



行政院研究發展考核委員會
Research, Development, and Evaluation Commission, Executive Yuan

Taiwan Digital Divide Report 2006

Summary

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Summary of Individuals & Household Digital Divide in Taiwan 2006

I. Introduction

According to “The Global Information Technology Report 2005-2006” published in March 2006 by the World Economic Forum (WEF), Taiwan was ranked 7th out of 115 countries included in the Networked Readiness Index (NRI), moving up 8 places from its 15th ranking in last year. The performance of Taiwan in the WEF rankings for 2006 was the best since 2001.

However, despite its outstanding performance in the IT industry, Taiwan encounters a similar problem as other advanced countries in the widespread of information technology- the digital divide. The digital divide inevitably resulted from different community groups having different capability in using information technology equipment and the Internet due to inconsistent accessibility to computers and their use of the Internet at different periods of time.

To bridge the domestic digital divide and to realize the dream of equal e-opportunities, the government has incorporated the “Program for Bridging the Digital Divide” into the “e-Taiwan Project” since 2004 and listed it as a key focus in policy implementation. Each year, the Research, Development, and Evaluation Commission (RDEC) conducts a digital divide survey, to evaluate the status of information infrastructure implementation and the result of digital divide reduction, hoping to understand the current situation of Taiwan’s digital divide through survey and research methodology consistent with modern social science standards. The results can be adopted not only as reference for the government in formulating the digital divide policy accordingly, but also in evaluating the progress and benefits of the implementation of the digital divide policy. At the same time, the results also help to sustain achievements from the digital divide research in previous years to further understand the changes in domestic digital divide trends, as well as connecting and conducting dialogue with international studies.

II. Study Methodology

In line with the purpose and spirit of its past studies, the 2006 Digital Divide Survey was contracted to the Survey Research Center of the UDN Group. The survey was conducted using computer assisted telephone interviews (CATI) from

April to June 2006. Random sampling interview was used to interview population of Taiwan nationality at or above the age of 12 in the two major metropolitan cities in Taiwan (Taipei and Kaohsiung), and 23 other counties and cities.

The survey was conducted after 6pm on weekdays as well as in the late afternoon and evening on weekends. The survey collected 26,702 valid samples in Taiwan, with a response rate of 75.8% (non-response rate is 24.2%). The estimated and actual distribution of random samples completed in counties and cities are shown in Table 1.

This survey originally completed random telephone interview with 618 indigenous peoples in total. Due to the consideration that the indigenous peoples accounts for a smaller proportion in the total sample size, the samples surveyed are not sufficient to infer the digital divide of the indigenous peoples. After the completion of 26,702 random samples, more random samples are extracted from the sample database provided by the Council of Indigenous Peoples of the Executive Yuan and the number of valid samples was increased to 1,068.

The survey for inflated samples of the indigenous peoples was scheduled to be conducted between Aug 16 and September 6 2006. After adding another 405 indigenous peoples to the total sample size, a total of 1,068 samples were analyzed.

Table1 Distribution and Actual Number of Samples Interviewed for
Individual/Household Telephone Survey

County/City	Numbers of residents aged 12 and above	Estimated Error	Sample Size	Actual Valid Samples
Total	19,438,610	±0.6%	26,489	26,702
Taipei City	2,267,652	±3%	1,067	1,113
Kaohsiung City	1,303,102	±3%	1,066	1,074
Taipei County	3,204,700	±3%	1,067	1,147
Yilan County	395,252	±3%	1,064	1,072
Taoyuan County	1,556,952	±3%	1,066	1,066
Hsinchu County	393,567	±3%	1,064	1,065
Miaoli County	477,286	±3%	1,065	1,066
Taichung County	1,289,840	±3%	1,066	1,068
Changhua County	1,117,543	±3%	1,066	1,066
Nantou County	460,945	±3%	1,065	1,085
Yunlin County	629,920	±3%	1,065	1,065
Chiayi County	479,867	±3%	1,065	1,065
Tainan County	959,392	±3%	1,066	1,067
Kaohsiung County	1,071,845	±3%	1,066	1,066
Pingtung County	773,016	±3%	1,066	1,068
Taitung County	204,893	±3%	1,062	1,074
Hualien County	298,120	±3%	1,063	1,069
Penghu County	80,243	±3%	1,053	1,053
Keelung City	338,670	±3%	1,064	1,076
Hsinchu City	324,413	±3%	1,064	1,065
Taichung City	861,466	±3%	1,066	1,066
Chiayi City	229,719	±3%	1,062	1,062
Tainan City	650,472	±3%	1,065	1,076
Kinmen County	60,392	±3%	1,049	1,049
Leinchang County	9,343	±3%	958	959

Data Source: Department of Statistics, Ministry of the Interior, “Age structure of Each County / City in Taiwan”, October 2005.

III. Study Framework and Survey Items

Considering previous years' trends and comparing the needs, the 2006 questionnaire on the digital divide basically has the same framework as the one in 2005. In order to provide a more thorough research framework for the 2006 digital

divide survey to allow domestic research trends to keep pace with international trends as well as to draft policies, the following modifications were made:

1. With correspondence to technological and social development, items such as mobile phone Internet service, receipt of junk mails, ability to operate the mouse and keyboard, online search for employment information and consumer product information were added. Moreover, additional question of possible learning obstacles for poor computer or Internet literacy was provided for the reference of future policy formulation.
2. Considering that long questions may result in high rate of refusal to answer, the question sets of "willingness to take up information training", "moral discipline on the internet" and "amount of money spent on information technology" were deleted.

The questionnaire consisted of four main parts: overview of individual use of the computer and Internet, overview of household use of the computer and Internet, basic individual information, and basic household information. The individual digital divide is measured by three primary dimensions: "access to information technology," "information literacy," and "information application"; whereas the household digital divide is measured by two primary dimensions: "household information environment" and "information literacy of the family."

The 2006 digital divide survey used various indicators to measure the usage of computers and Internet by population above the age of 12. After experts have analyzed the indicators using the AHP analysis and weight have been given according to the relative importance of the indicators, the Digital Performance Score for individuals, households and overall population in Taiwan can be calculated. The digital performance for different groups can also be compared.

As the relative importance of digital divide indicators may change with time, the weights for digital divide indicators for individuals/ households were recalculated this year.

The duration of this AHP scholar and expert survey started from June 6 to July 6 2006. A total of twelve representatives from the professional governmental and academic field who had participated in the promotion or research of the digital divide policy in Taiwan were invited to attend this survey. The specialized fields of academic representatives include sociology (2), information management (1) and

public administration (1); professional experts include one representative from Yam Digital Technology Co., Ltd., one representative from Chunghwa Telecom Laboratories, one representative from the Information Service Industry Association of R.O.C. and one representative from the Taipei Computer Association. Government departments including the Research, Development, and Evaluation Commission of the Executive Yuan, Computer Center of the Ministry of Education, National Information and Communications Initiative Committee of the Executive Yuan and Information Center of the Taipei City Government were invited. Please refer to Table 2 for the results of the weight calculation,.

Table 2. The Weight of Digital Divide Indicators and Framework for Individual/Household in 2006

The weight of digital divide indicators for individual digital score (0.597)						
I	II	III	Primary Dimension I	Secondary Dimension II	Indicator III	Cross indicator Weight
Access to Information Technology			0.144			
	Access to information equipment			0.283		
	Use a computer				0.307	0.007
	History of computer usage				0.693	0.017
	Access to the Internet			0.717		
	Used the Internet before				0.086	0.005
	Used the Internet in the past one month				0.218	0.013
	History of Internet usage				0.114	0.007
	Number of Internet usage hours				0.430	0.027
	Access the Internet using mobile phone				0.152	0.009
Information Literacy			0.265			
	Ability to use the computer mouse and keyboard				0.105	0.017
	Ability to install/maintain/fix computer hardware and software				0.077	0.012
	Ability to use e-mail				0.412	0.065
	Ability to use MS Office application software				0.282	0.045
	Ability to create Web pages				0.124	0.020
Information Application			0.592			
	Application at work (or school)			0.329		
	Use the computer at work (or school)				0.232	0.027
	Use the Internet at work (or school)				0.768	0.089
	Citizenship behavior			0.108		
	Know government agencies' websites				0.064	0.002
	Used the Internet to search for public notices				0.214	0.008
	Submitted online applications through government websites				0.414	0.016
	Sent appeals through government websites				0.308	0.012
	Daily life applications			0.435		
	Use the Internet to search for product information & compare prices				0.111	0.017
	Sell or buy products on the Internet				0.115	0.018
	E-banking				0.116	0.018
	Information search				0.214	0.033
	Use the Internet for recreation purposes				0.176	0.027
	Use online instant messaging services				0.114	0.018
	Use VOIP Internet telephone services				0.155	0.024
	Information collection			0.128		
	Ability to read English Web pages				0.281	0.013
	Ability to search for specific information				0.719	0.033
The weight of digital divide indicators for household digital score (0.403)						
I	II	III	Primary Dimension	Secondary Dimension II	Indicator III	Cross indicator Weight
Household Information Environment			0.267			
	Household information equipment			0.373		
	Number of computers in the household				0.584	0.023
	Ratio of family members to computers in the household				0.416	0.017
	Internet environment			0.627		
	Does the household have access to the Internet				0.677	0.046
	Type of Internet connection for computers in the household				0.323	0.022
Household Information Literacy			0.733			
	Percentage of computer users in the household				0.279	0.082
	Percentage of Internet users in the household				0.721	0.213

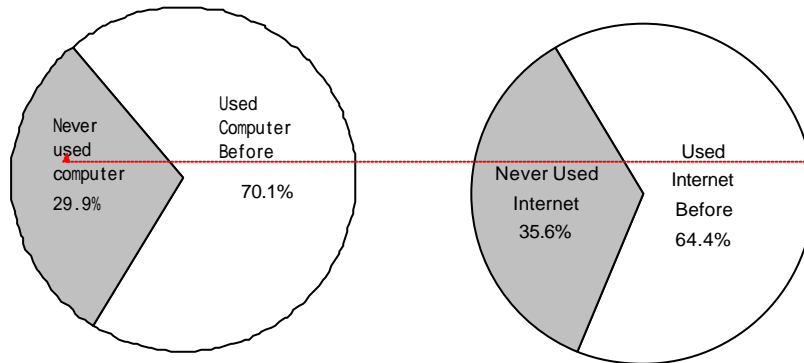
IV. Current Status of the Individual Digital Divide

This study was conducted to understand the computer and Internet usage of population above the age of 12 in Taiwan from the three primary dimensions: “access to information technology,” “information literacy” and “information application.” The results are as follows:

1. Access to information technology

1. The survey shows that 70.1% of population over the age of 12 in Taiwan has used the computer before. Based on this figure, it is estimated that 13.7 million people currently use the computer in Taiwan. On average, an individual in Taiwan uses the computer for an average of 8.34 years.
2. 64.4% of population over the age of 12 in Taiwan has used the Internet before. Using the number of people who have used the computer before as the denominator for calculation, 91.8% of the computer community is also the Internet community at the same time. Converting into number of people, the Internet population in Taiwan is approximately 12.6 million people. An individual in Taiwan uses the Internet for an average of 7 years, which is 1.34 years less than the computer usage on average. [Chart 1]

Chart 1 Computer and Internet Equipment Usage in Taiwan-Fuchien Area

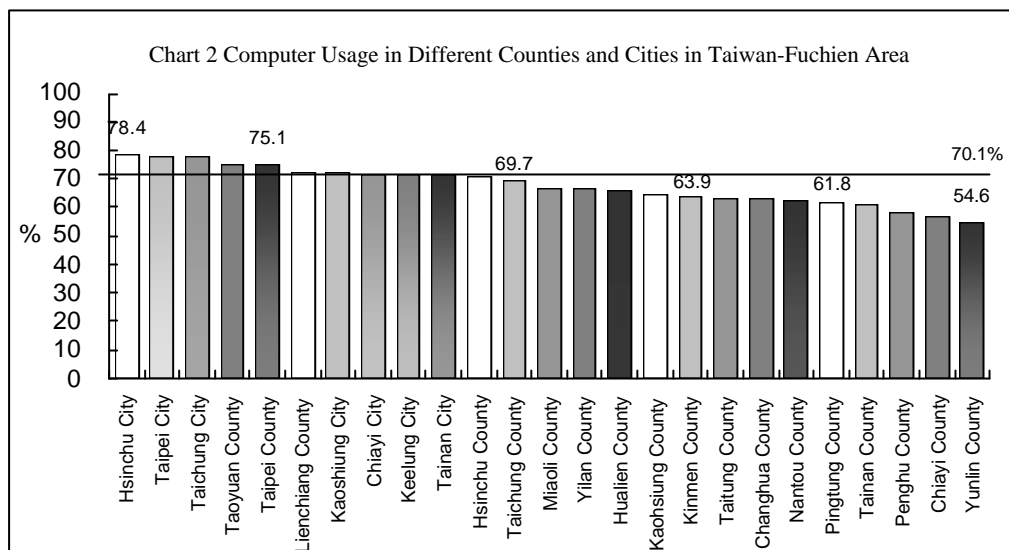


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3. A significant difference exists between residents in different counties and cities in accessing information technology equipment. Hsinchu City, Taipei City, Taichung City and Taipei County have the highest rate of computer usage and Internet access. On the other hand, the level of residents in Penghu County, Chiayi County and Yunlin County is comparatively lower with the computer

usage rate of less than 60%. The Internet access rate of Yunlin County residents is less than 50%. [Chart 2]



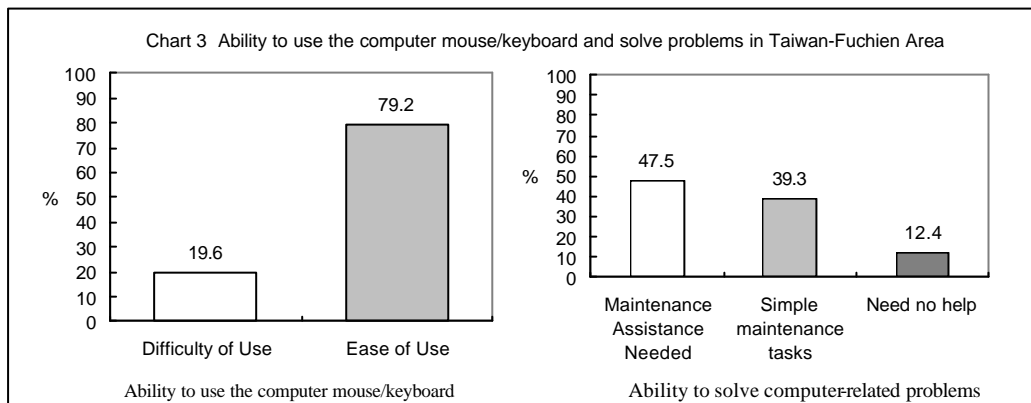
4. The status of public access to information technology shows distinctive differences according to different level of urbanization in their residential areas. Regions with higher level of urbanization have a higher rate of computer and Internet usage, and the residents in these regions access the computer for more years. The computer usage rate of people living in highly remote townships is 52.8% and the Internet access rate is less than 50%, which is distinctively less than residents of non-remote townships (66.7%).
5. More than 90% of the Internet community has approved of the benefits of the Internet on their daily lives. Only 5.6% considered that the Internet has not been helpful in their daily lives. From these results, the importance of the Internet in modern living has spoken for itself.
6. 10.6% of population over age of 12 who has accessed the Internet in Taiwan has accessed the Internet using the mobile phone and 5.0% has accessed the Internet using the PDA. In total, 13.8% of the Internet community has used mobile Internet services. If the calculation is based on the overall population over the age of 12, the rate of mobile Internet connection in Taiwan is approximately 8.9%. Further analysis shows that that population with higher socio-economic position have a distinctive tendency to use high-tech appliances. The rate of mobile Internet usage for people with education higher

than postgraduate level and high-level managers is close to 20%.

2. Information literacy

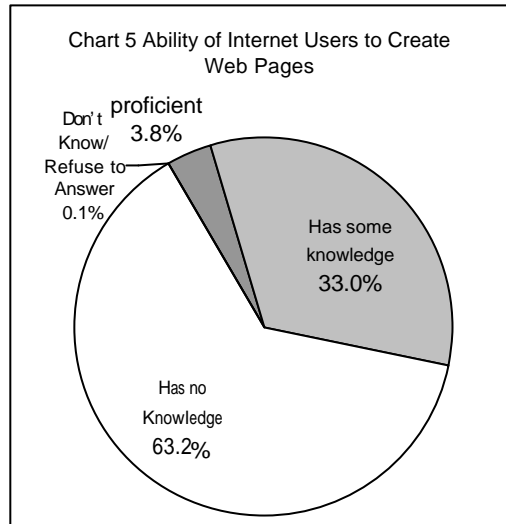
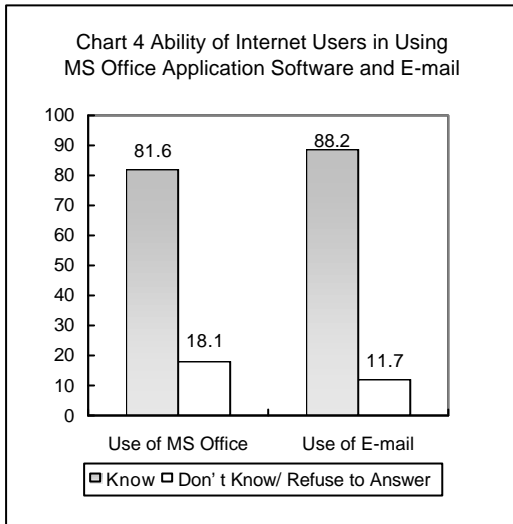
In this study, five indicators were used to observe the information technological literacy of the population in Taiwan: (a) Ability to operate a computer mouse and keyboard, (b) Ability to install/maintain/fix computer hardware and software, (c) Ability to use e-mail, (d) Ability to use MS Office application software, and (e) Ability to create Web pages.

- A. In terms of computer literacy skills, 47.5% of the population needs computer maintenance assistance, 39.3% can perform simple computer maintenance tasks, and 12.4% can carry out maintenance tasks independently. 79.2% thinks that they could operate a computer mouse and keyboard with ease, while 19.6% thinks that they are not very good at this. [Chart 3]



- B. 88.2% of Internet users know how to use e-mail, 81.6% know how to use the Microsoft Office application software, and 36.9% of the population has the ability to create Web pages.

- C. Those with a college degree or above have better computer literacy skills than those with other educational backgrounds. Professionals have the highest computer literacy skills among all types of job professions. Comparing to the non-indigenous Internet community, the computer literacy skills of indigenous Internet users is poorer. [Chart 4 and 5]



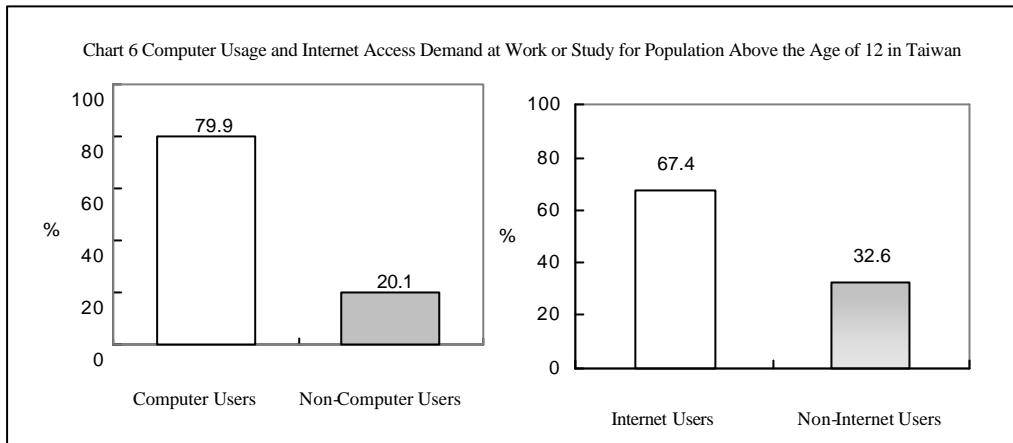
3. Information technology applications

The 2006 survey analyzed the information technology applications of the population in Taiwan from four dimensions: (a) Application at work (or school), (b) Internet citizenship behavior, (c) Daily life applications, and (d) Ability to receive Internet information.

(1) Application at work (or school)

- A. The application of computer and Internet at work and in teaching has been very common in Taiwan. As high as 79.9% of population has used the computer at work or study, and 67.4% of population needs internet access during work or study. Among these, professionals and business personnel are the two categories with the highest digitalization with over 90% require computer for work and the rate of Internet usage at work is approximately 80%. [Chart 6]

- B. Taipei City, Lienchiang County, Hsinchu City, and Taichung City have the highest digitalization level in terms of work (study) with about approximately 85% of the population uses computers at work or study. On the other hand, Tainan County (73.9%) and Chiayi County (73.5%) have the lowest digitalization level in terms of work applications.



(2) Internet citizenship behavior

- A. More than 82.0% of Internet users know that there are websites established by government agencies. Among these, 46.3% had used the Internet to access government policies or public notices in the past one year, 26.7% had filed online applications through government Web sites, and 8.9% had made appeals through government Web sites.
- B. Among those Internet users who know about the government e-transformation, those in the two outlying islands, Lienchiang and Kinmen, have the highest rate (58.5%, 55.3%) of using the Internet to access government policies or public notices. Hsinchu City (37.6%) and Lienchiang County (36.6%) have the most population that filed online applications through government Web sites. On the contrary, less than 40% of the population in Taichung County, Chiayi County, and Tainan County used the Internet to access government policies, which is the lowest in Taiwan.
- C. It is still uncommon for county/city residents to submit their suggestions or complaints via government Web sites. Changhua County (6.0%) and Tainan County (5.9%) have the lowest rate of citizen participation, which are less than half of that of Lienchiang County (14.3%) and Kinmen County (13.5%).

D. The rate of citizen participation via the Internet increases with the education level. Judging from the work status, managers and professionals are the two categories with highest rate of citizen participation via Internet. People hired by the government have highest rate of citizen participation via the Internet.

E. Among the Internet community that has not used any e-government services during the recent year, the highest proportion of 76.2% did not have the need to, followed by the feeling of insecurity (13.7%), complicated procedures (11.8%), the need to install special software or apply for certificate (11.2%), and considered e-government services not practical (7.8%).

(3) Daily life applications

(1) Among the Internet users above the age of 12 in Taiwan, 86.7% of them used the Internet to search for living information, 73.0% have used instant messaging services, 68.0% have used the Internet for recreation purposes, 50.5% have used the Internet to look for job opportunities, and 33.1% have used Internet telephone services before.

(2) Counties/cities in which more than 72% of the residents have played online games and listened to music on the Internet include Lienchiang County, Penghu County, Nantou County, Yunlin County, and Tainan County that have less developed recreational businesses. The percentage of people in Taipei using the Internet for recreational purposes is at least 10% lower than these areas and is the lowest in Taiwan.

(3) 76% of the Internet users in Taipei County, Hsinchu City, and Taipei City show more tendency of using instant messaging services such as MSN, ICQ, and Yahoo Messenger. 66.9% of Pingtung County residents have used instant messaging software, and is the lowest among the 25 counties and cities.

(4) In terms of online employment information, Taipei County (57.0%) and Hsinchu City (55.2%) have the highest population proportion that used the Internet to search for employment information. Pingtung County (41.9%) and Taitung County (40.6%) have the lowest population proportion for using the Internet to search for employment information.

(5) The proportion of population that used the Internet for recreation purposes is negatively correlated to the level of urbanization. More than 70% of people

that live in rural areas have played online games or listened to music online. The percentage of Internet users who have similar experiences in cities under county and provincial jurisdiction and cities under central government's jurisdiction have decreased to 68.4%, 66.4%, and 64.0% respectively.

- (6) Although E-commerce has grown in Taiwan but it is still not very popular. Only 22.6% of Internet users have used the Internet to carry out personal banking. However, 74.5% have used the Internet to search for product information or compare prices. 44.7% have sold or bought products or services on the Internet.
- (7) Yunlin County, Pingtung County, Chiayi County, and Changhua County have the lowest level of acceptance toward online shopping among the 25 counties and cities. On the other hand, Kinmen and Lianchiang, the two outlying counties, and Hsinchu City and Taipei City that enjoy higher digitalization have more than 50% of the population who have conducted online transactions before.

4. Ability to receive online information

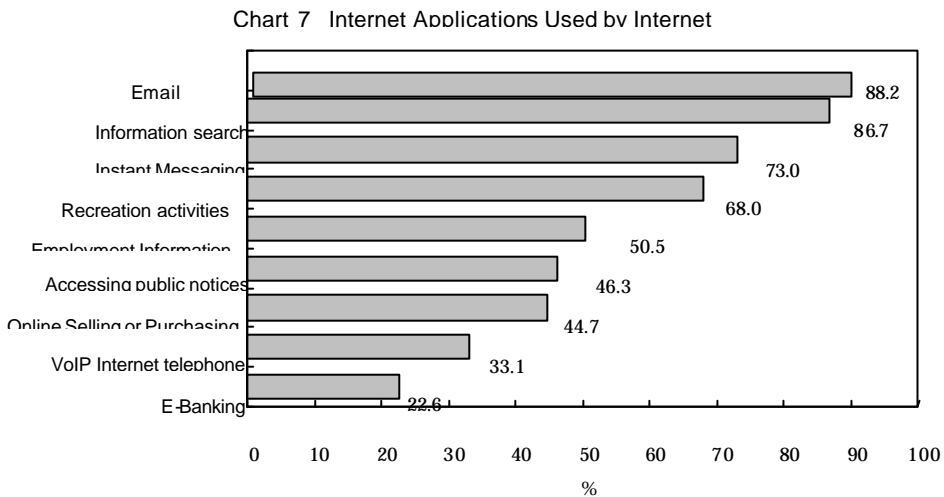
- (1) As high as 74.1% of Internet users know how to download and install programs on the Internet. Moreover, 78.2% of the respondents have the ability to search for specific information. However, the lack of strong English skills may be a burden for Internet users in Taiwan. 59.0% of Internet users believe that they lack the ability to read English Web pages.
- (2) People in northern counties and cities rated themselves higher in terms of searching for specific information and reading English Web pages than those in central, southern, and eastern region. Among these, residents in Taipei City and Hsinchu City are the most confident .
- (3) Among different occupations, professionals have the best capability in receiving online information. Among different job categories, civil servants have best capability in receiving online information.

(4) Other: Junk mails and public computers

1. Among those who have used e-mail in the past one month, more than half of them have received more than 10 junk mails per day (53.9%). 19.1% of them

received even more than 50 junk mails per day, showing the spread of junk/advertisement mails.

2. The spread of junk mails is a problem to most Internet users. More than 90% of them approved the idea of the government formulating relevant laws to regulate junk mails. Only 4.4% do not want government intervention.
3. In terms of the need for computers and Internet access in public areas, 31.8% of Internet users have this kind of need.
4. Surveys showed that popular locations for installing computers with free Internet access preferred by the public are libraries (65.1%) and train stations, MRT stations, or airports (59.9%), followed by local cultural centers (35.7%), in the vicinity of schools (34.8%), the establishment of community computer centers (33.8%), village activity centers (26.4%), fast food restaurants or coffee houses (10.4%) and convenient stores (9.7%). [Chart 7]



V. Current Status of the Household Digital Divide

The discussion on the current status of the household digital divide was based on the two primary dimensions: “household information environment” and “household information literacy”.

(1) Household information environment

- A. More than 81.6% of households in Taiwan have computers, with an average of 1.51 of computers per household. If only households with computers were taken into consideration, each household will have 1.86 computers on average.
- B. There are significant differences in the computer ownership among households in the 25 counties and cities. Nearly 90% of households in Taichung City, Hsinchu City, and Taipei City have computer equipment. On the other hand, Yunlin County, Chiayi County, and Taitung County have lower level of e-transformation with less than 70% of households have computer equipment.
- C. The percentage of household information equipment ownership and the number of household computers are positively correlated with the level of urbanization. Household information equipment is lacking in indigenous and remote villages. Computer equipment is least popular in mountain indigenous villages (53.0%), and the percentage of computer ownership in remote areas is 58.0%, which is significantly lower than the national average of 81.6%.
- D. For households whose source of income is derived from high level management, professional, technical, administrative or other white-collar categories, they are more likely to own computer equipment (over 90%); for those households belonging to the agricultural, forestry, fishery, livestock, or non-technical blue-collar categories, the popularity of computers is lower (approximately 60%).
- E. The rate of computer ownership in households whose monthly income is less than NT\$20,000 is only 27.8%. The rate increases greatly to 62.0% in households whose income is between NT\$20,000 ~ NT\$30,000 , but this figure is still far lower than the national average (81.6%). This shows that the monthly income of NT\$30,000 is the threshold for households in purchasing computers.
- F. Seven out of ten households in Taiwan have Internet connection (74.5%), among which 85.4% have broadband Internet connection. Only 5.0% still use narrowband dial-up Internet access.
- G. Among all households, only over 80% of the households in Taipei City

had access to the Internet in 2005. This year, excluding Taipei City, Hsinchu City, Taichung City, and Taipei County have over 80% of households with Internet access. Compared to the high Internet access rate of abovementioned cities, less than 60% of the households in Yunlin County and Chiayi County have Internet access, implying that a significant difference still exists between counties and cities.

- H. Looking from the aspect of the extent of remoteness of the area, the same conclusion of "the more remote the area is, the lower the rate of Internet access" was drawn. The percentage of household Internet access in non-rural areas is 77.3%, while the percentage of household Internet access in remote areas is only 47.8%.
- I. The condition in indigenous villages is similar to that in remote villages. Only 42.7% of households in mountain indigenous villages have Internet access. The rate of Internet access is increased to 63.3% in indigenous villages on plain. 75.4% of households in non-indigenous villages have Internet access.
- J. The percentage of Internet access is only 19.8% for households whose monthly household income is less than NT\$20,000. The percentage increases dramatically to 49.6% for households whose monthly household income is between NT\$20,000-30,000, but it is still nearly 25% lower than the overall average. More than 90% of households whose monthly household income is above NT\$90,000 have Internet access, with more than 90% of these having broadband Internet access.

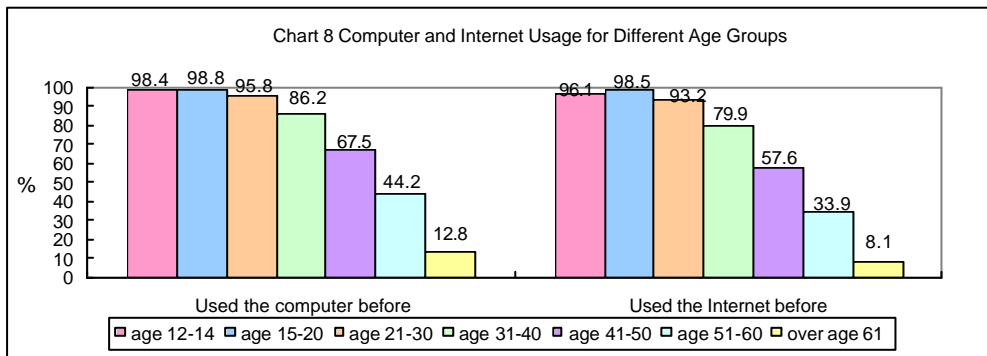
(2) Household information literacy

- A. Among the households in Taiwan, over 60% of household members have the ability to use a computer (61.2%); An average of close to 60% of all family members have the ability to use the Internet (58.1%).
- B. Looking at the computer usage rate, household members in Taipei City, Taichung City, and Hsinchu City still have the highest level of computerization among all 25 counties and cities, with more than 70% of computer users and more than 67% of Internet users in the household. On the contrary, Chiayi County and Yunlin County were ranked last in terms of the level of household information with less than 50% of computer and Internet users in the household.

VI. Reasons for Not Using the Internet and the Digital Wall

Domestic and overseas studies have indicated that the digital divide exists among people of different gender, age, education level, level of urbanization, ethnic background, occupation, and income. If the gap is caused by the social structure of each group and is too great to get across, a “digital wall” will be formed in the implementation of policies.

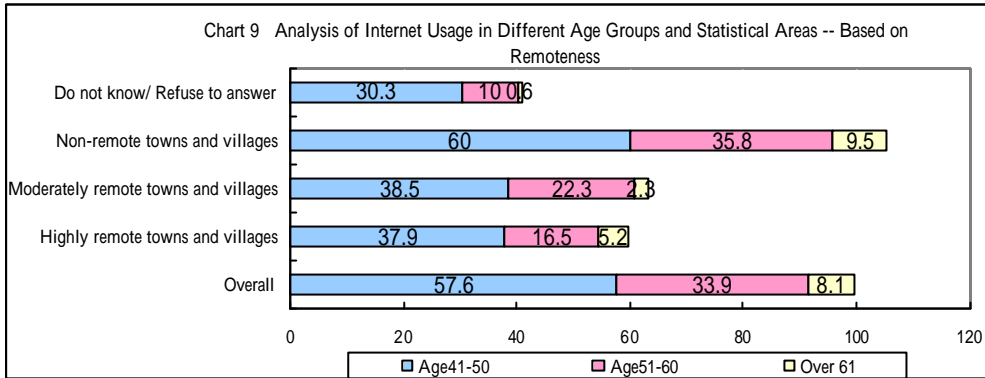
1. In terms of age group, more than 85% of people below the age of 40 use the computer. More than 96% of people below the age of 30 use the computer. The rate of computer usage is 67.5% in people between the age of 41~50 and drops to 44.2% for those between the age of 51-60. Only 12.8% of those aged 61 or older use computers.
2. The status of the recent use of the Internet is similar to that of the computer. Only 33.9% of those aged 51-60 use the Internet. Only 8.1% of those aged 61 or older use the Internet. About 80% of people aged 40 or below have used the Internet before. More than 90% of people aged 30 or below have used the Internet before. People who do not know how to use the computer or the Internet are mostly above the age of 40 and have senior high school or lower education level in Taiwan. In terms of regional distribution, about half of those who are computer illiterate live in less urbanized villages or towns. The top three reasons for not using the Internet is “Do not need to” (43.0%), “no time” (27.1%), and “Do not know how to use” (23.4%). [Chart 8]



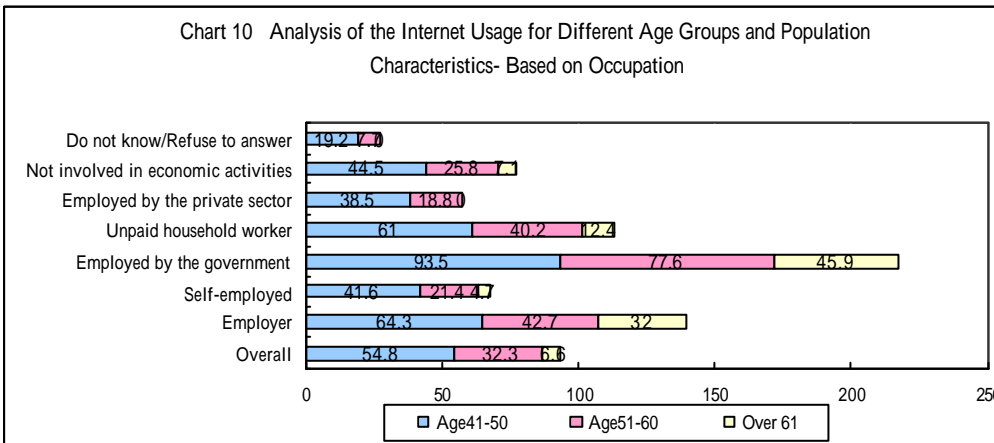
3. The digital divide between counties and cities is even greater for people aged 41-50. The highest rate of computer use is in Taipei (84.2%), which is

37% more than the lowest in Yunlin County (47.2%).

- In the over 40 age group, the overall computer and Internet usage rate of in non-remote areas is higher than that in low remote areas, which is higher than that in high remote areas. The regional gap is the most significant in the age group of 41-50 (about 20%); the gap reduces in the above 50 age group as most of them do not know how to use computers regardless of where they live in. [Chart 9]

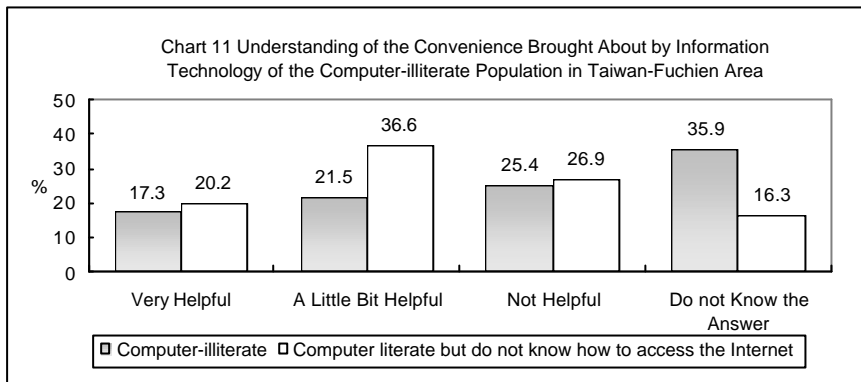


- In terms of occupation, the rate of computer usage is 64.9% and the rate of Internet use is 45.9% for workers employed by the government who are 61 years old or older, the highest computer usage rate among all groups. [Chart 10]



Computer-illiterate people in Taiwan often lack a clear understanding of the convenience that can be brought to their lives by information technology. More than 60% of them cannot imagine or do not believe that computers and the Internet can bring convenience to their daily lives. A high percentage of people who are computer

literate but do not know how to access the Internet understand that the computer or Internet benefit their daily lives (56.8%). However, 26.9% still believe that the computer and Internet are not helpful, and 16.3% do not know the answer. 【Chart 11】



6. “Not useful in daily life” (45.7%) is the main reason why most people do not think it is necessary to learn how to use the computer. Learning barriers that ranked second or third are “the texts are too small” (34.2%) and “it is too difficult for me to learn” (30.7%) respectively. 24.7% non-computer users believed that there is no need to learn as they cannot afford to buy computers. 19.2% complained that mouse and keyboard are difficult to work with.
7. On the whole, whether it is the use of computer or the Internet, or digital literacy, people who are older tend to use less of them and show poorer digital skills. In terms of percentage, more than 85% of people who are 40 or younger use the computer or Internet. The 40-50 age group is the transitional generation in the information society, and 68% of them have used the computer before. Less than 45% those who are 50 or older use the computer or Internet, showing a strong gap in the “digital wall.”

VII. Analysis of the Current Status of Digital Development of the Indigenous Peoples

1. About 70.1% of population above the age of 12 in Taiwan has used the computer before, and 64.4% has accessed the Internet before. The study shows that 62.7% of the indigenous peoples have used the computer and 55.4% of them have accessed the Internet before. These two figures are not only below the national average but are also lower than those of the Hakka

group, and non-indigenous and non-Hakka group. 。

2. In terms of age groups, there is no significant difference in the computer usage of the 12~30 age group between the indigenous peoples and the overall population. The difference becomes significant in the above 31 age groups. The indigenous peoples' computer usage in the 31-40 age group is 65.9%, which is 20.3% less than the national average (86.2%). The gap further expands to 25.7% for the 41-50 age group. 【Table 3】

Table 3 Comparison of Information Access between Different Age Groups of the Indigenous Peoples and Taiwan-Fuchien Population

	Computer Usage Rate (%)			Internet Access Rate (%)		
	All	Indigenous Peoples	Difference	All	Indigenous Peoples	Difference
Age 12-14	98.4	96.7	1.7	96.1	88.4	7.7
Age 15-20	98.8	97.3	1.5	98.5	96.5	2.0
Age 21-30	95.8	90.3	5.5	93.0	82.1	10.9
Age 31-40	86.2	65.9	20.3	79.7	54.6	25.1
Age 41-50	67.5	41.8	25.7	57.6	35.2	22.4
Age 51-60	44.2	25.5	18.7	33.9	13.2	20.7
Over age 61	12.8	4.8	8.0	8.1	4.0	4.1

3. In terms of the overall information literacy, the indigenous peoples performed poorer keyboard/mouse, troubleshooting, e-mail, and Office skills than other groups. However, the difference in creating Web pages is not that obvious.
4. The indigenous peoples have a lower participation rate in Internet citizenship. The percentage of the indigenous peoples who used the Internet to inquire public announcements (35.4%) and submit online applications (19.8%) is lower than that of the Hakka group ,and non-indigenous and non-Hakka group by 6.5% . They are similar to other groups in terms of submitting complaints or comments via the Internet (less than 10%).
5. Almost 80% of the indigenous Internet population conducts recreational activities on the Internet, which is 11.9% higher than the national average and at least 10% higher than that of the Hakka group, and non-indigenous and non-Hakka group. However, significantly less indigenous Internet users

use the Internet to search for daily life information (81.3%) and use the Internet telephone (19.2%) than Hakka group or non-indigenous and non-Hakka group. The usage rate is also lower than the national average.

6. The indigenous Internet population has poorer skills in searching for information (70.4%) or reading English Web pages (27.5%) as compared to the Hakka group or non-indigenous and non-Hakka group. The gap between the indigenous Internet population and other groups is only reduced in terms of file downloading and installation skills.
7. Although the indigenous peoples suffered the most in the digital divide, the findings in the past three years showed that they have improved in terms of using the computer and Internet or digital information proficiency. The digital divide has improved significantly. In terms of recent use of information technology, the computer usage rate of the indigenous peoples has increased from 43.8% in 2004 to 62.7% in 2006. The Internet usage rate has also increased from 37.8% to 55.4%. The usage rate has increased by at least 17.6%.

VIII. Comparison of the Individual and Household Overall Digital Performance Score

1. Individual Digital Performance Score

- (1) This survey utilizes many different indicators to gauge the computer and Internet usage for population above the age of 12. After experts have analyzed the indicators using the AHP analysis and weight have been given according to the relative importance of the indicators, the Digital Performance Score for individuals in Taiwan was calculated. The survey discovered that at the individual level, the population above the age of 12 has a digital performance score of 40.3 points, among which the access to information technology dimension was the highest (48.1 points), followed by information literacy (45.3 points) and information application (35.6 points), showing that even though the population has a certain level of understanding of computer operations, there is still much room for improvement.
- (2) The digital proficiency of population above the age of 12 of different characteristics is significantly different.. Among them, the overall digital performance score for male is 42.1 points, which is 3.6 points higher than

- female. The digital development gap is great for people with different education levels. Studies have shown that people with master's degree or above have an overall digital performance score of 76.3 points. The score of the illiterate population is only 0.4 points.
- (3) Among the different age groups, the digitalization for those under the age of 30 is quite similar, with the overall score higher than 60 points. Those above the age of 40 face a severe digital divide. The 41-50 age group received a score of 32.5 points, while the 51-60 age group or over 61 age group received a score of 18.4 points and 3.6 points respectively.
 - (4) The extent of digitalization is different among different sectors. Information and communication sector employees have the best digitalization level (75.8 points) ; Forestry, agricultural, fishery and husbandry sector employees (5.6 points), and retirees (7.5 points) have the poorest digitalization level. Moreover, the level of digitalization is quite limited in water supply and sewage treatment, construction, accommodation, food and beverage, and other service sectors' employees (average score is lower than 35 points).
 - (5) In terms of occupations, the digitalization level of professionals is the highest (70.4 points), followed by administrative workers (65.2 points). On the other hand, the digitalization level of labor and agricultural, forestry, fishery and husbandry sector employees is far from ideal with scores lower than 30 points. Among these, those in the agricultural, forestry, fishery and husbandry sector suffer the most severe digital divide (5.2 points).
 - (6) The overall digital performance score of government sector employees reached 65.3 points, far exceeding those of the private sector employees.
 - (7) The average digital performance score of the indigenous peoples is 33.5 points, which is significantly lower than the Hakka population (42.1 points) and non-indigenous and non-Hakka population (40.4 points).
 - (8) Comparing the differences between counties, cities and regions on the whole, Hsinchu City (48.4 points) has surpassed Taipei City (48.2 points) to become most digitized city in Taiwan. Taichung City was ranked third (47.0 points). Yunlin County (28.5 points) and Chiayi County (29.3) are still the ones with poorer digitalization .

- (9) The status of information technology applications is positively correlated to the level of urbanization in all areas of Taiwan. Taipei City was ranked first in terms of digital development (48.5 points), followed by commercial and industrial townships (46.2 points). Provincial municipalities (43.9 points), Kaohsiung City (42.3 points), and emerging towns (41.9 points) were ranked third. Comprehensive towns and cities, and outlying islands were ranked fourth. Lastly, the digital development of towns and villages in remote and mountain areas is the weakest.

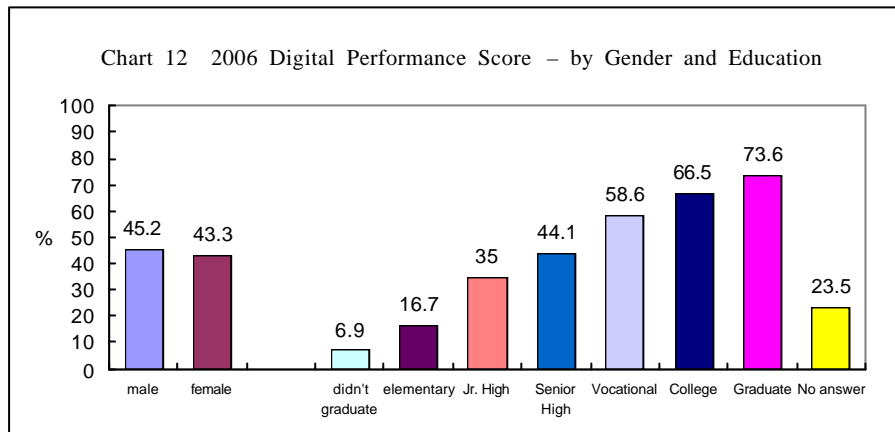
2. Household Digital Performance Score

- (1) On the whole, the household digital performance score in Taiwan is 50.0 points, among which the information environment dimension scored 63.4 points, surpassing that of the household information literacy score (45.8 points).
- (2) Differentiating the socio-economic status of the main household income provider, the score of main household income providers engaging in the information and communications media sector is the highest (69.9 points), followed by students (68.6 points) and educational service professionals (66.7 points). On the contrary, main household income providers engaging in the agricultural, forestry, fishery, and husbandry sector, water supply and sewage treatment, or who are housekeepers have poorer scores.
- (3) In terms of the occupation of the main household income provider, white-collar workers such as professionals have substantial household digitalization level, with scores between 58.0 points and 65.4 points. The scores of main household income providers engaging in the agricultural, forestry, fishery, and husbandry sector and non-technical/physical-labor sector are the lowest between 30.1 points and 33.9 points.
- (4) In terms of job sector of the main household income provider, the extent of household digitalization of those employed by the government (63.4 points) is significantly better than employers (57.7 points), those employed by private sector (53.2 points) and the self-employed (43.7 points).
- (5) For households with monthly income less than \$30,000, the extent of digitalization is low with a score between 22.3 to 37.1 points. This shows that that household income influences the extent of digital learning and applications of family members.

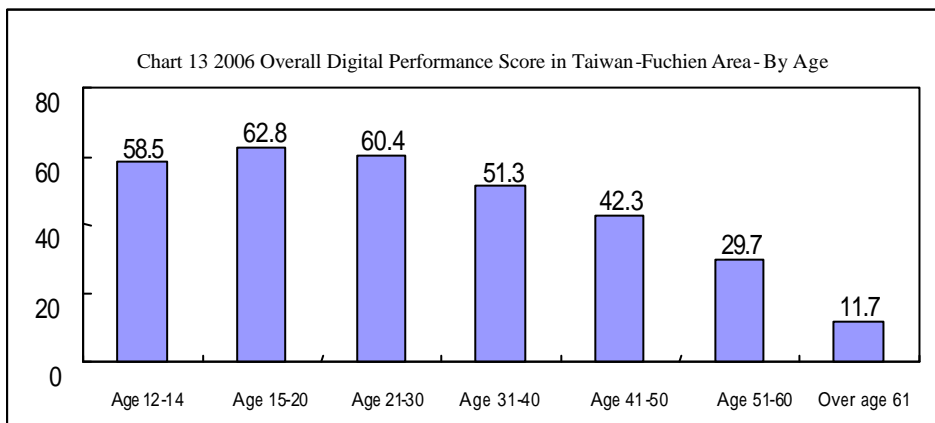
- (6) The household digitalization development for households with foreign spouses (36.0 points) is significantly lower than that of households without foreign spouses (50.7 points).
- (7) In terms of geographical differences, the extent of digitalization is the highest for Taipei City (59.9 points) and Taichung City (59.0 points). 9 counties and cities have a digital performance score higher than the average of 50.0 points, 14 counties and cities scored between 40~50 points, with Yunlin County (36.3 points) and Chiayi County (38.3 points) being the lowest.
- (8) In the Taiwan area, the status of information technology applications for villages and towns is positively correlated to the urbanization level. Taipei City was ranked first in terms of digital development, followed by provincial municipalities, commercial and industrial townships, and Kaohsiung City. Comprehensive cities and towns, and outlying islands were ranked third, and towns and villages in remote and mountain areas have the lowest score of 36.5 points and 32.1 points respectively.

3. The Overall Individual & Household Digital Performance Score

- (1) The total digital performance score of the Taiwan area is 44.2 points in 2006. The standard deviation reached 28.9 indicating that the digital development gap between different groups in the population is great.
- (2) The overall digital performance score of male is 45.2 points, which is 1.9 points higher than female. The overall digital performance score increases with the education level. The overall digital performance score for population with a master's degree or above reached 73.6 points, which is 11 times that of the illiterate population (6.9 points). [Chart 12]

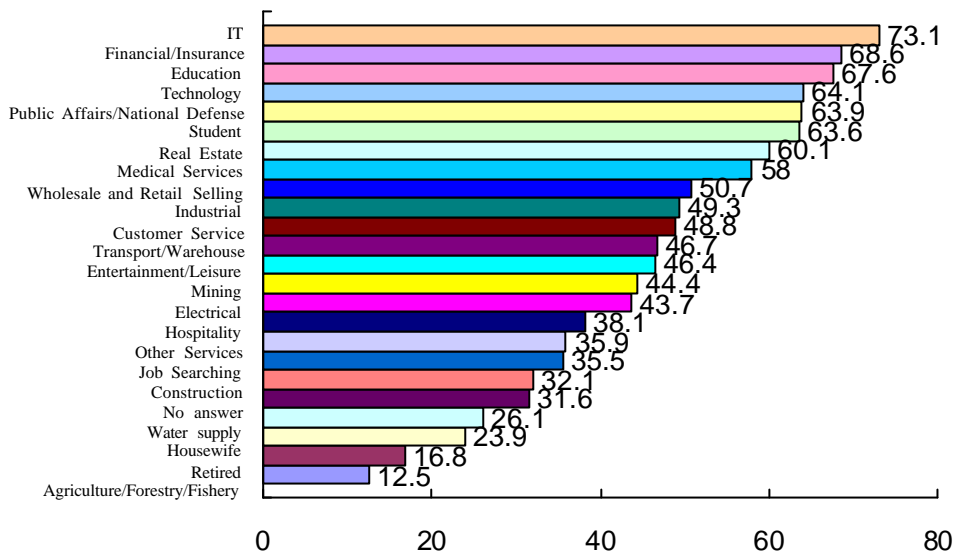


(3) Among the various age groups, the overall digital performance score for the under 30 age group is around 60 points, which topped the ranking. The above 51 age group scored lower than 30 points. [Chart 13]

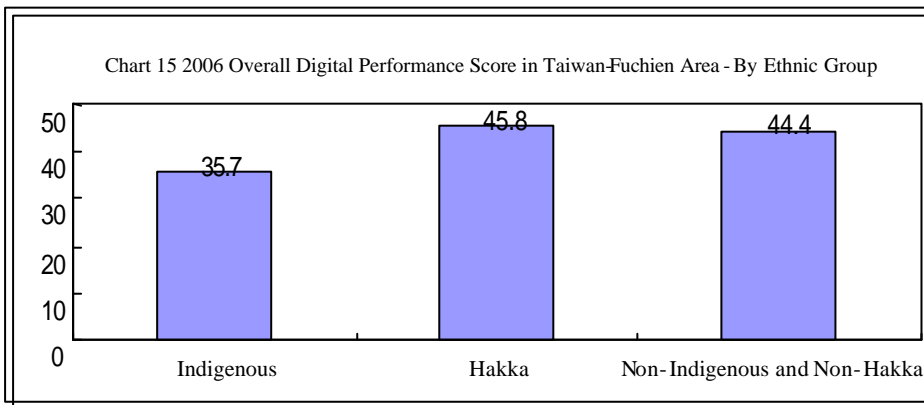


(4) Information and communications media, financial and insurance, and education service sectors scored the best, averaging over 67 points. Forestry, agriculture, and fishery and husbandry sector have the lowest score of 12.5 points. In terms of occupation, professionals have the highest digital performance score (68.7 points). On the other hand, the scores of workers engaging in physical labor and forestry, agriculture, fishery and husbandry sector are considered far from ideal. [Chart 14]

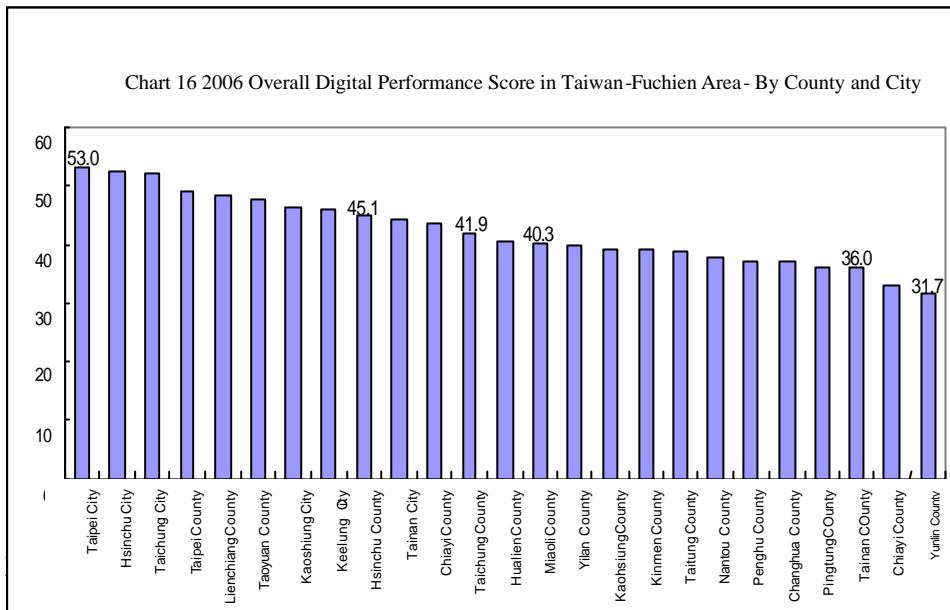
Chart 14 2006 Digital Performance Score – by profession



(5) The average digital performance score of the indigenous peoples is 35.7 points, which is significantly lower than the Hakka population (45.8 points) and non-Hakka and non-indigenous population (44.4 points). [Chart 15]



(6) In terms of differences between counties and cities, the digital performance score of Taipei City (53.0 points) is the highest, followed by Hsinchu City (52.3 points) and Taichung City (51.8 points). The least digitized counties and cities are Chiayi County and Yunlin County with an average score of 31.1 and 32.1 points respectively.



1. Comparison of the Individual Access to Information Technology

The 2006 survey shows that computer and Internet usage has become increasingly popular in Taiwan. The percentage of population above the age of 12 who has used the computer before increased from 66.8% in 2005 to 70.1%. Those who have used the Internet has also increased from 62.7% to 64.4%. [Table 4]

Table 4 Comparison of the Access to Information Technology for Population Above the Age of 12 in the Past 3 Years

	2004	2005	2006
Computer Usage Rate	68.2	66.8	70.1
Internet Usage Rate	61.1	62.7	64.4

2. Number of Years of Computer and Internet Access

The number of years of computer access of population above the age of 12 and who have used the computer before has increased from 6.57 years in 2004 and 7.37 years in 2005 to 8.34 years in 2006. The number of years of Internet access has also increased from 5.96 years in 2005 to 7 years. [Table 5]

Table 5 Comparison of the Number of Years of Access to Information Technology in the Past 3 years for Population Above the Age of 12 in Taiwan Area

	2004	2005	2006
Number of years of computer access	6.57	7.37	8.34
Number of years of Internet access	5.28	5.96	7.00

3. Daily Internet Usage Time

Compared to the survey results in 2005, the time spent using the Internet has increased from 2.26 hours to 2.40 hours for population above the age of 12. [Table 6]

Table 6 Comparison of the Daily Internet Usage Time of Population Above the Age of 12 in the Past 3 Years in Taiwan

	2004	2005	2006
Daily Internet Usage Time (Hours)	2.57	2.26	2.40

4. Computer and Internet Usage at Work or for Learning

The 2006 survey indicates that the computer and Internet has become a necessity at work or for learning. The computer usage rate at work or for learning has increased from 71.5% in 2004 to 79.9%, and the Internet usage rate has also increased from 63.9% to 67.4%. The transformation of businesses and learning has helped to increase the computer and Internet usage rate. [Table 7]

Table 7 Comparison of the Computer and Internet Usage at Work or for Learning for Population Above the Age of 12 in the Past 3 Years in Taiwan Area

	2004	2005	2006
Computer Usage Rate at Work or Learning	71.5	70.6	79.9
Internet Usage Rate at Work or Learning	63.9	59.1	67.4

5. Comparison of the Usage Rate of Various Internet Functions by the Internet Population

The data on trends from 2004 to 2006 shows that the usage rate of e-mail, Internet recreation activities and information search by the Internet population has not changed significantly in the past 3 years. However, the usage rate of instant messaging software has continued to soar. A total of 73.0% of Internet users use online instant messaging software to stay in touch with family and friends, an increase of 16.8% from 2004; Internet telephone users have nearly doubled from 19.6% in 2005 to 33.1%; the percentages of e-banking and online shopping have also grown. Internet users who have conducted Internet transactions before has reached 44.7%. [Table 8]

Table 8 Comparison of the Internet Usage of Internet Population Above the Age of 12 in the Past 3 Years

	2004	2005	2006
E-mail	86.9	85.7	88.2
Internet Recreation Activities	67.3	67.4	68.0
Information Search	85.4	88.1	86.7
Instant Messaging Software	56.2	67.6	73.0
E-banking	18.1	18.5	22.6
Online Shopping	30.4	37.2	44.7
Internet Telephone	--	19.6	33.1

6. The Access to Information Technology of the Indigenous and Hakka Peoples

Comparing the 2005 and 2006 survey results, the percentage of indigenous peoples over the age of 12 in Taiwan-Fuchien area who have used the computer before has increased dramatically from 44.5% to 62.7%; the percentage of those who have used the Internet before has also increased from 37.8% to 55.4%. The rate of Hakka population over the age of 12 who have used the computer before has increased from 67.6% in 2005 to 72.2% in 2006; Internet users have increased slightly from 63.1% to 66.9%. The survey results in the past two years indicate that although the access to information technology of the indigenous peoples in Taiwan area may not be on par to that of the Hakka, Fuchien, or external-province natives, their status has improved greatly. [Table 9]

Table 9 Comparison of the Access to Information Technology of the Indigenous and Hakka population in Taiwan Area

	Personal Computer Usage Rate			Internet Usage Rate		
	2004	2005	2005	2004	2005	2006
Indigenous Population	43.8	44.5	62.7	37.8	39.9	55.4
Hakka Population	67.4	67.6	72.2	60.5	63.1	66.9

7. Comparison of Household Information Environment

The survey results from 2004 to 2006 indicate that the percentage of household computer ownership has not changed much. The household Internet

access rate has increased from 70.6% to 74.5%. The investments on student computer learning of households with students currently attending school did not decrease. The percentage of household computer ownership has increased slightly from 91.2% to 92.2%. [Table 10]

Table 10 Comparison of the Household Information Environment Over the Past 3 Years in Taiwan Area

	2004	2005	2006
Computer Ownership Rate	81.4	79.5	81.6
Household Internet Access Rate	70.7	70.6	74.5
Computer Ownership Rate of Households with Students	91.4	91.2	92.2

8. Comparison of the Household Information Environment in Indigenous Towns and Villages

The 2006 survey results indicate that 53.0% of indigenous households in mountain regions own computers, which is an increase of 8% from 2004. The information environment of indigenous households in plain regions has improved significantly. The computer ownership rate has increased from 64.5% to 73.1%. Indigenous households who live in the mountain regions and already own computers have installed the Internet. The household Internet access rate increased from 35.8% to 42.7%. Indigenous households in plain regions also saw an increase in Internet equipment ownership rate from 59.7% to 63.3%. [Table 11]

Table 11 Comparison of the Household Computer Ownership and Internet Access Rate of Indigenous Population in Taiwan Area Over the Past 3 Years

	Household Computer Ownership Rate (%)			Household Internet Access Rate (%)		
	2004	2005	2006	2004	2005	2006
Indigenous Towns and Villages in Mountain Regions	45.2	55.7	53.0	35.8	37.3	42.7
Indigenous Towns and Villages in Plain Regions	64.5	67.1	73.1	59.7	57.9	63.3

X. Comparison of the Digital Divide and Policies Between Taiwan and International Countries

We can classify the issue of the “digital divide” into two categories: (1) the digital divide between different groups in a single country; (2) the digital divide between countries. This study was aimed to discuss the digital divide between different demographics in the Taiwan area, which is the former; the digital divide between countries has been deemed to be caused by poverty and slow development, and have to rely on the digital divide statistics published by various countries before further comparison can be made.

However, as the survey period, scale, sampling method, and survey subjects vary between different countries, plus due to language barrier in collecting the current digital divide information and related policies of various countries, the data collected will not be comprehensive if the governments or research institutions did not translate the data into English and publish on their official Web sites or in relevant periodicals. This is the restriction that has to be noted before analyzing the comparison of the digital divide levels between different countries.

(1) Comparison of the Current Status of the Digital Divide

1. Superb basic infrastructure allows broadband coverage to reach 99.58%

As stated earlier, the primary goal of countries in formulating the digital divide reduction policy at the initial stage is to enhance the basic Internet infrastructure. In this aspect, Taiwan has shown excellent results in terms of establishing basic physical facilities, using market competition to promote the establishment and availability of information infrastructure, establishing evaluation and control mechanism, rationally allocating resources, and providing local facilities that promote the access to public information. In May of 2006, the average broadband coverage rate in villages and neighborhoods has reached 99.58%, showing a significant advantage over other nations in terms of digital infrastructure.

2. Household information environments are far superior to those of Europe, United States, and neighboring Asian countries

Judging from household access to information technology, the extent of household digitalization in Taiwan was better than Korea, Japan, Singapore, the

United States, Finland, and the European Union nations¹ in 2004. This year, Taiwan household computer ownership rate increased to 81.6% from 79.5%, household Internet access rate also increased from 70.6% to 74.5%. Taiwan's performance this year is impressive. [Table 12]

Table 12 International Comparison of Household Computer Ownership Rate and Internet Access Rate

	Year	Household Computer Ownership Rate (%)	Household Internet Access Rate (%)
Taiwan	2006	81.6	74.5
Japan	2005	--	57.0
USA	2005	--	66.2
Korea	2004	77.8	66.9
Singapore	2004	74.0	65.0
Finland	2004	68.0	56.0
EU Nations (Average)	2004	--	47.0

3. Taiwan's individual access to information technology is lower than that of the United States and Korea

In terms of individual information access, although the rate of individual Internet access in Taiwan has increased from 62.7% in 2005 to 64.4% in 2006, it is still significantly lower than that of the U.S. and Korea. As for EU nations, since there are great differences in their economic development, the average rate of individual Internet access in Taiwan is much higher than the average of the EU nations.

From the fact that although Taiwan's household information environment is better than that of other countries, and yet the rate of individual Internet access in Taiwan is significantly lower than that of the U.S. and Korea, Taiwan's digital divide between different groups is more severe than that of these countries, thus lowering the rate of individual Internet access. For example, the rate of Internet access in people who are 65 or older in the U.S. is 38%, whereas the rate of Internet access for those who are 60 or older in Taiwan is only 8.1%. [Table 13]

Table 13 International Comparison of Individual Internet Access Rate

	Year	Population	Individual Internet Access Rate (%)
Taiwan	2006	Over age 12	64.4
USA	2005	Over age 12	78.6
Korea	2003	Over age 13	60.6
Singapore	2004	Over age 6	70.2
Finland	2004	Over age 15	57.0
EU Nations (Average)	2004	Over age 16	47.0

(二) Comparison of public policies to bridge the digital divide

Although the particular actions taken to bridge the digital divide are different among countries, they share the following common features:

1. All countries set their primary goals in the initial stage to enhancing the basic Internet infrastructure and increasing personal and household computer ownership rates. With recent advances in broadband technologies, increasing household usage of broadband internet has become the latest focus. According to the results of a survey published by OECE in 2006, the number of people using broadband internet is increasing at an impressive rate of 15% within one year.
2. With regard to increasing the household computer ownership rate, most countries accomplish this goal by collaborating with the private industry, encouraging companies to donate computers. For example, Korea set up the goal of collecting 820 thousand pre-owned computers within five years; Singapore set up the goal of providing computers to 300 thousand households. In both cases the government enlists help from the private industry. In addition, the recipients of pre-owned or brand new computers are mainly households with low income, handicaps, or elder people. Singapore government even requires the recipients to undergo IT training before they become eligible for the donation.
3. The governments from all of the countries are aware of the importance of increasing information literacy, which is usually achieved through computer training courses. However, the format of the courses varies among countries

There is no fundamental difference in policies between Taiwan and other countries except for two notable distinctions:

1. In addition to the divide caused by geographical segregations, mental and physical disabilities, and aging, the government of Taiwan appears to also pay attention to the divide caused by gender, social economical status, and occupation and provides computer training courses to a more diverse population.
2. The program of soliciting donation of pre-owned computers is run at a much smaller scale than other countries. This could be due to ineffective collaboration with the private industry. In addition, in Taiwan the recipients of donated computers include societies and organizations. This is likely to offset the effort to increase the number of computer ownerships in common households.

XI. Recommendations

Below are the proposed recommendations based on the 2006 survey results. However, it should first be mentioned that as government resources are comparatively limited and the digitally underprivileged may not be aware of the convenience brought about by digitalization, which may in turn motivate one to learn, the digital divide cannot be overcome in a short time. Only long-term intervention will produce effective results. Our recommendations are as follows:

1. Individual and household access to information technology have increased significantly. We must continue to strive for improvement in the future

The 2006 survey indicates that the rate of those over the age of 12 who have used the computer before has increased from 66.8% in 2005 to 70.1%. The percentage of those who have accessed the Internet before also increased from 62.7% to 64.4%; household computer ownership rate has increased slightly from 79.5% to 81.6%, household Internet access rate has also increased from 70.6% to 74.5%. Listed below are the most notable findings of the 2006 study on the reasons for the increase in the usage rate of personal computer and the Internet:

A In the past year, the computer usage rate of individuals between in the 41-50 age group increased from 59.3% to 67.4%, the Internet usage rate in the

51-60 age group also increased from 36.0% to 44.0%; the Internet usage rate in the 41-60 age group showed a remarkable increase, with the former age group increasing from 52.3% to 57.6% and the latter age group increasing from 29.2% to 33.9%.

- B. The household computer ownership rate of indigenous households residing in plain regions increased from 67.1% to 73.1% and 63.3% of the households own Internet equipment, increasing from 57.9% last year. The improvement of the household information environment of the indigenous households helps to increase the individual computer and Internet usage rate. The percentage of indigenous peoples over the age of 12 who have used the computer before has increased significantly from 44.5% to 62.7%; while the percentage of those who have used the Internet before increased from 37.8% to 55.4%.
- C. The usage rate of computer at work or for learning has increased from 70.6% to 79.9%, and the Internet usage rate has also improved from 59.1% to 67.4%.

The above results show that the government's digital investment in the middle-aged group and indigenous peoples living in plain regions has showed initial results. They will continue to work hard in the future.

In addition, the important reason behind the increase in computer and Internet usage among the population is the e-transformation of enterprises. If the government can speed up the e-transformation policy of SMEs, it is possible to double the results of the digital divide reduction and create a win-win situation for both the industry and society.

2. The measurement key points for the extent of digitalization of individuals and households have shifted, but we cannot neglect the importance of basic equipment.

With the growth in household computer ownerships and internet user populations, the metrics used by domestic industry, government, and academic experts to evaluate the extent of digitalization are very different from two years ago. In terms of evaluating the level of digitalization of individuals, prior emphasis was on one's proficiency in operating computers. Current emphasis is instead on information application. In terms of evaluating the level of

digitalization of households, prior emphasis was on the ownership of computers and network capabilities. Current emphasis is instead on the level of digitalization of members within the household.

With industry, government, and academia directing the allocation of national resources, the present research suggests that the shifted focus to some degree forecasts the changes in the emphasis in domestic information development and resource allocation.

However, with increasing emphasis on enhancing information application capabilities, the government should not neglect its fundamental responsibility in providing equal opportunity for everybody to access information. How to balance the need to enhance individual information application and the need to maintain information accessibility will be a challenge to the intelligence of our government.

(3) Developing computer systems and equipment to attract the middle-aged and elderly to learn computer skills

Results from both the 2005 and 2006 surveys indicate that the computer-illiterate population consists mainly of senior citizens and people with low education. It is necessary for the government to first identify the source of the difficulty in order to find the optimal approach to encourage these people to use computers.

Results from the present survey show that the main reason why most computer-illiterate people find no need to learn computers is because of low perceived utility in daily life. Forty-six percent (45.7%) of people say that there is no opportunity to use computers even if they know how to. The second and third ranked learning barriers are small fonts (34%) and difficulty of use (30.7%). In addition, 24.7% of non-computer users do not learn to use computers because they cannot afford one. 19.2% of people find computer mice and keyboards difficult to operate.

Based on these results, it appears that the first priority of the government should be to find materials that would appeal to senior citizens and make them feel that using the internet can be an integral part of daily life. In addition, the government should allocate funding or encourage private industry to develop computer equipments catering to the special needs of the middle-aged and elderly, such as imaging or voice systems, enlarged displays, enlarged mice, and enlarged keyboards, in order to overcome their psychological and biological barriers against learning computer skills.

4. Priority provision of computer and Internet subsidies to economically underprivileged households

The 2006 survey indicates that household's economic ability is the leading hindrance to household e-transformation. For households with monthly income lower than NT\$20,000, the household Internet access rate is a mere 19.8%, far lower than that of indigenous households residing in the mountain regions (42.7%) and plain regions (63.3%). It is recommended that the government adjusts the sequence of subsidy provision, giving priority to economically underprivileged households in their consideration (especially economically underprivileged households with students) and provides subsidies for computer purchases and Internet expenses to prevent further widening of the digital divide.

5. Continuously promoting the concept of household "information agent"

As shown in last year survey, the middle-aged and elderly population is unfamiliar towards new technology. Even through suitable contact channels, providing suitable learning materials and hardware equipment, it may not necessarily raise their information acceptance level. Under these circumstances, promoting household "information agent" or "household information teacher" is an effective measure to solve the digital divide problem for the middle-aged and elderly population.

According to the 2005 and 2006 surveys, the percentage of those who are computer-illiterate and have searched for information, made purchases or reservations using the Internet with the help of their family members has increased from 25.7% in 2005 to 29.9% in 2006, showing that more and more people are getting involved in the information society through information agents, and this

effort deserves to be continued.

6. Create the need for e-Government and develop the habit of using such services

The extent of electronization of the Taiwan government is one of the best in the world, but yet the level of public participation online and citizenship behavior has not grown significantly. Looking at the reasons of why the public does not use e-government services, 76.2% do not have the need, followed by feeling of insecurity (13.7%), complicated procedures (11.8%), and the need to install special software or apply for certificate (11.2%).

Therefore, if the government hopes to increase the popularity of e-government services, the most important is to provide services that the public needs most and help them develop the habit of using these services. Secondly, the government may also simplify the procedures and increase the public's confidence in using these services.

7. Control of advertisement junk mails

This year's survey shows that more than half of those who have used e-mail within the past month received more than 10 junk mails per day (53.9%); among which, 19.1% received more than 50 junk mails. As more than 90% agree that the government should formulate relevant regulations to deal with this problem, junk mail is indeed a big problem for Internet users.

As the problem of junk mail is becoming more severe, the 33rd meeting held by the APEC TEL (April 2006) addressed this issue, in which world leaders worked together to come up action plans to fight junk mails and the related threats. It was advised that there should be laws governing junk mail and the exchange of relevant policies, and economic bodies that already have anti-junk mail laws with effective operations should participate in other international cooperation agreements. Since junk mail and Internet security are directly related to public policies, the government needs to cooperate with other countries and regulate junk mail to enhance public's trust and confidence in using Internet services.

8. Install computers with free Internet access at strategic public locations

The survey shows that 31.8% of Internet users have the need to use the computer and Internet in public places. The desired locations are libraries (65.1%), train stations,

MRT stations, or airports (59.9%), county/city cultural centers (35.7%), schools (34.8%), and community computer centers (33.8%).

However, since different age groups have significantly different geographical needs, the government should choose strategic locations. For example, if the government hopes to encourage people who are above 61 years old to access the Internet, computers should be provided at village activity centers. Computers provided at libraries, train stations, and MRT stations would attract those between 21 and 60 to use. Computers with free Internet access in schools and libraries would satisfy the needs of those who are under the age of 20.