

Buyers' Reactions to the IBM
Notebook Computer

by

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MBA PROJECT REPORT
Presented to
The Graduate School

In partial Fulfillment
of the Requirements for the Degree of
MASTER OF BUSINESS ADMINISTRATION

THREE-YEAR MBA PROGRAM

THE CHINESE UNIVERSITY OF HONG KONG

1992

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ABSTRACT

The primary objective of this research project was to study buyers' reactions to the IBM Notebook Computer, N33, which was the only one from IBM on the market during the survey in 1991. Two new Notebook Computers were announced in March, 1992.

This research project also aimed to identify the key characteristics and features that a potential buyer prefers for a notebook computer.

This project had two stages. First, focus groups were set up to collect qualitative information on the IBM Notebook Computer. Second, retailers and dealers were interviewed to further help understand consumers' preferences for Notebook Computers and also their reactions to the IBM Notebook Computer.

The project collected much useful information. Recommendations for IBM to increase its Notebook Computer market share were made based on these findings, to help in the marketing of follow-on products.

These recommendations includes:

- . Enhancement of Product Features;
- . Increase of Distribution Channels;
- . Advertising Strategy; and
- . Information Channels for Notebook Computer Users.

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ACKNOWLEDGEMENTS

I would like to express my gratitude to my project supervisor Dr. Neil Holbert, who has provided much guidance. Without his guidance, the project would have never been completed. Furthermore, I would like to express many thanks to the IBM Marketing Department for providing the demonstration tool and retailer information for my research project.

GLOSSARY

Data Processing (DP) : The computer performs storing, retrieving, sorting or selecting data, changing data from one form into another, doing calculations or making decisions based on data.

Disk Drive : Disks and disk packs are mounted in a disk drive in a computer system.

Floppy disks : They are flexible disks or diskettes because they use a thin sheet of Mylar as their base; they are an important data storage medium for micro and minicomputers.

Hard Disks : They are main storage of data that contains an array of metallic platters sealed into an air-tight container.

Input devices : They are the input techniques to record the desired image in the input buffer of the computer's main memory. From there it can be stored on disk or tape and reproduced on the screen or printed as hard copy when needed.

Keyboard : It is one of the input devices; data can be

keyed into the computer for processing.

LAN : It is a set of devices that is hard-wired and located within a small distance of each other (about one square mile) is called a local area network, or LAN. LAN can be assembled into a number of different configurations.

Mainframes : They are multi-user computing systems with average initial configuration prices (including peripherals) of US\$750,000 and over. Examples would include IBM's ES/9000, Unisys' 2200, Tandem's Cyclone and DEC's VAX 9000.

Memory : The main store holds the programs and the data which a computer is using at the time. It includes two categories: RAM and ROM (q.v.).

Microcomputer : See Personal Computers.

Microprocessor : Processors used in microcomputers are known as microprocessors, but there is no conceptual difference between microprocessors and processors found in mainframe and minicomputer systems.

Mid-Range Systems : Multi-user computing systems with average initial configuration prices (including peripherals) of between US\$12,000 and US\$750,000. Examples include IBM AS/400, DEC VAX6000 and HP 3000.

Minicomputer : These are medium-sized computers; they are smaller, slower, and less expensive than mainframes. They have no special power or environmental control requirements, so they can be located conveniently throughout the organization's facilities.

Modems : This is shorthand for modulator-demodulator. Modulation converts digital signals into analog wave patterns. Demodulation reverses the process. Because computers represent data in digital form and the telephone system transmits data using continuous, or analog, wave forms, their combination must include equipment that converts signals from one to the other. This equipment is called modem.

Monitor : This is the video display units for graphics output. Although they look like home television sets, these terminals are quite different in the number of phosphorescent dots that can be illuminated on the screen.

Mouse : A mouse is a device, separate from but tied into computer. It is employed to control the cursor's movement on the screen. Mouse is used as an alternative input device to a keyboard.

OS/2 : This is an operating system for IBM/AT and PS/2 as a successor to DOS, developed by Microsoft and IBM. It features multitasking and a friendly graphical user

interface.

Personal Computers : These are single-user computing systems with average initial configuration prices (including peripherals) below US\$12,000. Examples include IBM's PS/2 and Apple's Macintosh. Its main computing component, the microprocessor (q.v.) is located in an integrated circuit chip (IC).

Printer : Taking a photograph of a computer monitor is one way of getting hard copy of the output being displayed. A printer is a device to draw the image on paper from the monitor rather than taking a picture.

Processors : These are the control and arithmetic/logic units, which are separate from the memory device.

RAM : It stands for random access memory, which store data only as long as they are supplied with electric power, and which can be written on, and erased (by rewriting).

ROM : It stands for read only memory, which can store data even when they are turned off, but which normally cannot have their contents altered by the microprocessor during regular processing.

Software/Services : This category includes software, services and maintenance. Software includes all software

products, including packaged applications, database management systems, operating systems, utilities, etc. Maintenance includes all maintenance contract revenues for hardware and software (excluding that bundled into rental equipment), as well as time and labor charges.

VGA : This is abbreviation for Video Graphic Array. It is a IBM PC display adapter standard. Its resolution is 640 x 480 pixel x 16 colors.

Workstations : These are single-user computing systems designed primarily for technical or engineering applications with average initial configuration prices (including peripherals) of between US\$6,000 and US\$50,000. Examples would include Sun Microsystems SPARC Station, IBM's RS/6000 and DEC's DECStation and VAXStation.

CHAPTER 1

INTRODUCTION

Computers are part of today's life in both business and personal matters. Technology has been advancing quickly. Computers are becoming more sophisticated and are now not only limited to certain professionals. More people are learning how to use computers to facilitate their work and enhance their personal lives. To be affordable to the general public, personal computers have emerged from the world of large computer to meet today's demands.

1.0 Description of Personal Computers

A computer is an automatic, electronic machine. A computer can perform a wide variety of tasks. Each task follows a set of instructions called a program.

A personal computer (PC) is a self-contained computer that has its own microprocessor, memory, keyboard and video system. The PC has allowed the user to perform tasks without connecting to a large computer system, and to share the computer with other users. The first generation of PCs was a desktop version. The user can put the computer on one's desk and perform work with it independently, or link

up to the large computer system for more complex jobs. The PC can also connect with other PCs and communicate with each other.

PCs have also been used as terminals to and from a large computer system. This has offered a lower cost to users than a regular terminal and the user can choose to use it alone.

Since the introduction of the PC, its popularity has been ever increasing because of its affordability and features.

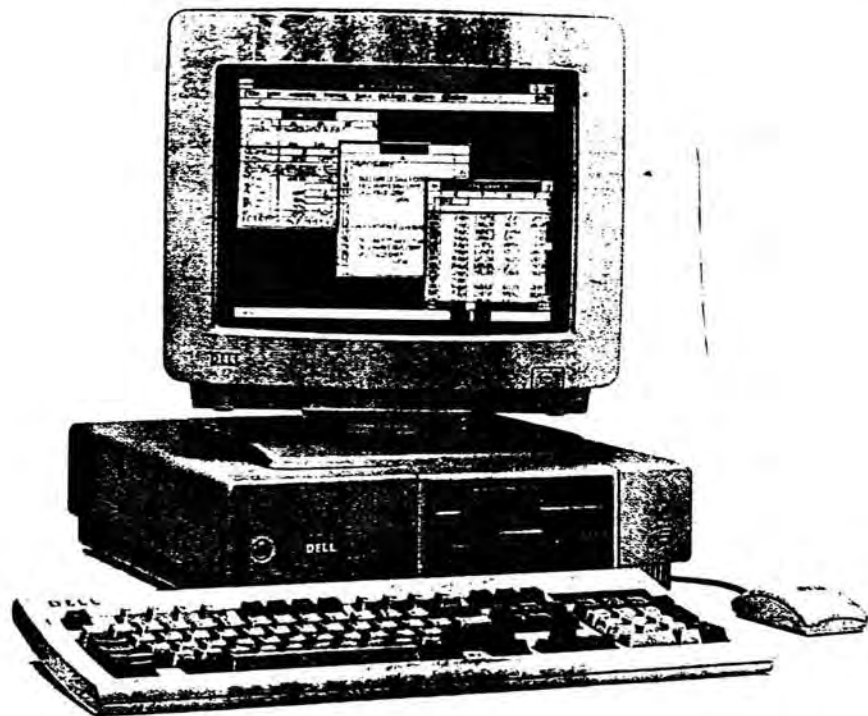


Figure 1 Desktop PC

PCs are becoming more compact so they can be carried around by users. Developments surrounding the portable PC are moving at an amazing speed. The new wave of subcompact computers currently encompasses three basic types: 1. Notebook and Laptops, 2. Pen-based computers, and 3. Pocket or Palmtop computers. The trend in downsizing that these units represent is merely a continuation of what has been happening to PCs in general since the early 1980s, with units getting smaller, more powerful, and less expensive.

Notebook and Laptop Computers have a new microprocessor chip, smaller disk drives, and thinner display screens, all of which allow users to perform the same functions using a smaller, lighter package. Notebook vendors are engaging in a furious competition to differentiate their improvements in the genre.¹

1.1 Laptop Computer

The Laptop Computer is small enough to fit easily into most briefcases. It weighs less than 4 kg, including battery. It does just about everything that a regular PC does and can be operated with battery. The user can use it on the train, on the road, or at home: business can be taken care of in

¹ Taylor, Thayer C. "The PC Evolution: Desktop...Laptop..Palmtop...?top"
Sales & Marketing Management
Vol: 143 Iss: 2 Date: Feb 1991 pp:
50 - 61

a way that is convenient to the users.

The laptop has taken the personal computer into homes, onto airliners and trains, and even into nightclubs.

To get access to the office computer network, PC users have to link the portable to a desktop machine to transfer data, or transfer data, or transfer the disks from one machine to the other.

More modern laptops use "docking stations". They do that by plugging the laptop into a stationary desk unit. The expense of buying two machines is eliminated.

The laptop can share resources - such as disks or printers - with other laptops and get access to files held in the central company database.

Radio networking technology needed to liberate the laptop is already available from an American company, Motorola. In Europe, the standards bodies are drawing up specifications and allocating radio spectrum to allow these wireless local area networks (LAN) to operate. (see Appendix I)

As the European specifications enable calls from cordless telephones as well as PC data to be sent over the ether, data, voice and video transmissions will merge with the

laptop computer.²

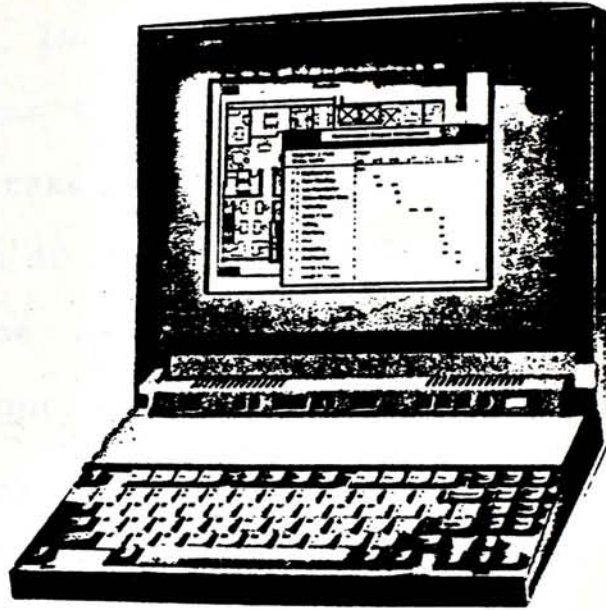


Figure 2 Laptop Computer

² Bradshaw, Della "Radio Networks Will Enable Laptops to Work in the Office" South China Morning Post Tuesday January 28th, 1992

1.2 Notebook Computer

The Notebook Computer is smaller than a Laptop Computer and can be used anywhere as a Laptop Computer - in the lecture hall, out of doors, in a client's office, on the road - without having access to AC power. The machine is simply light enough to be taken anywhere, powerful enough to run any of the thousands of application programs now available. The only difference between a Laptop and a Notebook Computer is the weight. All Notebooks are Laptops, but all Laptops are not Notebooks.

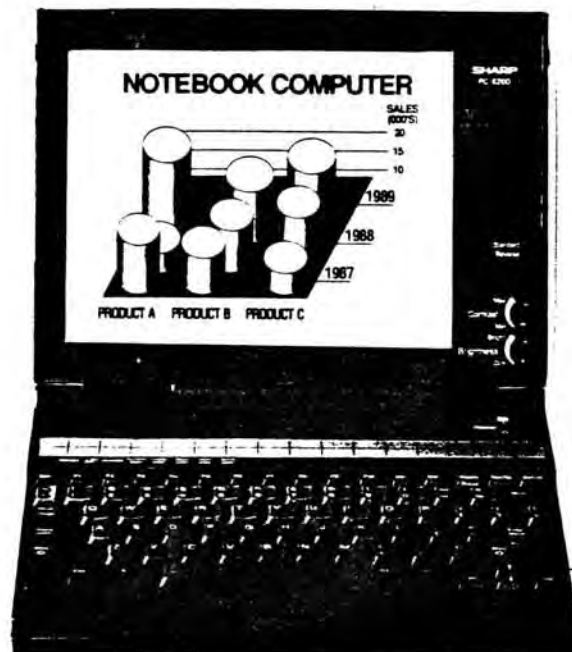


Figure 3 Notebook Computer

1.3 Palmtop PC

The Palmtop Personal Computer is a PC that is very small and can be used as a pocket size computer, as a calendar, phone list, or diary. It has limited memory for execution of tasks. It can be connected to a Desktop PC for data transmission. This pocket-size Palmtop Computer is for the highly mobile user who needs a very lightweight product for its limited functions.



Figure 4 Palmtop PC

1.4 Pen-based PC

The Pen-based PC uses a pen instead of a keyboard. Users do not need to type in the information through the keyboard. They can write the information into the computer as if they are writing a memo. By eliminating the keyboard, pen-based handhelds will attract a whole class of users who have shied away from computers altogether.

NCR Japan has announced a new Pen Computer in March, 1992 which allows input via electronic pen of English, numerical letters, Kanji, Kana, etc. NCR Japan plans to go after portable use in the finance/distribution industries.

2.0 IBM Notebook Computer

2.1 Introduction to IBM

IBM is the trademark for International Business Machines. IBM is an international computer company. Its products range from large computer systems to personal computer systems. Less than 1/3 of IBM's US\$69 billion in 1990 corporate revenues came from large computer systems. In recent years, IBM has become the dominant factor in minicomputers; it is much more than just mainframes. IBM's PS/2 desktop PC has been expanded from a Laptop Computer to a Notebook Computer. It is one of the major forces in the

emerging market for portable PCs.³

Among its PC sales in Hong Kong, IBM is estimated to have sold 5,800 to 6,000 units in 1990. About 14 to 18 percent of those are believed to have ended up in China. User acceptance of OS/2 in the PS/2 remains lackluster, and IBM is believed to be relying heavily on large orders to keep its PC sales up.⁴

IBM is working to increase market share and industry respectability for its PC system. Prices are lower than the original prices significantly to compete with competitors.

2.2 The IBM Notebook Computer

The IBM Notebook Computer weighs 2.5 kg, and can replace the desktop computer. IBM unveiled its notebook size portable computer along with a major advertising and marketing blitz aimed at market leaders Toshiba America and Compaq Computer Corporation. The success of this new product and the marketing blitz is crucial to IBM.⁵

³ Shaffer, Richard A. "Here Comes IBM" Forbes
Vol: 147 Iss: 4 Date: Feb 18,
1991 pp: 108

⁴ Hong Kong Information Technology 1991 Mid-Year
ResearchAsia (Hong Kong) September, 1991

⁵ Radding, Alan "Big Blues Takes Aim at Toshiba,
Compaq" Advertising Age Vol: 62 Iss: 13
Date: Mar 25, 1991 pp: 1

2.2.1 IBM Notebook Computer Features

A. Light and Compact :

It weighs just 2.5 kg (5.5 lbs) including battery, and is exactly A4 size, The Notebook packs nothing less than an impressive Intel 386SX 12 Mhz microprocessor. Its 2 MB (standard) of memory is expandable to 6 MB. And there is a 40 MB of hard disk storage to handle applications, with fast average seek time of 19ms. The standard 3.5" 1.44 MB external diskette drive contributes to making the N33 SX one of the lightest Notebooks in its class. It has a large 240mm (diagonal) black-on-white VGA display and 16 shades of grey.

B. Unique Features :

The thin 84 key compact keyboard comes with 12 function keys, inverted "T" cursor pad and adjustable keyboard angle for maximizing user comfort. The other standard features include serial port, parallel port, mouse/numeric keypad port, and external expansion I/O port for attaching external devices.

C. Power and Battery :

In addition, each system includes a universal power AC adapter and a rechargeable battery. The rechargeable battery pack provides over 1.5 hours of use depending on the operating environment and application characteristics.

When on AC power and in an idle state, the battery can be charged in approximately four hours. It only takes one hour for recharging the battery if the optional Quick Charge is used. Other options include 2 MB and 4 MB memory upgrade kits, an external 17 key numeric keypad, a mouse and a rechargeable battery pack. The product features are listed in Appendix IV.

2.3 Market Segments

The Notebook Computer is targeted at the professional and business segments, which include lawyers, accountants, and frequent travellers like salespeople and executives.

2.3.1 Lawyers

"Paralegals must be able to juggle the competing demands of numerous cases, as well as the expectations of several lawyers and clients, in order to be successful. Organization and management are crucial for the paralegal. Paralegals who are assigned a new case should begin by studying the file. A case summary sheet should contain names, telephone numbers and addresses of opposing counsel, clients, co-counsel, witnesses, and court officials. In complex litigation, a case notebook should be used. Organization and management of discovery can ensure the meaningful involvement of the paralegal in the case. Discovery documents should be accurately identified and dated as they are produced. Attention to detail should be given to the drafting of responses to interrogatories. The first step in preparing for a deposition is establishing a witness folder containing the deposition outline, pertinent documents, and professional information. Depositions should be summarized promptly so that impressions are not forgotten. A portable notebook Computer can help the paralegal to handle the documentation promptly and

accurately."⁶

2.3.2 Accountants

A growing number of professionals, including chartered accountants (CAs), are using technology to take their offices with them wherever they go. With the help of electronic organizers, laptop and notebook computers, cellular telephones, portable modems, text pagers, and other portable products, they are making the mobile office a business reality. One accounting firm in the US has launched computation on location, an office on wheels that provides accounting, tax-planning, and bookkeeping services.⁷

2.3.3 Frequent Travelers

A notebook computer can make a business trip more productive.

"Travelling with a notebook computer presents fewer difficulties if one considers a few practical tips in advance. It is best to select a small lightweight computer, such as a notebook computer, that will fit into an attache case and can easily be used on one's lap or on an airline food tray. In addition to carrying the machine itself, it will probably be necessary to take an AC power cord and a transformer. These items permit operating the computer on wall current and will allow for recharging batteries. Other

⁶ Mallory, Gini "Litigation and Discovery :
Organization and Management"
Legal Assistant Today Vol: 8 Iss: 6
Date: Jul/Aug 1991 pp: 86 - 93

⁷ DeLottiniville, Paul "Information Technology: The
Portable Professional"
CA Magazine Vol: 124 Iss: 8
Date: Aug 1991 pp: 18-22

items that might be needed are an AC extension cord, a telephone extension cord, and some blank formatted floppy disks. Since the add-ons can easily match or exceed the weight and bulk of the notebook machine, it may make sense to use a separate computer case to hold the equipment."⁸

The technology advancements available to the over 350 companies designing notebook computers give international executives many options when choosing a notebook. Physical size and weight of the notebook take on additional significance when travel is frequent or over long distances for the executives.

"The term 'offices without walls' describes a new environment where interactive information pervades business at all levels, especially marketing. An estimated 75% of notebook computer sales to date have been the purpose of sales automation."⁹

Salespeople can present quotation to the clients on the spot during the course of negotiation, with the help of the notebook computer. Customers' requirements can be input into the notebook computer instantly and modified quotations could be produced. This fast turnaround time on quotation can secure the business for the salespeople.

⁸ Seymour, Jim "Travelling with a PC - And Enjoying It"
Today's Office Vol: 25 Iss: 10
Date: Mar 1991 pp: 30-32

⁹ McNamara, George "Portable Providing Offices without Walls"
Computer Technology Review
Vol: 11 Iss: 10 Date: Aug 1991

2.4 Advertising Strategy

The IBM Notebook Computer was advertised in four local newspapers, Ming Pao, Hong Kong Economic Journal, South China Morning Post, and Hong Kong Economic Times. It was also advertised in international magazines. They were Time, Newsweek, Yazhou Zhoukan (Chinese), Asiaweek, Far East Economic Review, Asian Business, Reader's Digest, World Executive's Digest, Asian Wall Street Journal, and the International Herald Tribune (See Appendix XV).

The centerpiece of the advertising was a cat holding the IBM Notebook Computer. The slogan with it was "BLUE NOTE It's dark - and light - and the price is right". In some of the advertisements, the BLUE NOTE was changed to the NEW NOTE. This was due to the low familiarity with the 'BLUE' in Hong Kong. Most People in Hong Kong are not as familiar with the IBM blue as the US public is. (See Appendix V for the advertisement).

There were several local computer exhibitions, in which IBM took the opportunity to promote its Notebook Computer.

The IBM Notebook Computer is priced at HK\$16,998 with all the standard features as described in the previous section. This was the lowest regular notebook computer price in the Hong Kong market during the time of announcement (August 1991) with the 386SX microprocessor.

Therefore, the pricing strategy was to invade the low end market of notebook computers. It was felt that such "penetration" pricing was still preferable, and could successfully capitalize on the reputation of IBM for experience and quality.

2.5 Place

The IBM Notebook Computer was first introduced in the U.S., and then came to Asia. It was launched in Hong Kong in August 1991.

2.6 Distribution Channels

The product is sold through the normal IBM authorized PC dealers, the IBM Authorized PC Solution Dealers, and IBM Authorized PC Selected Product Dealers.

The IBM Authorized PC Dealers are dealers that have no retailing outlets. They sell mainly to corporate customers. The IBM Authorized PC Solution Dealers provide application solution packages to the customers that includes both hardware and software. The IBM Authorized PC Selected Product Dealers are retailing outlets that sell just the PC hardware.

In this introduction, IBM took a big step in distribution.

The product was not only sold through IBM dealers but also through reputable retailers. These retailers increased its product availability in Hong Kong. Some of these retailers were in Tsimshatsui and some in the Central District.

Moreover, one of IBM dealers, System Pro, took the opportunity to sell the Notebook Computer through direct mailing. The product was sold through the Hong Kong Bank Master Card advertisement. This package offered payment terms by thirty-three installments, and one custom-made carrying case was given as a gift for each Notebook Computer purchased. (see Appendix XIV for the advertisement)

2.7 Environment

Users who can afford top-of-the-line notebook computers can now buy enough speed, capacity, and power to run any application they want, including "Windows" and computer-aided design (CAD) applications. Prices should fall on 386SX Notebooks when color portable and "486" Notebooks start arriving in volume. There are many Notebooks in the market. (see Appendix VII) They vary widely in important areas, such as capacity and value. In other areas, such as software compatibility and the keyboard, they are

similar.¹⁰

Numerous companies are introducing 80386SX-based notebook computers at lower prices with advanced features than the notebook computers in the market are currently offering. Toshiba America is the most competitive company for notebook computer. They offer a wide range of products at a competitive price.

Apple Computer Inc. announced its notebook Macintosh computer entry into the portable personal computer market in fall 1991. Its Notebook Computer weighs around 5 pounds. Analysts said that the pent-up demand for an adequate portable Macintosh was so great that product shortages could be felt almost immediately. Apple's partnership with miniaturization giant Sony could help it steer clear of user complaints about compromising power for portability.¹¹

Although Compaq's stock price is down 60% for 1991, new distribution strategies, better customer support, aggressive prices, and a Japanese expansion are taking the company toward a rebound. Compaq has taken a long-term outlook and is revitalizing its PC line. The company will

¹⁰ Chapin, Rod; Lyons, Patrick; Rupley, Sebastian
"Powerful Notebooks: Are They Worth the Cash?"
InfoWorld Vol: 13 Iss: 30 Date: Jul 29, 1991
pp: 51-60

¹¹ Daly, James "Apple Notebook Crowd Forms"
Computerworld Vol: 25 Iss: 24
Date: Jul 17, 1991 pp: 1-6

debut new PCs, which will make extensive upgrades easier for the user. Along with plans for a color notebook, the PCs could help reestablish the company's engineering edge. The company strategy is not to cut cost but to keep track of the competition.¹²

Toshiba has come out with a color notebook computer that has the power as a desktop PC. Weighing in at 12 pounds, the T6400 aims at the high-end user.¹³

AT&T, a large telephone company in US, has cut its notebook computer by 13.6% in price. This large company has focused on its laptop computer and notebook computer as their strategic products, not to mention its traditional communication networking.

The editors of Laptop Computer magazine have chosen AST Research Inc's Premium Exec 386SX/20 as "Notebook of the Year".¹⁴

¹² Depke, Deidre A. "A Comeback at Compaq? Wait Till Next Year" Business Week
Iss: 3232 Date: Sept 23, 1991
p: 38

¹³ Kaplan, Douglas "Notebook Packs Power"
Electronic World News
Date: Feb 3, 1992

¹⁴ "Notebook Honour for AST" South China Morning Post
Date: Jan 28, 1992

3.0 Objective and Significance of the Research

The PC is a major trend in technology to replace the "big" computer machine. The PC user now has his option to take the PC with him anyplace and he can get the most out of the machine. The portable PC is becoming very popular with users. Technology has made the equipment smaller in size, and now a portable can have many of the same functions as a Desktop PC.

IBM is a major computer manufacturer in the world, and it is important to maintain its market share among keen competitors. The IBM Notebook Computer was introduced into the Hong Kong market in August 1991. By that time, the market had already been flooded with many brands of notebook computers with various features.

It is important for IBM to understand how the buyers react to its Notebook Computer. These findings could provide IBM with information to position new products into the Hong Kong market and stay competitive.

It is the objective of this paper to provide as much insight into the initial marketplace acceptance as possible and to provide guidance for the future.

Several factors are undoubtedly involved in the market's reaction to the IBM Notebook Computer, notably:

1. The physical properties of the Notebook Computer;
2. The retail trade's reactions to the Notebook Computer;

3. Potential purchasers' appraisal of the Notebook Computer; and
4. The comparative performance of competitors' notebook computers.

For the fourth item, there are many reviews in the technical magazines focusing on the competitive performance of notebook computers. Therefore, this project is designed to address the first three items above.

Research could divide itself into three basic areas: (1) an exploratory phase aimed at developing insights and hypotheses; (2) consumer surveys aimed at quantifying hypotheses among consumers; and (3) trade surveys. This paper concentrated on the first and third areas.

CHAPTER 2

LITERATURE REVIEW

Notebook Computers are the latest and smallest development in the evolution of portable computers. Although many Notebooks are purchased as supplemental computers, their size does not necessarily limit their capabilities. In power, performance, and price, Notebooks vary almost as much as desktops. According to International Data Corporation, the notebook market grew by 40% in 1991.¹⁵

1.0 Competitive Environment

Buyers are nowadays facing a mind-boggling array of portable computers in all power levels, sizes, and prices. In making the decision, the first question to consider is size. The machines are divided into subcategories starting with the Palmtop, which can weigh under one pound. Power is also important. The floppy disk drives make it possible to download files onto removable disks and store them. The application that is most important to the user will help

¹⁵ DuBois, Jeffrey "Notebook Computers: Small Wonders" CFO: The Magazine for Senior Financial Executives Vol: 7 Iss: 3 Date: Mar 1991 pp: 22-29

narrow the choices. For example, if a computer is needed just for word processing, the user should spend time evaluating keyboards. Price could be final determinant.¹⁶

"Buyers today can choose from dozens of computers the size of a standard 3-ring Notebook. Size is limited only by the need for a keyboard to feel comfortable to adult human hands and for a monitor screen to be legible at viewing distance. A number of engineering advances lie behind the Notebook computers. Because of their portability, Notebook computers have been designed to endure bangs and rattling that their desktop counterparts never encounter. For battery power to last, lower power complementary metal oxide semiconductor (CMOS) circuitry is partnered by displays and six drives that incorporate heroic power management techniques."¹⁷

Laptop and notebook computers accounted for 12.1% of all computers sold in retail channels in April 1991.¹⁸ As prices and sizes of these computers drop, businesses face a wide array of choices. Acer, Active Book, Airis, Agilis, ALR, Apple, AT&T, IBM, and Toshiba are among the firms that have entered the portable computer market over the last few years. It has become increasingly difficult for buyers to recognize the cutting edge in terms of price, processor technology, display technology, battery life, weight, and

¹⁶ Depke, Deidre A. "Before You Leap for a Laptop..."
B u s i n e s s W e e k
 (Industrial/Technology Edition)
 Iss: 3212 Date: May 6, 1991
 pp: 136-137

¹⁷ Bell, Trudy E. "Incredible Shrinking Computers"
IEEE Spectrum Vol: 28 Iss: 5
 Date: May 1991 pp: 37-41

¹⁸ Krohn, Nico "The State of the Art in Portable"
InfoWorld Vol: 13 Iss: 25
 Date: Jun 24, 1991 pp: s65-s68

connectivity capabilities.

Price wars will continue in the Notebook market because the clone vendors are going to enter the market at a lower price, thereby putting pressure on the major manufacturers.

As hardware prices continue to drop, manufacturers, finding it more difficult to make a profit, are hoping that volume sales will make up for the diminishing margins. Companies like IBM, Dell and Compaq have already had great price reductions. Price cuts include a 13% reduction in IBM's PS/2, L40 SX Laptop, and reductions of up to 27% in Compaq's LTE and LTE/286 Notebook computers. Some companies are expanding distribution channels in order to bolster volume sales. The PC market will be flooded with inexpensive machines, which will lead to a shakeout among PC vendors.

2.0 Strategies of Major PC Manufacturers

AT&T, hoping to cut 50% off its office leasing costs nationwide, is preparing to implement a virtual office concept through the use of laptop computers for as many as 10,000 of its corporate wide salespeople. The company treats each office separately and attempts to do the same with each employee, encouraging employees to think about the impact of the concept on their work style and family life. For those who do work out of the office most of the

time, the plan is to keep common office space available.¹⁹

Apple, Compaq and IBM are making painful adjustments to stay ahead of their competitors. Both IBM and Compaq made sharp price cuts in early 1991. More fundamental changes have been made in the realm of distribution, , especially in distribution from dealer channels to direct sale. One company that has enjoyed growth because it recognized opportunities for the direct sale of microcomputers is Dell Computer Corporation. There is every indication that the marketing challenges to IBM and Compaq will intensify as the Microcomputer market shifts to Notebook and other portable computer systems. The systems are less complicated purchases than a Desktop personal computer. Consequently, they are opening up the market to a number of new direct-selling manufacturers.²⁰

Apple Computer Inc. Chairman John Sculley recently announced the largest layoff in the company's history, with 10% of its 15,600-member workforce being let go as part of a company-wide restructuring to reduce costs. The cutbacks are a by-product of a changing business strategy, with Apple shifting from selling expensive machines with high

¹⁹ Fitzgerald, Michael
 "AT&T Furnishing Wall-to-Wall Laptops"
Computerworld Vol: 25 Iss: 19
 Date: May 13, 1991 p: 41

²⁰ Yovovich, B.G. "Surviving in the Treacherous
 Microcomputer Market" Business Marketing
 Vol: 76 Iss: 8 Date: Aug 1991 p:17

profit margins to high volumes of low-cost Macintosh.²¹

Compaq is likely to boost advertising spending in 1992 in a repositioning to regain its competitive edge in the US\$20 billion personal computer market. Compaq, the No. 3 PC marketer, has taken a beating recently by low-price competitors such as Dell and AST. The company has retooled its business strategy to broaden its product line, cut costs and increase distribution channels. Compaq intends to boost market share on the PC side by reaching a wider audience. To that end, the company is working on a lower-price PC line sold through superstores, considering direct mail distribution and may even target the education market.²²

3.0 Hong Kong Market

The Hong Kong Productivity Council (HKPC) is taking a more proactive role in building a local computer manufacturing industry, fearing that if it does not do so, Hong Kong may trail far behind other regional dragons, especially Taiwan.

²¹ Daly, James "Apple Cuts Back, Eliminates 1,500 Jobs" Computerworld Vol: 25 Iss: 21
Date: May 27, 1991 p:109

²² Lawrence, Jennifer "Compaq Regroups - Price Repositioning Will be Key to Comeback" Advertising Age
Date: Dec 2, 1991

The Hong Kong PC Market is growing at a fast rate (see Appendix II).

The HKPC also wants to upgrade the technological design capability of local computer manufacturers to ensure that end products are of export quality. The HKPC, through its Electronics Services Division, has therefore taken the lead since mid-April in rounding up an initial seven local computer manufacturers to get a notebook computer design project going.²³

4.0 Hong Kong PC Market Segmentation by Industrial Applications

The International Data Corporation (IDC) divides the PC market share into four different application segments: home/hobby; education; technical/scientific; and business (see Appendix III). The business segment currently accounts for the majority of the PC sales. The education segment, on the other hand, has experienced a sales improvement over the last two years.

Computer systems used as processors for test equipment or processor control are classified as the technical/scientific segment. The vendors have to provide highly sophisticated CAD/CAM support to the users.

²³ Tan, Helen "HK Push Joint Notebook Effort"
Asia Computer Week Vol: 12
No: 18 Date: Jun 10 - 16, 1991

The home/hobby segment continues to be least attractive for most PC vendors. The home users mostly appreciate the PCs which are cheapest and with reasonable quality. For these users, the Golden Shopping Arcade is like a computer supermarket, where they can find their desired hardware, their software manual, and game software for pleasure.²⁴

The IBM Notebook Computer is targeted primarily at the business segment. It would be difficult for IBM to sell its Notebook Computer to the home/hobby segment in Hong Kong because of its price. The clone PC manufacturers still have the most of this segment because they can offer cheaper prices than IBM. Brand and quality are not the major buying factors for the customers in this segment.

²⁴ Li, Terence "Computerization in Hong Kong"
Inform Times Date: Spring 1991

BIBLIOGRAPHY

- "Notebook Honour for AST" South China Morning Post
Date: Jan 28, 1992
- Bell, Trudy E. "Incredible Shrinking Computers"
IEEE Spectrum Vol: 28 Iss: 5
Date: May 1991 pp: 37-41
- Bradshaw, Della "Radio Networks Will Enable Laptops to
Work in the Office"
South China Morning Post
Date: January 28th, 1992 (Tuesday)
- Chapin, Rod; Lyons, Patrick; Rupley, Sebastian
"Powerful Notebooks: Are They Worth the
Cash?" InfoWorld Vol: 13 Iss: 30 Date:
Jul 29, 1991 pp: 51-60
- Daly, James "Apple Notebook Crowd Forms"
Computerworld Vol: 25 Iss: 24
Date: Jul 17, 1991 pp: 1-6
- Daly, James "Apple Cuts Back, Eliminates 1,500 Jobs"
Computerworld Vol: 25 Iss: 21
Date: May 27, 1991 p:109
- DeLottiniville, Paul "Information Technology: The Portable
Professional" CA Magazine Vol: 124
Iss: 8 Date: Aug 1991 pp: 18-22
- Depke, Deidre A. "A Comeback at Compaq? Wait Till Next
Year" Business Week Iss: 3232
Date: Sept 23, 1991 p: 38
- Depke, Deidre A. "Before You Leap for a Laptop..."
Business Week (Industrial/Technology
Edition) Iss: 3212 Date: May 6, 1991
pp: 136-137
- DuBois, Jeffrey "Notebook Computers: Small Wonders" CFO:
The Magazine for Senior Financial
Executives Vol: 7 Iss: 3
Date: Mar 1991 pp: 22-29
- Fitzgerald, Michael "AT&T Furnishing Wall-to-Wall
Laptops" Computerworld Vol: 25
Iss: 19 Date: May 13, 1991 p: 41

Hong Kong Information Technology 1991 Mid-Year
ResearchAsia (Hong Kong) September, 1991

- Kaplan, Douglas "Notebook Packs Power"
Electronic World News
 Date: Feb 3, 1992
- Krohn, Nico "The State of the Art in Portable"
InfoWorld Vol: 13 Iss: 25 Date: Jun 24,
 1991 pp: s65-s68
- Lawrence, Jennifer "Compaq Regroups - Price
 Repositioning Will be Key to
 Comeback" Advertising Age
 Date: Dec 2, 1991
- Li, Terence "Computerization in Hong Kong" Inform
Times Date: Spring 1991
- Mallory, Gini "Litigation and Discovery : Organization
 and Management" Legal Assistant Today Vol:
 8 Iss: 6 Date: Jul/Aug 1991 pp: 86 - 93
- McNamara, George "Portable Providing Offices without
 Walls" Computer Technology Review
 Vol: 11 Iss: 10 Date: Aug 1991
- Radding, Alan "Big Blues Takes Aim at Toshiba, Compaq"
Advertising Age Vol: 62 Iss: 13
 Date: Mar 25, 1991 pp: 1
- Seymour, Jim "Travelling with a PC - And Enjoying It"
Today's Office Vol: 25 Iss: 10
 Date: Mar 1991 pp: 30-32
- Shaffer, Richard A. "Here Comes IBM" Forbes Vol: 147
 Iss:4 Date: Feb 18, 1991 pp: 108
- Tan, Helen "HK Push Joint Notebook Effort"
Asia Computer Week Vol: 12 No: 18
 Date: Jun 10 - 16, 1991
- Taylor, Thayer C. "The PC Evolution:
 Desktop...Laptop..Palmtop...?top"
Sales & Marketing Management Vol: 143
 Iss: 2 Date: Feb 1991 pp: 50 - 61
- Yovovich, B.G. "Surviving in the Treacherous
 Microcomputer Market" Business Marketing
 Vol: 76 Iss: 8 Date: Aug 1991 p:17

CHAPTER 3

METHODOLOGY

1.0 Exploratory Projects

In order to do the exploratory research, "focus groups" were conducted.

This qualitative technique is used to generate understanding and insight rather than to produce projectable conclusions. The methodology builds on two psychological principles: the assumption that individuals talk more freely about the product or problem in a group of perceived peers than by themselves, and the synergy of ideas whereby one consumer's thoughts are played off another's, resulting in a synthesis of insight.

The focus group procedure was developed to gain an insight into the reactions of buyers or potential buyers towards the IBM Notebook Computer. In conducting focus group research, target buyers were first identified. As described in Chapter 1, they were executives, accountants, lawyers, engineers, professionals, and salespeople.

Seven groups were conducted among males and females aged 25 to 40 years old, during the period October 10 - 20, 1991. Group composition are summarized in Appendix XII.

1.1 Conducting the Focus Group

The success of each focus group is very much the responsibility of the group moderator. The focus group moderator (the writer of this paper) has had training in conducting productive sessions on this technical topic among target markets.

In conducting a focus group, the moderator's role is to:

- . Lead and guide the discussion, probing revelations of interest as they are volunteered;
- . Insure, to the extent possible, that each group member expresses his or her own opinion or point-of-view; and
- . Stimulate, confront and probe, thereby maximizing the generated insight.

The session began with the moderator introducing herself and broadly defining the purpose of the discussion.

Then questionnaire Part 1 (Appendix VIII) was handed out to the participants. The participants filled out the questionnaire privately and individually, and returned them to the moderator. Then they were allowed to "play with" the computer (an IBM N33 Notebook Computer) for fifteen

minutes. After that, they were given a second questionnaire (Part 2: Appendix IX) again that was filled out privately and individually, and was returned to the moderator. Then the focus group session began.

1.1.1 Part 1

The questionnaire in Part 1 was designed so that the participants were asked :

- . The popular brands and types of PCs that they own;
- . The popular software that they use at work and at home;
- . The awareness of Notebook Computers;
- . The time they spent on their Computers;
- . The sources they learn about PC and Notebook Computers;
- . The likes and dislikes about their Notebook Computers if they own one;
- . The key characteristics of Notebook Computers that are most desirable to them;
- . The importance of selected criteria for them to choose a Notebook Computer;
- . A price range for the Notebook Computers that is acceptable to them; and
- . The distribution channels that they are aware of Notebook Computers.

1.1.2 Part 2

As noted above, each participant was given the opportunity to examine and try an IBM Notebook Computer for a duration of 15 minutes. The Notebook Computer had been installed with demonstration programs like " Windows" and "CADCAM". After the demonstration, the moderator then passed out the questionnaire (Part 2: Appendix IX) to the participants. The private feelings of participants towards the likes and dislikes towards the IBM Notebook Computers were solicited. On the questionnaire form, participants were also asked of their sex, age, education level, nature of company business and job title for demographic purposes.

1.1.3 Part 3

The moderator then followed the discussion guide (Appendix X) to direct the flow of discussion of the participants within the desired boundary. After the participants had experienced the IBM Notebook Computer, the moderator then led the discussion towards the likes and dislikes of the machine and a general discussion of notebook computer.

The goals of this discussion were to:

- . Identify specific needs or questions buyers might generally have regarding the Notebook Computers; and
- . Identify the key characteristics or features that

users would like or dislike about the IBM Notebook Computers.

2.0 Trade Survey

IBM retailers must not be overlooked as an important information source. They are the marketers who have the most direct contact with potential users. Thus, they should be aware of the features that individuals consider as they "shop" for Notebook Computers, since they are likely to be consulted during this process. After the purchase itself, retailers may have additional exposure to IBM Notebook Computer owners, especially if problems are encountered by the users.

The survey of IBM retailers focused upon areas similar to those addressed in the consumer surveys:

- . Identification of product attributes which buyers are most interested in;
- . Identification of buyers' reactions to the IBM Notebook Computers; and
- . IBM's image as compared to competitors.

IBM's identification of product problems could lead to a modification of the product, and its service, and thus ultimately increase sales in future periods. Since IBM has a complete list of its retailers, this was used as a

sampling frame from which respondents would be chosen based on physical location which determined the customer targets. Five retailers were chosen for in-person interviews at their shops. The retailers were offered a summary of the interview results on both the users and the trade as a token of appreciation for their participation. The interviewer followed the interview guide (Appendix XI) during the interview with the retailers.

CHAPTER 4

KEY FINDINGS

1.0 Findings on Buyers' Reactions to the Notebook Computers

1.1 Part 1 - General Findings on PCs

A. PC usage :

From the questionnaire (Part 1: Appendix VIII), most participants owned Desktop PCs rather than Laptops or notebook computers. All participants used PCs at work and 85% of them also used the PC at home.

Most of them use Lotus 123, Wordstar, Windows, and Wordperfect at work. At home, they use the PC for word processing, spreadsheets, and video games. Most of them use the PC from a period of 1 hour to 3 hours per day.

B. Sources of PC information :

Most of the participants obtained PC information through technical magazines, newspapers, exhibitions and friends.

C. Brand Awareness of Notebook Computer :

The top three well-known notebook computer vendors are IBM, AST and Apple. Other brands mentioned during the survey were listed in Appendix XIII.

D. Findings about the most desired features in a Notebook Computer:

| | |
|---|--|
| System | CPU - Intel 30386 |
| Clock Speed | 20 / 33 Mhz |
| Co-processor | Preferred |
| Ram | 2MB Standard / 4MB Expandable |
| Mass Storage: Hard Drive Access Time | 40 MB 19 ms |
| Floppy Disk Drive | 3.5" - 1.44MB Drive (internal) |
| Video Display: Gray scales Color | 32 Preferred |
| Desired Interface Features | Serial (RS-232-C), Parallel (Centronics), CRT Monitor, PS/2 Mouse, Numeric Keypad, Expansion Bus (for expansion box), Internal FAX, Data Modem (host connectivity) |

E. Selection Criteria for choosing a Notebook Computer :

(Not Important=1; Very Important=5)

| | |
|---------------------|------|
| FUNCTIONS | 4.65 |
| QUALITY | 4.40 |
| WEIGHT / SIZE | 4.35 |
| PRICE | 3.90 |
| AFTER SALES SERVICE | 3.55 |
| BRAND NAME | 2.40 |

F. Price Preference :

It is in the range of HK\$12,000 to HK\$15,000 for a notebook computer with features comparable to the IBM Notebook Computer.

G. Places to buy Notebook Computers

Most of participants chose to buy notebook computers at the Golden Arcade in Shamshuipo. The rest of them chose direct dealers. Some would consider Broadway Electric Shop, which is a chain electric shop in Hong Kong.

H. Price

Most of the participants considered the price offered by

1.2 Part 2 - Likes and Dislikes of the IBM Notebook Computer

A. Features :

Most of the participants complained of the external disk drives. They would like to see the system connected to an external monitor. The clock rate of 12 Mhz is too slow compared to other brands. The battery life was 1.5 hour and most participants considered it to be too short. The power adapter was too big to carry around. The video display had a 16 gray scale only. There was no built-in modem and no co-processor socket. The participants expressed their liking of keyboard and the video display.

B. Appearance :

Some participants complained about the position of the power socket which was located at the back of the Notebook Computer. Most of the participants expressed appreciation for the color of the Notebook Computer.

C. Weight / Size :

Most of the participants considered the weight and size of Notebook Computer was acceptable. Some wished it could be thinner and lighter.

D. Price :

Most of the participants considered the price offered by

IBM (HK\$16,900) was fair and competitive. Some wished it to be still cheaper.

E. Durability :

Some participants considered the Notebook Computer to be robust and appeared to be better than competitor models. The cover for the disk drive socket appeared to some to be fragile.

1.3 Part 3 - Comments from Group Discussion

The IBM Notebook Computer should be compatible to capabilities of a Desktop PC. The IBM Notebook Computer should be thinner. More advertisements were needed so buyers could be aware of the product. A cheaper price would be more desirable for the IBM Notebook Computer. Buyers like to have a notebook computer to facilitate their work during travel.

From the discussion, only 4 out of 21 owned Notebook Computers. The brands were AST, Compaq and Packard Bell. Comment on the AST was that improvements were needed for its keyboard layout. Comments on Packard Bell were that its size was compact but battery life was short and video display was not good. Appendix XIII has more detailed information on the survey findings.

2.0 Retailers and Dealers

Five retailers and dealers were interviewed in November 1991. Three of the retailers were located in Tsimshatsui and one in Central. One general dealer was in Quarry Bay. The general dealer did not have a retail business yet at the time of the interview. Their monthly Notebook Computer sales were all about the same.

The customers of the retailers and dealers included corporate purchasing, executives, individuals and tourists. They carried brands from Apple, AST, Compaq, IBM, Sanyo, Sharp, Texas Instruments, Toshiba, Twinhead, and Panasonic. Their monthly notebook computer sales is around 30 units. Among all brands, the best sellers are IBM, Texas Instruments, Sharp and Compaq.

2.1 Awareness of the IBM Notebook Computer

IBM had advertised in four local newspapers: Ming Pao, South China Morning Post, Hong Kong Economic Times, and Hong Kong Economic Journal. Overall, the advertisement was well received. The graphic - the cat - impressed potential buyers in the market. Advertisements were not run in the newspapers continuously. There were more inquiries and

sales of the product during the advertising period.

2.2 Source of Information regarding Notebook Computers: how did buyers learn about it?

Mostly the customers learned about the Notebook Computers from technical magazines. The inputs from the salespeople were key to decision making of the customers.

2.3 Price range for Notebook Computers

The acceptable price range for a notebook computers was ranging from HK\$10,000 to HK\$17,000 for personal purchase. For corporate purchase was HK\$20,000 to HK\$30,000.

2.4 The most desired features of Notebook Computers

| | |
|---|---|
| System | CPU - Intel 80386 |
| Clock Speed | 20 Mhz |
| Co-processor | Preferred |
| Ram | 2MB Standard / 4MB Expandable |
| Mass Storage: Hard Drive Access Time | 40 MB 19 ms |
| Floppy Disk Drive | 3.5" - 1.44MB Drive (internal) |
| Video Display: Gray scales Color | 32 Preferred |
| Desired Interface Features | Serial (RS-232-C), Parallel (Centronics), CRT Monitor, PS/2 Mouse, Numeric Keypad, Expansion Bus (for expansion box), Internal FAX, Data Modem (host connectivity) |

2.5 Likes and Dislikes of IBM Notebook Computer

| | LIKES | DISLIKES |
|----------------------|------------------------|--|
| FEATURES | Good back-lit screen. | Battery: life too short; recharge time too long; Notebook not operational during recharge. Speed: clock rate of 12 Mhz too slow. Power Supply: adaptor too big and heavy; quick charger too expensive. Options: no optional CRT monitor interface. Drive: external and noisy. |
| APPEARANCE | Exclusive black color. | No carrying case. |
| WEIGHT / SIZE | Good. | |
| PRICE | Reasonable. | |
| DURABILITY | Good. | |

2.6 Comments

Television commercials are frequently very effective media in Hong Kong to promote products. Dealers thought that IBM should put the Notebook Computer commercials on television. The price of the product was reasonable but it would be more appealing to customers if there was a promotion

package. The package could include software, hardware, or carrying case as a bonus for the notebook computer. In spite of it, the product features, price and brand was very competitive at the time of product introduction. It captured the market in the low end technology segment. The features were adequate for general applications and the company reputation provided buyers confidence in the quality of the product. Sales were good in the beginning. The Notebook Computer market is very competitive. Within a few months, competitors had introduced models with enhanced features at a reduced price. This has impacted the sales for the IBM Notebook Computer. Buyers can easily get other products with more features and better price compared to the IBM model. For IBM to stay competitive in the Notebook Computer market, it is time for IBM to announce its follow on products to the market.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

1.0 Conclusions

When comparing comments from the retailers and buyers, most of them matched very well. One important note of all was that the price performance of the IBM Notebook Computer was a big success at the time of its introduction. IBM offered the best price (HK\$16,998) for the features in the market at this time. Other competitors like AST and Toshiba offered more features at a higher price. The IBM Notebook Computer satisfied the buyers who were interested in using the notebook computer for word processing only. The IBM Notebook Computer could do the job for them at a reasonable price with a name for quality. Moreover, the price was close to the preferred price found in the survey (HK\$12,000 to HK\$15,000).

There were many dislikes from the buyers and retailers but they were not totally detrimental to the product. During the time of the product introduction, the IBM Notebook Computer was the cheapest among all key competitors. The IBM brand name was an advantage to the product.

As a result of the survey, we have concluded that there are areas for improvement.

1.1 Promotion Package

One general comment from the interview of dealers was that IBM did not have any promotion package to help the sales of the product. One dealer has put in some software packages as "Windows" and "DOS" for the sale. They also commented that buyers would prefer to have a custom made carrying case for the IBM Notebook Computer. Based on these findings, we recommend including some software to help the promotion of the Notebook Computer. A custom made carrying case with the IBM logo would be attractive to the customers.

1.2 Advertising and Promotion

From the survey, dealers had complimented the advertisement. The graphic and slogan were good. However, the advertising was not continuously run in newspapers to maintain the product awareness. When the advertisement was on, there were more interests on the product from the potential buyers. Besides that, the Notebook Computer market is very competitive. The traditional advertising and promotion strategy for technical products has to be modified to stay competitive in the market.

Since there is a lot of traffic at the Municipal Transit Railway (MTR) stations, promotion counter at the MTR station will attract a large size of people passing by. People will look at the demonstration and may collect some brochures from the sales people. Other than MTR stations, counters can be set up in the popular shopping centers such as Pacific Place in Admiralty, New World Centre in Tsimshatsui, etc. This could help to increase the product awareness among the general public.

Television is very popular in Hong Kong. Having a product commercial on TV in prime time will increase product and brand awareness tremendously. The elephant commercial on TV was a big success for IBM to promote its new business strategy. However, IBM has not done any TV commercial for its Notebook Computer yet. It is recommended that IBM should do some advertising during product introduction. These would give the product a good start off. Then IBM could use low budget advertising to support the product awareness. These could be the existing advertisements such as commercials on newspaper or magazines. To maintain a continuous advertising is essential for the product awareness.

1.3 Software Packages

More tailored software packages for lawyers and accountants would be an advantage. Most of these professional people

required more training and education in using PCs. During the survey, some of these professionals claimed they did not know how to use the PC or they did not find the PC helpful to their jobs. Most of them refused to use a PC because of their lack of knowledge of the PC. Their excuse was that they were too busy. Most of the word processing was done by their secretaries. However, in the US, these two professions rely on the PC to improve their productivity, as it was noted in Chapter 2.

1.4 Users Club

It was interesting to find out from the survey that most buyers brought PC products based on the recommendations of either salesperson or friends. In order to get access of PC information other than the sources mentioned above, it will be helpful to establish a PC Users' Club for users to share and exchange information. It is a club for users to find out about new products. Users can share their experiences with both hardware and software products. Manufacturers can use the club for their new product announcement. IBM can initiate a users' club within its company. The club in the company can share their information about PCs and its software products available in the market. They can send their comments or suggestions to the company about company products. Thus, this club can promote a stronger sense of belonging to the company among the employees. This kind of club can be extended to the community to promote the use of PC among the public.

1.5 Training Courses

From the survey, product awareness was very important for the product. It is a very good channel to increase product awareness through training classes. IBM should initiate more training courses for entry level users. Even though there are many courses offered in the community, their quality was questioned by the general public. If IBM would organize these training courses tailored for different professionals, this would help the promotion of PC usage.

1.6 Products

From the surveys with the potential buyers and retailers and dealers, the most desired features for Notebook Computer were consolidated in the following table. Both the dealers and buyers had provided similar responses which were listed in Chapter 4.

| | |
|---|---|
| System | CPU - Intel 80386 |
| Clock Speed | 20 / 33 Mhz |
| Co-processor | Preferred |
| Ram | 2MB Standard / 4MB Expandable |
| Mass Storage (Hard Drive) | 40 - 60 MB |
| Floppy Disk Drive | 3.5" - 1.44MB Drive (internal) |
| Video Display: Gray scales Color | 32 Preferred |
| Desired Interface Features | Serial (RS-232-C), Parallel (Centronics), CRT Monitor, PS/2 Mouse, Numeric Keypad, Expansion Bus (for expansion box), Internal FAX, Data Modem (host connectivity) |

From the survey, it was discovered that functions, weight/size and quality of a Notebook Computer were more important than brand name, price and after sales service. Therefore, it is important for IBM to consider enhancing

its product according to the comments solicited from the survey.

One of the major comment was the clock speed which is 12 Mhz. This was very slow compared to the competitors' notebook computers. From Table I, the most desired clock speed was 16 Mhz.

Another comment was the battery life. The life is 1.5 hours now and it was considered to be short. From the survey, 83% of the interviewees used PCs other than in the office from 1 hour to 3 hours. Therefore, the follow on product should consider a longer battery life of up to 3 hours.

Another comment was the size of the adapter. The adapter was too big to carry it around. The whole concept for Notebook Computer was for PC to be portable. Since the battery life was short, the user may have to carry the adapter around. A slimmer design of adapter should be considered.

From the survey, a built-in disk drive was more preferable than an external drive.

Most buyers would prefer to plug the Notebook Computer into their office system. If the Notebook Computer can provide connection to external keyboard and monitor, the user can bring the unit back to the office and uses a better

keyboard and color monitor for interfaces.

1.7 Distribution Channels

From the survey, most potential buyers would go to the Golden Arcade Shopping Centre in Shamshuipo to buy PCs. As indicated in Chapter 2, the potential market for computers was the business sector in Hong Kong. The buyers in this sector tend to go to the reputable dealers and retailers rather than to the Golden Arcade Shopping Centre, which carries a lot of counterfeit software and clones of the original machines. Therefore, the current selected dealers and retailers were good. From Chapter 2, PC manufacturers are increasing their distribution channels, including direct mail. IBM needs to focus on enhancing its distribution channels. IBM has recently used CSL outlets for its Notebook Computer. IBM should stay with the reputable ones only, since these reputable dealers and retailers serve most of the corporate accounts and business people.

1.8 Price

The price of HK\$16,998 was considered to be very competitive at the time of introduction. From Chapter 2, most PC manufacturers cut their prices drastically to stay competitive. Most of the major PC manufacturers such as

Apple Computers were streamlining their operation in order to survive in the keen competition with a low profit margin. For IBM to capture the market, its follow on Notebook Computer products would have to be price competitive with other Notebook Computer manufacturers. Moreover, the functions of IBM Notebook Computer needs to be top of the niche in the market.

2.0 Recommendations

As we can see from the Literature Review on Chapter 2, the notebook computer market is very competitive.

"It has become increasingly difficult for buyers to recognize the cutting edge in terms of price, processor technology, display technology, battery life, weight, and connectivity capabilities."(quoted from Chapter 2)

Technology will no longer be the primary driving force of notebook computer purchases. Instead, distribution effectiveness and marketing skills have become more influential on purchase decisions.

To survive in the Hong Kong Notebook Computer market, the manufacturers have first to be technologically competitive. The manufacturers should cut costs and improve product features. Besides, they should identify their market and ensure their products are designed to satisfy the market. Within the target segment, they have to understand the customers' requirements and the motives behind their

purchase.

Development costs are very high so it is an advantage for the manufacturers to establish alliances. Maintaining alliances could provide competitive edge for the manufacturers to cover a larger range of products. IBM has formed several alliances. IBM formed an alliance with Apple to develop workstation. Another alliance is IBM with Toshiba to develop colour LCD for notebook computer. In the local market, Hong Kong Productivity Council has formed an alliance with local manufacturers to develop notebook computer. (refer to Chapter 2 for details)

The following recommendations were made based on findings from the surveys. As from Chapter Two, the market segment for the Notebook Computer is the business sector for IBM. The cost of the computer is not low enough to compete for the home segment market. These recommendations were arranged in priorities.

2.1 Products

From the survey, buyers are looking for a processor 80386 with a clock speed 20 Mhz to 33 Mhz. The IBM Notebook Computer is built with 80386 at 12 Mhz. The market has notebook computer that could offer the speed at 20 Mhz and 33 Mhz.

The market was expecting an IBM new notebook computer with enhanced features.¹ For IBM to stay competitive, it is important to shorten the product development cycles of its Notebook Computer. Only if IBM stays ahead in its technology, it can maintain its market leadership. IBM has around one year development cycle on notebook computer. IBM has launched the market driven quality across the company worldwide. IBM now targets to reduce the development cycle to six months.

IBM had in the past concentrated on providing their customers with hardware only. IBM has now changed its strategy to provide "total solutions" to its customers. By enhancing its technical support to customers, IBM plans to capture more market share. A complete solution includes both hardware and software.

In order to take care of the industry segment of the business, the Notebook Computer should be designed in such a way that the users can take it back to their office and use it as a terminal. After installing some LAN hardware, the users can plug in the external keyboard and monitor to their Notebook Computer.

1. IBM announced two new Laptop Computer models in March, 1992. One is the enhanced version of the N33 (Notebook Computer discussed in this paper) and the other is a color Laptop Computer.

2.2 Distribution Channels

From Chapter 1, one of the IBM dealers has started its direct mailing service on the IBM Notebook Computer with Hong Kong Bank Master Card. From Chapter two, PC competitors are streamlining their sales channels. IBM should consider more indirect channels for product distribution. An effective distribution channel can be cost justified and is important to the sales success since it

1. Reaches the greatest number of customers;
2. Moves the highest volume and range of products; and
3. Creates local presence for the manufacturer.

Direct mailing is one of the sales channel for IBM Notebook Computer.

2.3 Marketing Programs

IBM utilizes corporate advertising, using various trade press and non-trade press outlets, i.e., Asian Computer World, IT Asia, Time, and Newsweek. Besides that, IBM can donate their notebook computer to colleges and museums to increase its awareness. From Appendix VI and Appendix XV, it was observed that IBM Notebook Computer sales were higher in the first two months. These were probably contributed by the heavy advertising in August. This should continue through year end for better sales.

2.4 Advertising

From Chapter Two, it was stated that Compaq is to boost its advertising expenditure this year. With its brand name being well-known, IBM should focus more on product features and benefits provided by its Notebook Computer. Hong Kong is a unique place for advertisement. If IBM can successfully set the trend in the city with its Notebook Computer through good advertising, its market place will be strengthened. The TV campaign: "The Road is Long" with two elephants was a great success. This was a worldwide campaign and it has aroused public attention to the commercial. The Royal Society for the Prevention of Cruelty to Animals, a local society, wrote a letter to the South China Morning Post to challenge the commercial because they felt the elephants were being mistreated. IBM had to reply to the challenge in public. However, this did not create a negative image for IBM. As a matter of fact, the public perception on the commercial was generally good.

2.5 Information Channels

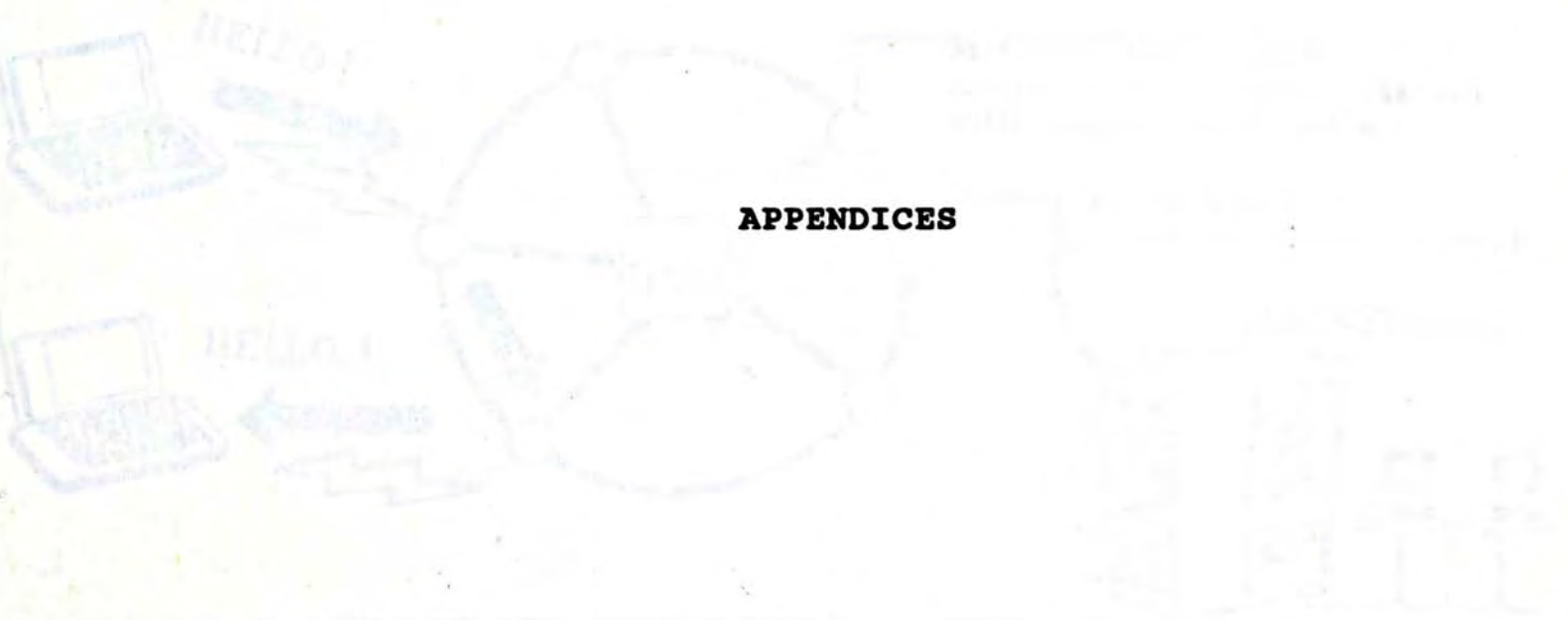
One comment from the survey with dealers was that IBM did not run its advertising in newspapers continuously. Whenever there was an insertion in the newspaper, inquiries for the product were significantly increased. Since the life cycle of Notebook computer usually is less than a year, it is definitely helpful to IBM to maintain its advertising insertions in the newspaper continuously for

the first four to five months to maintain the product awareness.

Other than advertising, various information-oriented media can also be highly effective for IBM. These media generally include trade shows, and a PC Users' Club. These channels can increase product awareness in Hong Kong and also strengthen corporate image. IBM has actively participated in trade shows. IBM should consider the PC Users' Club to promote its products.

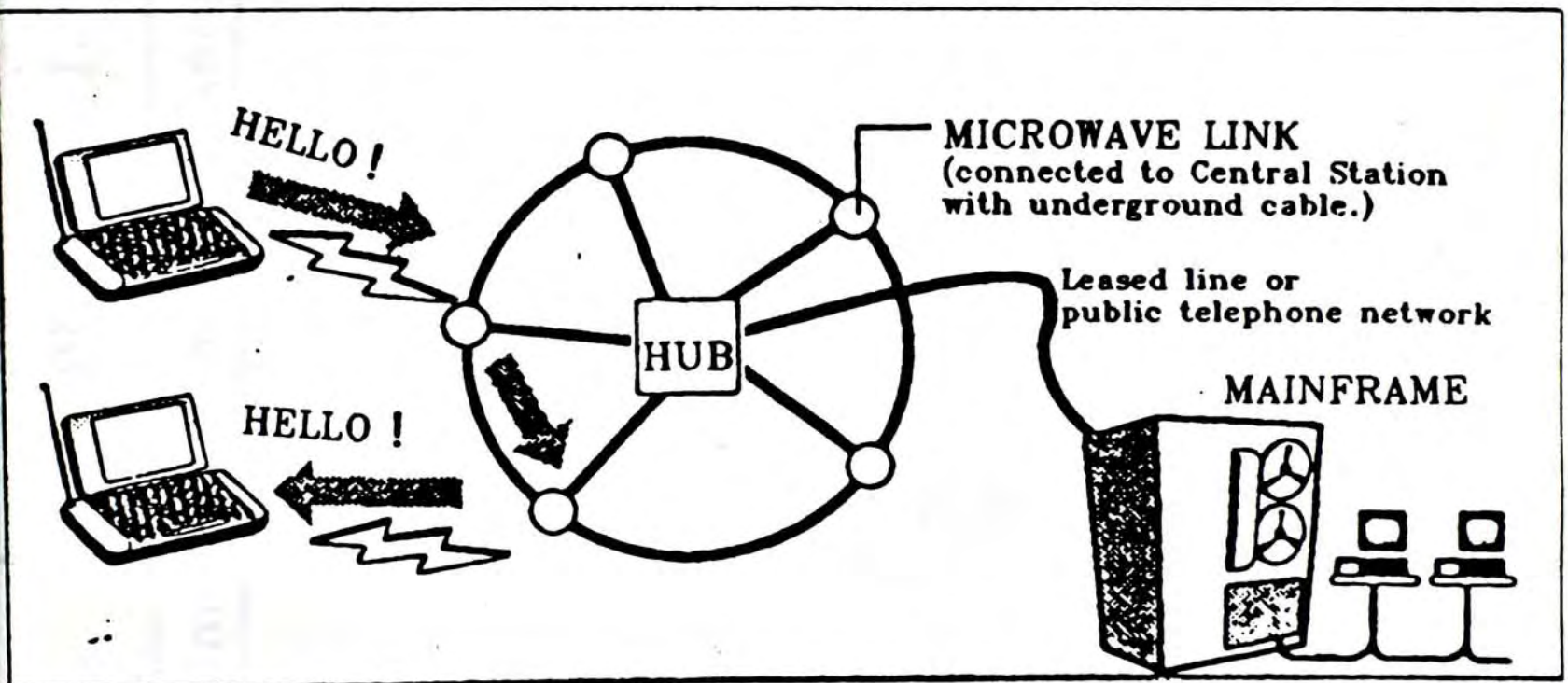
APPENDIX I

AN EXAMPLE OF RADIO NETWORKING



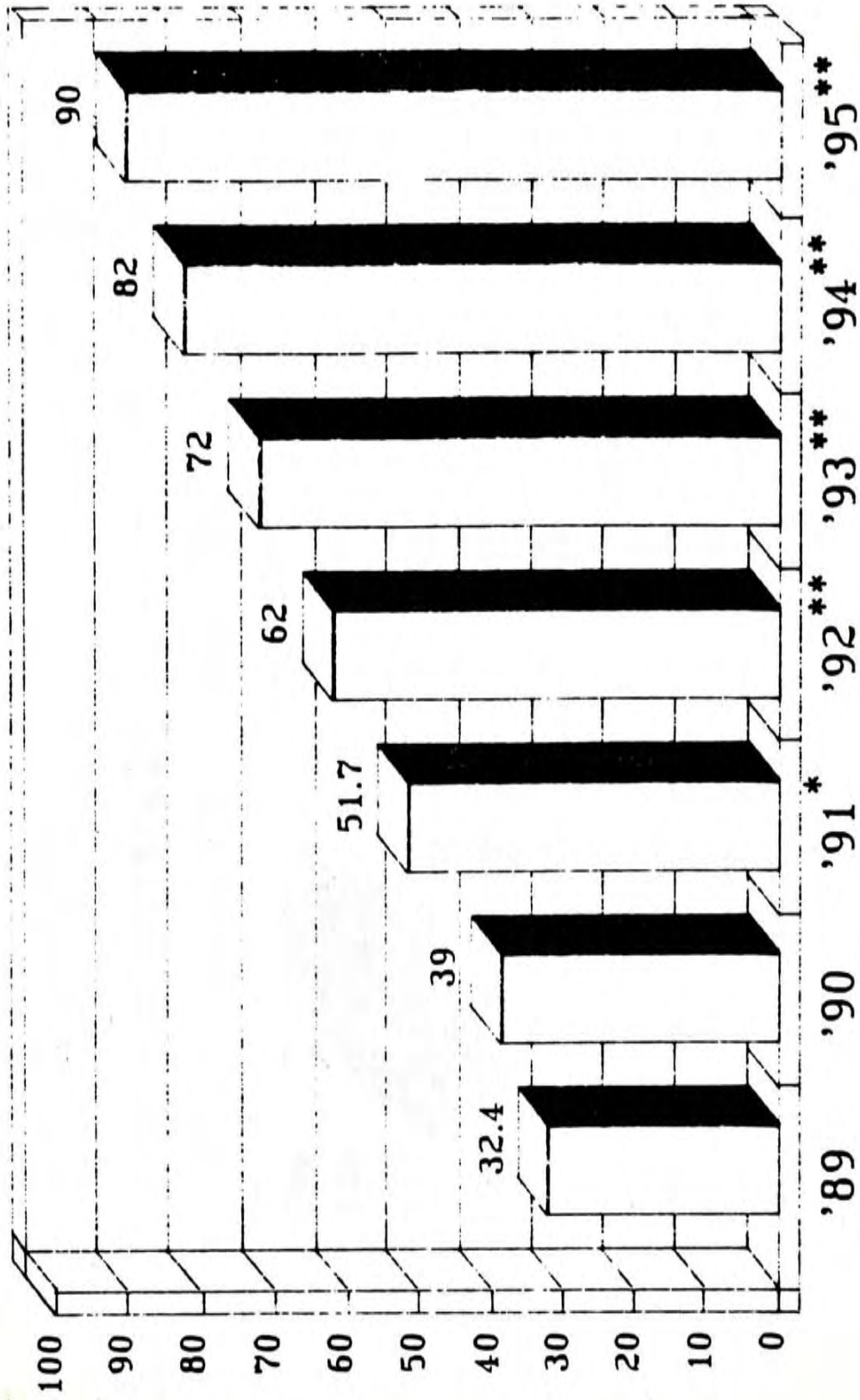
APPENDIX I

AN EXAMPLE OF RADIO NETWORKING



APPENDIX II

PC Unit Sales in Hong Kong : 1989-1995

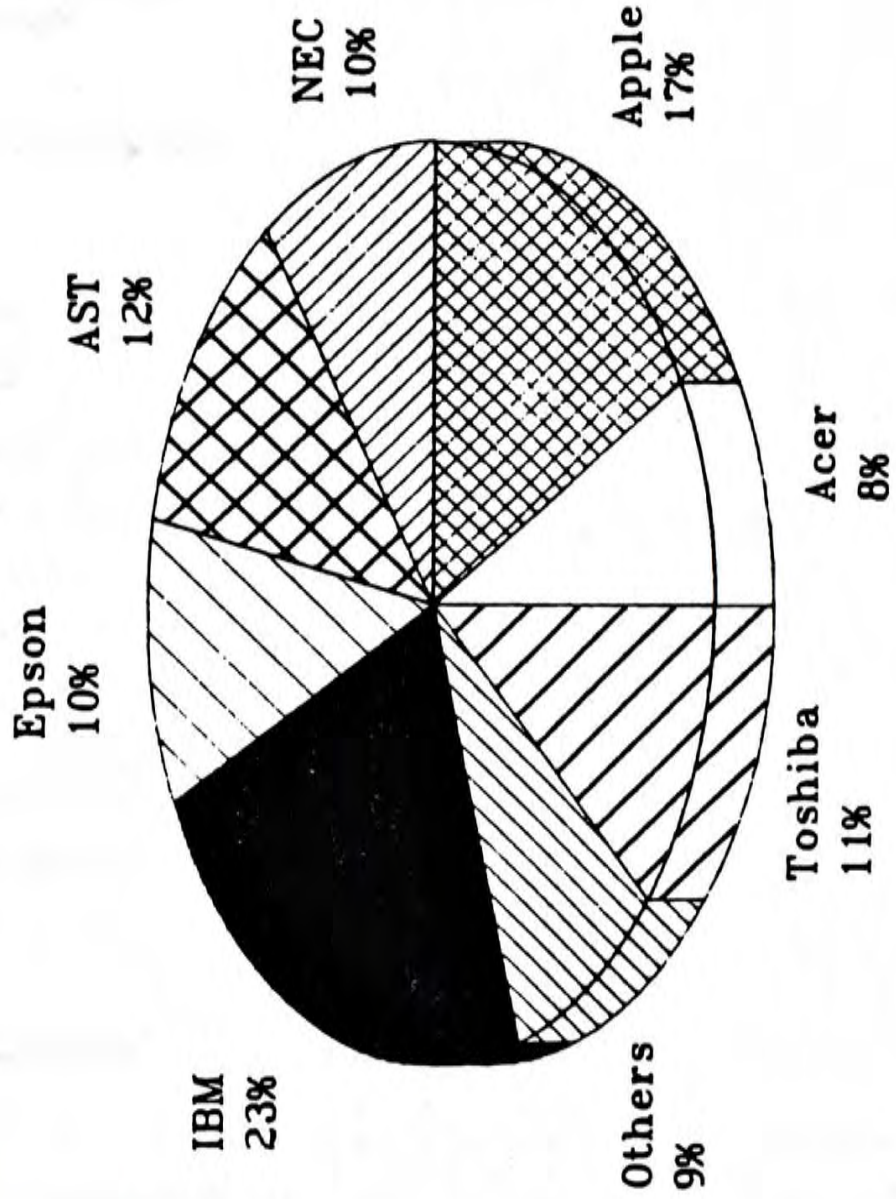


* Estimated

** '92-'95 Projected

APPENDIX III

1990 PC Market Shares by Dollar Volume



Appendix IV

The IBM Notebook Computer Specifications:

Model N33

| Feature | Benefit |
|--|--|
| Lightweight, compact design | <ul style="list-style-type: none">• Allows PS/2 Notebook to fit into the smallest of attaché cases, or be easily stored on a bookshelf• Light enough to carry and use anywhere you need it |
| i386 SX processor at 12 MHz | <ul style="list-style-type: none">• Runs the latest 32-bit applications, as well as the thousands of standard PC applications available. |
| Integrated VGA liquid crystal display | <ul style="list-style-type: none">• Offers a large easy-to-read 240mm (9.5-inch) viewing area• Fluorescent sidelighting enhances contrast and reduces glare• Angle adjustment, contrast and brightness controls provide maximum viewing comfort• Provides sharp, clear black-on-white text and graphics |
| 84-key compact keyboard | <ul style="list-style-type: none">• Has familiar keyboard layout for ease of use• Standard number of keys assures that all functions can be used quickly with a single finger. Separate dedicated cursor control keys in the usual inverted T shape provide easy access to often-used functions |
| Adjustable keyboard angle | <ul style="list-style-type: none">• By pulling out tabs from the back panel, the keyboard angle can be adjusted to suit the individual user |
| Optional 17-key numeric keypad | <ul style="list-style-type: none">• Provides fast input for user working with numeric applications |
| 70 ns parity — checked low power memory — 2Mb standard — 6Mb maximum | <ul style="list-style-type: none">• Ensures fast access to applications and program data• Provides sufficient memory for modern business environments, including Microsoft™ Windows. The IBM notebook memory operates in low-power refresh mode, minimising its power consumption• Choice of additional memory configurations, as your requirements increase, with optional low-power SIMMS. |
| Fast (19 ms) 40Mb hard disk, with a 63mm (2.5-inch) form factor | <ul style="list-style-type: none">• Provides capacity and performance for your programs and data, in a compact space |
| External, high density 90mm (3.5-inch) diskette drive | <ul style="list-style-type: none">• Can store 1.44Mb of data on a robust, highly portable medium. Minimises the weight of the system, and reduces power consumption, so maximising battery life. |
| Advanced Power Management | <ul style="list-style-type: none">• Conserves battery power during idle times and between keystrokes: "trickle charge" during AC operation, too, to keep recharging to a minimum• Automatically adjusts processor speed to achieve the ideal balance of performance and power conservation — yet allow you to choose maximum speed when you need it |
| Suspend/Resume | <ul style="list-style-type: none">• Allows you to stop and restart applications simply by closing and then reopening your PS/2 Notebook — you can pick up exactly where you left off• Lets you change batteries in the middle of an application without closing programs or files |
| Advanced NiCad battery pack | <ul style="list-style-type: none">• Lets you perform business computing tasks whenever and wherever you need. The Advanced Power Conservation features of the PS/2 N33 SX ensure a battery life of over 1.5 hours in normal usage |
| Power-on Password protection | <ul style="list-style-type: none">• Provides data security by requiring that a password be entered when the computer is turned on• Can be disabled when not required |
| Integrated ports for diskette drive, parallel, serial and keypad/pointing devices | <ul style="list-style-type: none">• Allows instant connection of other peripherals, such as printers and communications lines |

Appendix IV Cont'd

The IBM Notebook Computer Specifications

| Feature | Benefit |
|--|--|
| Autosensing AC Power-Adapter | <ul style="list-style-type: none">Automatically adjusts for local power conditions — a particularly useful feature when travelling abroad. The AC Adapter trickle charges the advanced NiCad battery in four hours, while the system is in operation |
| LED indicators | <ul style="list-style-type: none">Keep you informed of the status of the IBM notebook, and include a battery indicator (high, medium and low) and keyboard status lights |
| Optional Quick Charger | <ul style="list-style-type: none">Can recharge a fully exhausted battery in around one hour |
| Mini mouse option | <ul style="list-style-type: none">Attaches directly, or through the numeric keypad, so you can have full 101-key capability plus a mouse |
| International Hardware Warranty Service | <ul style="list-style-type: none">Provides IBM warranty service in any country where the PS/2 Notebook is sold |

IBM Personal System/2 Model N33 SX at a glance

| | |
|------------------------------------|--|
| Machine number | 8533-043 |
| Microprocessor | 80386 SX |
| Standard | |
| Clock speed | 12 MHz |
| Other functions | Suspend/Resume |
| Bus architecture | IBM Personal Computer AT™-type |
| Data path | 16-bit |
| Memory (RAM) | |
| Standard | 2Mb (70ns) |
| Maximum on system board | 6Mb |
| System maximum | 6Mb |
| Integrated display | 240mm (9.5") diagonal; Supertwisted Nematic (STN) black-on-white LCD; cold fluorescent sidelighting; 13:1 contrast ratio; 1:1 aspect ratio |
| Integrated functions | 16-bit Video Graphics Array (VGA) with serial port, parallel port, keypad/pointing device port, external expansion port |
| Diskette storage (external) | |
| Standard 90mm (3.5-inch) | 1.44Mb, 720K |
| Hard disk storage | |
| Standard | 40Mb (19ms) |
| Display modes | |
| Integrated liquid crystal display | VGA, EGA, CGA and MCGA compatibility, including 640 x 480 addressability and up to 16 grey shades; 25 lines by 80 characters |
| Keyboard | 84 keys plus attachable 17-key numeric keypad; adjustable angle with pull-out tabs from back panel; standard layout keyboard |
| Power supply | Rechargeable battery pack for over 1.5 hours continuous operation (normal use), recharge time 4 hours; optional Quick Charger recharge time 1 hour; AC adapter (100-240V AC, 50 or 60 Hz); worldwide usage |
| Size | Approximate Height 43mm x Width 297mm x Depth 210mm (1.75" x 11.75" x 8.25") |
| Warranty | One-year limited IBM service warranty; International Hardware Warranty Service |

Appendix V

The IBM Notebook Computer Advertisement

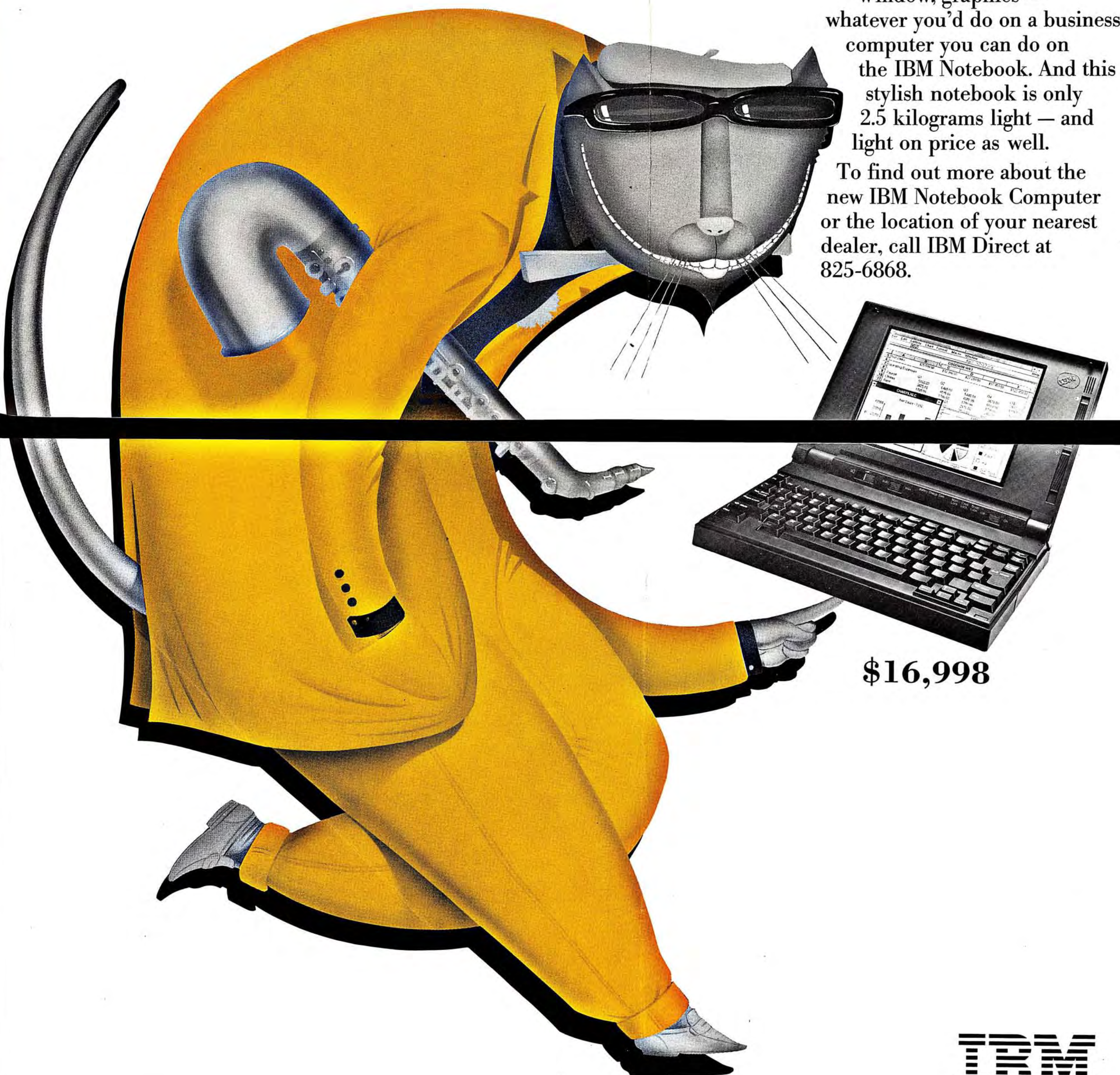
BlueNote

It's dark – but light – and the price is right

Pick it up. It feels just right. And from its 386SX processor to its 40 megabyte hard disk it has all the right stuff. Including a bright VGA display that's easy to read in a cosy jazz club or a bright office.

Window, graphics – whatever you'd do on a business computer you can do on the IBM Notebook. And this stylish notebook is only 2.5 kilograms light – and light on price as well.

To find out more about the new IBM Notebook Computer or the location of your nearest dealer, call IBM Direct at 825-6868.

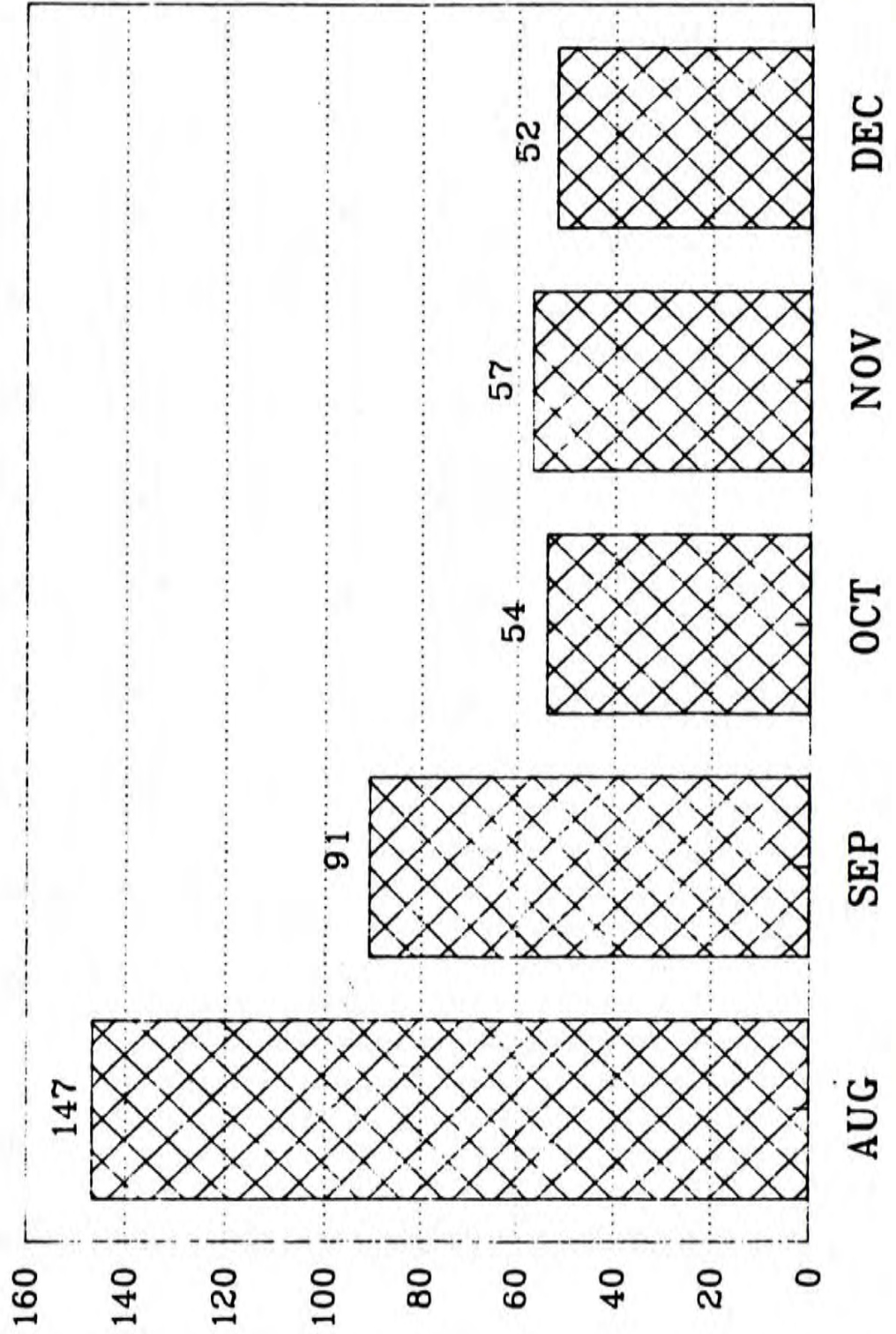


\$16,998

IBM

APPENDIX VI

The IBM Notebook Computer Sales Volume (1991)



Appendix VII

Notebook Computer Competitive Information

Laptop/Notebook Pricing Analysis

November 8, 1991

All in HK\$

| Brand | Processor | Mem | Dskt | Display | Disk | List | Street | |
|-----------------------------------|----------------------|----------------|-------------|----------------|----------------------|--------------|-------------------------|-----------------------|
| IBM L40 SX | 386SX/20 | 2MB | 1.44 | LCD VGA | 60MB | 37768 | 26929 | IBM Laptop |
| Olivetti (plus built in mouse) | 386SX/20 | 2MB | 1.44 | LCD VGA | 60MB | | 20000 | |
| Toshiba 2000SX | 386SX/16 | 1MB | 1.44 | LCD VGA | 20MB 40MB | | 24500 27500 | |
| Toshiba 2000Sxe | 386SX/20 | 2MB | 1.44 | LCD VGA | 40MB 60MB | TBA TBA | TBA TBA | |
| Toshiba T3100SX | 386SX/16 | 1MB | 1.44 | LCD VGA | 40MB | | 14490 | |
| Toshiba T5200/100 | 386/20 | 2MB | 1.44 | LCD VGA | 100MB | | 29970 | |
| Apple | 68000/16 68030/16 | (TBA) (TBA) | | | | | 18720 24180 | |
| AST Pre Exec | 386SX/20 | 2MB | 1.44 | LCD VGA | 20MB 40MB 60MB | | 15500 16200 17800 | |
| Pack Bell 386SX | 386SX/20 | 2MB | 1.44 | LCD VGA | 40MB | | 16800 | |
| Commax 386SX | 386SX/16 | 1MB | 1.44 | LCD VGA | 40MB | | 15900 | |
| Acura 338SX | 386SX/16 | 1MB | 1.44 | LCD VGA | 40MB | | 17500 | |
| Compaq LTE 386s | 386SX/20 | 2MB | 1.44 | LCD VGA | 30MB | | 32206 | |
| | 386SX/20 | 2MB | 1.44 | LCD VGA | 60MB | | 34984 | |
| Sanyo | 386SX/20 | 1MB | 1.44 | LCD VGA | 60MB | | 15000+ | |

Appendix VII Cont'd

Notebook Computer Competitive Information

| | | | | | | | |
|------|----------|-----|------|---------|----------------------|--|-------------------------|
| Acer | 386SX/20 | 1MB | 1.44 | LCD VGA | 20MB 40MB 60MB | | 12800 15800 18800 |
|------|----------|-----|------|---------|----------------------|--|-------------------------|

| | | | | | | | | |
|--------------------|-----------------|------------|-------------|----------------|--------------|--------------|----------------|-----------------|
| ----- | | | | | | | | IBM |
| IBM N33SX | 386SX/12 | 2MB | 1.44 | LCD VGA | 40MB | 20506 | 16998 | Notebook |
| Toshiba T1200Xe | 286/12 | 1MB | 1.44 | LCD VGA | 20MB | | 11970 | |
| AST Pre Exec | 286/12 | 2MB | 1.44 | LCD VGA | 20MB 40MB | | 13400 14750 | |
| Pack Bell 286 | 286/12 | 1MB | 1.44 | LCD VGA | 20MB | 22230 | 15800 | |
| Compaq LTE/286 | C286/12 | 640KB | 1.44 | LCD VGA | 40MB | 25459 | 18330 | |
| Sharp PC6220 | 286/12 | 1MB | 1.44 | LCD VGA | 20MB | 16200 | 14200 | |

Memory Module -- around HK\$ 3000 per 1MB

Appendix VIII

Questionnaire Part 1

Survey on buyers' reactions to Notebook Computer

Your Name: _____

Name of Company: _____

1. What kind of PC you use?

Notebook Computer ___ regular PC ___ Laptop Computer ___

2. What brand of PC?

3. Do you have a PC at work? Yes ___ No ___

If no, go to question 7.

4. What do you use it for?

5. What kind of software you use mostly?

Appendix VIII Cont'd

Questionnaire Part 1

Survey on buyers' reactions to Notebook Computer

6. How long do you normally operate continuously a PC, other than office hour? (examples: at home, during travel and etc.)

- 1 hour
- 2 hours
- 3 hours
- 4 hours and above

7. Do you use a PC at home? Yes No
IF NO, GO to question 9.

8. What do you use it for at home?
(Please tick the appropriate ones.)

- Video Games
- Spreadsheet
- Word Processing
- Filing
- Personal Telephone Directory
- Others (please specify) _____

9. Have you heard of Notebook Computer? Yes No

If No, go to question 16.

10. Please name 3 brands of Notebook Computer.

11. Where do you learn about the Notebook Computer?
Please tick the appropriate one.

- Newspaper
- Technical magazines
- Friends
- Sales calls by sales people
- Schools
- Exhibition and fairs
- Others (please specify) _____

Appendix VIII Cont'd

Questionnaire Part 1

Survey on buyers' reactions to Notebook Computer

If you own a Notebook Computer, please answer questions 12 to 15.

12. Brand of Notebook Computer you own.

13. Where do you use it for?

- Home
- Office
- Field
- Customer Calls
- Travels
- Others (please specify) _____

14. Please briefly describe the likes of your Notebook Computer.

15. Please briefly describe the dislikes of your Notebook Computer.

16. How do you usually obtain information about PC?

- Newspaper
- Technical magazines
- Friends
- Sales calls by sales people
- Schools
- Exhibition and fairs
- Others (please specify) _____

Appendix VIII Cont'd

Questionnaire Part 1

Survey on buyers' reactions to Notebook Computer

The following questions (#17 to #22) are referenced to the attached specifications for a Notebook Computer. Please select the desired features which you consider to be essential for a Notebook Computer.

Please tick the appropriate ones.

17. System:

CPU - 80486, 80486SX, 80386, 80386SX, 80286, Don't know ___
Clock Rate: 10, 12, 16, 20, 25, 33, 50 MHz, Don't know ___
Co-processor: Yes ___ No ___ Don't know ___

18. Memory- RAM:

Standard: 2MB Yes ___ No ___ Don't know ___
Expandable: ___ MB (fill in the blank)

19. Mass Storage- Hard Drive:

Standard: ___ MB (fill in the blank)
Access time - 19 ms Yes ___ No ___ Don't know ___

Appendix VIII Cont'd

Questionnaire Part 1

Survey on buyers' reactions to Notebook Computer

20. Floppy Disk Drive:

Standard: 3.5" 1.44MB Yes ___ No ___ Don't know ___
Do you prefer Internal / External drive (pls select one)
Optional: _____ (fill in the blank)

21. Display:

Gray scales: 16 / 32 (select one) Don't know ___
Color: Yes ___ No ___

22. Please select the desired interface features:

- ___ Serial (RS-232-C) Interface
- ___ Parallel (Centronics) Interface
- ___ CRT Monitor Interface
- ___ PS/2 Mouse Interface
- ___ Numeric Keypad Interface
- ___ Expansion bus (for expansion station)
- ___ Internal Fax / Data Modem (host connectivity)
- ___ Don't Know

23. What are your selection criteria for choosing a Notebook Computer?
Please circle the degree of importance.

| Least Important | | Most Important | | | |
|-----------------|---|----------------|---|---|------------------------------------|
| 1 | 2 | 3 | 4 | 5 | Functions: display, memory and etc |
| 1 | 2 | 3 | 4 | 5 | Weight / Size |
| 1 | 2 | 3 | 4 | 5 | Quality |
| 1 | 2 | 3 | 4 | 5 | Price |
| 1 | 2 | 3 | 4 | 5 | Brand Name |
| 1 | 2 | 3 | 4 | 5 | After sale service |
| 1 | 2 | 3 | 4 | 5 | Others (please specify) _____ |

Appendix VIII Cont'd

Questionnaire Part 1

Survey on buyers' reactions to Notebook Computer

24. If a particular Notebook Computer is to offer to you, what will be the price range that is acceptable to you? (Appendix A is a specification of a sample Notebook Computer)

HK\$ _____

25. Please select the places you would purchase a Notebook Computer from the following list?

- Daimaru
- Welcome Supermarket
- Broadway Electric Shop
- Golden Arcade
- Silvercord, Tsimshatsui
- Swire Company
- Airport Duty Free Shops
- Others (please specify) _____

Appendix VIII Cont'd

Questionnaire Part 1

Survey on buyers' reactions to Notebook Computer

Specifications (Appendix A)

| | |
|--|--|
| CPU | 80386SX |
| Coprocessor | 80387SX (Option) |
| Clock speed | 20MHz switchable |
| Display interface | VGA/CGA/EGA/MDA/MGA |
| Floppy disk drive | Double-sided, high-density 3.5" (1.44MB) |
| Hard disk drive | 20MB/60MB internal |
| Printer interface | Centronics parallel |
| Asynchronous communications interface | RS-232C serial |
| Display | LCD white panel with CFL backlighting |
| Display area | 197 x 149mm (Effective area) (7 $\frac{3}{4}$ " x 5 $\frac{7}{8}$ ") |
| ROM | 64KB system bios, 64KB VGA bios |
| Main RAM | 1MB standard, expandable to 5MB |
| Keyboard | ASCII: 82 keys, 101-key emulation LOCAL: 83 keys, 102-key emulation |
| EMS | LIM 4.0 |
| Operation system | MS-DOS Version 4.01 |
| BASIC | GW-BASIC Version 3.2 |
| Power supply | AC 100-240V, 50/60Hz with AC adaptor DC with NiCd rechargeable battery pack |
| Dimensions (W x D x H) | 312 x 254 x 51.5mm (12 $\frac{1}{4}$ " x 10" x 2") |
| Weight | Approx. 3.2kg (7 lbs.) |
| Accessories | User guide, system diskette, NiCd rechargeable battery pack, AC adaptor |

* Design and specifications subject to change without notice
* Trademarks owners: MS-DOS and GW-BASIC/Microsoft Corp.,
IBM, PC and AT/International Business Machines Corp.,
Centronics Centronics Corp

Appendix IX

Questionnaire Part 2

Survey on buyers' reactions to Notebook Computer

After you have seen the Notebook Computer sample, please describe you likes and dislikes according to the following features.

| | Likes | Dislikes |
|-----------------------|----------------|-----------------|
| 1. Features | _____ _____ | _____ _____ |
| 2. Appearance | _____ _____ | _____ _____ |
| 3. Weight/Size | _____ _____ | _____ _____ |
| 4. Price | _____ _____ | _____ _____ |
| 5. Durability | _____ _____ | _____ _____ |
| 6. Others | _____ _____ | _____ _____ |

7. **Your age:**

- above 50 years old
- 30 to 50
- under 30

Appendix IX Cont'd

Questionnaires PART 2

Survey on buyers' reactions to Notebook Computer

8. Your sex: Female ___ Male ___

9. What is your education level?

- ___ University Education
- ___ Post-secondary Education
- ___ Secondary Education
- ___ Primary Education
- ___ No Formal Education

10. What is the nature of your company business?

11. What is your job title?

Appendix X

Focus Group Discussion Guide

The moderator explained the purpose of the focus group. The moderator emphasized to the participants the acceptability of any diverse opposing views.

Discussion of general impression of IBM Notebook Computer and other Brands:

- focused on comparison with other brands of Notebook Computer
- what do they like or dislike about other brands
- focused on improvements recommended for IBM on its products

Appendix XI

Retailers and Dealers Interview Guide

Name of the interviewee: _____

Name of Company: _____

Interviewee's Job Title: _____

Date of Interview: _____

The interviewee was being asked of the following questions and the interviewer wrote down the responses.

1. What are your customer target groups?

2. What brands of Notebook Computer you carry for sales?

3. What is your monthly Notebook Computer sales?

4. What is the Number One sales of Notebook Computer?

10. Passively sold

Standard 200 Yes

Especially 40

Appendix XI Cont'd

Retailers and Dealers Interview Guide

5. How do you feel about the awareness of IBM Notebook Computer?

6. Where do your customers learn about the Notebook Computer?

- Newspaper
- Technical magazines
- Friends
- Sales calls by sales people
- Schools
- Exhibition and fairs
- Others (please specify) _____

7. What kind of software do the customers run with Notebook Computer?

8. What is the acceptable price range for a Notebook Computer?

Please tick the appropriate ones for the best features desired.

9. System:

CPU - 80486, 80486SX, 80386, 80386SX, 80286, Don't know ___
Clock Rate: 10, 12, 16, 20, 25, 33, 50 MHz, Don't know ___
Co-processor: Yes ___ No ___ Don't know ___

10. Memory- RAM:

Standard: 2MB Yes ___ No ___ Don't know ___
Expandable: _____ MB (fill in the blank)

Appendix XI Cont'd

Retailers and Dealers Interview Guide

11. Mass Storage- Hard Drive:
Standard: _____ MB (fill in the blank)
Access time - 19 ms Yes ___ No ___ Don't know ___
12. Floppy Disk Drive:
Standard: 3.5" 1.44MB Yes ___ No ___ Don't know ___
Do you prefer Internal / External drive (pls select one)
Optional: _____ (fill in the blank)
13. Display:
Gray scales: 16 / 32 (select one) Don't know ___
Color: Yes ___ No ___
14. Please select the desired interface features:
___ Serial (RS-232-C) Interface
___ Parallel (Centronics) Interface
___ CRT Monitor Interface
___ PS/2 Mouse Interface
___ Numeric Keypad Interface
___ Expansion bus (for expansion station)
___ Internal Fax / Data Modem (host connectivity)
___ Don't Know
15. What are your selection criteria for choosing a Notebook Computer?
Please circle the degree of importance.
- | Least | | Most | | | |
|-----------|---|-----------|---|---|------------------------------------|
| Important | | Important | | | |
| 1 | 2 | 3 | 4 | 5 | Functions: display, memory and etc |
| 1 | 2 | 3 | 4 | 5 | Weight / Size |
| 1 | 2 | 3 | 4 | 5 | Quality |
| 1 | 2 | 3 | 4 | 5 | Price |
| 1 | 2 | 3 | 4 | 5 | Brand Name |
| 1 | 2 | 3 | 4 | 5 | After sale service |
| 1 | 2 | 3 | 4 | 5 | Others (please specify) _____ |
16. Please describe your likes and dislikes of IBM Notebook Computer in the areas of Features, Appearance, Weight/Size, Price, Durability, and others.
17. The interviewees are asked for additional comments.

Appendix XII

Demographic Information of Participants

1. Professions of Participants:

Accountant, Banking, Executives, Hardware
Engineer, Lecturer, Marketing Manager,
System Engineer

2. Companies that participants work for:

Arab Asian International Ltd, Astec
Components Ltd, Bankers Trust Company, COL
Ltd, EDPS Systems Ltd, Electrical &
Mechanical Services Department of Hong Kong
Government, Hong Kong Bank, Hong Kong Oxygen
& Acetylene Co. Ltd, Hong Kong Polytechnic,
Hong Kong Telecom, Hong Kong University,
K.C.R. Corporation, Maxtor (HK) Ltd, Modern
Devices Ltd

3. Age:

| AGE GROUP | NUMBER of PARTICIPANTS |
|------------------|-----------------------------------|
| Aged 30 to 50 | 15 |
| Under 30 | 5 |

Appendix XII Cont'd

Demographic Information of Participants

4. Sex:

| SEX GROUP | NUMBER of PARTICIPANTS |
|------------------|-------------------------------|
| Male | 19 |
| Female | 1 |

Appendix XIII

Detailed Information on the Survey Findings

1. Types of PC used by the participants (in % out of 20 participants):

Each participant could select more than one choices.

| PC | NUMBER of PARTICIPANTS |
|-----------|-------------------------------|
| Desktop | 18 |
| Laptop | 5 |
| Notebook | 3 |

2. 100% of participants used PC at work.
3. 86% of participants used PC at home.
4. Top Six Software Used at Work by the Participants:

DBASE

EXCEL

Lotus 123

Windows

Wordperfect

WordStar

Appendix XIII Cont'd

Detailed Information on the Survey Findings

5. Four major application programs used at home by the participants:

Filing

Spreadsheet

Video Games

Word Processing

6. Notebook Computer Brand Name Awareness by Participants:

Top three: Apple, AST, IBM

Others: 3COM, Acer, Commax, Compaq, NEC, Olivetti, Tower Packard, Twinhead, Unisys

7. Top four sources that the participants obtained PC information:

Trade Publications (e.g. computer magazines), Newspapers, Exhibitions, and Friends

Appendix XIII Cont'd

Detailed Information on the Survey Findings

8. Number of hours that the participants used PC other than at the office:

| Length of Time | Number of Participants |
|-----------------------|-------------------------------|
| One Hour and less | 1 |
| One Hour | 6 |
| Two Hour | 6 |
| Three Hours | 4 |
| Four Hours and Up | 2 |

Appendix XIII Cont'd**Detailed Information on the Survey Findings**

9. Places that participants would purchase their notebook computer from:

| PLACES | NUMBER of PARTICIPANTS |
|-------------------------|-------------------------------|
| Golden Arcade | 12 |
| Dealer Direct | 8 |
| Silvercord, Tsimshatsui | 7 |
| Broadway Electric Shop | 6 |
| Swire Company | 6 |

Appendix XIV

The IBM Notebook Computer Direct Mail Advertisement

IBM N33 SX 唯一具有座枱式 PS/2 功能的筆記簿型電腦

IBM N33 SX 筆記簿型電腦，體積輕巧而功能廣泛，A4 尺碼，僅重 5.5 磅，適合隨身帶備。效能超卓的 386SX 處理器可運行 32 位之應用程式及所有標準私人電腦的應用程式，包括「示窗」等。

N33 SX 的 40MB 硬磁碟，具備 2MB 記憶，能擴展至 6MB，9.5 吋 對角 的 VGA 黑白顯示器可顯示 16 種灰度，提供高對比的清晰圖像畫面。電源方面可選用電池或交流電，方便隨時隨地使用，在飛機上、戶外、客戶的辦公室、會議室內，均可即時處理重要資料，隨後再接駁上兼容的打印機。

N33 SX 的附件包括有充電式電池、交流電插座、供額外記憶的外置高密度 3.5 吋軟磁碟驅動器、基本應用軟磁碟及說明手冊。

其他的 IBM 獨有功能包括保險密碼、備用軟磁碟驅動器插頭、串聯、並聯、鍵盤 / 鼠標器、暫停 / 繼續功能，及 84 鍵的密集鍵盤。

跟其他 IBM 私人電腦一樣，N33 SX 筆記簿型電腦可享用由 IBM 在香港合作最久的代理商東實電腦提供的專業維修及保養，並保證可與現有及未來的軟件硬件兼備，發揮最高的效能。

每部 IBM N33 SX 筆記簿型電腦特惠價：

HK\$16,998 或 3 x HK\$ 5,666 (33)

贈品：購買筆記簿型電腦一部，可獲贈特製手提袋一個

*一年免費保養

IBM's N33 SX: the only notebook computer with desktop PS/2 capabilities

The versatile, go-anywhere IBM N33 SX Notebook Computer is small and light. In A4 size, and weighing just 5.5lbs, it will conveniently fit in your briefcase, while carrying a powerful 386 SX processor which will run the latest 32 bit applications and all standard PC applications including "Windows".

It has 40 MB of hard disk, with 2MB of memory expandable to 6MB, a 9.5" (diagonal) black on white VGA display, and 16 shades of grey, giving crisp, high contrast graphics. Since it runs on battery or AC power, you can work on a plane, outdoor, in someone else's office or in a conference hall, and later plug it into any compatible printer.

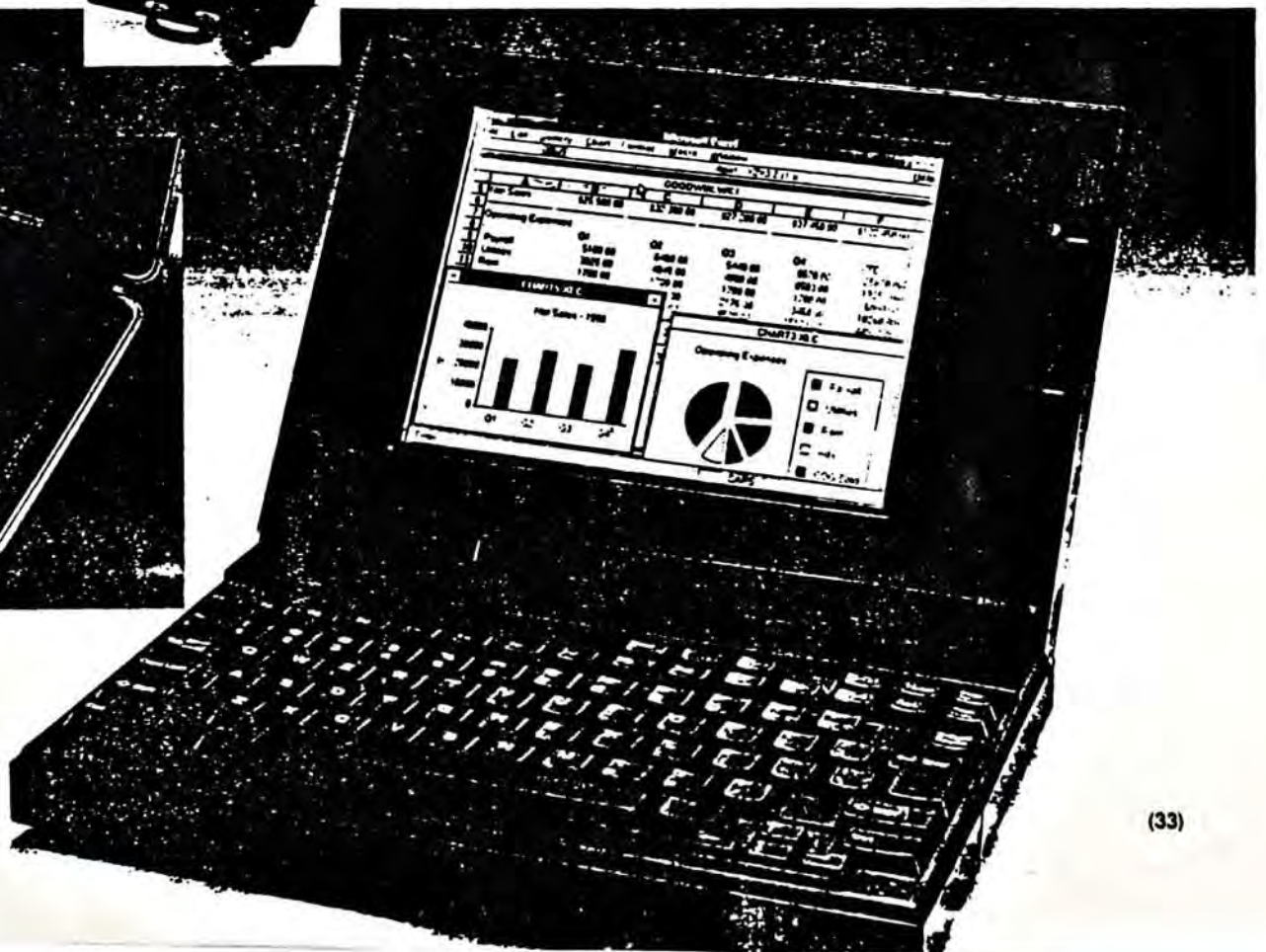
Supplied with the N33 SX are a rechargeable battery pack, an AC adapter, an external High Density 3.5" diskette drive for extra storage, a reference diskette and manuals.

Other exclusive IBM features included are 'password' security; integrated ports for diskette drive, serial, parallel, and keypad/pointing devices; 'suspend/resume' function and 84 key compact keyboard.

Like all IBM personal computers, the Notebook comes with the expert service and support of System-Pro Computers, the longest established IBM dealer in Hong Kong, and carries the guarantee that it will work both with today's products and programmes, and those of tomorrow.

Each IBM N33 SX Notebook Computer
Special Cardholder Price: HK\$16,998 or 3 x HK\$5,666 (33)
Gift: One Custom-made Carrying Case with each IBM
N33 SX Notebook Computer purchased

* One-Year Free Warranty



Appendix XV

Media Placement Of The IBM Notebook Computer AD

(as shown in Appendix V)

| <u>TIME</u> | <u>MAGAZINE</u> | <u>NEWSPAPERS</u> |
|--------------------|--|--|
| August, 1991 | Total 10 insertions in <u>Time</u> , <u>Newsweek</u> , <u>Yazhou Zhoukan</u> , <u>Asiaweek</u> , <u>Far East Economic Review</u> , <u>Asian Business</u> , <u>Reader's Digest</u> , <u>World Executive's Digest</u> , <u>Asian Wall Street Journal</u> , and <u>International Herald Tribune</u> . | Total 10 insertions in <u>South China Morning Post</u> , <u>Ming Pao</u> , <u>Hong Kong Economic Times</u> and <u>Hong Kong Economic Journal</u> . |
| September, 1991 | Nil | Nil |
| October, 1991 | Nil | Total 10 insertions in <u>South China Morning Post</u> , <u>Ming Pao</u> , <u>Hong Kong Economic Journal</u> and <u>Hong Kong Economic Times</u> . |
| November, 1991 | Nil | Nil |
| December, 1991 | Nil | Total 3 insertions in <u>South China Morning Post</u> , <u>Ming Pao</u> and <u>Hong Kong Economic Journal</u> . |

* The copy was in English for publications underlined.

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