33 Motorola in China

INTRODUCTION

'China basically looked to us as a friend, and the time you need a friend most is when you're in hot water.' These sentiments surrounded Motorola's 1989 operating expansion into China at the same time that a peaceful demonstration turned into a bloody massacre in Beijing's Tiananmen Square.[1]

Robert W. Galvin, Motorola's former CEO, began negotiations with the Chinese government to enter into the Chinese electronics industry. However, Galvin did not want to pursue the traditional joint-venture method of entry into China, which Chinese officials had proposed. Instead, he wanted to establish a wholly-owned subsidiary in Beijing.

The Tiananmen Square incident turned out to be the saving grace Motorola needed to win in the negotiations for its wholly-owned subsidiary. While other foreign companies were pulling out of deals and breaking contracts because of the student demonstration, Motorola decided to remain in China. Once the smoke cleared, negotiations reconvened and Chinese officials stood ready to offer almost anything to Motorola, including the wholly-owned subsidiary it desired.

Motorola has since expanded even more broadly in the Chinese market through joint ventures and other alliances. As a result of the company's support for China during the Tiananmen incident, Motorola has enjoyed increased concessions for its operations from the Chinese government. In almost every one of its new ventures, Chinese officials have been there to help ease the way for Motorola. Current projects in the country include the construction of a Greater China Headquarters facility in Beijing, a wafer fabrication plant in Tianjin, and a research and design centre in Hong Kong. With each new facility, Motorola strengthens its claim that it is in for the long haul with the Chinese people.[2]

Despite Motorola's successes in China since the Tiananmen incident, certain issues are causing concern for the firm's managers. Historically, Motorola's core competencies in the wireless communications and semiconductor sectors have provided much profit for

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This case was prepared by Christine C. Mayo, Gregory L. Richards, Kate Sumpter and Basilios A. Strmec under the direction of Professor Robert E. Hoskisson. The case is intended to be used as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

the growing company. Now the firm is producing and selling personal computers through licensing and sublicensing agreements as well as through joint ventures. In addition to this technological expansion, Motorola wants to expand even further into China throguh direct foreign investment.

Motorola's increased expansion has raised three concerns. First, should Motorola move away from its core businesses of wireless communications and semiconductors toward its new ventures in computers? A second concern, relating to the diversification issue, involves Motorola's decision to align with Apple to create Mac-compatible systems. The final issue facing Motorola concerns its investment of US$1.2 billion in China, which seems to increase every year.

BACKGROUND ON MOTOROLA

Motorola leads the world in manufacturing advanced electronic systems, communication components, and semiconductors. Its major businesses include cellular telephones, paging and data communications, two-way radios, automotive electronics, personal communications, defence and space electronics, and computers. Motorola semiconductors are used in communication devices, computers, and millions of other electronic products. Conducting business on six continents, Motorola employes more than 142,000 people and maintains manufacturing facilities throughout the world.[3]

Motorola's fundamental objective is total customer satisfaction through quality, speed, technology, and teamwork.[4] In meeting this objective, Motorola concentrates on 'respecting the individual, maintaining uncompromising integrity, and focusing on a vision of a world in which everyone can reach their full potential.'[5] With these basic goals and principles, Motorola seeks to achieve 'what you never thought possible.'[6]

History

Paul V. Galvin founded Motorola in 1928 as the Galvin Manufacturing Corporation. The company's first product was a "battery eliminator" that enabled customers to operate their radios with home electricity instead of batteries. The Galvin Manufacturing Corporation commercialized car radios in the 1930s under a new brand name, Motorola. The company also began to advertise nationally to strengthen its success in the home radio market. In 1947, Galvin Manufacturing Corporation officially changed its name to Motorola, Inc. Motorola's management decided to study solid-state electronics and enter into government work. By 1959, Motorola had developed a strong presence in consumer electronics and had built its first semiconductor facility. At the same time, it was a leader in military, space, and commercial communications equipment. While Motorola was expanding rapidly in the domestic market, it was also positioning itself to expand

internationally and was determined to become and then remain the global industry leader.[7]

In 1959, Paul Galvin passed away and his son Robert W. Galvin assumed control of the company. Under Robert's leadership, Motorola began a new era, shifting its focus away from domestic consumer electronics toward new international markets. The company sold its colour television receiver business in order to concentrate its energies on high-technology markets spanning government, commercial, and industrial fields. In the following decades, Motorola quickly developed into the leading worldwide supplier of cellular telephones. This electronic evolution continued into the 1990s with marketing contracts for a satellite-based global personal communication system.[8]

Structure

Motorola's high degree of decentralization enabled it to expand rapidly. Its business operations are divided into four sectors and two groups to provide flexibility and utilize expertise. The four sectors include General Systems; Semiconductor Products; Messaging, Information, and Media; and Land Mobile Products. The two main groups are the Automotive, Energy, and Controls Group and the Government and Space Technology group. Another component of Motorola's organizational structure is the New Enterprises organization, which guides the company into new strategic alliances to capitalize on emerging high-technology and high-growth opportunities.[9]

Strategy

Two key beliefs underlie Motorola's fundamental strategy for total customer satisfaction: respect for the dignity of the individual and uncompromising integrity.[10] These beliefs provide stability and strength, creating an environment of empowerment. To remain competitive, Motorola's management encourages long-term investment in technology. Consequently, the company has increased sales per employee by 3.2 per cent per year and has reduced in-process defect levels 250 times. Investments of over US$4 billion in research and development have resulted in over 400 new patents since 1991. In 1995, sales increased 22 per cent to US$27 billion. Additionally, earnings jumped from US$1.56 billion to US$1.78 billion with 63 per cent of sales being generated in markets outside the United States of America (see Exhibit 33.1).[11]

Communications and Semiconductor Industries

Motorola, which is the market leader in cellular telephones, pagers, and two-way radios, commands the largest share of wireless communications equipment sales in the world.[12] Motorola also has dominant positions in the semiconductor market in many of the areas it serves. The cellular telephone market has grown to 85 million subscribers, and

Exhibit 33.1
Motorola financial information

	1995	1994
Income Statement		
Net sales	27,037,000	22,245,000
COGS	17,545,000	13,760,000
Gross profit	9,492,000	8,485,000
Setting, general, and administrative expenses	4,642,000	4,381,000
Depreciation and amortization	1,919,000	1,525,000
Interest expense	149,000	142,000
Income before taxes	2,782,000	2,437,000
Provision for income taxes	1,001,000	877,000
Net income	1,781,000	1,560,000
Statement of cash flows		
Operating activity	3,287,000	2,552,000
Investing activity	(4,579,000)	(3,968,000)
Financing activity	1,276,000	1,271,000
New cash flow	(16,000)	(145,000)
Balance Sheet		
Assets		
Cash	725,000	741,000
Marketable securities	350,000	318,000
Receivables	4,081,000	3,421,000
Inventories	3,528,000	2,670,000
Other current assets	1,826,000	1,775,000
Total current assets	10,510,000	8,925,000
Net property, plant, and equipment	9,356,000	7,073,000
Deposits and other assets	2,935,000	1,538,000
Total assets	22,801,000	17,536,000
Liabilities & stockholders' equity		
Notes payable	1,605,000	916,000
Accounts payable	2,018,000	1,678,000
Accrued expenses	4,170,000	3,323,000
Total current liabilities	7,793,000	5,917,000
Deferred charges/income	968,000	509,000
Long-term debt	1,949,000	1,127,000
Other long-term liabilities	1,043,000	887,000
Total liabilities	11,753,000	8,440,000
Net common stock	1,774,000	1,764,000
Capital surplus	1,813,000	1,415,000
Retained earnings	7,461,000	5,917,000
Shareholder equity	11,048,000	9,096,000
Total liabilities and shareholders' equity	22,801,000	17,536,000

Motorola's sales in this industry account for about 29 per cent of its total revenue. Additionally, with almost half of the world's population aware of its paging services, Motorola has captured a large portion of the paging market's 95 million users.[13] Pagers, cellular telephones, and personal communication equipment are being used throughout the world and are driving Motorola's expansion. The semiconductor business is now developing the technologies that will reshape the electronics industries. These new technologies are faster, stronger, cheaper, and more reliable. Motorola also leads the world in several of the fastest-growing semiconductor segments. It is flourishing in the energy and industrial sectors, the automotive sector, multimedia set-top boxes, personal computer printers, and interactive, microcontroller-based smartcards.

In addition to the growth in its semiconductor segment, Motorola has made advances in satellite communications. The firm created the Iridium global wireless communications network to serve hand-held telephones and permit voice, data, facsimile, or paging messages to reach their destinations almost anywhere on the earth's surface.[14] Other recent technological innovations include "streaming video", which makes movies accessible on a PC, and the software program VocalTech, which allows phone calls over the Internet.[15]

Motorola Computer Group

The Motorola Computer Group (MCG) continues to find new and inventive ways to add value to the company. MCG is composed of three areas of focus: embedded technologies, technical OEM systems, and commercial systems. Its strategy is to deliver high-performance PowerPC platforms and solutions in graphics-intensive applications for Macintosh, Windows NT, and AIX operating systems.[16] MCG is now venturing internationally, specifically into China, to expand its operations, cultivate a broader knowledge and research base, and gain access to a potentially colossal market. Motorola hopes its investment in China can help launch its computer sales and technology into the twenty-first century.

China

The high-tech electronic industry is witnessing the birth of a new player. As China draws the world's attention, many corporations are investing billions of dollars in the Chinese market. China is expected to emerge as the world's largest consumer of electronic products, buying everything from computers and radios to telephones and televisions. Due to its market potential, growing labour force, and expanding economy, China is expected to emerge as a major competitor in the micro-electronics industry for the production of semiconductors, two-way radios, and computers.[17]

Economic conditions in China

One must understand the evolution of the Chinese economic system to comprehend the nature of business in China and how Motorola operates in this volatile nation. Prior to market reforms, the government State Planning Commission developed and implemented policies that outlined the short and long-term objectives of the national programme. To allocate the economic resources to various units and regions, the commission created ministries organized by economic units and provinces organized by geographic regions.

The horizontally connected ministries often overlapped resources and pursued redundant measures. However, the reforms of 1978 changed the way the ministries, the provinces, and the commission interacted and dealt with each other. More reforms are in progress, encompassing both the bureaucratic and the individual worker as entities of the economic system. As a result of these reforms, employees now receive promotions and compensation increases based more on performance levels than on politicla issues and seniority. These increased incentives encourage employees at all levels to worker harder and to improve work quality, thus improving product quality.

A major aspect of the Chinese reforms concerns the establishment of Special Economic Zones (SEZs), which encourage increased foreign investment, especially from firms involved in light manufacturing industries. Foreign firms choosing to locate in an SEZ receive special tax treatment and special facilities in terms of infrastructure and government services. Business dealings within an SEZ are decentralized so that the province has direct control over the transactions in its respective zone. This reduces the levels of bureaucracy a firm must go through to perform its operations. Special benefits provided by locating within an SEZ include allowances in corporate income taxation, factory site choices, and import duty waivers. Many expatriates living within a zone may receive special personal benefits as well, such as special housing, better living conditions, and preferential tax treatement.[18]

Electronic future

The expected emergence of China as a leader in the high-tech field of electronics stems from the ongoing changes the Chinese government has been pursuing since the 1978 reforms. The political framework created by the changes will allow China to participate in a dynamic global economy as both a consumer and a producer. As the number of graduating scholars from China's universities increases, so does the rate at which the Chinese people demand more high-tech products. Thus, Chinese industries are scrambling to produce consumer electronic products to meet the rising demand. The universities in China are encouraging increased enrolment in hopes of securing the nation's future by cultivating the knowledge and skills needed to progress in the volatile electronics industry.

Supporting China's move into electronics is increasing foreign investment by companies such as Northern Telecom, Philips, and Intel in Shanghai; Ericsson in Nanjing; IBM in Shenzen; and Motorola in Beijing, Tianjin, Hong Kong, and Nanjing.[19]

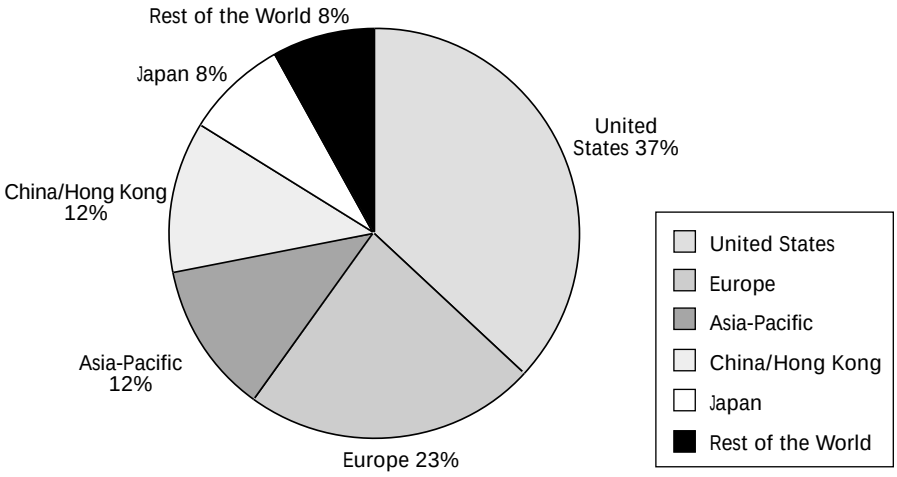
MOTOROLA IN CHINA

Motorola is taking giant strides to ensure its presence in the Chinese market. By encouraging the Chinese economy through direct foreign investment and by supporting the Chinese people through education programmes and community projects, Motorola is staking a claim in China's future. Therefore, as China grows, Motorola will grow too, especially in the areas of research, design, manufacturing, and sales. China and Hong Kong already comprise 12 per cent of the firm's total sales, and Motorola's managers expect this figure to increase (see Exhibit 33.2).[20]

Thus, Motorola brings new technologies into a culture that has not caught up completely with the rest of the world. The firm encourages its Chinese employees to take an active role in their work. This practice gives Motorola a better image in the eyes of the Chinese. In fact, Gary Tooker, a high-ranking Motorola official, is considered a head of state when he visits China.[21] This honour is rarely given to foreigners, especially in business.

Motorola contributes to its standing in the Chinese electronics industry by indicating that will remain in China for the long term. Currently, about 6,000 locals are employed

Exhibit 33.2
Market sales,1993



Source: http://www.mot.com/General/China/facts96.html

in the various manufacturing and research facilities throughout the nation,[22] and its investment in China surpassed US$1.2 billion in 1995 (see Exhibit 33.3).[23] These additional investments place Motorola as the number-one foreign investor in the growing Chinese electronics market. Nevertheless, there are still tremendous risks involved in dealing with the Chinese political system, which is relatively unstable and plagued by corruption. Although the Chinese reforms improved the political situation, government officials pay little respect to copyrights and many basic human rights. In addition, sociopolitical instability, labour unrest, inadequate energy supply, underdeveloped infrastructure, limited local financing, and low labour productivity intimidate many foreign investors. However, Motorola continues to invest significantly in the Chinese economy. This concerns many investors because Motorola would lose most of its Chinese investment if China's economy fails.[24]

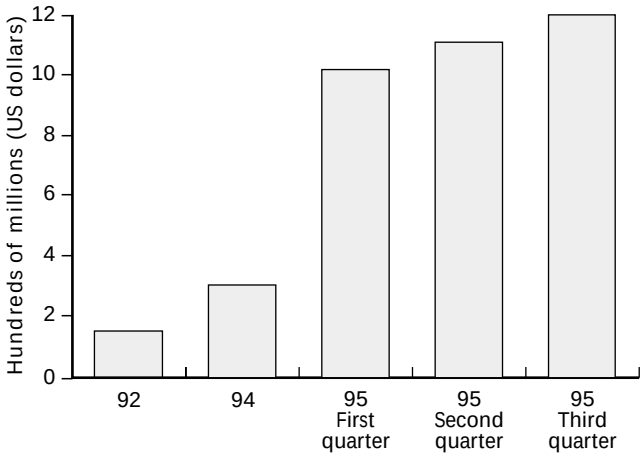
Locations

Strategically planned sites for the Motorola facilities in China underscore the firm's operations in this nation. This main focus of Motorola's operations include Beijing City and Tianjin, as well as Hong Kong, which rejoined China in 1997 (see Exhibit 33.4).

Beijing

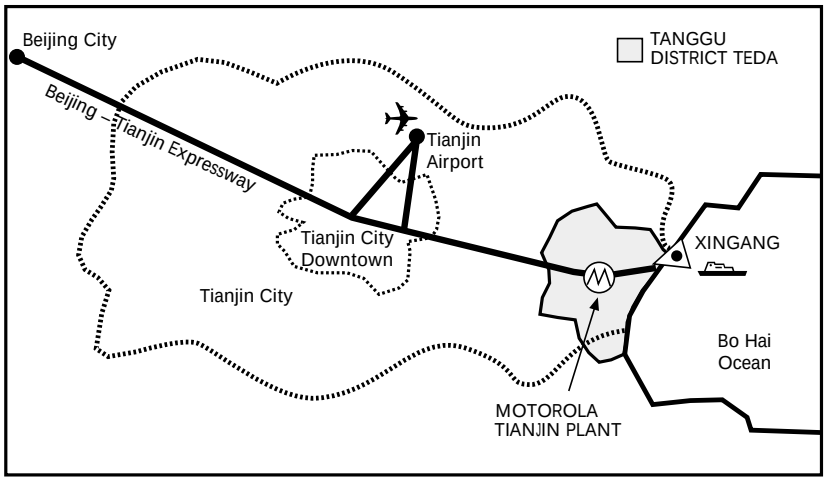
Beijing serves as the headquarters for all ongoing operations in China. In 1986, Motorola opened its first facility there as a representative office to test the Chinese market.[25] In 1995, Motorola (China) Electronics Ltd. (MCEL)[26] purchased a high-tech modern office

Exhibit 33.3
Investment growth in China



Source: http://www.mot.com/General/China/test1/eng/invest.html

Exhibit 33.4
Motorola plant locations



Source: http://www.mot.com

building to house the future Greater China headquarters, furthering Motorola's long-term commitment to China. Rick Younts, the executive vice-president of MCEL, states:

> The purchase of this building and the locating of Motorola's future Greater China headquarters in Beijing is a vote of confidence by Motorola in the future of China and indeed the future of Greater China. Long-term success requires long-term commitment. Motorola's vision is of a vigorous and mutually beneficial partnership with all of China. Beijing – a city of tremendous history, culture, and resources – will be the base from which we build that future and a more prosperous tomorrow.[27]

Tianjin

Since the initial entry into China through Beijing, Tianjin has evolved into the manufacturing centre of Motorola's operations in China (see Exhibit 33.4). Motorola broke ground for the first manufacturing plant in Tianjin in June 1992 in the Tianjin Economic Development Area (TEDA).[28] Operations began there in March 1993 and expanded in 1995 with the construction of an advanced submieron wafer fabrication facility in the XiQing Economic Development Zone (XEDC). Younts believes this investment supports the Beijing actions:

The establishment of this wafer fabrication plant is important because it signifies our long-term commitment to China. This indicates that Motorola is full of confidence in the modernization of China and also indicates our sincerity in the active assistance and involvement in establishing China's micro-electronics industry at world-class level.[29]

Motorola authorities chose a prime site for this plant. The XEDZ lies along the outskirts of Tianjin City, close to major roads and highways. Downtown is only 10 km away, the airport is approximately 15 km away, and the original Motorola plant in TEDA is about 45 km away from the fabrication plant. Scheduled to open in late 1997 or early 1998, 400 to 500 people were to be employed in the initial stages of operations at this facility.[30]

> "We are focusing on high growth areas, and we are adding capacity to capitalize on opportunities across our major product lines,"[31] says C. D. Tam, the Motorola Asia Pacific Semiconductor Group senior vice-president and general manager. He feels that this new facility supports Motorola's objective of creating total customer satisfaction by increasing its operating advantages.

Quality standards and education

Motorola executives know that they need to invest heavily in education to succeed in the global market. In the 1980s, they realized that unless they improved production quality they would lose market share. A higher-quality standard demanded a better educated work force. A training programme was started to improve their employees' performance. In their Illinois production facilities, company leaders were stunned to find that 60 per cent of their manufacturing employees had trouble with simple arithmetic. Understanding the language was another challenges at many sites. When a plant in Florida offered English as second language designed for 60 people, about 500 registered for the programme.[32] Consequently, Motorola learned how to communicate with and train people who are overcoming language barriers. Investments in the training amounted to US$60 million a year in the early 199os.[33]

Better education of the work force helps Motorola achieve the ambitious quality goals of Six Sigma. In its efforts to achieve total customer satisfaction, Motorola (China) Electronics Ltd (MCEL) has adopted Six Sigma and is performing well. This quality standard calls for every process to produce no more than 3.4 defects for every one million parts manufactured.[34] Six Sigma has been incorporated into every aspect of Motorola's operations. The current achievement rate of 99.9996% accuracy owes some of its success to the Quality and Speed Policy to which the employees adhere (see Exhibit 33.5)[35]

The achievement of global leadership in quality is based on the continual training of the work-force in new technologies.[36] In the words of a Motorola executive, "Whenever we reach a certain level of expertise or performance, there's always another one to go for." Even though challenges exist, Motorola has been able to bring its culture of continuous education and high-quality results to China. It spends about US$4.5 million annually in training courses for its staff at Beijing and Tianjin.[37] In addition to internal training, the company has encouraged higher education by sponsoring 2,000 scholarships

Exhibit 33.5
Motorola Asia Pacific semiconductor products group quality and speed policy

- Every employee strives for continuous improvement in Quality and Speed of products and services that we provide our customers.
- We recognize that we all serve a Customer, whether internal or external to Motorola.
- Our goal is to surpass our Customers' expectations and be Best-in-Class. To this end we continuously monitor their Key Indices of Performance as well as our own.
- We continuously strive to Streamline our operations and eliminate Non-Value-Added Processes.
- Every employee is aware that only through Empowered. Cross-Functional Teamwork can we achieve continuous success.
- We are committed to Do-It-Right-the-First-Time and to use all appropriate tools and methods to help us exceed Beyond Six Sigma Performance in everything we do.

Source: http://www.apspg.com/quality.html

in the last four years at top Chinese technical universities, including Beijing University, Tianjin University, and Fudan University.[38]

Community

Motorola views its operations in China not only as a business opportunity, but also as a chance to assume an active role in the local community and environment. In addition to the 6,000 jobs it provides for the Chinese people, Motorola has organized Project Hope[39] in an effort to increase the standard of living for the local people (contributions amounted to US$820,000 in 1996).[40] Currently, this project is building schools in 16 rural villages while continually looking for new ways to expand its reach.[41]

STRATEGIC ALLIANCES

Although historically Motorola has relied on strategic alliances and joint ventures to pursue direct foreign investment, it entered different markets in China through wholly-owned subsidiaries, alliances, and partnerships. To coordinate its investment projects in China, the firm established Motorola (China) Investment Ltd. As a holding company. For specific examples of Motorola's alliances in China, see Exhibit 33.6.

Motorola and Apple

Apple Computer, Inc., the company that produces the Macintosh operating system, has had limited success in the past few years. In hopes of regaining the market share it lost to Microsoft's Windows, Apple entered into alliances and licensing agreements. For example, Apple entered into an alliance with IBM and Motorola (the AIM Alliance) to

Exhibit 33.6
Motorola's alliance in China

Chinese Company	Sector
Joint ventures	
• Loshan Radio Factory	Semiconductors
• Panda Electronics Group	PowerPC computers
• Shanghai Radio Communications Equipment Manufacturing Ltd	Pagers
• Hangzhou Communications Equipment Factory	Cellular telephones
Learning alliances	
• Legend Group	Software development
• Computer Integrated Manufacturing System-Engineering Center at Qinghua University (Beijing)	Manufacturing research
• MPT Datang Telecommunications	Cellular telephone equipment
• China PowerPC Consortium	Chinese language operating system development

Source: http://www.mot.com/General/China/facts96.html, 6 March 1997.

develop the PowerPC platform, also known as the Common Hardware References Platform (CHRP). The CHRP will run multiple operating systems including AIX, Mac OS, and Windows NT.[42]

Licensing Agreement

Motorola signed a licensing agreement with Apple in February 1996 which allows Motorola to sell computers that bear its own brand name and rely on the Macintosh operating system (Mac OS). The licensing agreement also allows Motorola to sublicense, which empowers it to grant other hardware manufacturers the right to use the Mac OS without permission from Apple. Ron Rogers, director of Motorola Computer Group, commented: "Basically, the sublicensing agreement allows [MCG] to sell systems in a multitiered distribution environment. In effect, we have open licensing of the Mac OS."[43]

As a result of its ability to develop and sell PowerPCs based on the Mac OS, Motorola developed a new line of Macintosh clones. This line, known as the StarMax family, utilizes high-performance PowerPC microprocessors and features a multimedia-rich feature set and a five-year warranty. Motorola Computer Group's corporate vice-president and general manager Joe Gugliemi stated: "We know there is a demand for high-performance, quality systems; customers can feel confident that the StarMax systems they purchase meet the impeccable Motorola standards of quality."[54]

Motorola's decision to enter the PC market via the licensing agreement with Apple has been questioned since the firm's core competencies have traditionally focused on the communications and semiconductor markets. Sceptics suggest that Motorola may be straying from its "bread and butter" industries by building entire computer systems.

Gugliemi expressed his endorsements when he stated, "We believe the Mac-compatible market is an important opportunity for us, and also for Apple. This will make customers more at ease in buying Mac platform products."[45]

Motorola also feels that it can utilize its manufacturing, engineering, and marketing expertise to spark demand for the waning Mac systems. Although the Mac system is already considered the most user friendly operating system and maintains a certain portion of the computer industry market share, Motorola believes it can add value to the system by offering stronger products, more choices, and competitive prices. Motorola plans to offer desktop systems with the Mac OS in China through its alliance with Panda Electronics Group. Gilbert Amelio, Apple's chairman in 1996, indicated that he hopes Apple can build a big following in China. "We live in a world where only about half the people alive have used a telephone, much less a computer. The fact that a small segment of users uses another platform … hardly matters," Amelio said. "Our intention is to get as many people excited and using the Macintosh operation around the world as we can."[46]

The licensing agreement with Motorola will certainly promote excitement. The question still remains, however, whether manufacturing Mac-based systems is the best way for Motorola to enter the computer market. Can Motorola help the Mac system break IBM and Intel's stronghold in China, or will Motorola simply be wasting millions of dollars on an unmarketable computer system of the past?

Motorola and Panda

Panda Electronics Group is one of the largest electronics enterprises in China. It was founded in 1936 and produces shortwave communication systems, satellite communications systems, mobile communications systems, video cassette recorders, radio/audio tape recorder, and component audio products. In 1994, Panda's revenues amounted to US$540 million.[47]

Nanjing Power Computing Ltd

Motorola announced its major joint venture with Panda Electronics Group on 31 October 1995. Panda Electronics Group is one of China's leading electronics companies, and Motorola International Development Corporation (MIDC) is Motorola's wholly-owned subsidiary in Schaumburg, Illinois. The two companies formed Nanjing Power Computing Ltd. The overall purpose of the joint venture is to develop, produce, and sell computer systems based on PowerPC microprocessors with Motorola investing 60 per cent and Panda Electronics Group investing 40 per cent.[48] Motorola's part in the alliance involves shipping electronic circuit boards to Nanjing Power Computing where the boards will be packaged into final computers and sold in Chinese markets. Through this

alliance, Motorola will gain access to Panda's extensive distribution network and be able to market its StarMax line to consumer and education markets. Achieving the overall goal will help to empower Nanjing Power Computing to develop new RISC PCs for China and other markets in Asia.

China's Marketing Division of the Electronic Computer Micro-electronic Research (CCID) of the Ministry of Electronics Industry reported that the PC computer market in China was entering a rapid growth stage. In 1995, the division expected computer sales to increase by 50.4 per cent with a a 25 per cent average increase over the next five years.[49] Therefore, with Panda serving as Nanjing's distribution arm throughout China, Nanjing Power Computing will be able to capitalize on this growth because of its superior computing technology, manufacturing expertise, and distribution channels.

Edward Staiano, executive vice-president of Motorola, Inc., and president and general manager of Motorola's General Systems Sector, commented:

> We are extremely excited with the development of this joint venture as it brings for the first time the strength of the PowerPC architecture to a market with vast opportunity. The computer market in China is clearly moving toward an integrated multi-media environment that combines graphics, audio and telecommunication functionality which is fully supported by our PowerPC microprocessor-based platforms. We believe that PowerPC will dramatically change the face of desktop computing in China.[50]

Chen Xiang Xing, chairman of the board of Panda Electronics Group, also expressed his support and enthusiasm.

> This cooperation between two powerful giants will be a major force in contributing to, and participating in, China's national development policy for the country's computer industry. Motorola, as one of the leading global corporations in the electronics industry, and Panda, one of China's largest and most comprehensive electronicss enterprises, form a powerful union which will introduce state-of-the-art and technologically advanced PC computers to the Chinese marketplace.[53]

Motorola and Panda decided to base the management, engineering, and manufacturing organizations of Nanjing Power Computer Ltd. In the Jianging Economic and Technology Development Zone. The first products manufactured at this site were scheduled to reach the Chinese market in 1996. Nanjing Power Computing will be capable of producing in excess of 100,000 multimedia PC systems annuall.[52]

In addition to establishing production schedules, Nanjing needed an organizational structure designed to meet both Motorola and Panda's expectations. Nanjing Power Computing installed a management structure with a general manager reporting to a board

of directors that consists of seven members, four appointed by Motorola and three by Panda.[53] Nanjing Power Computing then established its own marketing department to provide support to the existing sales channels of Panda Electronics Group in China.

Production in China protected Motorola from the 1997 Asian financial crash and kept profit margins somewhat higher than analysts had predicted.[54] More importantly, however, the Chinese market continues to evolve, and the world watches with great anticipation. Two billion people comprise a relatively untapped, seemingly infinite market.

STRATEGIC CHALLENGES AND QUESTIONS

From two-way radios to wireless communications and from television receivers to semiconductors, every new business opportunity Motorola, Inc., embarks upon seems to succeed. Most recently, Motorola has entered the computer market through the AIM Alliance and the Apple licensing agreement. Today, Motorola Computer Group is expanding its computer operations into China through its partnership with Panda Electronics.

However, a question arises as to whether Motorola should move away from its core businesses of wireless communications and semiconductors to its new ventures in computers. Overdiversification could pose potential organizational problems for the firm; however, the computer industry could provide Motorola with significant new opportunities, particularly in Asian countries.

A second concern relating to the diversification issue involves Motorola's decision to align with Apple and create Mac-compatible systems. Apple's difficulty in competing with IBM and IBM-compatible systems might be a problem that transfers to Motorola's computer business. Thus, the question exists as to whether Motorola can successfully create new demand for the Mac OS.

A final issue facing Motorola concerns its investments in China. The company has not only invested in manufacturing operations; it also has invested in the well-being of the Chinese people through supporting higher education and other community programmes. The concern surrounding this issue deals with the lack of infrastructure in China as well as the low income of its citizens. Sociopolitical instability, labour unrest, inadequate energy supply, underdeveloped infrastructure, limited local financing, and low labour productivity still intimidate foreign investors.[55] Is China the rising star of tomorrow? Is the Nanjing joint venture with Motorola the right approach in China? Should Motorola invest so heavily in China when there is at least doubt about the potential of the Chinese market?

Motorola has been successful in its past ventures into new arenas. Will it be successful in the computer market? More specifically, will it be successful competing with IBM-compatible computers by producing Mac-compatible computers? Finally, should Motorola invest so heavily in China when there is doubt about the potential of the Chinese market?

NOTES

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