless devices to consumers and small-to-medium sized business, Nexus offers local area network (LAN) and related networking technology solutions. The focus of Acer's advertising is representative of the new breed of next generation products with emphasis on innovation and reliability. The company is to be positioned as unique one-stop hardware and services provider.

### Product Innovation Strategy

Acer continues to invest in research and development of innovative products that address a diverse and versatile client base. The company strives to make the most of the opportunities provided by the IT industry - by focusing on areas where it holds excellent technological expertise, followed by integrating complementary technologies to design high-quality high-performance products. To

this effect, Acer is reducing costs and manufacturing new and advanced products through flexible operational designs.

### Research and Development

The company's R&D strategy includes intense efforts and resources in developing PDAs, IAs, e-solutions and e-business in addition to desktop and mobile PCs, video and Internet phone and Tablet computer. Acer undertook renewed R&D efforts in 2000, which resulted in development of several innovative products that attained worldwide recognition. Total R&D spending was NT\$2,649.993 million, a rise of 18.42% over 1999 levels of NT\$2,237.84 million. A few products receiving significant acclaims or awards in 2000 include Acer Veriton FP2 LCD PC, Acer TravelMate 739 mobile PC, TravelMate 340T mobile PC, and TravelMate 350 Acer Altos SA50 server appliance.

## MARKET OVERVIEW

### PERSONAL COMPUTERS

#### Bearing the Brunt of Slowdown

Optimistic projections peg global PC demand to grow 10.5% in 2001 compared with 16 per cent last year. Global shipments of PCs totaled 132 million units in 2000 as growth remained relatively lower in comparison to 1999 levels. Major factors responsible for the downward trend include overall global economy slowdown, sales decline in the months of September and December and falling demand for home PCs. The US and Western Europe representing world's largest PC markets, witnessed declining growth trend in 2000. PC shipments reached 0.48 million in the US, recording a modest growth of about 7.3% over 1999 figures. The Western European region recorded a 7.5% growth in the PC shipments in 2000 from 0.29 million units in 1999.

In contrast to bleak growth prospects in the US and Western Europe, Asia-Pacific (excluding Japan) registered robust growth of about 39% with Japan recording 39.4% growth. The Asia-Pacific region is set to emerge as the most significant and fastest growing PC market in the near future. The weakened global PC market in 2000 reflected upon the profitability of several companies in the industry. However, companies tried to restore lost ground with several strategic restructuring initiatives including revamping of marketing strategies.

To counter the saturating market for PCs, companies are expected to come out with innovative products such as PDAs, smart phones and set-top boxes to tap the potential for alternative revenue generating streams. A notable trend witnessed in the PC market is the increasing popularity of mobile PCs despite dwindling overall PC demand.

#### Handheld Computers: Growing Popularity

With the technology revolution on a downslide, the personal computer industry is set to witness a gloomy year in 2001. The market is unlikely to regain its lost glory at least until mid-2001 until when the industry would have to wait for the next technology wave to pick up. Continued fall in revenues and profitability for many PC makers through the first half of 2001 is likely to result in downsizing of PC manufacturing operations in the years to come. However, handheld computers hold vast potential to gain significant headway in the market following the addition of wireless capabilities. Laptop computers, one of the better performing segments in the PC industry in terms of revenues, is gradually losing ground with the advent of handheld computers with wireless capability.

#### Mobile Phone: Potential Revenue Earner

Taiwan production of mobile phones accounted for nearly 2% of the global production figures. The trend of several mobile manufacturing majors outsourcing manufacturing to low-cost centers such as Taiwan is likely to catch on and result in Taiwan accounting for over a tenth of global production estimates in 2001. Global demand for mobile phones is estimated to be worth about 500 million units, up 5% from 475 million units in 2000. Acer Communications expects to up its production by about 25% to 5.9 million units in 2001.

#### PCs: Driven by Shorter PLCs

Intense competition, price wars, ever-changing customer preferences, rapid technology developments, and continuous disputes over intellectual property characterize the worldwide PC market. Frequent product launches by major players have resulted in short product life cycles. Therefore, it is imperative to constantly

review customer preferences while planning product transitions. Difference in prices of new and old products also plays a major role in customer purchase decisions.

Fourth quarter shipments increased on account of booming consumer market in Japan and Asia-Pacific. Increase in sales volume is attributed to the growing popularity of the Internet, significant changes in product design, and low prices. Russia and Brazil, emerging from economic stagnation, also contributed significantly to the growth while sales in Canada and Middle East posted a strong performance. Year 2000 issue did not affect the market significantly as purchases by small and medium businesses more than neutralized lack of spending by big corporations.

### Market Trends

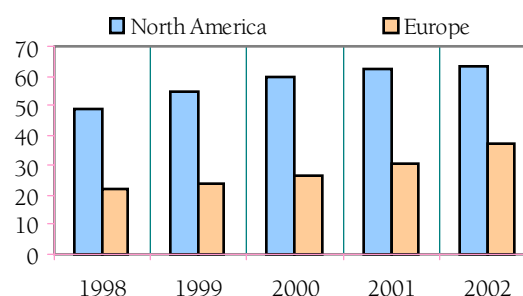
Rapid growth in Asia was partially negated by unforeseen natural events such as the Taiwan earthquake, which disrupted supply chains of several PC vendors. However, inventory positions of all major PC vendors improved in comparison to 1998 owing to better logistics management. The year 1999 also witnessed major vendors switching over to the 'Dell' sales model, although companies such as HP and Compaq embraced both the 'direct' and 'channel' sales models. While emphasis in the US was on tapping consumer PC demand, market expansion continued to dominate worldwide PC market.

### Shipments and Market Share of Leading PC Vendors Worldwide: 2000 (Units in '000s)

Company	% Share	Units
Compaq	13.3%	17,425
Dell	11.5%	15,067
Hewlett-Packard	8.0%	10,481
IBM	7.0%	9,171
Fujitsu Siemens	5.0%	6,551
NEC	4.5%	5,896
Gateway	4.0%	5,241
Apple	3.0%	3,930
Acer	3.0%	3,930
Toshiba	3.0%	3,930
Sony	1.5%	1,965
Legend	1.5%	1,965
eMachines	1.0%	1,310
Samsung	1.0%	1,310
Trigem	0.5%	655
Others	32.3%	42,318
<b>Total</b>	<b>100.1%</b>	<b>131,145</b>

### Homes Owning One or More Desktop PCs: 1998-2002E (In Percentage)

Years	North America	Europe
1998	48.7	22.0
1999	54.8	23.7
2000	60.1	26.4
2001	62.3	30.7
2002	63.5	37.2

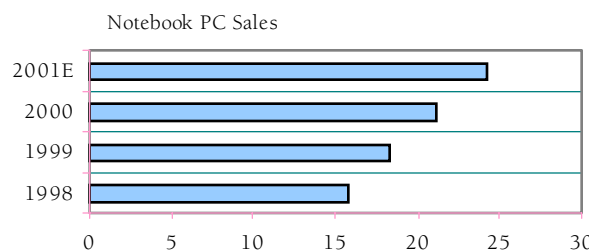


### Commoditization of the PC Market

The worldwide PC market shows a distinct shift towards commoditization the trend being more dominant in 1999. Success in this segment primarily depends on the vendor's ability to penetrate the market with both low- and high-end products, and by adoption of new optimized manufacturing and distribution model. Speed and coordination in the supply chain are essential to market success in the fast moving IT business.

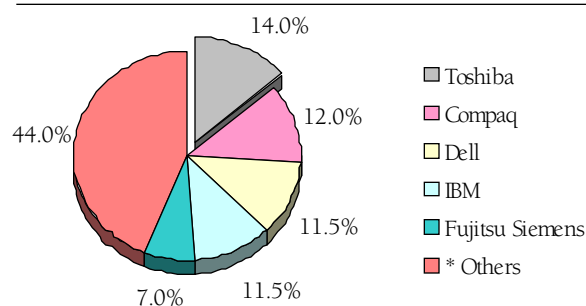
### Worldwide Notebook PC Market: 1998-2001 (Units in 000's)

Year	Notebook PC Sales
1998	15.70
1999	18.30
2000	21.10
2001E	24.20



### Market Share of Leading Vendors of Portable Computers Worldwide: 2000 (Units in '000s)

Company	% Share	Units
Toshiba	14.0%	3,639
Compaq	12.0%	3,119
Dell	11.5%	2,989
IBM	11.5%	2,989
Fujitsu Siemens	7.0%	1,820
NEC	6.5%	1,690
Sony	6.0%	1,560
Acer	4.0%	1,040
Hewlett-Packard	4.0%	1,040
Apple	3.0%	780
Gateway	2.0%	520
Sharp	2.0%	520
Panasonic	1.5%	390
Hitachi	0.5%	130
Others	14.5%	3,769
<b>Total</b>	<b>100.0%</b>	<b>25,993</b>



\* Include NEC, Sony, Acer, HP, Apple, Gateway, Sharp, Panasonic & Hitachi

### Number of Mobile Subscribers using Location-based Services Worldwide: 2005

Region	Subscribers (in million)
North America	148
Western Europe	188
Eastern Europe	4
Central/South America	12
Middle East	5
South Africa	7
Asia-Pacific	29
<b>Total</b>	<b>393</b>

The worldwide portable PC market reported volume sales of about 26 million units in 2000. Toshiba, Compaq, Dell and IBM accounted for nearly 50% of the market.

### REGIONAL MARKET ANALYSIS

#### USA

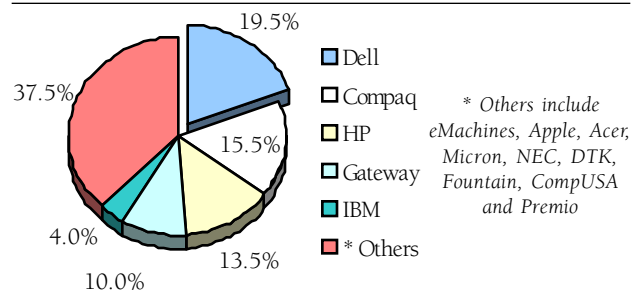
#### PERSONAL COMPUTERS

##### PCs: Declining Fortunes

The US PC market is fast reaching a state of saturation. Personal computers and the Internet have become indispensable tools of American life. Cut-throat competition and unfavorable economic situation has prompted the industry to focus on strategy implementation and product positioning with respect to changing market trends. Dell and Compaq lead the intensely competitive US PC market where new technologies and customer satisfaction dictate sales. In addition to Acer, other major players in the portable and desktop segments include IBM, Hewlett-Packard and Toshiba. PC penetration in US households reached 52.5% (53 million homes) in the beginning of 1999. The market witnessed a rapid increase in PC penetration during 1995-1998, reaching a substantial 42% in 1998. Increased Internet applications coupled with decreasing prices are expected to increase PC penetration to 65% of the US household sector by 2003.

### Shipments and Market Share of Leading Desktop PC Vendors in the US: 2000 (Units in '000s)

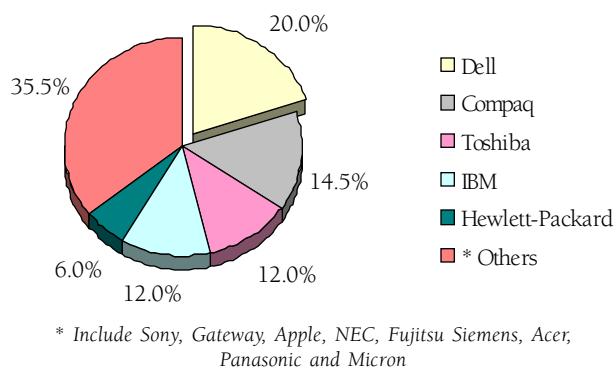
Company	% Share	Units
Dell	19.5%	6,310
Compaq	15.5%	5,015
Hewlett-Packard	13.5%	4,368
Gateway	10.0%	3,236
IBM	4.0%	1,294
eMachines	4.0%	1,294
Apple	4.0%	1,294
Acer	2.5%	809
Micron	1.5%	485
NEC	1.0%	324
DTK	0.5%	162
Fountain	0.5%	162
CompUSA	0.5%	162
Premio	0.5%	162
Others	22.5%	7,281
<b>Total</b>	<b>100.0%</b>	<b>32,358</b>



\* Others include eMachines, Apple, Acer, Micron, NEC, DTK, Fountain, CompUSA and Premio

Market Share of Leading US-based Vendors of Portable Computers: 2000 (Units in '000s)

Company	% Share	Units
Dell	20.0%	1,903
Compaq	14.5%	1,379
Toshiba	12.0%	1,142
IBM	12.0%	1,142
Hewlett-Packard	6.0%	571
Sony	5.5%	523
Gateway	4.5%	428
Apple	4.0%	381
NEC	2.0%	190
Fujitsu Siemens	1.5%	143
Acer	1.5%	143
Panasonic	1.0%	95
Micron	1.0%	95
Others	14.5%	1,379
<b>Total</b>	<b>100.0%</b>	<b>9,513</b>



Leading Vendors of PCs in the US – 1998 &amp; 1999 (Units in '000)

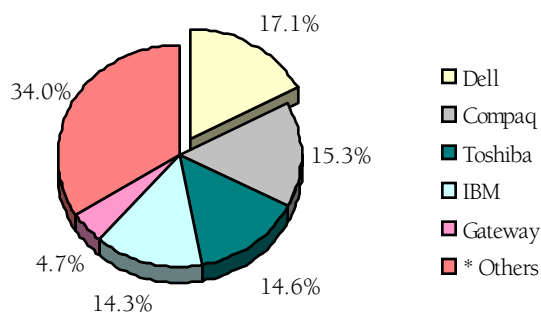
1999 Rank	Company	1998 Volume	1998 Mkt Share	1999 Volume	1999 Mkt Share	YoY Growth
1	Dell	4,799	13.2%	7,492	16.6%	56%
2	Compaq	6,052	16.7%	7,222	16.0%	19%
3	Gateway	3,039	8.4%	4,001	8.9%	32%
4	Hewlett-Packard	2,832	7.8%	3,955	8.8%	40%
5	IBM	2,983	8.2%	3,274	7.2%	10%
	Others	16,549	45.7%	19,248	42.5%	16%
	<b>All Vendors</b>	<b>36,254</b>	<b>100.0%</b>	<b>45,192</b>	<b>100.0%</b>	<b>25%</b>

\* Shipments are exclusive of OEM sales for all vendors; \* Shipment data for NEC/PBNEC includes Packard Bell, NEC, NEC Japan, NEC China, and ZDS.

\* Shipment data for Compaq includes Compaq, Digital Equipment, and Tandem.

Market Share of Leading US-based Vendors of Portable Computers: 1999 (Units of '000s)

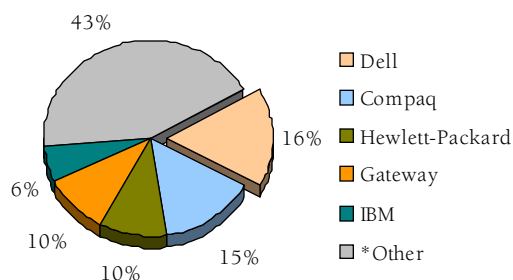
Company	% Share	Units
Dell	17.1%	1,353
Compaq	15.3%	1,211
Toshiba	14.6%	1,155
IBM	14.3%	1,132
Gateway	4.7%	372
Apple	4.1%	324
Sony	3.6%	285
NEC/Packard Bell NEC	3.0%	237
Hewlett-Packard	1.9%	150
Fujitsu Siemens	1.8%	142
Acer	1.5%	119
Panasonic	1.2%	95
Micron	1.0%	79
Micro Electronics	1.0%	79
CTX	1.0%	79
Other	13.9%	1,100
<b>Total</b>	<b>100.0%</b>	<b>7,913</b>





### Market Share of Leading Desktop Computer Vendors in the US: 1999 (Factory Shipments by OEMs – Units in '000s)

Company	% Share	Units
Dell	16%	5,747
Compaq	15%	5,388
Hewlett-Packard	10%	3,592
Gateway	10%	3,592
IBM	6%	2,155
eMachines	5%	1,796
Apple	5%	1,796
NEC	4%	1,437
Acer America	3%	1,078
Micron	1%	359
Other	25%	8,980
<b>Total</b>	<b>100%</b>	<b>35,920</b>



\*Others include eMachines, Apple, NEC, AcerAmerica & Micron

### Internet – Major Driver

Internet is currently the single largest force driving the US PC market. Several PC marketers have tied up with ISPs and Internet foyers to increase their sales by providing rebates to customers enrolling for long-term Internet Service Provider deals. Further, declining PC prices and rising consumer interest led to the development of new Internet applications. Some of the leading non-direct players in the industry including IBM, Compaq and HP are working out new equations to increase their direct operations, reduce costs, strengthen sourcing pacts, enhance production techniques and provide online technical support operations.

### Economy Models Rule the Market

High demand for increased processing speed, memory and hard disk drive space resulted in instability in PC pricing. Most of the recently developed software packages in the US are independent of processor speed. Consequently, demand for inexpensive machines that support interoperable software has increased significantly.

### Buyer Profile

About 40% of the new PCs manufactured in the US in 1999 were targeted at new buyers. The user profile is likely to change with about 63% of customers likely to belong to the under-graduate category. Approximately 68% are expected to figure in the income range below US\$35,000, and about 75% do not use computers at workplace. Majority of the new users are expected to be beginners or learners.

### Small Business

The number of small businesses operating in the US totaled about 2.3 million in 1999. This market presents numerous opportunities for IT VARs and independent retailers. Small businesses spent most of their IT budget for networking their computers in 1999. The average spending on IT products and services by a small business was estimated to be about US\$13,900 during this period.

Prompted by strong US employment growth, new technology initiatives, Y2K solutions and increasing Internet access, the US small business PC market grew at a robust pace in 1999. Business, health and financial services, communications and technology development, and environmental industries were areas that exhibited maximum growth.

Technology deployment for small businesses based in the United States primarily involves PC upgrade, networks upgrade and more emphasis on employee skills and training. These goals open up opportunities for channel players to increase their sales and earnings in the market. Typically, small businesses depend on smaller VARs, particularly independent retailers for solutions in areas such as hardware, software, service and support.

### JAPAN

#### Low Penetration Rate Presents High Potential for Growth

Japanese PC shipment growth is likely to slump to 13% in 2001 from 21% recorded in 2000. The scenario remains tough for most PC manufacturers in Japan. Factors such as falling prices, inroads by new competitors both domestic and foreign, and more demanding customers eroded profit margins to negligible levels. Dell and upstart supplier Sotec led the move to cut prices while Japanese PC makers continue to offer higher priced versions with expensive features. Declining memory and microprocessor prices also resulted in falling prices.

However, Japan's low personal-computer penetration ratio is likely to absorb the impact of a slowdown in technology spending. Compared with their US and European counterparts, relatively few Japanese own PCs which led manufacturers to forecast strong demand growth.

Japanese PC shipments in 1999 increased to 9.9 million units primarily on account of strong sales in the consumer segment, coupled with resurgence in demand from the corporate sector. The corporate sector accounted for over 70% of the total PC market, while mail order PC sales through the Internet and telephone accounted for a mere 5%. Leading mail order PC sellers including Dell Computer and Gateway 2000 plan to increase sales through the channel by over 30%. Sales growth in these segments is attributed to increased usage of Internet in both professional and non-professional end-use segments. An increase in home use of Internet, demand for competitively priced desktop PCs, increased corporate penetration, and rise in purchases of high-performance notebook and sub-notebook PCs were the major factors that triggered growth in the Japanese PC market.

#### NEC, Fujitsu and Toshiba Share Honors

NEC, Fujitsu and Toshiba are leading manufacturers of personal computers in Japan. Hitachi, Matsushita, Mitsubishi, Sharp, Sony, and Epson are the other major players in the market. US companies active in the Japanese PC market include IBM, Compaq and Apple. Although US companies dominate semiconductor microprocessors (CPUs) market, domestic manufacturers concentrated on the production of high performance multimedia PCs and peripheral systems, to maintain their share in the market. A majority of major players have shifted manufacturing units to other Asian countries to reduce production costs, thereby maintaining competitive prices with US imports. Price, performance, quality, brand recognition, efficient delivery, strong distribution, and efficient customer service are the major factors that determine competition in the market.

#### Leading Vendors of PCs in Japan: 1999

Rank	Company
1	NEC Corp.
2	Fujitsu Ltd.
3	IBM Japan Ltd
4	Toshiba Corp.
5	Hitachi Ltd.

#### ASIA-PACIFIC

##### China

##### China Drives PC Growth for Acer

- ◆ In the year 2000, Acer reported record surge in sales of PCs in Mainland China. Revenues amounted to US\$187.5 million representing record growth of 200% over the previous year. Results were in direct contrast to the global trend of declining PC sales. Total shipments posted a splendid 240% increase over 2000 levels catapulting Acer into the list of top five branded PC

vendors. Strong marketing campaigns coupled with introduction of a series of product lines at competitive prices offering a variety of features led to unprecedented growth in Acer's PC sales in China.

- ◆ Acer's expansion plans for China focus on major corporate customers offering e-solutions to small and mid-sized companies. Establishing stronger distribution channels is one of the strategies to tap vast potential in the Chinese PC market. Acer plans to establish about 1,000 retail stores across major cities in China and pursue expansion of distribution channels with 500 additional stores every year.
- ◆ Acer successfully executed an e-channel management information system in China to streamline operations, improve efficiency and curtail operating expenses. The success led to further expansion of e-channel system to more cities across China. To enhance customer service, Acer negotiated with local vendors for supply of PC spare parts and is contemplating setting up spare parts centers in 50 Chinese cities by 2001.
- ◆ Acer is also pushing for extensive usage of Internet technology to facilitate smooth and efficient provision of quality customer services. The IT market holds tremendous potential as China's signing of WTO opens up more lucrative avenues for global companies. China is poised to replace Germany as the world's third largest IT market by 2001, and vie with Japan for the second spot by 2002.

#### PERSONAL DIGITAL ASSISTANTS

##### Bucking the Trend

In the year 2000, 425,000 PDAs were sold in China and about 65,000 in Taiwan. The market is estimated to grow at about 30% a year to reach the one million mark in China alone. Reflecting a similar trend, the Taiwanese market is expected to grow at a CAGR of 45% to cross the 210,000 mark by 2003. Acer along with competitor Twinhead International garnered nearly 10% of the notebook market in 2000. Legend retained the top spot in China with a market share of about 23%, followed by IBM with 20% and Toshiba with 18%. NEC and Compaq were the other major players.

Acer's Chinese operations accounted for nearly half the company's total worldwide production of peripherals such as keyboards, scanners and monitors. The company plans to increase motherboard production in China with a view towards increasing PC production contribution to over 50% by the close of 2006. The company's Taiwanese production will be focused on capital intensive and other emerging technology products such as network communication devices, TFTs and LCDs. Acer Communication & Multimedia sells nearly 1.2 million CRTs a year as OEM equipment to HP and IBM and about 50,000 CRTs a month in China.

Considering the fact that over 75% of the world's PDAs work on the Palm OS, the deal with Palm makes Acer the first Taiwanese company to license the product. Other popular operating systems for hand-held computing devices include Linux and Windows CE. Leading companies in the PDA market include Mitac, Inventec Computer, Micro-Star International and CMC Magnetics. Priced at an expected US\$500, SlimMate Acer's first PDA competes directly with Mitac's Linux-oriented CAT Bluetooth PDA.

### Increased Political Tension Fails to Stop Taiwanese IT Companies from Investing in China

Increased political tension building up between Mainland China and Taiwan failed to have any material impact on investments by Taiwanese IT companies. Acer led the fray by investing in various plants in China the latest being the mainboard plant with annual capacity of over 6 million units. However, financiers exhibited extreme reluctance to fund Chinese projects due to escalating political tensions between the governments. Shortage of domestically available components in China proved to be a hindrance for Acer, which is importing components such as PC boards and capacitors from Taiwan after paying a hefty value-added tax. Another inhibiting factor for Acer's operations in China is the problem of importing raw materials into and exporting finished products out of China, as over 70% of the company's production is earmarked for exports.

### PC Shipments Exceed Three Million

Excluding Japan, overall PC sales in Asia-Pacific increased 29.8%, reaching 6.46 million units in the first half of 1999. The second half witnessed higher growth in PC shipments owing to economic recovery, price decline and government tenders. Shipments during this period crossed the 3 million mark reaching 3.5 million units and valued at US\$4.8 billion. IBM, Compaq, Acer, Legend and Samsung are leading PC manufacturers in the region. IBM is the market leader, especially popular in Korea, Taiwan and Australia.

### China and India: Immense Potential

China and India are expected to emerge as leading PC markets in the Asia-Pacific region in the next 3-4 years. The market is currently in a recovery phase characterized by dropping product prices and stabilizing international exchange rates. Despite positive growth trends in the region, the market is susceptible to political instability in India, Malaysia and Indonesia. Additionally, strained Sino-American relations also cast a shadow on continued growth in the Asia-Pacific PC market. Further, the market is also highly sensitive to availability of low-cost desktops.

### Malaysia – An Expensive Production Base

Manufacturing operations in Malaysia are getting expensive more so in the semiconductor business. The main contributor to rising

costs is a key input, labor. Given the scenario, companies have the option to either reposition as manufacturers of higher-end products or move existing manufacturing operations to other low-cost centers. The option to switch to higher-end products offers improved margins but comes with a lead foot in terms of upgrading employee skills. The option to relocate operations to lower cost centers is a prudent cost-cutting measure, but only in the short run. Cost cutting efforts transfer the company's focus to lower end products where competition is normally fierce and price-based thereby creating a drag on margins.

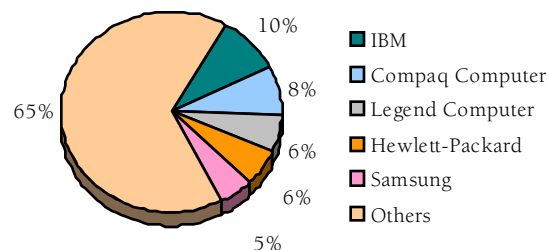
The country is also facing an acute shortage of quality engineers making many semi-conductor based companies rethink strategies that involve setting up a production base in the country. Acer too was among the companies that scaled down production exposures in the country owing to these reasons. For manufacturers shying away from Malaysia, more favorable options are countries that have a lower labor cost and/or oversupply of labor such as Thailand or China.

### PC Sales Growth in Major Asia-Pacific Markets: H1 99

Country	Growth Rate (%)
Taiwan	70
South Korea	65
India	38
China	20

### Leading PC Companies in Asia-Pacific Q2: 1999

Company	Market Share (%)
IBM	9.5
Compaq Computer	7.6
Legend Computer	6.0
Hewlett-Packard	5.8
Samsung	5.3
Others	65.8
<b>Total</b>	<b>100.0</b>



## LATIN AMERICA

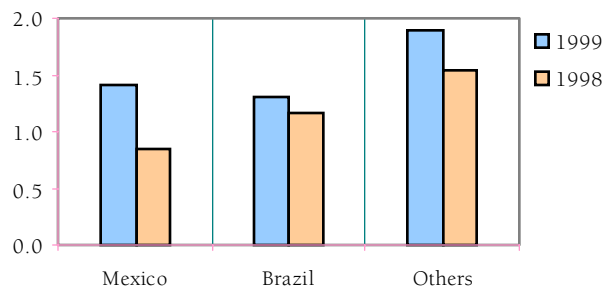
### Desktop PCs Rule the Market...

The Latin American desktop and notebook PC market in the third quarter of 1999 generated sales worth US\$1.5 billion. Unit sales totaled 1.63 million units owing to a general turnaround in the market and a boom in the Mexican market. The single most important factor that buoyed up sales was an unprecedented growth of over 82% in sales of desktop PCs. Vendors now offer Internet-ready PCs and easy financing schemes, aiming to garner market share in the home and small businesses segments. An increase in the number of domestic PC assemblers and small integrators in Venezuela, Chile and Brazil also contributed to increased sales.

Dell has stepped up its emphasis on the Latin American PC market where it held just 2.9% share in 1998. The company announced plans to introduce new and advanced PC models into the market, besides setting up PC manufacturing facilities in the region. Major players in the Latin American PC market include Compaq, IBM, Dell, Hewlett-Packard and Acer. The company intends to offer high-quality products at low prices and back it up with good customer service.

### PC Market in Latin America (In Million Units): 1998-99

	1999	1998	Growth % (99/98)
Mexico	1.4	0.84	65
Brazil	1.3	1.15	13
Others	1.9	1.54	23
<b>Total</b>	<b>4.6</b>	<b>3.53</b>	<b>30</b>



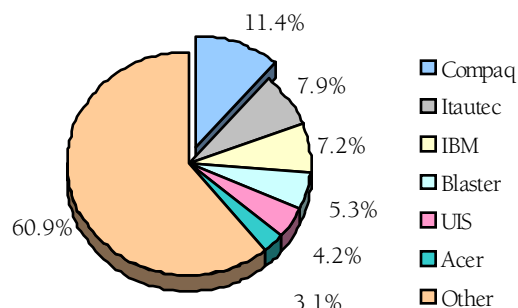
PC market in Latin America posted a strong 30% growth in 1999 with shipments reaching 4.6 million units.

Mexico led the market with sales of 1.4 million units, accounting for over 30% of the overall Latin American market followed by Brazil, which ranked second with sales of 1.3 million. However, the growth rate was comparatively lower at 13%. Overall, top six players accounted for more than 50% of the market. Compaq led the market shipping over one million units and garnering 22.1% share. IBM

followed with 8.6%; Acer captured 6.8% of the market while HP held 5.9%, Alaska 3.8% and Dell 3.6%. Other brands accounted for 49.1% of the market in 1999. Dell emerged as the fastest growing brand with 86% growth.

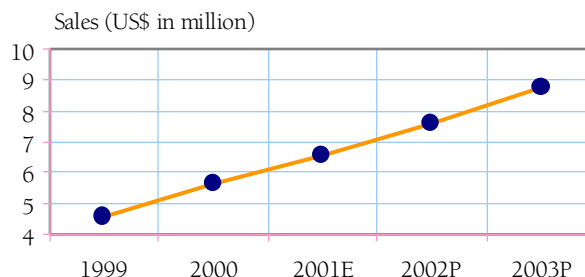
### Market Share of Leading PC Vendors in Brazil: 2000

Company	% Share
Compaq	11.4%
Itautec	7.9%
IBM	7.2%
Blaster	5.3%
UIS	4.2%
Acer	3.1%
Other	60.9%
<b>Total</b>	<b>100.0%</b>



### Notebook & PCs Market in Latin America: 1999-2003

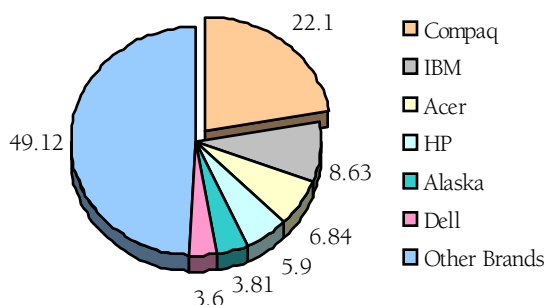
Year	Sales (US\$ in million)
1999	4.60
2000	5.63
2001E	6.52
2002P	7.56
2003P	8.79



The four largest imported PC brands namely Compaq, IBM, Hewlett-Packard and Acer accounted for 42% of total sales in 1999, as against 47.3% during the previous year. Compaq was the clear winner in the top six IT markets during the third quarter of 1999, with an 18% share. Compaq met with considerable success in Mexico by way of price cuts and implementation of strategies for individual customer segments with greater focus on the home segment.

#### Leading Players in Latin American PC Market: 1999

	Units in 000'	% Share
Compaq	1,016	22.10
IBM	397	8.63
Acer	314	6.84
HP	271	5.90
Alaska	175	3.81
Dell	165	3.60
Other Brands	2,258	49.12
<b>Total</b>	<b>4,596</b>	<b>100.00%</b>



#### Mexico

Mexico is the fastest-growing market for computer equipment in Latin America. However, the industry faces serious obstacles in the form of low disposable income of a majority of the population. Computer penetration stands at a mere 5% compared to 50% in the US. In 1998, Mexico's computer equipment sales totaled \$2.2 billion. Small- and medium-size businesses and households led strong growth in the industry. Growth in the market is attributed to an increased number of credit plans offered by companies such as Compaq Computer Corp, Acer Inc and Telefonos de Mexico.

#### EUROPE

##### France: World's #4 in PCs

France is the fourth largest PC market worldwide and the second largest in Europe. Similar to other Western nations, the market has

been receptive to new technologies, particularly Internet-based ones. Growth in this segment is driven by several factors, which include

- ◆ An encouraging economic scenario, with low inflation rate of around 2 percent.
- ◆ Investments in computer equipment by several IT companies after long years of planning
- ◆ Shorter technological cycles resulting in faster adoption of new technologies.

#### Major Players in the Arena

IBM, Bull, Compaq-Digital and Hewlett-Packard dominate the French PC market, followed by a host of other local and foreign players.

#### Leading PC Manufacturers in France: 1999

Rank	Company	Market Shares
1	Compaq	13.1
2	Hewlett-Packard	10.2
3	IBM	9.3
4	Apple	6.2
5	ZDS	5.5
6	Packard Bell	5.1
7	Toshiba	4.4
8	Dell	3.8
9	Olivetti	3.3
10	SNI	2.5

#### Germany

##### Notebook PCs Hold Sizeable Market Chunk

German PC market was worth DM15 billion in 1999, witnessing an increase of 9.3% compared to 1998. Approximately 30% of overall sales were accounted for by notebook PCs.

#### Italy

##### Higher Notebook Sales Propel Growth

Acer ranked the top selling PC brand in Italy, ahead of Compaq that remained the numero uno for over 3 years. The achievement was largely aided by increased notebook sales. Acer branded notebooks ranked the second highest selling brand in Asia Pacific with nearly 15% share of the market next only to IBM. In the fourth quarter of 2000, the Acer brand nudged its way through archrival Compaq to attain the number one position in Italy.

## SERVERS

Slowdown in worldwide IT spending did not hamper sales of server systems, which continued to boom through the lean period. Global shipments of servers posted a strong 14% growth in 2000 compared to the previous year. Compaq Computer led the market in 2000, whereas Sun Microsystems and Dell Computer emerged as the fastest growing with shipments growing by 62% and 42% respectively. Compaq Computers led the server market with 27% of total units shipped in 2000. IBM followed with 17% with Dell at 15%. Hewlett Packard with 11% and Sun Microsystems with 7% were the other market leaders.

Global market for servers is witnessing a phase of transition in basic categories with dynamic changes in platforms as well as hardware. Six major players dominate the market accounting for more than 90% share.

- ◆ While Unix based servers still hold significant share, Windows NT servers dominated the market with faster growth over the last two years.
- ◆ Servers providing cross platform compatibility are in greater demand as compared to single platform systems.
- ◆ Linux compatibility is becoming a key determinant in purchase decisions of customers since it provides reliability of Unix and user-friendliness of NT at minimal costs.
- ◆ HP has been losing share to rival Sun Microsystems in its core Unix based servers business. HP is contemplating a strategy to recapture lost ground from Sun due to near stagnant growth in the Unix business.
- ◆ Emerging Internet applications and e-commerce are touted as the biggest factors triggering growth in servers market.
- ◆ Overall, Sun is emerging as the leader in the server segment with dominant shares in both platforms and top of mind systems.

### Entry Level Servers: Market Dynamics

Market for entry-level servers is expected to grow by 22% per annum until 2004 making it the fastest growing sub-segment

- ◆ Within the entry level segment, Intel based servers with prices under \$25,000 are growing at more than 25% and are expected to contribute more than 50% of sub-segment revenues. Primary factor triggering this growth is the increasing number of LAN installations worldwide
- ◆ Compaq leads the market by a huge margin over rivals in the entry-level server market. Other leading players include Dell, IBM, HP and NEC.

## Midrange Servers

### Highlights

- Less established players were affected adversely by increasing competition.
- Players with niche product lines in the server segment such as Tandem, Axil, Digital, Netpower and Stratus, now face stiff competition from established players.
- Concentrating on the Windows NT platform cost HP heavily in the mid range server market.
- Compaq derives over 50% of its revenues from Unix and NT servers.

### Strategies of Top Midrange Server Vendors

#### Dell - Committed to NT

- ◆ HP - Phase out the current PA-RISC line to include Itanium based architecture
- ◆ Sun - Committed to its own Unix/RISC line and shift to Itanium if demanded by top customer
- ◆ IBM - Channeling mainframe technology further down the line and developing add-on technologies

## Web Servers

### Compaq and Sun Dominate the Market...

Web servers market was clearly dominated by Compaq and Sun as of second quarter 1999. HP and IBM, leaders in other server markets, were ranked fourth and fifth respectively. Sun accounted for 24.0% of the market while market leader Compaq garnered 26.0% share.

#### Leading Vendors of Web Servers: 1999Q2

Vendors	Market Share (%)
Compaq	26.0
Sun	24.0
Dell	12.0
HP	10.0
IBM	8.5
Others	19.5

