

EXECUTIVE SUMMARY

1. This is the fourth Information Technology (IT) Household Survey launched by NCB, with the first survey carried out in 1990. The main objectives of the survey are to:

- Gauge the level of IT penetration in Singapore Households
- Assess the sophistication and extent of IT usage in the households
- Identify barriers and motivations towards on-line IT usage

2. A total of 2,000 Singapore homes were interviewed using a structured questionnaire. The house listings were drawn from a sampling frame provided by the Department of Statistics (DOS).

3. Overall, there has been high IT deployment in Singapore households over the last few years, mainly in computer and Internet. Home computer ownership and home Internet penetration has increased substantially since 1996 to current levels of 59% and 42% respectively. A comparison with other countries shows that Singapore is relatively ahead of US, Australia and Japan in computer and Internet infrastructure deployment.

4. There is a general trend towards having more than one computer at home, currently at 16% representing an increase by more than 10% since 1990. In 80% of the households with computers, there are 2 or more users. Overall, users spent an average of 6.3 hours a week on their computers.

5. Forty percent of the households have Internet access only a year ago, with 20% of them having access for six months or less. Home Internet access comprises mainly of individual dial-up subscribers (95%) rather than corporate account users (office and schools/ polytechnics/universities).

6. More than 80% of the households with home Internet access have only 1 family member with an Internet account. The estimated total number of Internet account holders at home is 477,928. The proportion of users accessing Internet without their own account has increased, with 70% of the households having users accessing Internet without their own accounts. The estimated number of home Internet users is 764,680.

7. Most of the home Internet users are not heavy users as only 5% spent more than 15 hours per week accessing Internet. Overall, the average time spent per week is 4.7 hours.

8. The high IT penetration is however not matched with a high sophistication of IT usage. Usage pattern has not changed much over the years. Email/chat is still the most commonly accessed application as indicated by 87% of the home users. E-commerce adoption by home users is still at "early adopter" stage among home users. On-line home shopping, which is popular in countries such as the US, has little impact in Singapore with only 8% of total home Internet users having used it. On-line government transactions and financial services are used by only 14% and 10% of the total home Internet users respectively.

9. On-line shopping behaviour over the last 6 months is as follows:

- value of purchase is \$135 (median)
- books & stationery are the most common products bought (39%)
- payment mechanism is by credit card over the Internet (80%)

10. The most commonly accessed on-line government transactions are the submission of Income Tax Return (83%) and requesting for CPF statements (4%).

11. High IT deployment does not necessary reflect a sophistication in the consumer media behaviour and preferences as reflected by the dominant use of IT for e-mailing. Hence, the challenge is to inform and educate users on the appropriate potential inherent in IT. As there are pores of the population who are non-owners of IT products/services and non-users of IT products/services, there should be specialised rather than general programs and initiatives targeted at each distinct group of the population to ensure the eventual attainment of an information society for the future.

1. INTRODUCTION

The IT Household Survey 1999 is the fourth Information Technology (IT) household survey to be carried out. The first was in 1990, with the second in 1993 and the third in 1996. This survey was conducted in June 1999. It aims to assess the scope (type) and usage of IT in the Singapore households.

1.1 OBJECTIVES

The main objectives of the survey are to:

- Gauge the level of IT penetration in Singapore households
- Assess the sophistication and extent of IT usage in the households
- Identify challenges and motivations for on-line IT usage

1.2 METHODOLOGY

a. *Sample*

The survey covered 2,000 housing units in Singapore and includes the following housing types:

- HDB/JTC flats
- HUDC/private apartment/condominiums
- Bungalows/semi-detached/terrace houses
- Shophouses

The sample was selected from the Household Sampling Frame maintained by the Department of Statistics (DOS). Selection was done using a two-stage stratified design.

b. *Data Collection*

Data was collected from face-to-face interviews with the heads of households using a structured questionnaire. For those households where the head was not available, the main computer user or the next decision-maker was interviewed.

1.3 DATA ASSESSMENT

The sample and data were checked for representativeness by comparing the sample distribution along a few key dimensions with the profiles in the master household frame. The sample was deemed to be representative and no statistical weightage was needed for the data analysis.

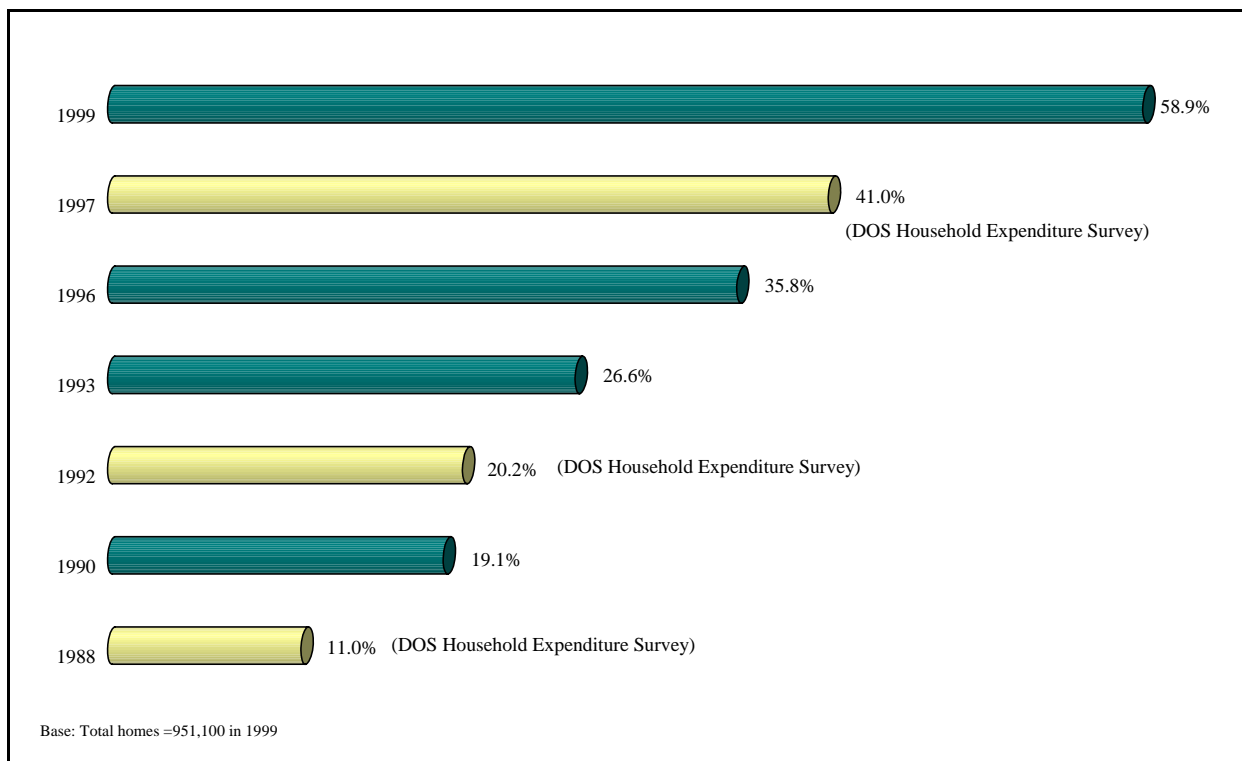
2. OWNERSHIP OF COMPUTERS IN SINGAPORE HOUSEHOLDS

2.1 LEVEL OF PENETRATION

a. Overall

Computer ownership in Singapore households has been increasing since 1987 when the data was first available. In 1987, only 11% of the Singapore homes owned a computer based on the findings of 1987/88 Household Expenditure Survey (HES) conducted by the Department of Statistics (DOS). Ownership rose to 19% in 1990 when NCB conducted the first IT Household Survey. Subsequently, ownership rose to 27% and to 36% in NCB's 1993 and 1996 surveys. In the latest 1997/98 HES conducted by DOS, home ownership of computers was at 41%. The current survey shows that 59% of the Singapore homes owned at least one computer (Figure 2.1). This rapid increase in ownership over the last 3 years can be attributed to the government efforts in promoting computer and Internet usage among the general public as well as the emphasis on IT usage in school curriculum, arising from the implementation of the IT Masterplan in education.

Figure 2.1: Ownership of Computers in Singapore Households



Compared with other countries, Singapore has a relatively high ownership of home computers. In Japan¹, the home computer penetration rate was 42%. In Australia², 47% of households have a

¹ Nomura Research Institute, May 99

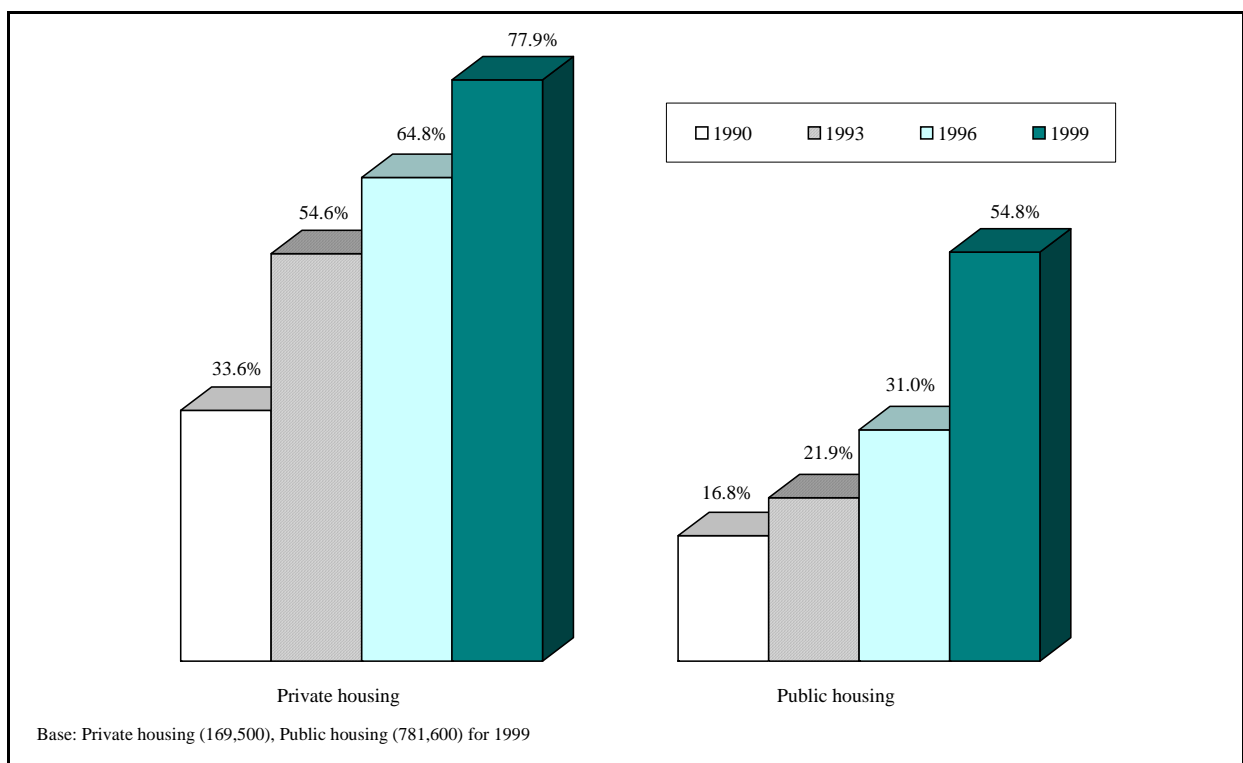
² Australian Bureau of Statistics, May 99

computer, while in the US³, it is 54%. This high penetration rate is supported by findings in the 1999 World Times/IDC Information Society Index where Singapore was ranked top in computer infrastructure and Internet infrastructure.

b. Penetration Level by Type of Housing

Computer ownership continues to be higher in private housing than in public housing. Seventy-eight percent of private homes have at least one computer as compared with 55% of those in public housing. However, ownership has increased significantly for the public housing over the last 3 years. Compared to the 1996 survey, the penetration rate has increased significantly by 24% for the public housing versus 13% for private housing.

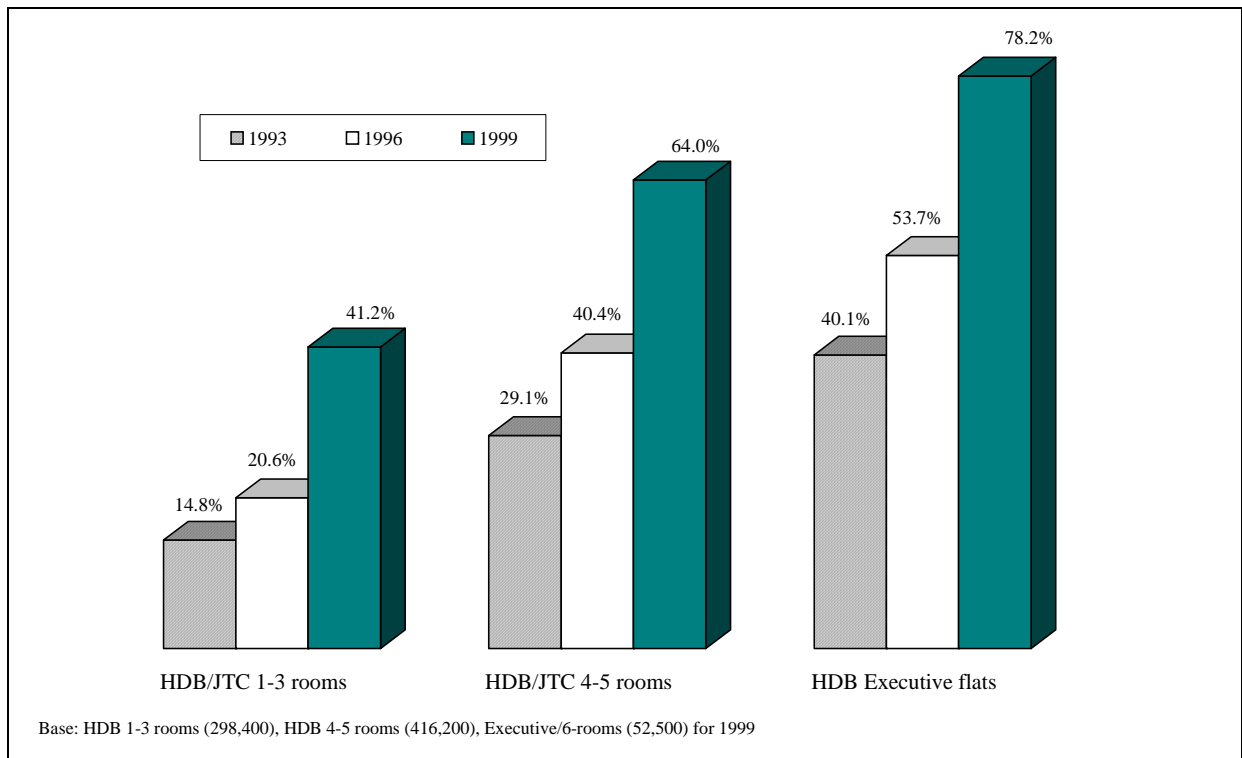
Figure 2.2: Ownership of Computers by Type of Housing



Computer ownership has increased by 20% or more for all the different types of public housing. Seventy-eight percent of those in executive flats/maisonettes own a computer, an increase of 25% from 1996. Penetration rate is 64% for the 4-5 room flats, up by 24% from 1996, while for the 1-3 rooms, computer ownership increases from 21% in 1996 to 41% in 1999.

Figure 2.3: Ownership of Computers in Public Housing

³ GartnerGroup’s Dataquest, Feb 9 & Arbitron New Media. 99

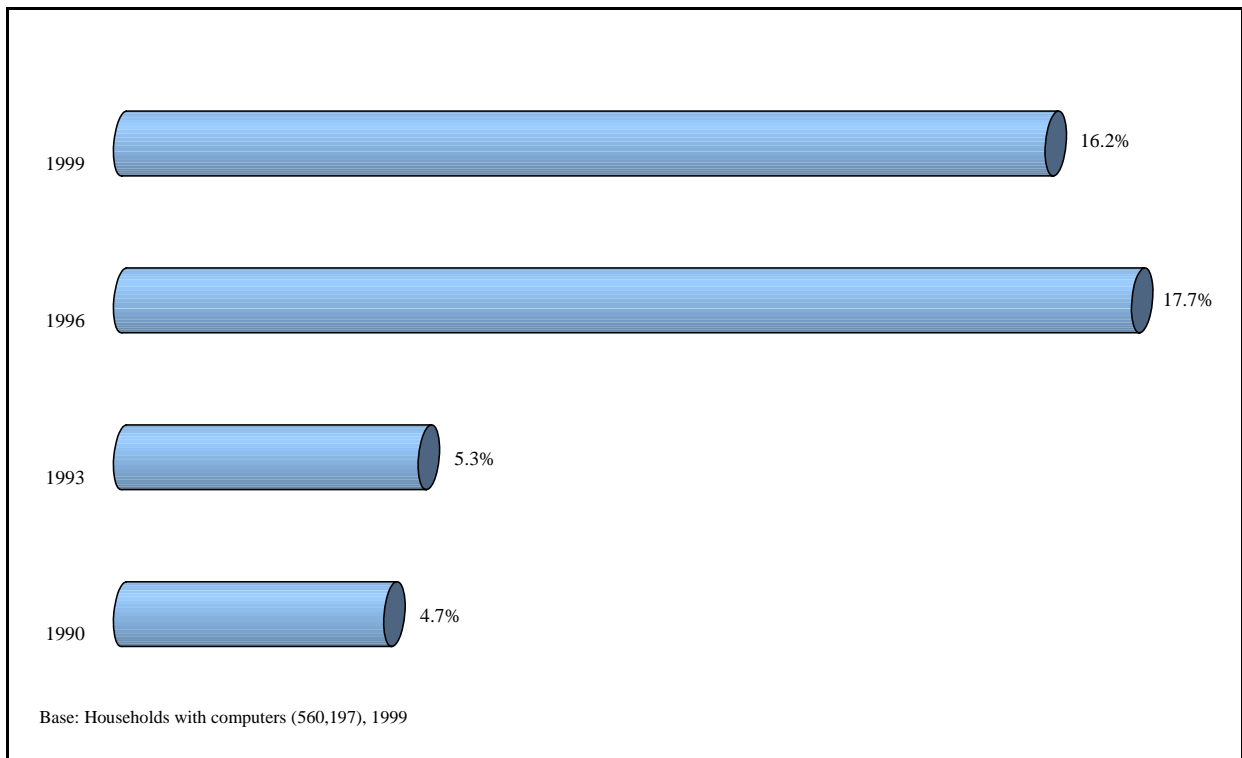


2.2 NUMBER AND TYPES OF COMPUTERS OWNED

a. *Number of Computers*

Of the households with a computer, 84% of them owned one computer while 16% of them have two or more computers. Though there was a slight decrease by 2% in the proportion of households with two or more computers from 1996, the general trend is that the proportion of households having more than one computer has increased by more than 10% since 1990. Affordability and perception of the usefulness of computers could have resulted in the ownership of more than one computer meeting needs and demands in the household.

Figure 2.4: Households with Two or More Computers

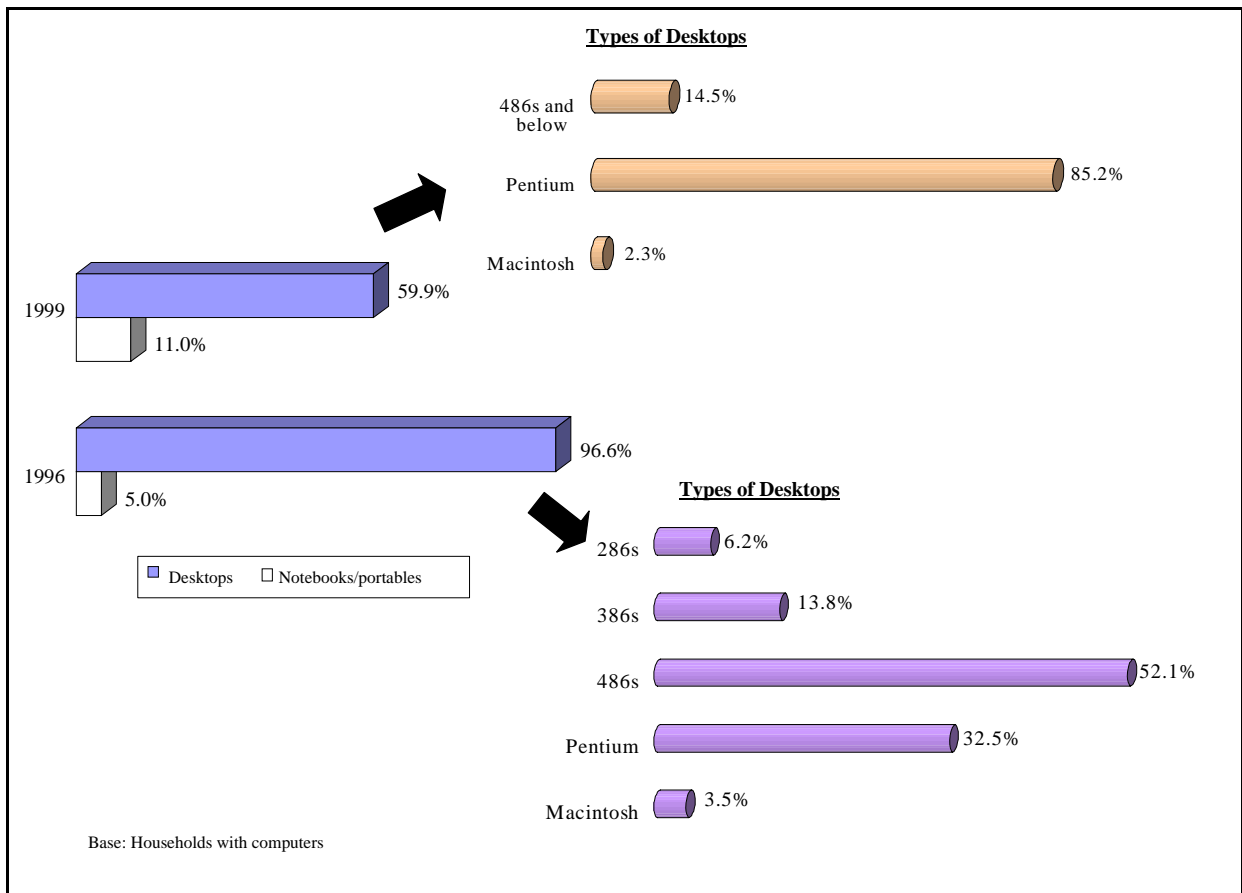


b. Types of Computers Owned

Desktops are still the dominant type of computers owned, with 60% of the households owning desktops, while 11% owned notebooks/portables. However, there is an increasing home ownership of notebooks/portables. Compared to 1996, the proportion of households owning desktops has decreased by more than 30%, while the proportion of households owning notebooks/portables has increase from 5% in 1996 to the current 11%.

The majority of the desktops found in the homes are high-end PCs, with 85% being Pentium. In 1996, only 33% of the households own a Pentium. The popular 486 PCs that was predominant in 1996 has declined significantly. Only 15% of the homes now have PCs which are 486 and below, compared to 1996 where more than half of the homes have 486 PCs and 14% of them have 386 PCs.

Figure 2.5: Types of Computers Owned

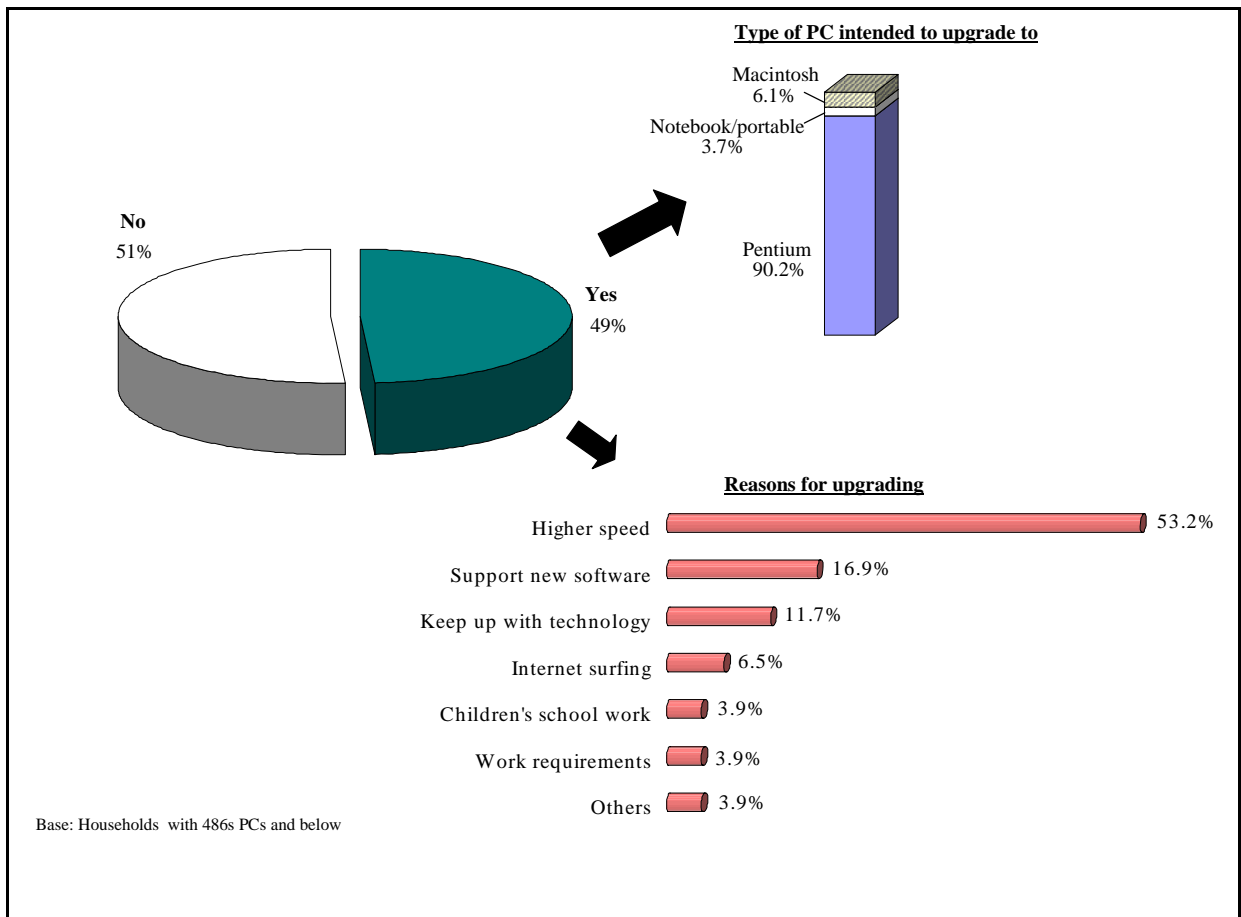


c. Intention to Upgrade

About half of the households (49%) with 486 PCs and below expressed intention to upgrade. Among them, 9 out of 10 have the intention to buy a Pentium, 4% of them would purchase a portable/notebook. Another 6% of them intend to purchase a Macintosh.

The need for higher speed was the main reason given by more than half of those who intend to upgrade their computers (53%). About one fifth of them (17%) indicated that they are upgrading their computers to support new software, while 12% of them expressed the need of keeping up with technology that prompted them to upgrade their computers.

Figure 2.6: Intention to Upgrade

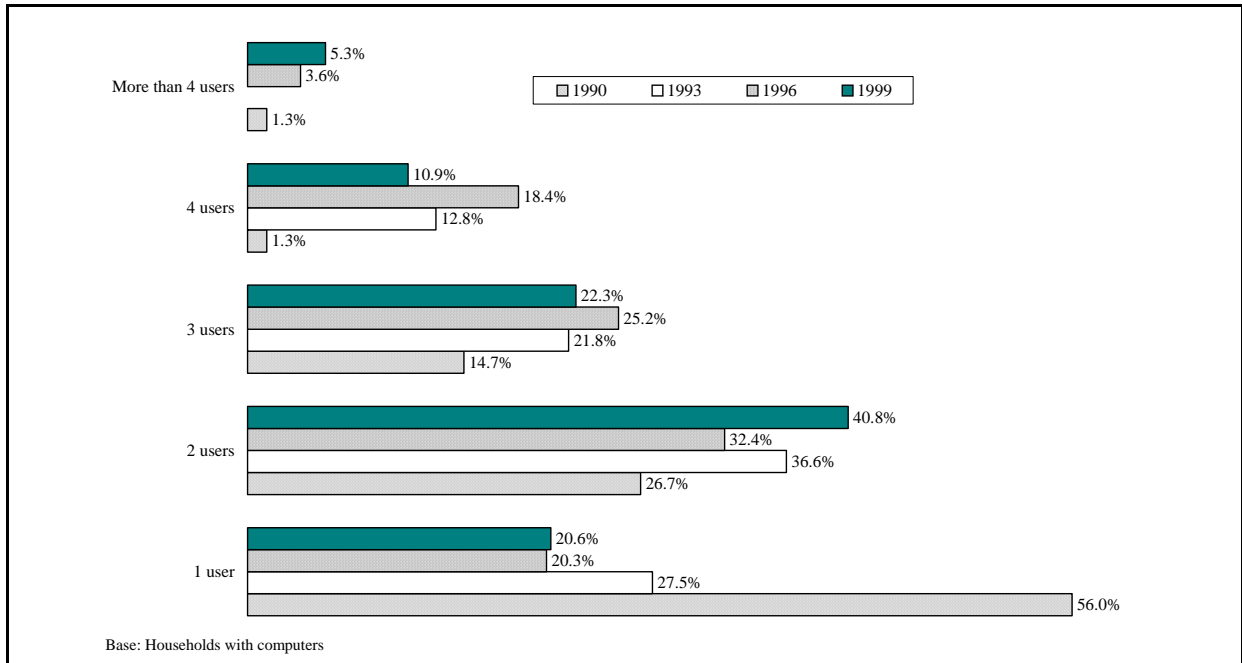


2.3 USAGE OF COMPUTERS AT HOME

a. Number of Computer Users

Presently, there are more multiple computer users in the households compared to 1990, with 80% of the households having 2 or more users. Single user make up 21% in 1999 compared to 56% in 1990. The proportion of households with 5 or more users has increased from 1% in 1990 to the current 5%.

Figure 2.6: Number of Persons Using Computers at Home



Note: In 1993, 1.3% of the households have no users.

b. Profile of Home Users

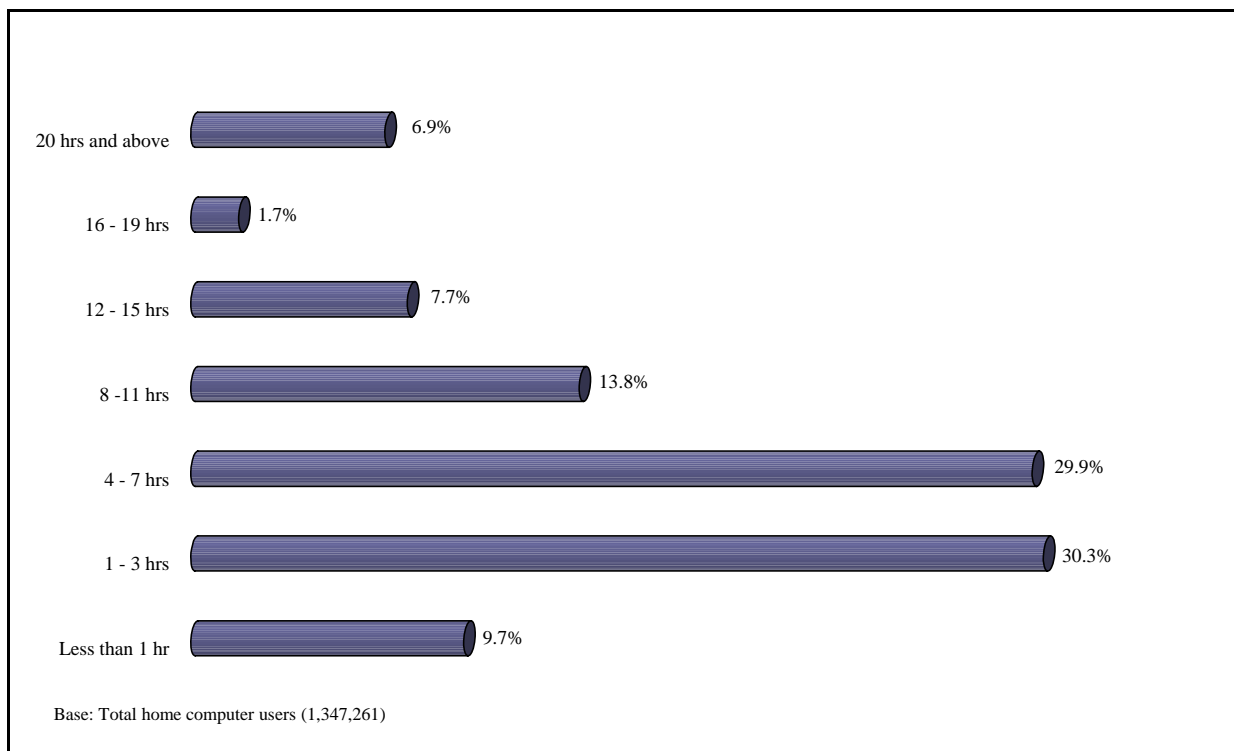
The following is a detailed profile of home computer users:

Characteristics	Attributes	Percent
Gender	Male	54.7%
	Female	45.3%
Age Group	Below 20 years	35.6%
	20 – 29 years	22.9%
	30 – 39 years	21.9%
	40 – 49 years	14.7%
	50 years and above	4.9%
Educational Level	Primary and below	17.3%
	Secondary	34.9%
	Post-secondary	9.4%
	Tertiary	52.5%
Employment status	Working adults	52.5%
	Students	39.4%
	Housewives/retirees	6.6%
	Unemployed	1.5%

c. Hours of Home Computer Usage

The majority of the home users (40%) spent 3 hours or less per week on the PC, with 10% of them spending less than an hour weekly. Only 9% of the users spent more than 15 hours per week. Overall, users spent an average of 6.3 hours a week on their PCs.

Figure 2.7: Hours of Home Computer Usage Per Week



d. Types of Computer Usage

Overall, the top three main uses of computers are:

- Emailing, a home/work application (87%)
- Playing games, a home fun application (56%)
- Information retrieval on hobbies, a home living applications (35%).

Home users are least likely to use their computers for:

- Printing T-shirt, a home fun application (0.7%)
- Telephony, a home/work application (3%)
- On-line banking, a home living application (3%)
- Teleworking, a home/work application (4%)
- Distance learning, a home learning application (5%)

Table 2.1: Types of Computer Usage at Home

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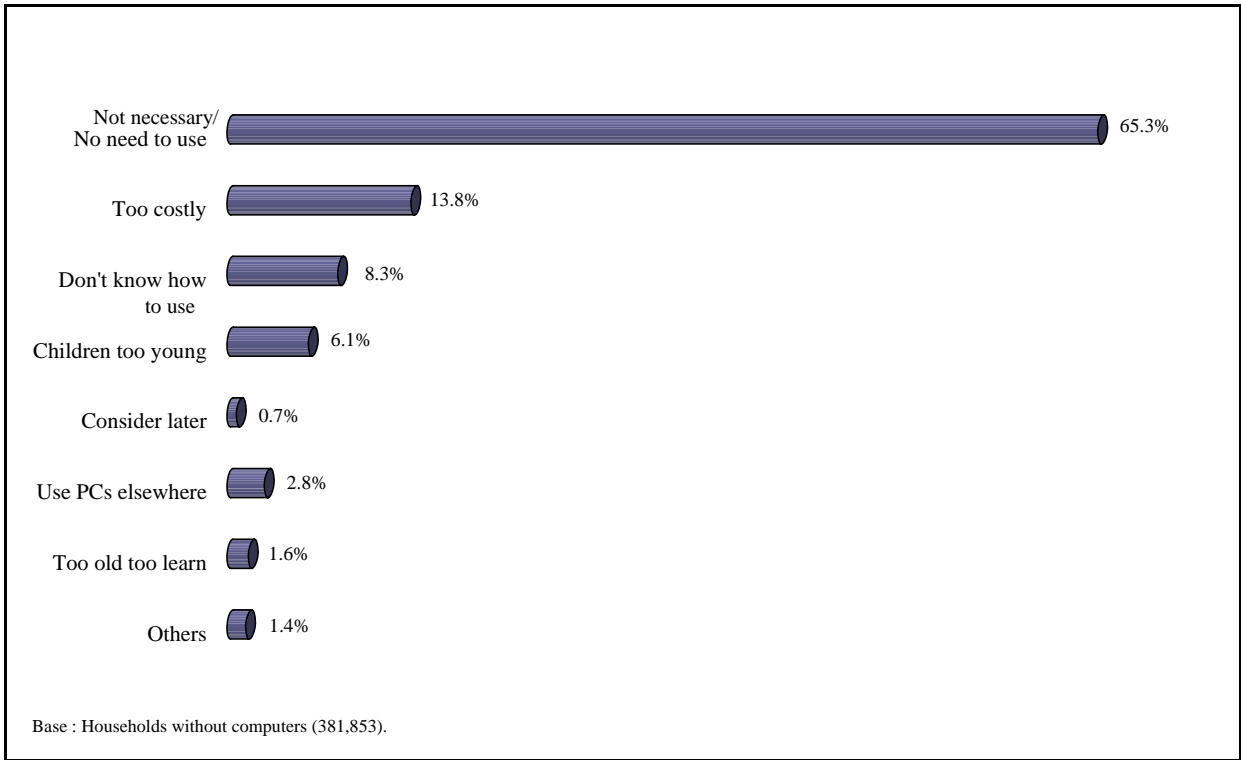
Types of Computer Usage	Percent
<i>Home Fun Applications</i>	20.7
Play games	56.1
Watch movies	16.0
Print greeting cards	10.1
Print T-shirts	0.7
Home Learning Applications	17.9
School work	26.4
Self learning	24.3
Distance learning	5.3
Play/learn music	9.5
Home/Work Applications	19.9
Personal correspondence	26.6
Family book-keeping	5.5
Address management	6.9
Work from office	26.3
Teleworking	4.2
Email	86.5
Telephony	2.9
Fax document	9.3
Home Living Applications	12.8
On-line/home banking	3.4
On-line/home shopping	7.9
Job search	7.3
Library services	6.4
Information retrieval on stocks/ shares	11.0
Information retrieval on travel	18.1
Information retrieval on hobbies	35.4

3. HOUSEHOLDS WITHOUT COMPUTER

3.1 REASONS FOR NOT OWNING A COMPUTER

Similar to previous surveys, the main reason given by households for not owning a computer is that they do not see the necessity to own one (65%). The next common reason is that households find it too costly to own one (14%), even though prices of computers have declined significantly. The proportion of households indicating high cost as a reason for non-ownership has remained about the same since 1990. The majority of the households indicating price as a deterrent factor are from the HDB 1-3 rooms flats. The proportion of households having no intention of buying a computer because the children are too young to use it has declined from 13% in 1996 to 6% in 1999.

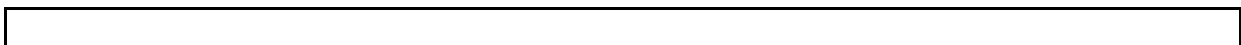
Figure 3.1: Main Reasons for Not Owning Computers

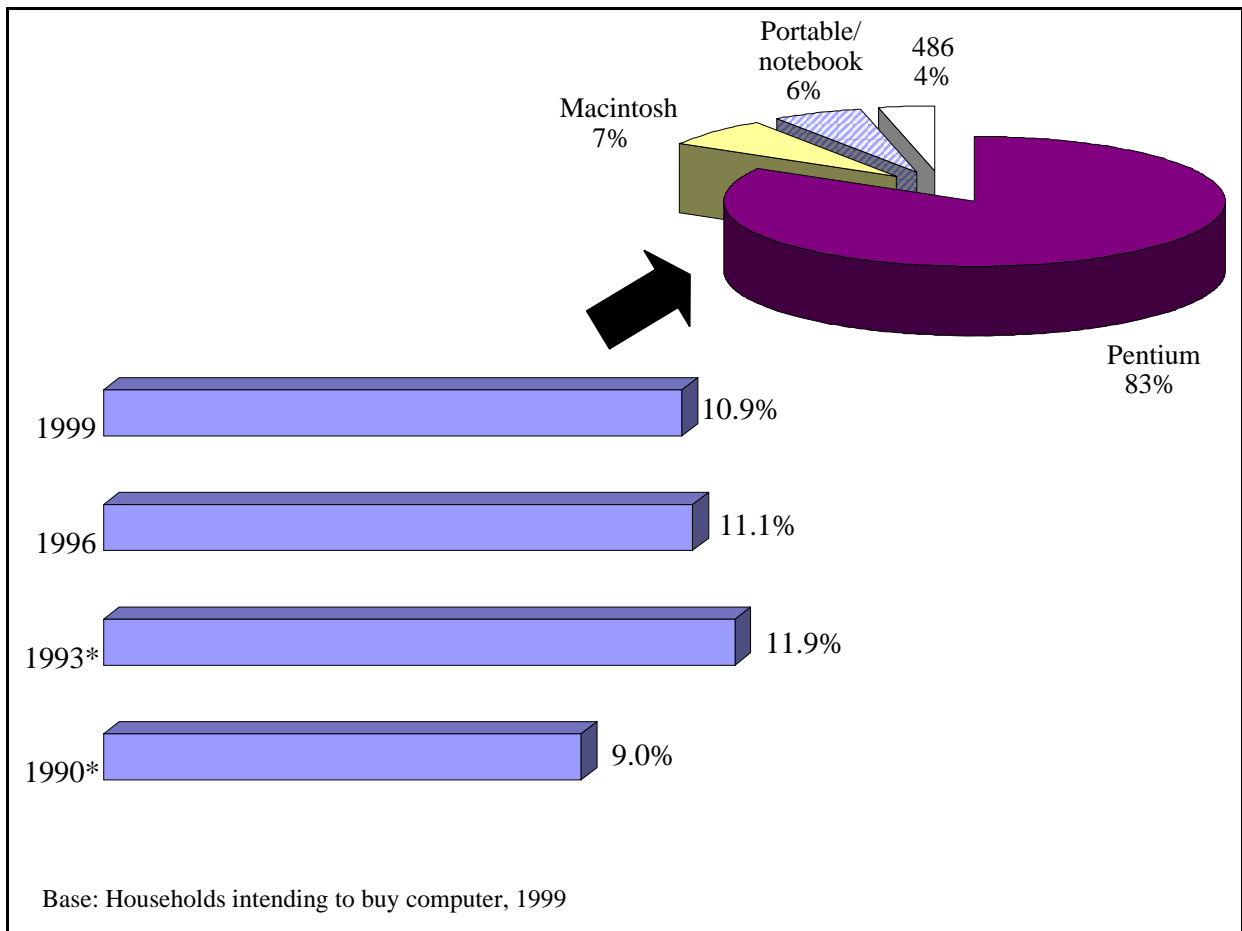


3.2 INTENTION TO PURCHASE A COMPUTER

Eighty-nine percent of the households without a computer have no plans to purchase a computer within the next three months. Only 11% of them intend to do so. This is similar in 1996.

Figure 3.2: Intention to Purchase and Type of Computer to Purchase





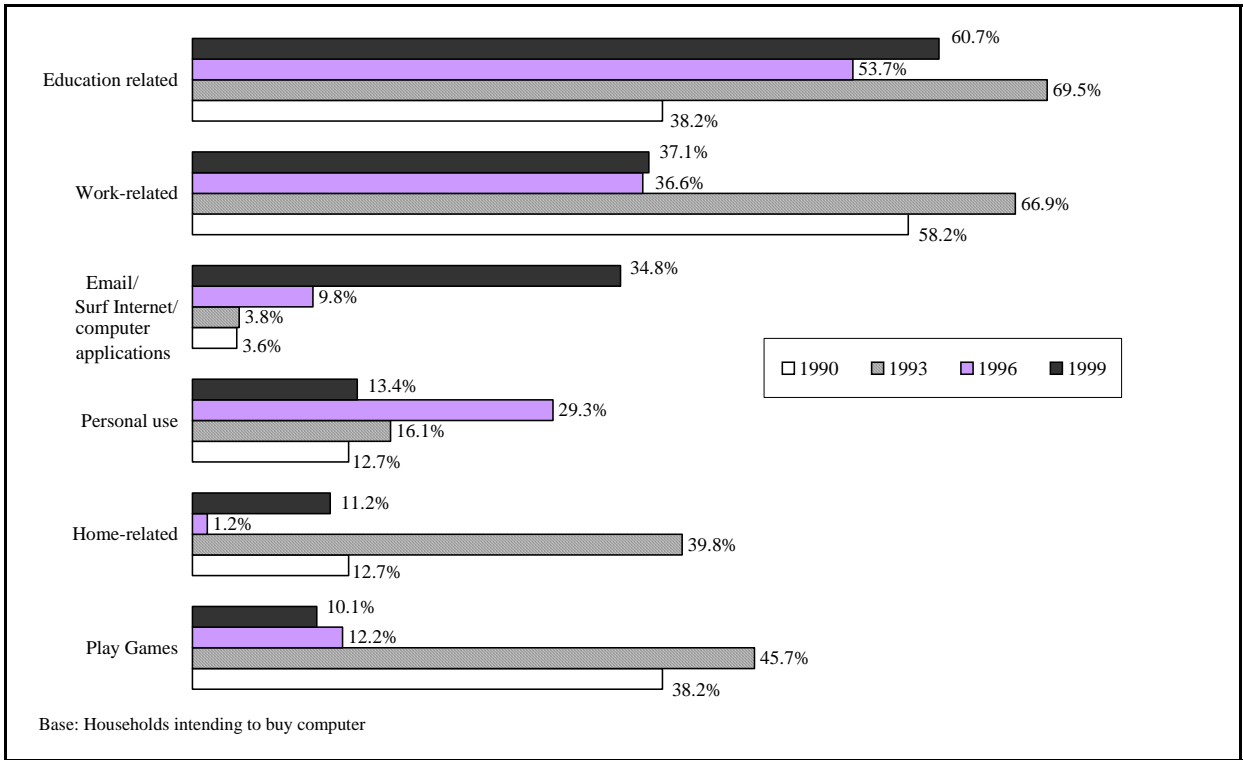
Note: * The length of period for 1990 and 1993 surveys is 12 months

For households with intention to purchase a computer over the next three months, the majority of them (84%) intend to buy a Pentium. One possible reason could be that this is the minimum configuration necessary to run most of the current software packages and CD-ROMs. Macintosh attracted 7% of the potential buyers while another 6% of them intend to purchase a portable/notebook. Lower PCs such as 486 PC attracts only 4% of the potential buyers.

3.3 AREAS OF PLANNED USAGE

Among the potential home computer buyers, 61% of them plan to use the computer for education-related purposes such as children's school project work. The second most common planned usage for the computer is for work-related purposes. These two areas of planned usage were also the top two preferred areas for potential buyers in all previous surveys. The proportion of potential buyers for these two top areas of usage has not changed significantly. The area of planned usage with the highest increase is email/surf Internet/computer applications, from a low 4% in 1990 to a high 35% in 1999. Buying a computer to play computer games has declined significantly from a high 46% in 1993 to only 10% in 1999.

Figure 3.3: Areas of Planned Usage



4. INTERNET ACCESS IN SINGAPORE HOUSEHOLDS

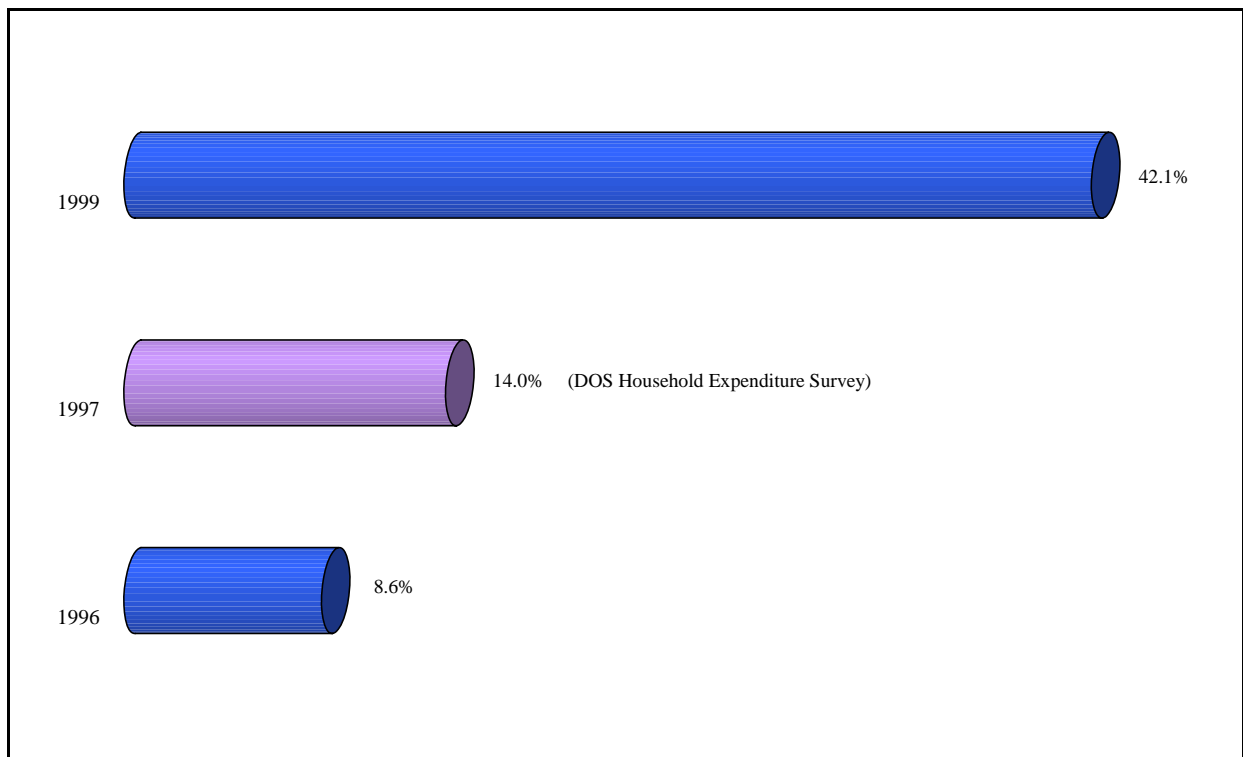
4.1 LEVEL OF PENETRATION

a. Overall

Home Internet access has grown rapidly with the availability of public access since 1994. In 1996, only 9% of the Singapore homes have Internet access. The penetration level grew to 14% in 1997 as revealed in the Household Expenditure Survey 97/98 conducted by DOS. The current survey findings revealed that 42% of the Singapore homes currently have Internet access. The significant increase in home Internet access over the last two years can be attributed to the following factors:

- Low Internet subscription fees by the three Internet Service Providers
- Free Internet account given by schools or low/subsidised subscription rate
- High home computer ownership.

Figure 4.1: Internet Access in Singapore Households



A comparison with other countries shows that Singapore has a relatively high home Internet access. Within the Asia-Pacific region, 22% of Australian households have Internet access², while Internet penetration in Japan homes stood at 13%⁴. In Europe, 40% of Swedish households have home Internet access, 25% for Denmark and 14% for United Kingdom⁵. In US, 40% of the households have

⁴ Ministry of Posts & Telecommunications, White Paper, 1999

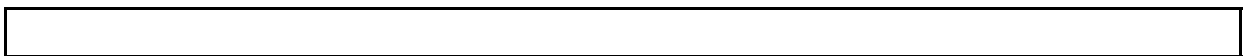
⁵ European Commission's Eurobarometer Survey, 1997-98

home Internet access⁶, while the penetration in Canadian homes is estimated to be 21%⁷. This high home Internet penetration rate for Singapore is supported by the findings in the 1999 World Times/IDC Information Society Index where Singapore was ranked top for Internet and Computer Infrastructure.

b. Internet access by Type of Housing

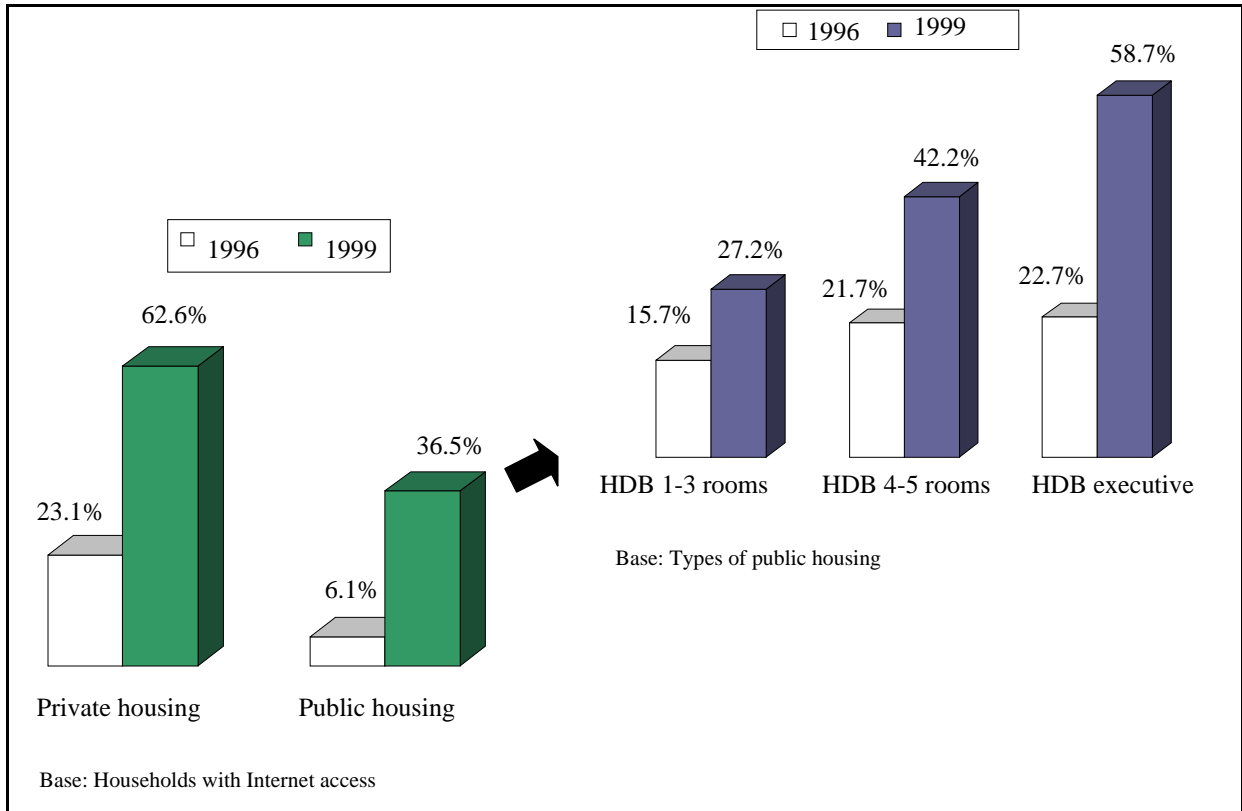
Internet access is higher in private housing than in public housing. Sixty-three percent of the homes in private housing have Internet access compared to 37% of homes in public housing. Compared to 1996, the penetration rate has increased by 40% for private housing and 30% for public housing. Home Internet access in public housing has increased significantly for all flats. For homes in public housing, 59% of the executive flats have Internet access, an increase by 36% from 1996. For HDB 4-5 rooms, 42% of them have home Internet access, up from the 22% in 1996. Penetration stood at 27% for HDB 1-3 room, up by 12% in 1996.

Figure 4.2: Internet Access by Type of Housing



⁶ Infobeats, June 1999 & Greenfield Online Inc, Oct 99

⁷ Paper: Spectrum information technologies & telecommunications sectors industry

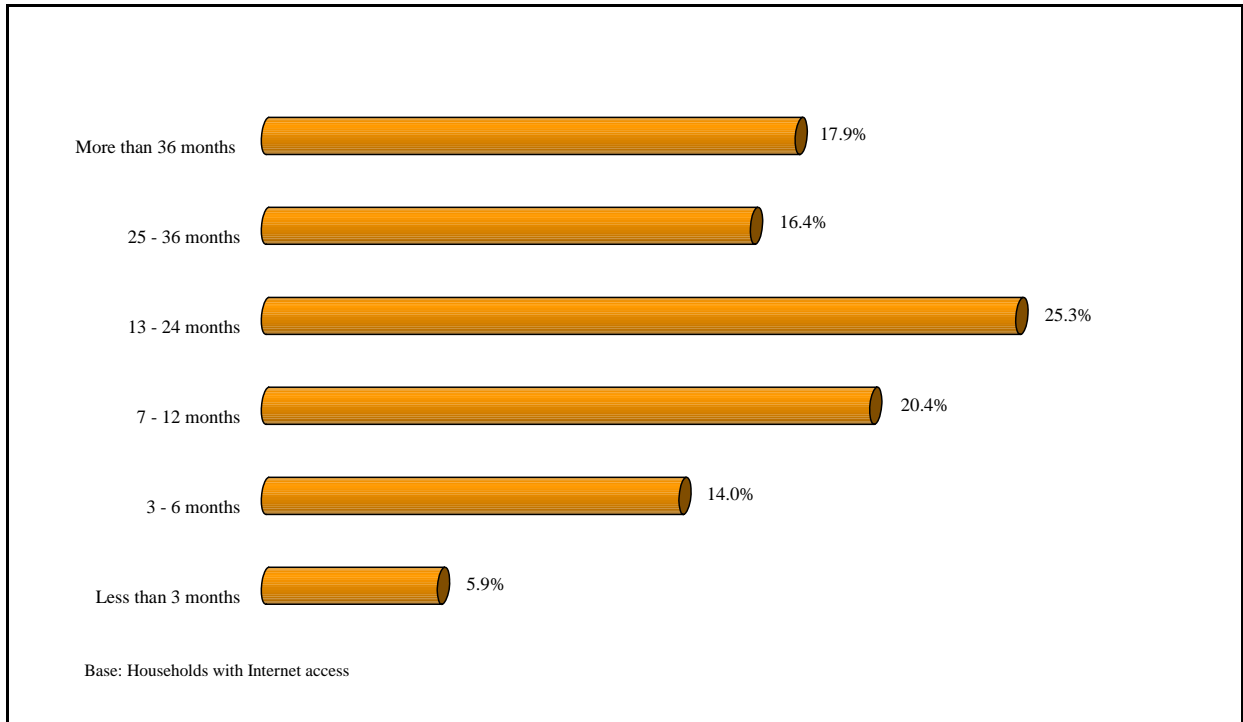


4.2 INTERNET ACCESS

a. Length of Internet Access

Forty percent of the homes have Internet access only a year ago, with 20% of them having access for six months or less. This relatively high recent length of access could be due to the low Internet subscription fee offered by the three Internet Service Providers over the last year. One-third of the homes had Internet access from home for more than two years, much higher than the 11% in 1996.

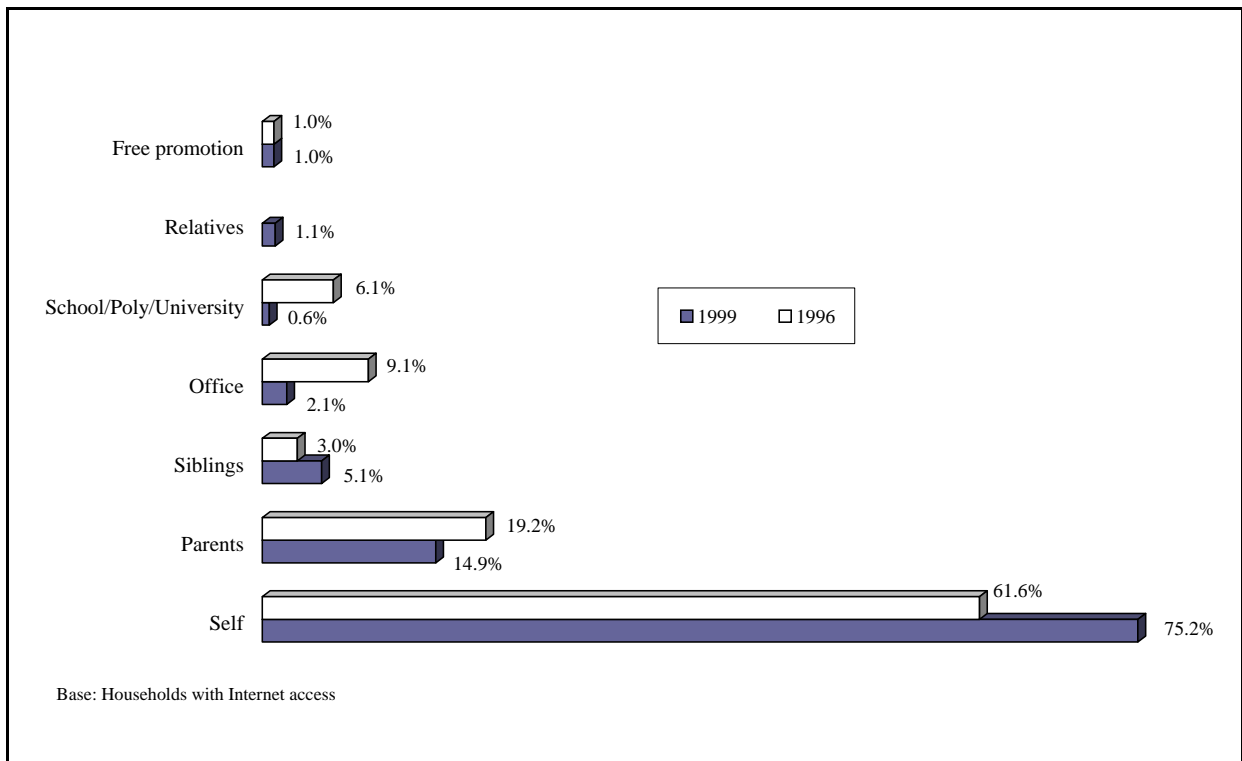
Figure 4.3: Length of Internet Access from Home



b. Internet Subscription

As in the 1996 findings, home Internet access comprises mainly individual dial-up subscribers rather than users with corporate account (office and schools/ polytechnics/universities). The majority of the home users pay for their own Internet subscription, either the users themselves (75%) or their parents (15%) or their siblings (5%) pay for the subscription. This trend is similar to the 1996's trend but with an increase in the proportion of the users paying on their own or by their siblings while the proportion of parents paying has declined. Corporate account (office/educational institutions) accounted for only 3% of home Internet access, a significant decline from the 15% in 1996. The relatively low proportion of home users using corporate accounts for home Internet access implies the preference to separate home usage vs corporate usage.

Figure 4.4: Payment for Internet Subscription



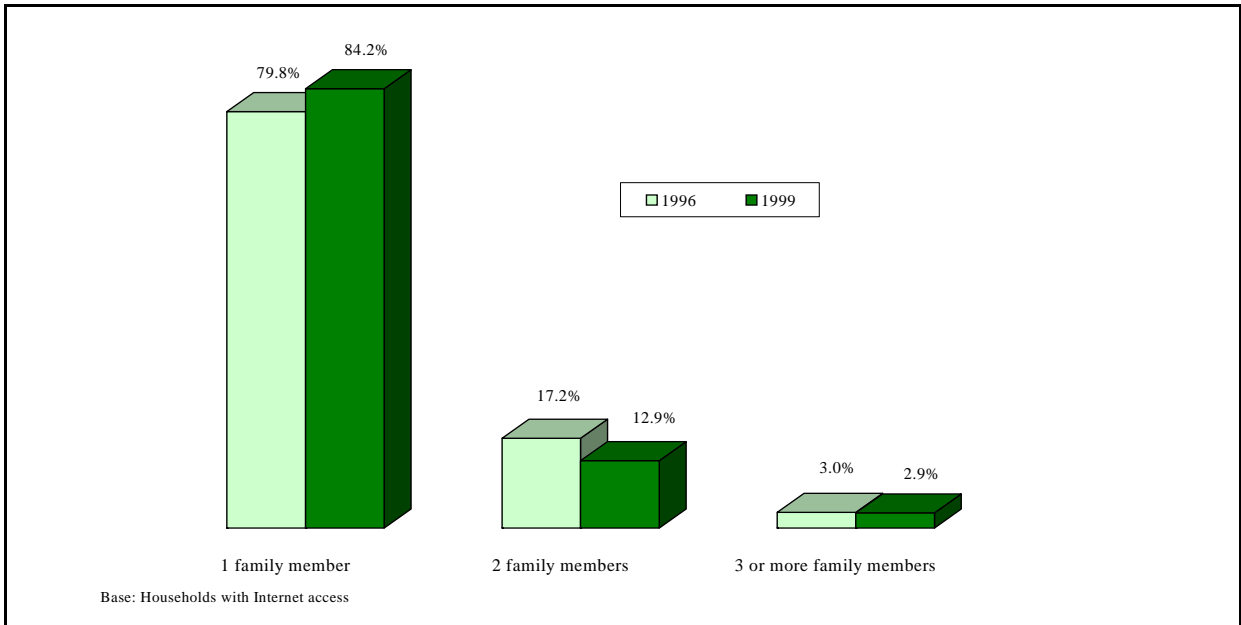
4.3 CHARACTERISTICS OF HOME INTERNET USERS

a. *Number of Internet Accounts and Users*

Single Internet account is the norm for majority of the households. Over 80% of the households have only 1 family member who has an Internet account. Another 13% of the households have 2 family members with Internet accounts. Compared with the 1996 findings, the proportion of only 1 family member with Internet account has increased by 4%.

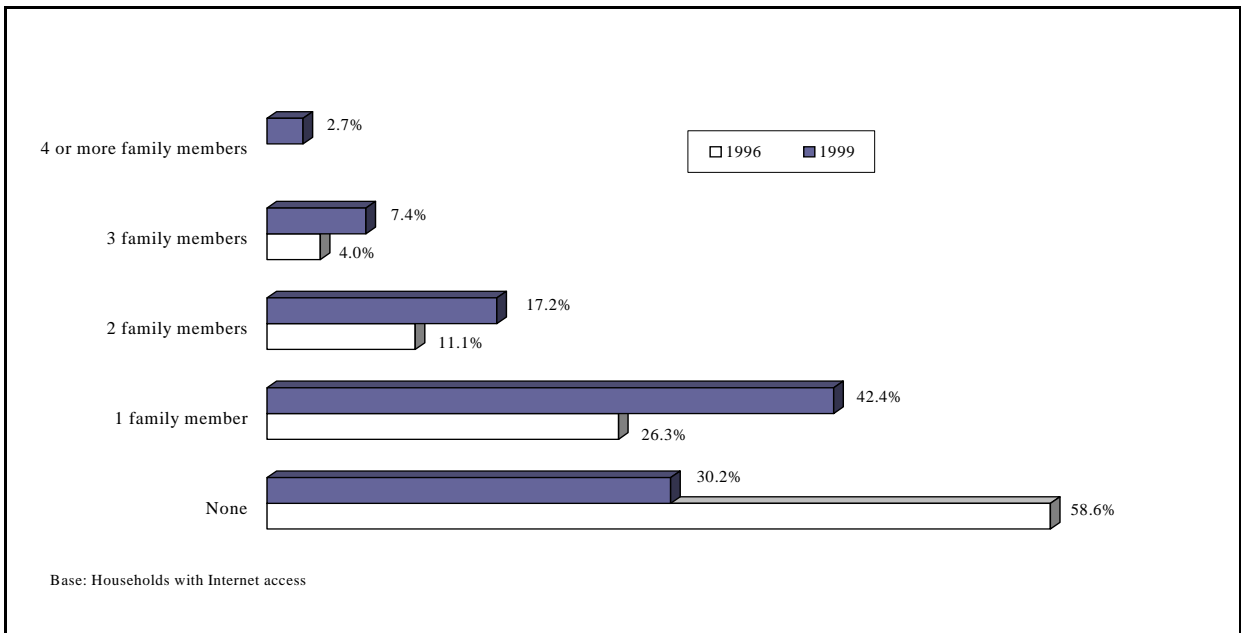
The estimated total number of Internet account holders at home is 477,928, a significant increase from the estimated 88,473 Internet account holders at home in 1996.

Figure 4.5: Number of Family Members with Internet Accounts



The proportion of family members accessing Internet without their own account has increased. Only 30% are accessing Internet with their own Internet account compared to 59% in 1996. Among the 70% of the households who have users accessing Internet without their own accounts, the majority of them (42%) have only 1 family members do so, an increase by 16% from 1996. The estimated number of home Internet users is 764,680, a significant increase from the estimated number of 114,368 in 1996.

Figure: 4.6: Family Members Accessing Internet Without Their Own Account



b. Profile of Home Internet Users

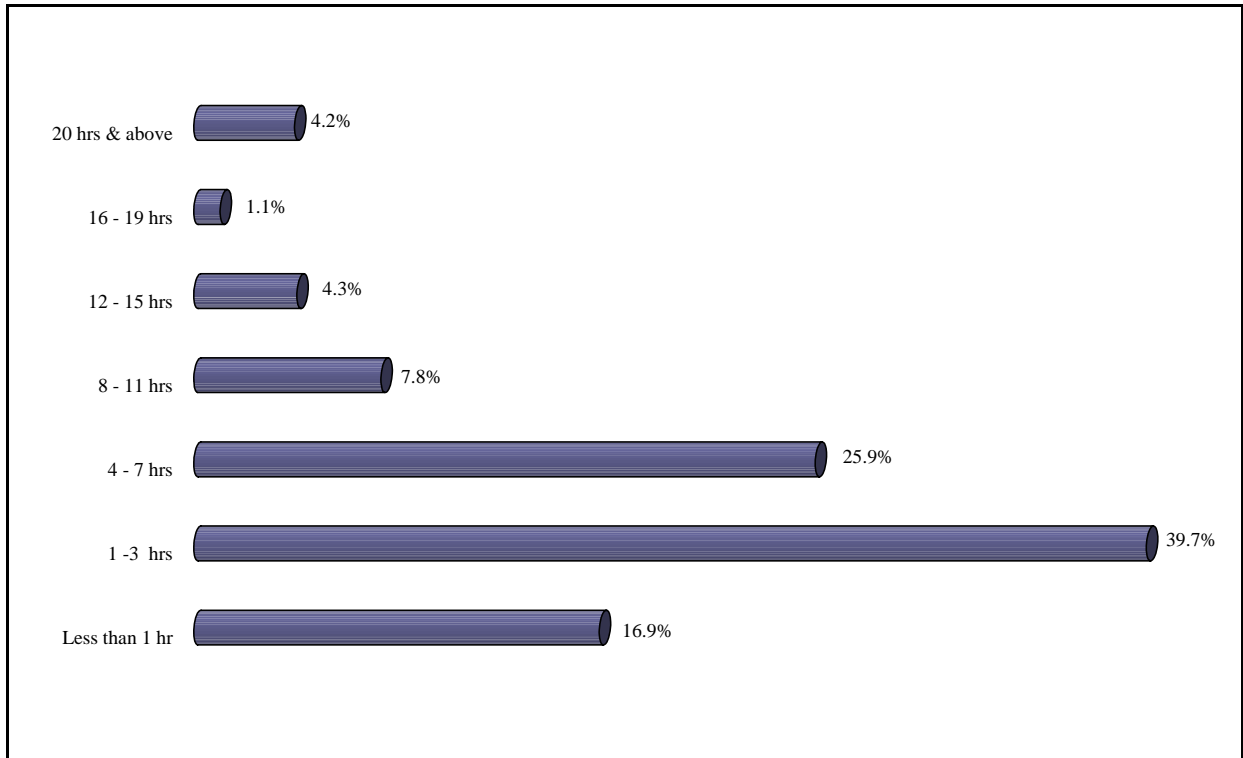
The following is a detailed profile of home Internet user:

Characteristics	Attributes	Percent
Gender	Male	56.7%
	Female	43.3%
Age Group	Below 20 years	26.1%
	20 – 29 years	28.9%
	30 – 39 years	25.3%
	40 – 49 years	14.4%
	50 years and above	5.3%
Educational Level	Primary and below	4.5%
	Secondary	32.5%
	Post-secondary	11.1%
	Tertiary	51.9%
Employment status	Working adults	60.3%
	Students	32.2%
	Housewives/retirees	6.4%
	Unemployed	1.4%

c. Hours of Internet Usage

Overall, home Internet users are not heavy users as only 5% spent more than 15 hours per week accessing Internet. The majority of the users (40%) spend between 1-3 hours weekly. The average time spent is 4.7 hours per week.

Figure 4.7: Hours of Internet Usage Per Week



d. Types of Internet Usage

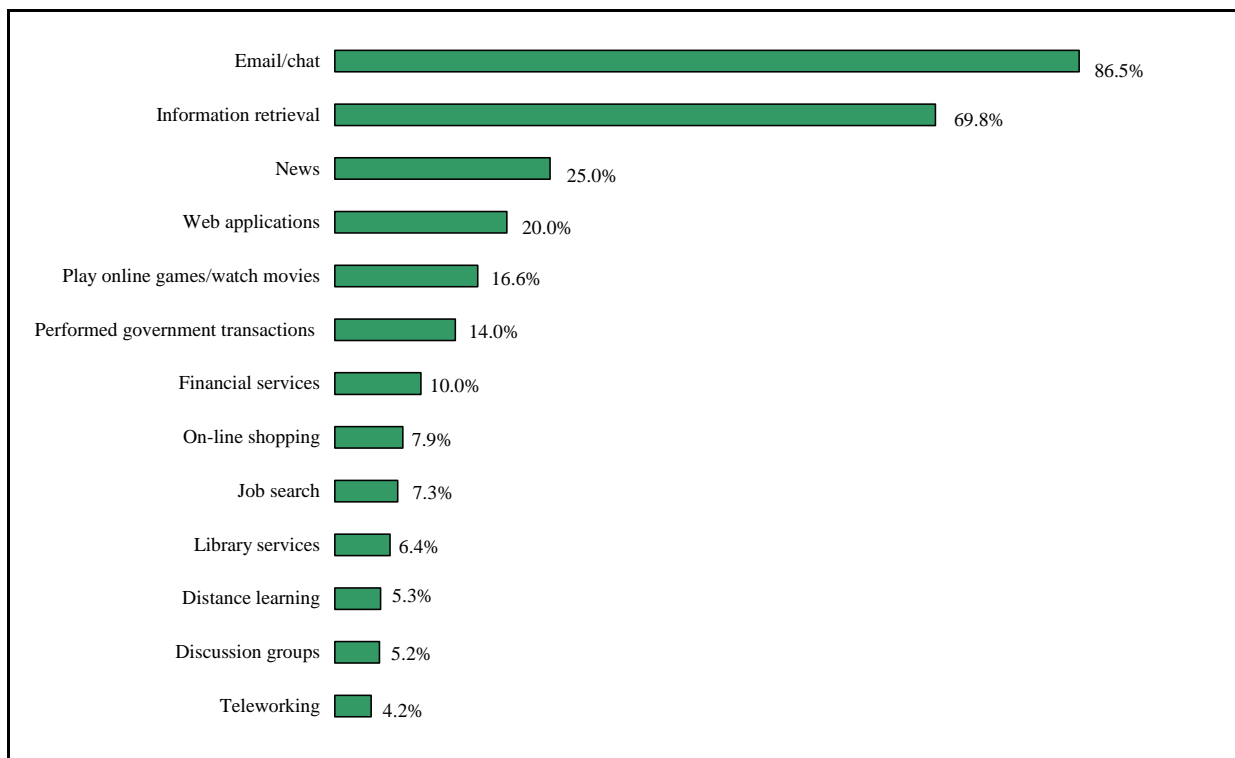
The top five uses of Internet are:

- Email/Chat (87%)
- Information retrieval (70%)
- News (25%)
- Web applications (20%)
- Play on-line games/watch movies (17%)

Users are least likely to use the Internet for:

- Teleworking (4%)
- Discussion group (5%)
- Distance learning (5%)
- Library services (6%)
- Job search (7%)

Figure 4.8: Types of Internet Usage at Home



E-commerce related activities such as on-line shopping either with or without actual purchases attracted only 8% of the home users. This shows that on-line shopping though popular in countries such as US, has yet to make an impact in Singapore. Shopping as a favourite leisure activity, the easy access to and abundance of retailing outlets are competing factors against the adoption of on-line shopping by the general population. Other E-commerce activities such as financial services and on-line government transactions attracted only 10% and 14% of the users respectively.

4.4 E-COMMERCE RELATED ACTIVITIES

This section presents detailed findings of the respondents who are Internet users (46% of home Internet users) and their participation in the following E-commerce related activities at home:

- On-line shopping
- On-line Government transactions

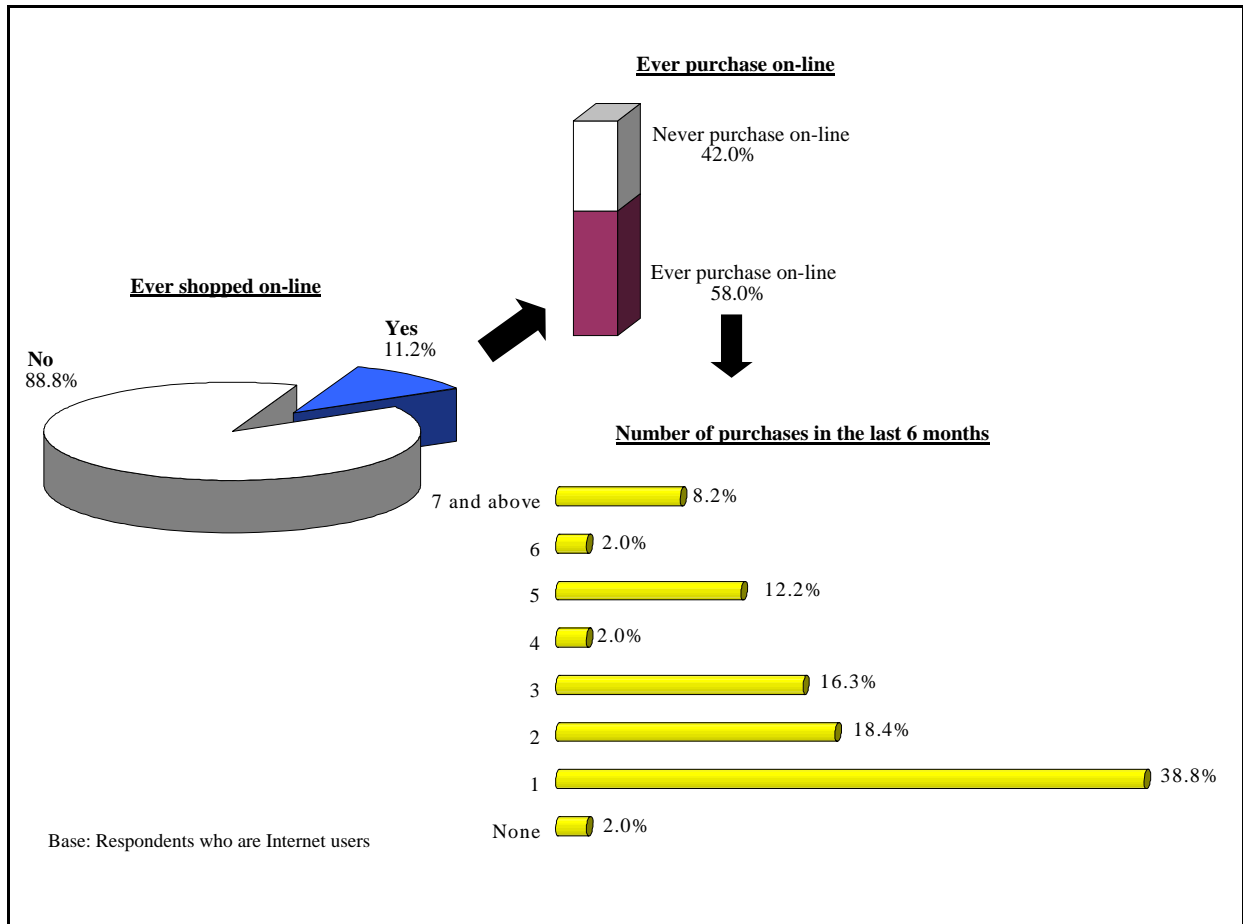
a. ***On-line Shopping***

i. Shopping Behaviour

Among the respondents who are Internet users, only 11% of them have ever shopped on-line. Among them, more than half of them (58%) have ever made an on-line purchase. The volume of purchases in the past six months is not high. Two percent of the respondents who have ever purchase on-line but not in the last six months. Thirty-nine percent of them made a single purchase, while 35% of them had

2-3 purchases. Those who had made more than 6 purchases over the last six months constituted only 8%.

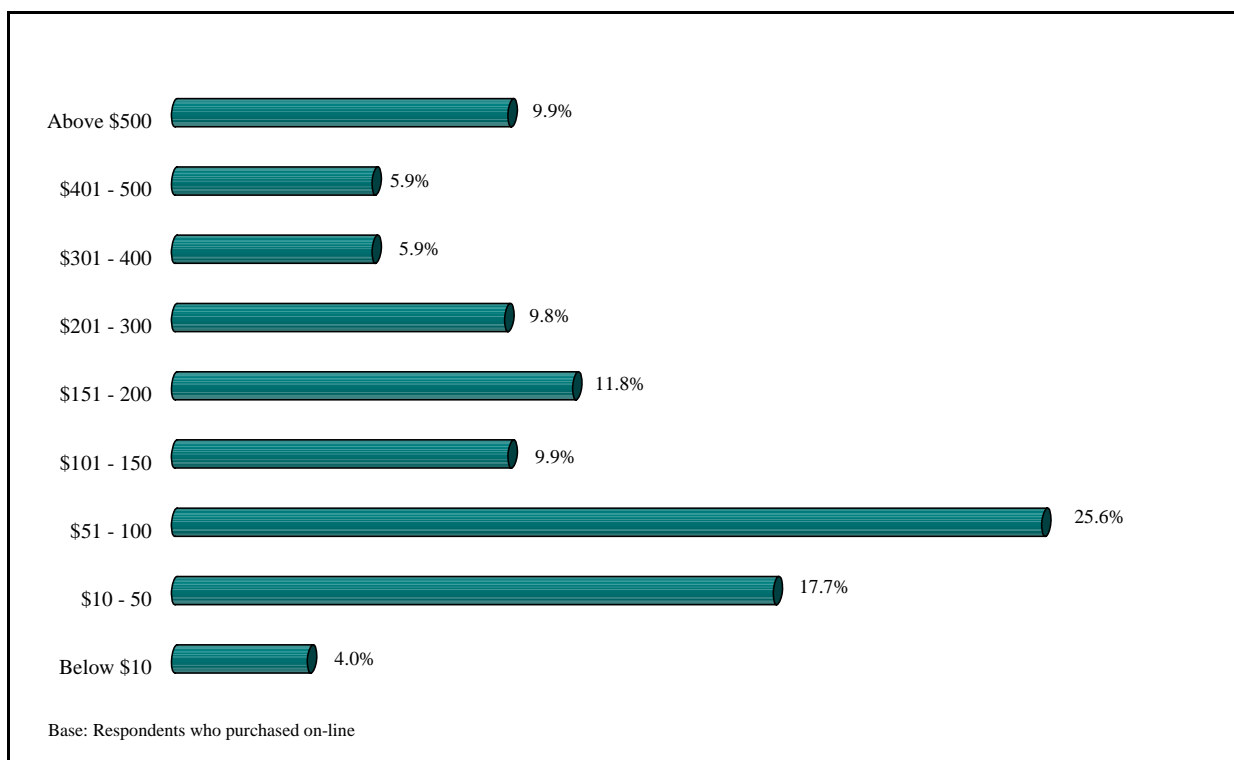
Figure 4.9: On-line Shopping Behaviour of Respondents



ii. Amount Spent On-line

Overall, the value of goods bought on-line is not high. Twenty-six percent of the respondents who bought on-line spent between \$51-\$100 and 18% of them spend between \$10-\$50 in the last six months. Those who spent more than \$500 constituted only 10%. The range of dollar-value spent over the last six months varies from as low as \$5 to as high as \$1,350. The median amount spent by respondents over the last six months was \$135 though \$100 value of goods bought was the norm.

Figure 4.10: Amount Spent on On-line Purchases in the Last 6 Months



iii. Types of Products and Services Bought

Books and stationery are the most popular items bought over the Internet as indicated by 39% of the respondents who have ever bought on-line. Other more popular products are:

- IT related products eg software and modems (20%)
- Groceries/food & beverages (18%)

Products that attracted only a minority of the respondents who purchased on-line are:

- Education services eg correspondence course (2%)
- Toys (2%)
- Professional/business services eg real estate and accounting (2%)

Table 4.1: Products and Services Bought from Internet

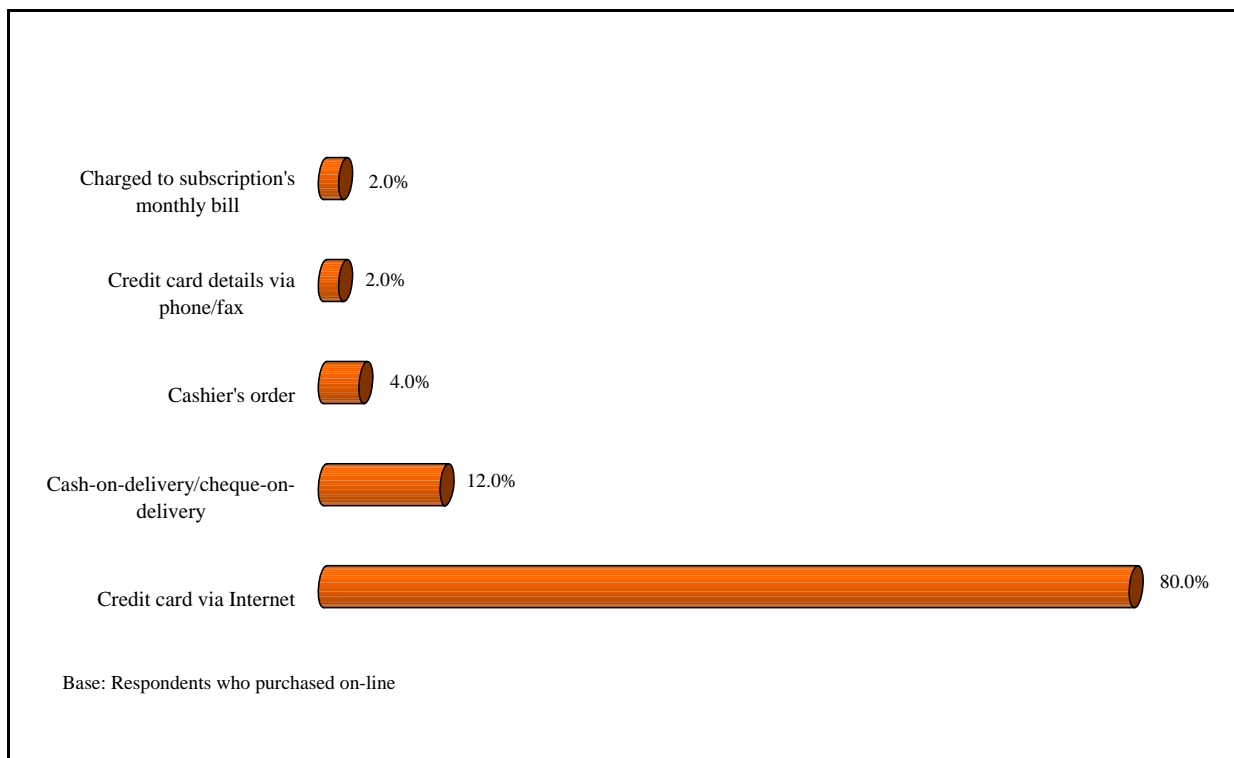
Products and Services	Percent
Books and stationery	39.2
IT related products eg modems, software	19.6
Groceries/food and beverages	17.6
Tickets eg concert, drama, movies	15.7

Shoes and clothing	15.7
Travel related services	11.8
Software through downloading	7.8
Gift items eg flowers, hampers	7.8
Banking services eg shares, investment products	7.8
On-line newspapers, magazines, papers	5.9
Household items/durables	5.9
Collector's items eg stamps	5.9
Fitness products eg golf clubs, gym equipment	5.9
On-line games	3.9
On-line information services	3.9
Education services eg correspondence course	2.0
Toys	2.0
Professional/business services eg real estate	2.0

iv. Payment Mechanism

Payment for on-line purchases via credit card payment on the Internet is the most popular payment mechanism used. Eighty percent of the respondents who bought on-line used this payment mechanism. This suggests that the respondents are not too concerned over the security issues generally associated with on-line payment mechanism. Payment via cash-on-delivery or cheque on delivery is the next most common payment mechanism used by 12% of the respondents.

Figure 4.11: Methods of Payment for On-line Purchases



v. Reasons for Not Shopping/Buying On-line

Eighty-nine percent of the respondents who are Internet users have never shopped on-line; among those who ever shopped on-line, 42% of them never bought on-line. The main reason cited for not doing so is the preference of going to the physical retail shops for variety of products and comparison of prices (35%). This is not surprising given the love for shopping as a favourite leisure activity, the easy access to and abundance of retailing outlets among the population. Another concern is the lack of trust in submitting credit card details over the Internet expressed by 11%. This implies that security issue will always be a concern for those who has never shopped on-line but a hurdle which can be overcome easily once they have tried to purchase on-line. The lack of knowledge of on-line buying procedures is the reason for 10% who do not shopped/buy on-line.

Table 4.2: Main Reasons for Not Shopping/Buying On-line

Main Reason	Percent
General shopping related issues	
Preference for physical shops for variety and price comparison	35.0
Don't know how to buy on-line	9.9
Not interested at all	7.8
Not aware of on-line shopping	2.5
No credit card	1.0

No time	0.3
Expensive	0.1
Products-related issues	
Not enough information given to make a purchase decision	4.9
Cannot get the goods I want	3.1
Products shown on Internet differ from actual product	2.2
Difficult to return defective goods/goods that do not met expectations	2.0
Items offered are not attractive enough	1.1
Security-related issues	
Don't trust the Internet with my credit card	11.3
Don't want to give personal information over the Internet	6.7
Information may be misused by sellers	3.6
Seller may not be genuine	2.1
Concern with purchasing/delivery process	
Take a long time to find the sites I want	1.3
Delay in delivery time/inconvenient	0.6

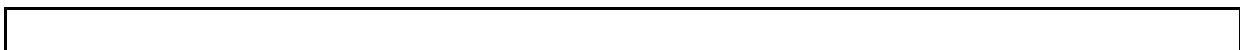
b. On-line Government Transactions

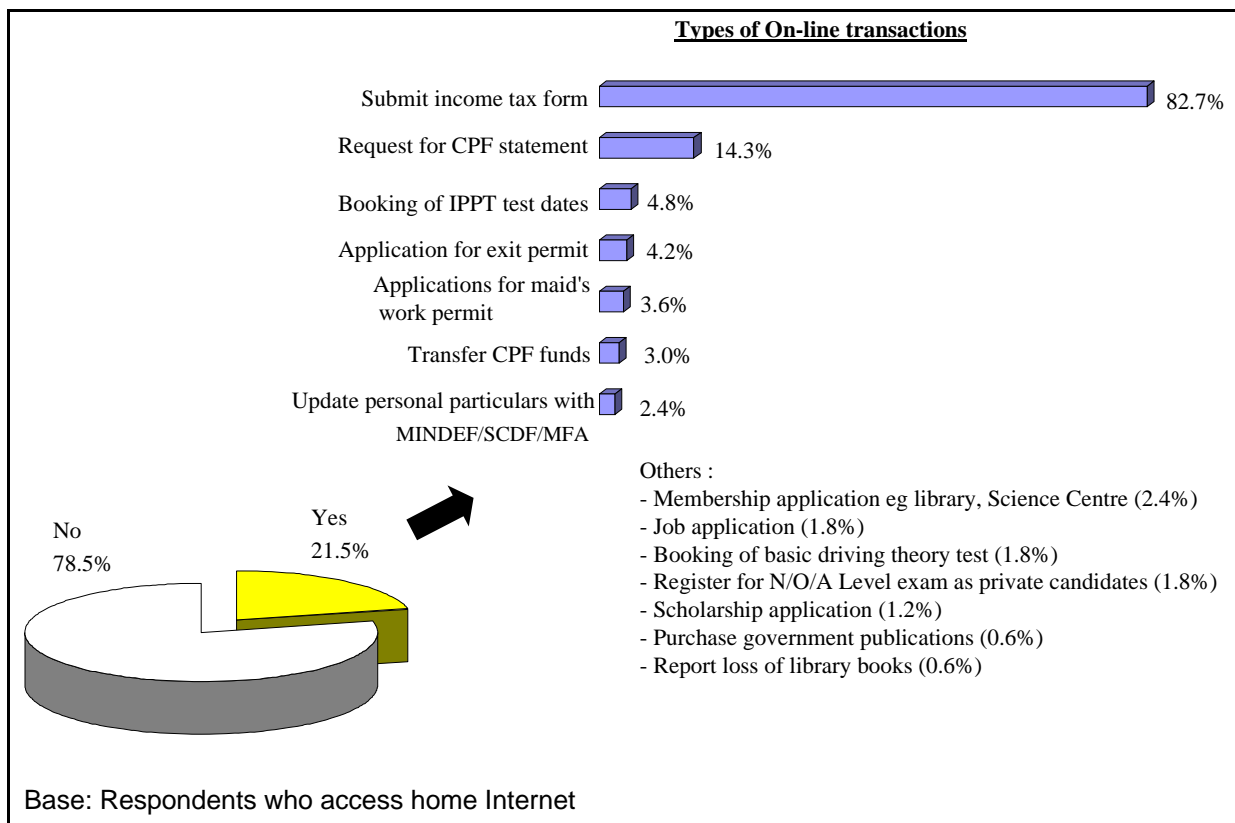
Using the Internet for on-line government transactions though not prominent is relatively higher than on-line shopping. Twenty-two percent of the respondents who access Internet at home have ever used the Internet for on-line government transactions.

i. Types of On-line Government Transactions Accessed

The most commonly accessed on-line government transaction is the submission of Income Tax Return as indicated by 83% of the respondents who accessed on-line government transactions. Requesting for CPF statements attracted 14%, making it the next most popular on-line government transaction. Only 5% used the Internet to book for IPPT Test Dates. Less than 5% have accessed the remaining on-line government transactions available such as application for maid's work permit, application for exit permit, etc.

Figure 4.12: Types of On-line Government Transactions Accessed





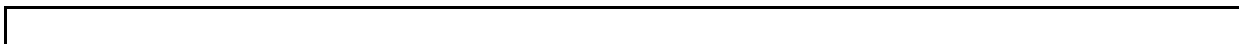
ii. Main Reasons for Not Accessing On-line Government Transactions

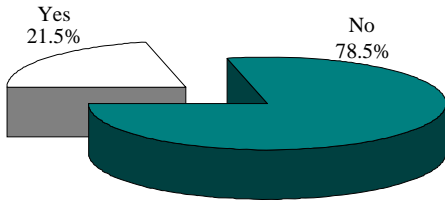
Seventy-nine percent of the respondents who accessed home Internet do not access on-line government transactions. The three main reasons for not doing so are:

- Preference to handle government transactions by post/ phone (23%)
- Prefer to make a personal visit to the relevant government departments (22%).
- Too time consuming/troublesome (16%)

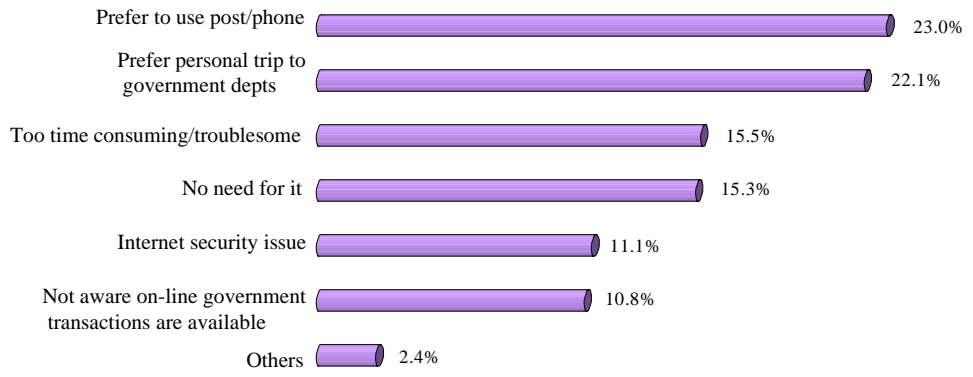
The lack of awareness as reflected by 11% and the distrust of Internet security by another 11% implies that more publicity has to be carried. And as long as the trust with the conventional form of handling government transactions prevails, on-line government transactions will lack behind.

Figure 4.13: Main Reasons for Not Accessing On-line Government Transactions





Reasons for not accessing



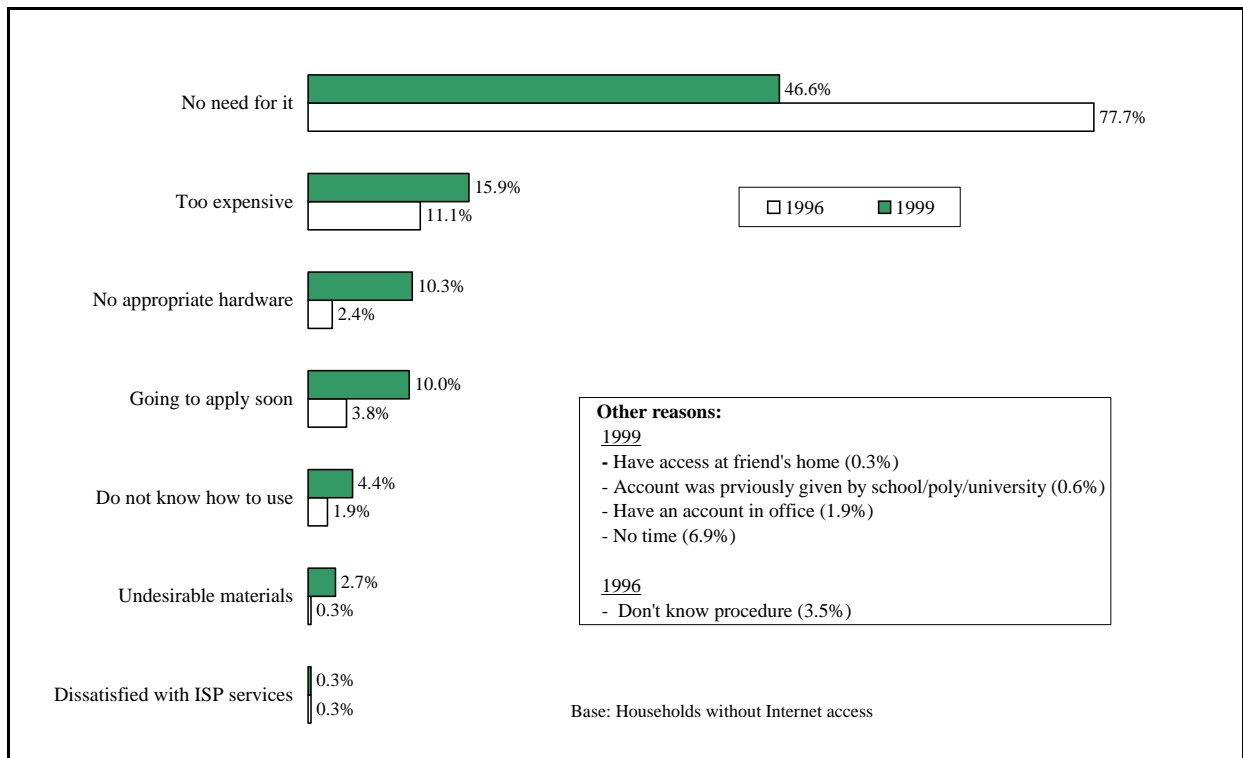
Base: Respondents who access home Internet

5. HOUSEHOLDS WITHOUT INTERNET ACCESS

5.1 REASONS FOR NOT HAVING HOME INTERNET ACCESS

Twenty-eight percent of the households with computers have no Internet access. Among them, 7% of the households ever had Internet access from home before. The most common reason given by these households for not having Internet access at home is that they do not see the necessity to have it (47%). Though this was also the common reason given by households in 1996, the proportion has declined by 31%. Sixteen percent of the households indicated cost of subscription as the hindering factor though subscription fee has been reduced substantially. Lack of appropriate hardware and intention to apply soon were cited by another 10% respectively.

Figure 5.1: Main Reasons for Not Having Internet Access



5.2 MOTIVATION TO SUBSCRIBE TO INTERNET

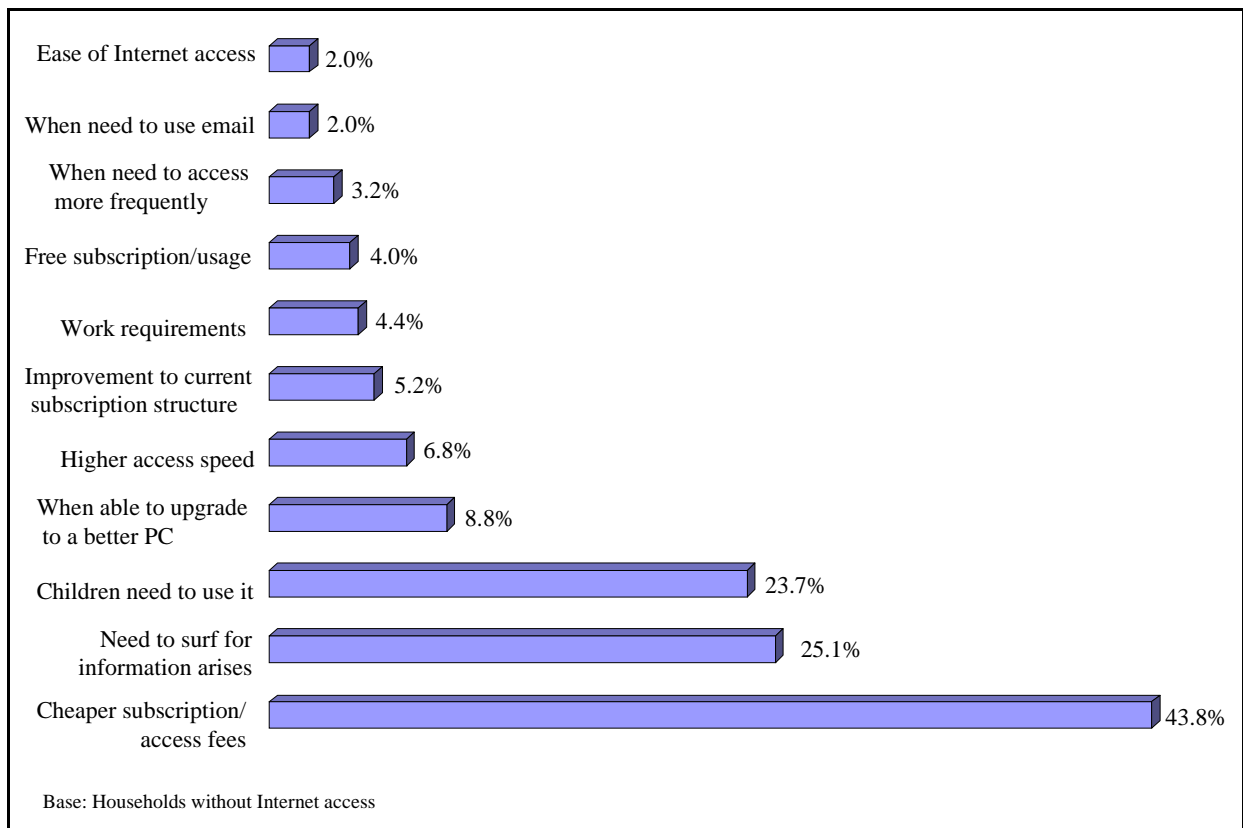
The three motivations that would attract non-subscribers to subscribe to Internet are:

- Cheaper subscription/access fees (44%)
- Surf for information when need arises (25%)

- Children need to use it (24%)

Internet subscription/access fee appears to be a deterrent factor for home Internet access. Sixteen percent of the households gave the reason of expensive subscription as the main reason for not being a current subscriber (para 5.1). Cheaper subscription/access fee is the most commonly cited motivation factor to subscription. In addition, non-subscribers are also looking for free access. To further increase home Internet usage, ISPs may need to consider repackaging their current subscription packages to make it even more attractive despite the fact that current rates are relatively lower than before.

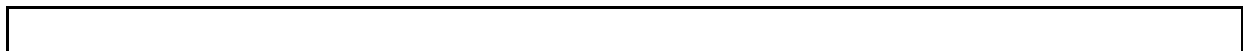
Figure 5.2: Motivation to Subscribe to Internet

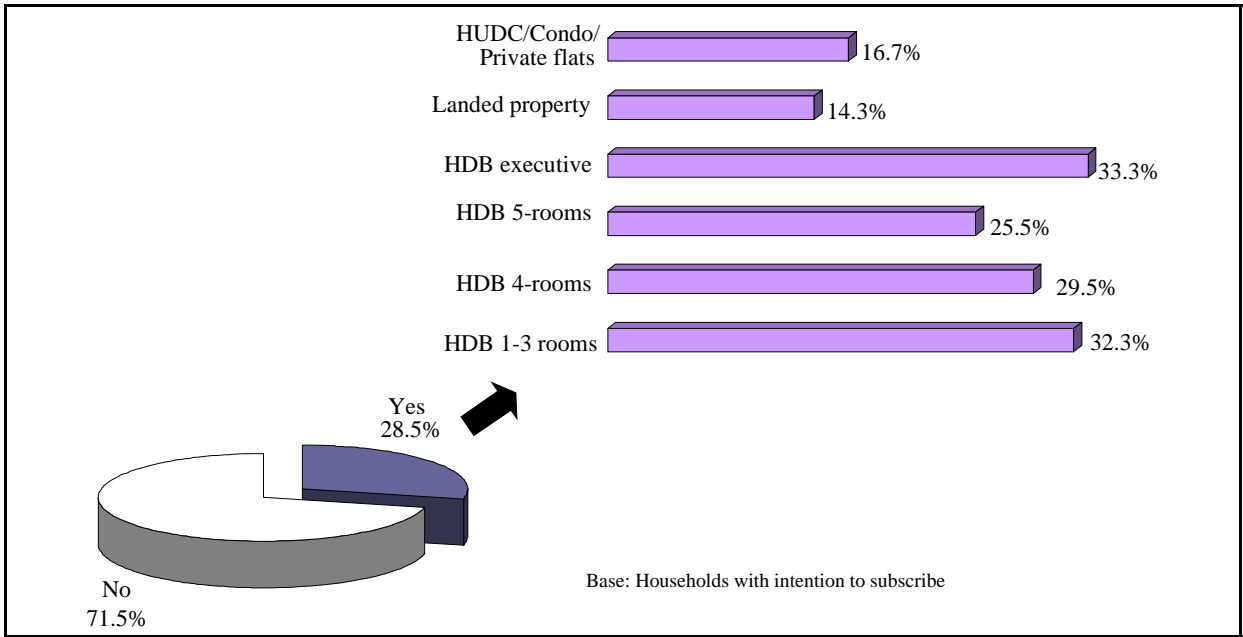


5.3 INTENTION TO SUBSCRIBE TO INTERNET

Over 70% of home computer owners do not intend to subscribe to Internet within the next six months. Only 29% intend to do so. They are mainly households in HDB executive flats and HDB 1-3 rooms. Less than 20% of the private households expressed similar intention.

Figure 5.3: Intention to Subscribe to Internet and Type of Housing





6. CONCLUSION

6.1 Overall there has been rapid IT deployment in Singapore homes over the last few years, mainly in computers and the Internet. The survey findings showed that home computer ownership and home Internet penetration have increased substantially since 1996 to the current level of 59% and 42% respectively. Comparison with other countries shows that Singapore is relatively ahead of US, Australia and Japan in computer infrastructure and Internet infrastructure deployment.

6.2 Today more than half of the homes have at least 1 computer and with this continuing upward trend, the computer would be considered as an integral home appliance like television is today in the very near future. The high Internet penetration is partly attributed to the low Internet subscription rates, as well as the perception of IT being perceived as a learning aid for education, especially by the parents.

6.3 The relatively high level of IT deployment in the homes reflect an encouraging leap towards the attainment of an information society. It also reflects that the government efforts in trying to achieve an intelligent wired island is bearing fruits. The relevant government authorities should continue with the existing efforts to sustain the growth.

6.4 The high IT deployment is however not matched with a high sophistication of IT usage. Usage pattern has not changed significantly over the years. Email/Chat is still the main use of Internet as indicated by 87% of the home users. E-commerce adoption by home users is still at "early adopter" stage. On-line home shopping, which is popular in countries such as US, has yet to make an impact in Singapore as it has attracted only 8% of total home users. On-line government transactions attracted only 14% of the total home Internet users.

6.5 High IT deployment does not necessary reflect a change in the consumer media behaviour and preferences. Hence, the challenge face is in informing and educating users to the appropriate potential inherent in IT so as to increase the sophistication level of IT usage, thereby, reducing e-mailer fraternity and stimulating users into trying other services available on the Internet.

6.6 The findings showed that the initial foundation for an Information Society is in place. With 59% of the households owning computers, it is timely to adopt a niche strategy to draw in the others who are non-computer owners and non-users. This can be done by developing and implementing specialised rather than general programs and initiatives targeted at identifiable distinct groups.

Appendix Table 1: COMPARISON BETWEEN SURVEY FINDINGS AND DOS HOUSEHOLD FRAME

<u>Type of Housing</u>	<u>Survey response</u>	<u>DOS Household frame</u>
HDB 1-2 rooms	5.7%	6.3%
HDB 3 rooms	30.4%	25.1%
HDB 4 rooms	30.0%	28.9%
HDB 5 rooms	11.9%	14.9%

HDB executive	4.6%	5.5%
HDB others	-	1.5%
HUDC/ Private apartments/ Condominium	10.5%	10.1%
Landed properties	6.2%	6.7%
Shophouses	0.7%	0.9%
Total	2,000	951,100

Appendix Table 2: Demographic Profile of Household Respondents

Characteristics	Percent
Gender	
Male	67.2
Female	32.8
Race	
Chinese	71.8
Malays	15.8
Indians	9.1
Others	3.3
Age Group	
Below 20 years	2.7
20 – 29 years	12.6
30 - 39 years	32.2
40 - 49 years	29.3
50 years and above	23.2
Education Level	
No education	6.2
Primary	22.1
Secondary	36.2
Post-secondary	7.7
Polytechnic/Diploma	11.2
University	16.6
Type of Housing	
HDB 1-2 rooms	5.7
HDB 3 rooms	30.4
HDB 4 rooms	30.0
HDB 5 rooms	11.9
HDB executive	4.6
HUDC/Private apartments/Condominium	10.5
Bungalows/Terrace houses	6.2
Shophouses	0.7
Monthly Household Income	
Below S\$1000	7.2
S\$1000 – S\$1999	22.3
S\$2000 – S\$2999	19.9
S\$3000 – S\$3999	18.1
S\$4000 – S\$4999	11.1
S\$5000 – S\$5999	6.7
S\$6000 and above	14.7

(n=2000)