

# Digital Divide in Taiwan 2010 Summary

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Research, Development, and Evaluation  
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## Summary of Digital Divide in Taiwan 2010

### I. Introduction

According to the “World Information Society Report 2007” published by the International Telecommunication Union (ITU), Taiwan was ranked 7th out of 181 countries included in the Digital Opportunity Index (DOI), an index comprising three sub-indexes (infrastructure, opportunity and application) used to analyze the development status and trends of an information society, moving up from its 10th ranking in 2006.

However, despite its outstanding performance in the IT industry, Taiwan faces a problem similar to that faced by other advanced countries in the widespread use of information technology – the digital divide. The digital divide is the inevitable result of different community groups having different capabilities 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” in 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 were 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 the achievements from digital divide research in previous years to further understand the changes in domestic digital divide trends, as well as to connect and conduct dialogue with international studies.

### II. Methodology

In line with the purpose and spirit of its past studies, the 2010 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 July to August 2010. Random sampling interview was used to interview a population segment of Taiwan nationals at the age of 12 or above in the two major metropolitan

cities in Taiwan (Taipei and Kaohsiung), and 23 other counties and cities.

The survey was conducted after 6 pm from Monday through Sunday. The survey collected 16,008 valid random samples with a response rate of 68.3%. The estimated and actual distribution of random samples completed in counties and cities are shown in Table 1.

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

County/City	Number of residents aged 12 and above	Estimated Error	Sample Size	Actual Valid Samples
Total	20,391,427	±0.8%	16,000	16,008
Taipei City	2,318,518	±3.5%	800	800
Kaohsiung City	1,355,652	±3.5%	800	802
Taipei County	3,441,028	±3.5%	800	801
Yilan County	408,382	±4.0%	600	600
Taoyuan County	1,726,303	±3.5%	800	800
Hsinchu County	435,001	±4.0%	600	600
Miaoli County	492,820	±4.0%	600	600
Taichung County	1,361,728	±4.0%	600	600
Changhua County	1,145,450	±4.0%	600	600
Nantou County	468,977	±4.0%	600	600
Yunlin County	635,045	±4.0%	600	600
Chiayi County	485,872	±4.0%	600	600
Tainan County	987,141	±4.0%	600	600
Kaohsiung County	1,107,913	±4.0%	600	601
Pingtung County	781,855	±4.0%	600	600
Taitung County	204,407	±4.0%	600	600
Hualien County	301,384	±4.0%	600	600
Penghu County	86,287	±4.0%	600	600
Keelung City	345,056	±4.0%	600	600
Hsinchu City	351,488	±4.0%	600	600
Taichung City	937,552	±3.5%	800	800
Chiayi City	237,692	±4.0%	600	602
Tainan City	681,840	±4.0%	600	600
Kinmen County	85,271	±4.0%	600	600
Leinchiang County	8,765	±4.0%	600	602

Data Source: Department of Statistics, Ministry of the Interior, "Age structure of Each County / City in Taiwan and Fuchien Area", July 2010.

In order to infer the opinions of the whole population over the age of 12 from the survey, the sample data had to be fitted with weight to be in compliance with the population data. The sample composition of this survey has been fitted with weights according to the proportion of sex and age in the population over the age of 12 of each county/city in Taiwan as released by the Ministry of the Interior in July 2010.

Apart from fitting the sample composition of each county/city with weights, we have carried out a second stage weighted reduction on them according to the proportion of the population over the age of 12 of each county/city to that of the whole country. This is because the sampling design of this survey, based on the allotments of samples for each individual county/city were so assigned that the sampling errors never exceed  $\pm 4\%$ . This was done to ensure that those counties/cities with little population and which might not gather enough samples for inference through random sampling could still produce enough samples. Even though this practice has the advantage of offering basically uniform opportunity to all counties/cities, it also gives rise to a shortcoming: the overrepresentation of samples from some of the counties/cities. Thus, it is hard to directly infer the overall opinion of the population over the age of 12 in this country. Therefore, samples from those counties/cities that have inflated sample sizes must be fitted with weights according to the proportion of the population over the age of 12 of each county/city to that of the whole country to ensure the correctness of the survey results. This can be seen in the following comparisons and analyses of the overall digital divide except for those simple comparisons between counties/cities. The sex/age distribution of samples before and after being weighted is shown in Table 2.

Table 2. The Sex/Age Distribution of Samples in the Individual/ Household Telephone Survey

Items	Actual Samples	Percentage before Weighted	Percentage after Weighted
Gender			
Male	7,567	47.3	50.0
Female	8,441	52.7	50.0
Age			
12-14	659	4.1	4.6
15-20	1,633	10.2	9.5
21-30	1,922	12.0	17.6
31-40	2,751	17.2	18.5
41-50	3,031	18.9	18.4
51-60	2,928	18.3	15.6
61-64	776	4.8	3.5
65 and above	2,308	14.4	12.1

### III. Study Framework and Survey Items

In harmony with the essence of the previous surveys, the 2010 Digital Divide Survey explores the digital divide status of various population segments in the Taiwan area from the three aspects of: access to information technology, information literacy, and information application.

In order to identify the digital divide indicators that are most representative of the status quo in the development of information technology and to keep pace with international trends, the indicators used in the 2010 Digital Divide Survey are determined in two stages. In the first stage, the research unit reviewed the newest relevant research documentation in Taiwan and abroad, made revisions to the existing investigation indicators, and made the first draft of the indicator framework. After symposia, scholars and experts adopted a resolution which confirmed that the framework and investigation indicators for the 2010 Digital Divide Survey are as shown in Table 3.

Table 3. The Study Framework and Major Investigation Indicators of the Individual and Household Digital Divide Survey 2010

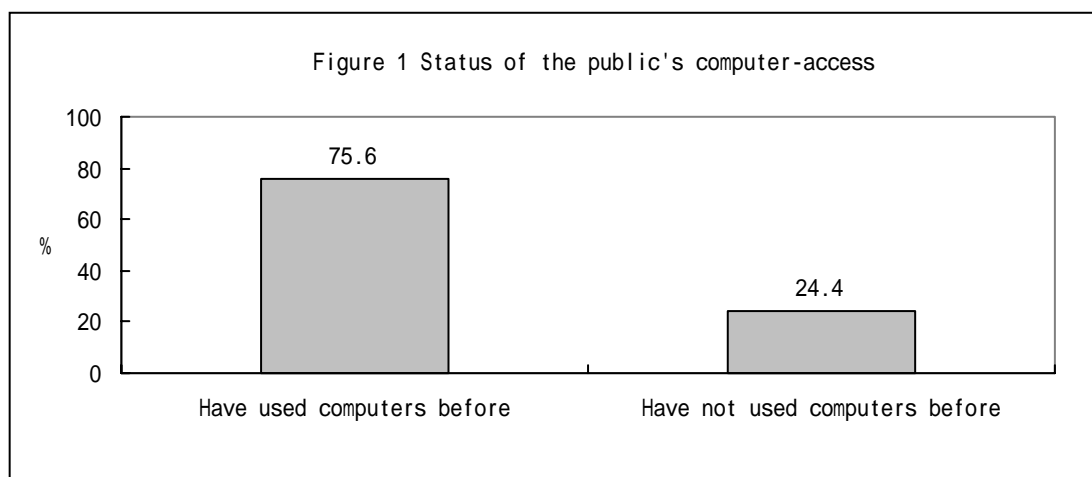
Primary Dimension	Secondary Dimension	Tertiary Dimension	Indicators (The Coverage of Each Dimension)	Remarks	
Individual Digital Status	Access to Information Technology	Access to information equipment	1.Used the Computer before 2.Used the Internet before 3.Used the Internet via mobile device before	Evaluation of the use of computers/Internet	
		Usage and frequency of the Internet	1. Hours spent online per day. 2. Years of Internet experiences.	Evaluation of the frequency of Internet access	
	Information Literacy	Information Technology Literacy	1.Ability to read Web pages in foreign languages 2.Ability to search for specific information 3.Ability to apply for accounts/PINs	Evaluation of the ability to gather information and web services.	
		Information Security Literacy	1.Frequency of having computer being infected or hacked 2.Frequency of losing data due to failure of back-up	Evaluation of the effectiveness of computer security and protection	
	Information Application	Citizenship behavior		1.Used the Internet to search for public notices 2.Submitted online applications through government websites 3.Posting personal opinions on public policies/issues online. 4.Browsing other's opinions on public policies/issues online.	Evaluation of the use of e-government services and participating in political/social discussions online

Primary Dimension	Secondary Dimension	Tertiary Dimension	Indicators (The Coverage of Each Dimension)	Remarks
		Daily life applications	<ol style="list-style-type: none"> <li>1. Buying or selling commodities online.</li> <li>2. Online banking services.</li> <li>3. Online instant message. (such as MSN)</li> <li>4. E-mails.</li> <li>5. Daily News browsing</li> <li>6. Search for product information or prices</li> <li>7. Search for medical or health-related information</li> <li>8. Online e-map services</li> </ol>	Evaluation of the popularity of e-commerce, information searching and communication via the Internet.
		Web2.0	<ol style="list-style-type: none"> <li>1. Participation in online communities.</li> <li>2. Providing knowledge or personal experiences for others' reference</li> <li>3. Browsing the knowledge or experience provided by others</li> </ol>	Evaluation of Web 2.0 applications
Household Digital Status	Household Information Environment	Household information equipment	<ol style="list-style-type: none"> <li>1. Household ownership of computer</li> </ol>	Evaluation of household computer ownership
		Internet environment	<ol style="list-style-type: none"> <li>1. Household ownership of Internet access</li> <li>2. Type of Internet connection for computers in the household</li> </ol>	Evaluation of status and method of household Internet connectivity.
	Household Information Literacy	<ol style="list-style-type: none"> <li>1. Percentage of family-members accessing the Internet.</li> </ol>	Evaluation of number of family-members going online (percentage)	

## IV. Current Status of the Individual Digital Divide

### (1) Access to Information

01. The survey shows that 75.6 % of the population who are 12 years of age or older in Taiwan have used a computer before; based on this information, it is estimated that there are about 15.42 million computer users in Taiwan who are 12 years of age or older.



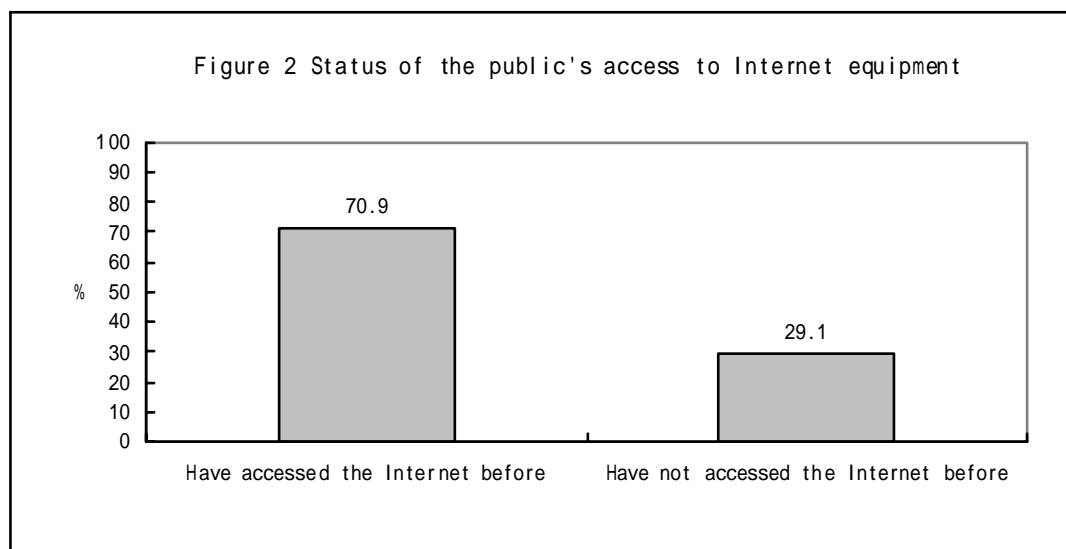
02. Of the 25 counties/cities, all counties/cities, more than 80% of the residents in Taipei City (81.9%), Taichung City (81.2%) and Hsinchu City (80.7%) have used a computer before, making these places of higher computer literacy. In contrast, computer literacy is lower in Chiayi County (61.2%), Yunlin County (62.6%) and Pingtung County (64.9%) as less than 65% of the residents in these locations have ever used a computer.

03. The public's computer access varies significantly based on the degree of urbanization of the places they live in. Generally speaking, computer access is higher in more urbanized regions. Moreover, 62.8% of those living in remote areas have used a computer before, whereas 77.4% of those living in non-remote areas have used a computer before, indicating a significant gap.

04. The public's computer access also varies significantly depending on individuals' education level, job status, and job positions. Those who have a higher level of education, work in finance and insurance, information and communication, education services, science or technical services, are in studies, or work in government agencies clearly have a higher computer-access rate. Computer-access rate in those with disabilities is lower than 50%, which is still significantly low.



05. Of those who are 12 years of age or older, 70.9% of them have accessed the Internet before, indicating approximately 14.46 million individuals. On average, Internet users in Taiwan have 9.1 years of Internet experience and spend about 2.83 hours online per day.



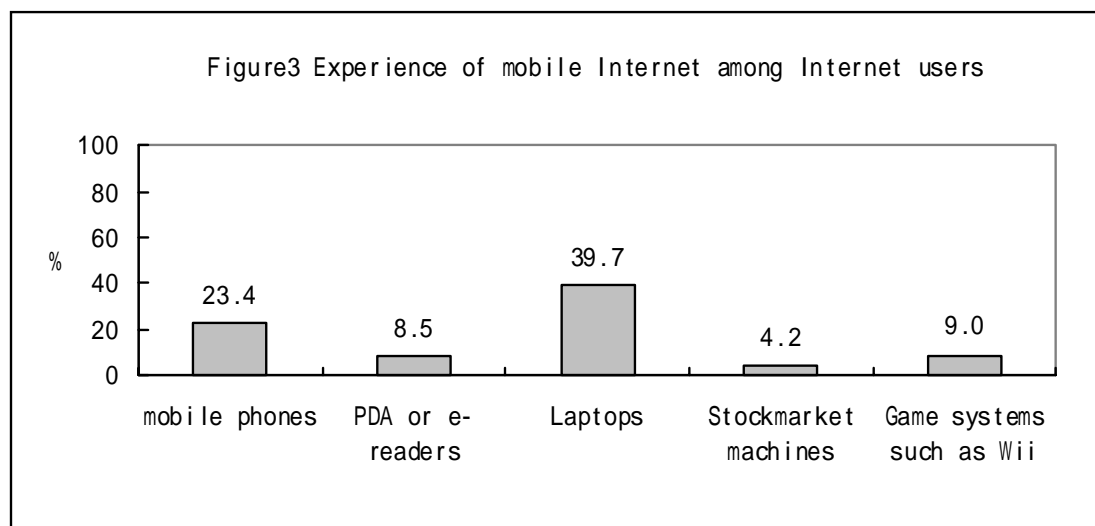
06. Internet-access is highest in Taichung City (78.0%), Taipei City (77.6%), Hsinchu City (76.6%) and Taoyuan County (75.9%) as more than 75% of the residents there have accessed the Internet before; in contrast, the access rate is lower in Chiayi County (56.8%), Yunlin County (58.7%) and Pingtung County (59.5%) as less than 60% of the residents there have the same experience.

07. The public's Internet-access rate also varies significantly depending on how urbanized the places they live in are. Individuals living in places that are more urbanized not only enjoy better Internet-connectivity but also spend more time online on a daily basis and have more years of Internet-related experiences. Internet-access rate is higher in the municipalities of Taipei and Kaohsiung (76.3%), provincial cities (75.2%), and county-controlled cities (74.5%) as the average is higher than 70%, whereas the counterpart is between 60% and 70% in townships (67.4%) and villages (63.6%). Moreover, access rate in remote towns/villages or aboriginal towns/villages is significantly lower than that in non-remote towns/villages or non-aboriginal towns/villages; of which, the rate is especially lower in highly-remote towns/villages (54.6%) and mountain-aboriginal towns/villages (60.4%).

08. In general, the Internet-access rate is positively correlated to the education level. More than 90% of the individuals who have finished college education have

accessed the Internet, while only 15.5% of those who have only finished elementary school or lower access the Internet. The current industrial status indicates that those who work in the information and communication industries spend the longest time online, as much as 5.0 hours per day, and have 12 years of Internet-related experiences on average.

09. Mobile Internet is a new trend in the development of the Internet, and a multi-select survey reveals that of the Internet users who are 12 years of age or older, 23.4% of them have accessed the Internet with their mobile phones, 8.5% with their PDA, 39.7% with a laptop at a location outside their home or office, 4.2% have done so with a stock-market machine, and 9.0% have done so with gaming consoles such as Wii; in total, 53.0% of the Internet users have gone online with a mobile device. Using the population of 12 years or older as the denominator, our nation's mobile Internet-access rate is 37.6%.



10. Mobile-Internet-access rate is highest in Hsinchu City (61.3%), Taipei City (61.2%) and Taichung City (60.2%) (more than 60%), and lower in Pingtung County (39.6%) and Tainan County (44.7%) where the rate is less than 45%. Judging from the level of remoteness, the same access rate is lower than 50% in remote towns/villages, indicating a lower popularity.
11. Individuals of higher SES (socioeconomic status) are also more likely to go online via mobile devices. The rate is also higher among those who are more educated. Further, the highest rate among all occupations is those working as high-level managers and professionals (71.1% and 68.2% respectively).

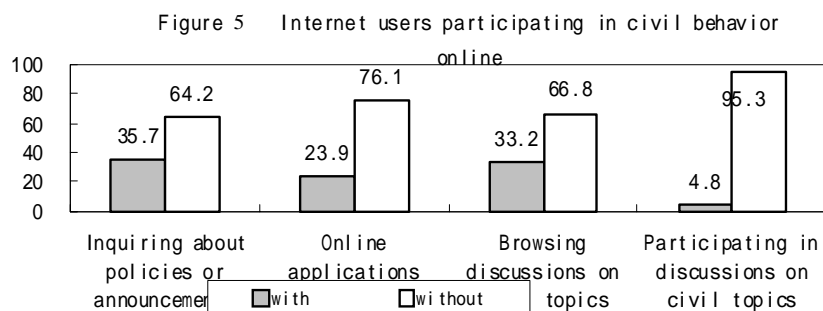
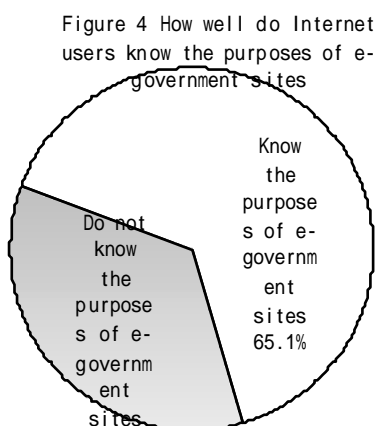
## (2) Information Literacy

01. The public's information literacy is evaluated from three aspects: the ability to look for specific information, the ability to read websites in foreign languages, and the ability to apply for accounts/PINs. When their friends/family have certain information needs, 21.4% of the Internet users are very confident that they can help them gather the needed information online, and 51.0% are quite confident, totaling 72.4% that are able to look for specific information online.
02. The less-than-ideal ability to understand foreign languages is still a potential problem for Internet users in Taiwan, 48.9% of whom do not browse websites in foreign languages, and 16.2% and 5.0% do not understand most of the foreign languages or all of them respectively. Totaling 70.1% lacking the ability to read websites in foreign languages). 26.5% indicated they could understand most of them, while only 3.4% could fully understand them.
03. As for the ability to apply for accounts/PINs and become a new member of a particular website, 75.1% of the Internet users have the ability, whereas 24.9% are unsure how.
04. In general, Internet users' information-gathering ability is positively correlated with their educational level. More than 90% of those who have completed graduate schools believe they are able to look for particular information online, more than 70% of them can understand all or most of a website in a foreign language, and close to 90% of them have the ability to apply for accounts/PINs, making this group the highest performing when compared to other educational levels.
05. Information-security awareness is evaluated with two indicators: protection against computer-viruses or hacking and the prevention of data-loss. According to the survey, 50.7% of the respondents stated that they have experienced computer-virus infection or hacking in the past year, and 23.2% reported the experience of losing data to hard-drive failure or lack of back-up whereas 76.1% do not have such an experience.

### (3) Application of Information

01. The public's information-application is analyzed through four aspects: (1) online citizenship behavior, (2) life applications, (3) community sharing and (4) job applications.

02. Among the Internet users in Taiwan, 65.1% know governmental agencies have dedicated websites, 35.7% have used the Internet to search for governmental policies or announcements in the past year, and 23.9% have submitted online applications through governmental websites.

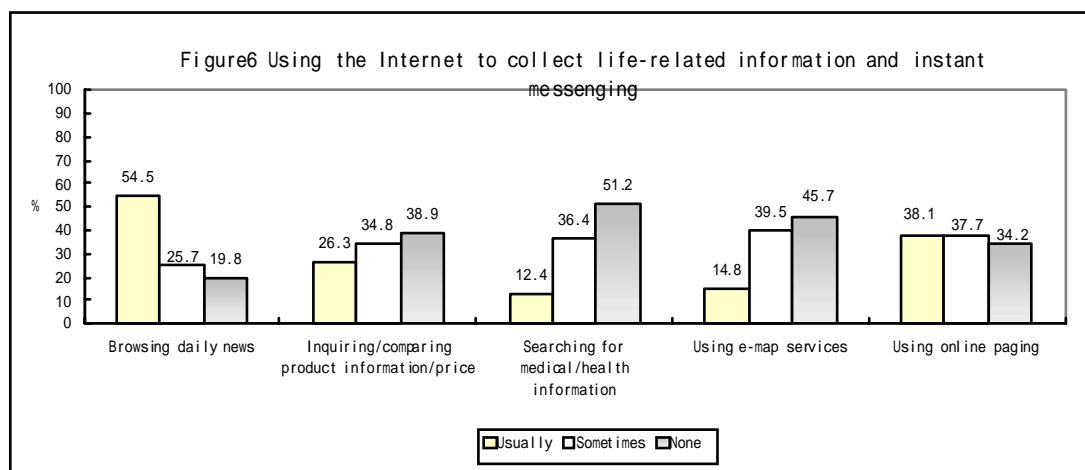


03. In terms of the participation in civil topics, the survey shows the Internet is having more and more influence as a platform for debating civil topics. Of the respondents, 6.2% and 27.0% respectively often and sometimes browse others' comments on political, social, and/or public-policy issues, totaling 33.2%. However, Internet users are more inclined to browse than they are to announce, and only 4.8% express their opinions on political, social, or public issues (0.5% and 4.3% respectively often and sometimes do so).

04. Except Tainan County (59.2%), more than 60% of Internet users in other locations know about the purposes of governmental websites, especially in Keelung City (70.4%) and Kinmen County (69.7%). As for the urban-rural difference, the participation in online citizenship behavior is basically positively correlated with the degree of urbanization. Internet users in municipalities, provincial cities, and county-controlled cities are more likely to know about the purposes of governmental websites, to use the Internet to inquire about governmental policies, and to make online applications than those in rural areas; significant differences, however, are not seen in terms of online participation in civil issues.

05. As for using the Internet to gather life-related information, the survey shows that among those aged 12 or older, 80.2% go online to see the daily news, 61.1% have looked for consumer-goods related information online, 48.8% have looked for

medical/health information online, and 54.3% have gone online to use e-maps such as GIS. Given the fact that the public relies on the Internet to gather daily-life information, it is common for Internet users to apply the Internet on their daily routines.



06. Of the respondents, 38.1% frequently and 37.7% (totaling 75.8%) sometimes use online chatting software to stay in touch with their friends and family.
07. Compared to those in rural areas, those living in the municipalities of Taipei and Kaohsiung, provincial cities, and county-controlled cities are more likely to go online to check daily news (more than 80%), check/compare product information or prices (more than 60%), and use e-maps such as GIS (more than 50%).
08. As for the aspect of job condition, high-level managers and professionals are far more likely to use the Internet to check the daily news, compare product information/prices, look for medical/health information, and use e-maps. Online instant chatting software is especially more popular among technicians and professional assistants (80.8%), professionals (80.0%), and supportive staff (79.3%).
09. Taiwan's e-commerce still has room for growth. About 12.0% and 14.5% of Internet users respectively often and sometimes use the Internet for dealing with personal finance, totaling 26.5%. However, 63.9% of the respondents have sold or purchased items through the Internet; most of them have purchased products or services (52.6%), 0.3% only sold items online, and 11.1% have done both.
10. The average frequency of online purchases among online shoppers is 7.8 sessions

in the past year; among those who have shopped online in the past year, the average amount is 13,864 NTD, thus the estimated value of this market is 127.5 billion NTD. Despite the popularity of online shopping, “online payment” is not the top choice of online shoppers. The multi-select survey indicates that most shoppers make payments through post offices or banks (44.8%), followed by using a credit card (40.1%). In addition, COD, or Cash on Delivery (35.7%) and pay-and-pick-ups at convenient stores (25.1%) are also quite popular, indicating online shoppers’ concern with transaction-security.

11. Among all occupations, high-level managers are most accepting towards online financing (50.4%), and more than 80% of professionals and supportive staff have online-shopping experiences which is far higher than other occupations. However, those working as managers spend most on online shopping when judging the frequency and amount of online purchases in the past year. Among those who shopped online more than 10 times in the past year, 33.1% have spent more than 20,000 NTD.
12. The multi-selection question items on the public’s use of Web 2.0 indicates that most of them use MSN (48.8%) and Facebook (41.4%), followed by blogs (34.9%); the percentage is relatively lower in terms of PTT (10.5%), Plurk (7.5%), or Twitter (2.7%); 35.1% of the respondents have never participated in any community-websites.
13. Judging from the experiences of sharing and participating in online knowledge websites, it is clear that the importance of Internet users’ comments is increasingly important as they frequently (17.0%) or sometimes (33.3%) go online to ask questions or search for existing Q&As (such as Yahoo Knowledge or Wikipedia), totaling 50.3%. However, the source of “Internet users’ comments” is quite restricted, and only 22.0% in total would go online to share knowledge and experiences; of them, only 4.4% frequently provide comments.
14. The experience of participating in community websites is also positively correlated with the level of education. Among the highly-educated Internet users who have finished college or higher, close to 78% participate in community websites, and more than 60% ask questions or seek answers online, which are significantly far higher than individuals of other educational backgrounds. Judging from the type of occupation, professionals who are more computer-literate are far more likely to participate in online knowledge building as 70.3% use community websites, 60.4% go online to ask questions or seek

answers, and 5.2% “frequently” go online to share knowledge and experiences.

15. The survey reveals that among the working class in Taiwan, only 57.6% use a computer at work, and 47.1% go online for job-related purposes. This suggests that there is still much room for growth in Taiwan’s computer and Internet access in the occupational setting.
16. The multi-select question items on the respondents’ purposes for using a computer indicate that among those who must use a computer to deal with work-related tasks, they mostly use the computer or the Internet for word-processing (82.5%), followed by using work-related software (65.0%), gather work-related information (64.7%), communicate with clients (56.9%), and design/develop products (22.2%).
17. Among the 25 counties and cities, work-digitization is highest in Taipei City (73.9%) and Hsinchu City (68.6%), and is lowest in Chiayi County (37.1%) and Pingtung County (37.7%). Internet applications are still highest in Taipei City (67.1%) and Hsinchu City (57.8%) and lowest in Pingtung County (28.4%), Yunlin County (30.6%), and Chiayi County (30.6%).
18. Job-related computer applications are lower than 40% in remote areas, which are significantly different from the non-remote counterparts (60.2%), and the gap in terms of job-related Internet applications between the two is more than 20%.
19. With the increased level of education, people nowadays are more likely to work on a computer or go online at a work setting. In terms of the current job market, professionals and people working in firms are the two types of employees with the highest level of digitalization. When classified based on the employing department, governmental agencies have the highest level of digitalization; 83.7% of governmental employees have to work with a computer, and 71.4% access the Internet for job-related purposes.
20. Among those who have changed jobs or been job-hunting in the past year (17.1%), close to 80% (77.6%) looked for employment-related information online (20.9% and 56.7% respectively “often” and “sometimes”), indicating the Internet has become a primary channel for seeking employment information.
21. Of the respondents, 57.6% stated that they stopped using an online service in the

past year due to the concern with having to input personal information, whereas 42.4% reported no such concern, indicating that concern with disclosed personal information is a potential problem in online information access.

22. More than 60% of the respondents living in the municipalities of Taipei and Kaohsiung avoid a service website that requires the input of personal information, a percentage far higher than their counterparts in other locations. Judging from the educational level, those who are more computer-literate and have completed college education are more likely to avoid websites that require personal information (more than 60%), and only 33.8% have such concerns among those who complete elementary school or less.

(5) Analysis of non-Internet users, new Internet users, and Internet drop-outs

01. More than 20% of the public in Taiwan still do not know how to use a computer or go on the Internet, and these non-Internet users are mostly 50 years of age or older with an education level of senior high school or below; close to 50% of those who are computer or Internet illiterate live in townships or villages where urbanization is lower.
02. The main reasons why non-Internet users do not access the Internet include not knowing how (44.5%), not having the need to (36.7%), being too busy to do so (17.4%), and health-related reasons or disabilities (13.5%).
03. If free Internet-related lessons were provided, 22.0% of these computer/Internet illiterate respondents expressed interest to participate, thus it is estimated that 1.3 million of those aged 12 or above would like to learn how to access the Internet. Of the non-Internet users who are willing to learn, most are females (58.1%), age 50 or above (62.9%), and completed junior high school or lower (59.6%), making these individuals the primary targets for future free Internet lessons.
04. Among the current Internet users, 1.0% are new-comers who have experienced the Internet for 1 year or less; of them, 66.2% are females, a percentage twice as much as that of males. They are mostly 41-60 years old (66.5%) and with an education of junior high school or lower (47.0%).
05. The reasons behind newcomers' Internet-experiencing include: to learn about new things (43.8%), to look for information (24.0%), to play games online (17.6%), to kill time (12.1%), work-related reasons (8.7%), to shop online (4.0%),



to learn with children (0.9%), and to chat online (0.2%).

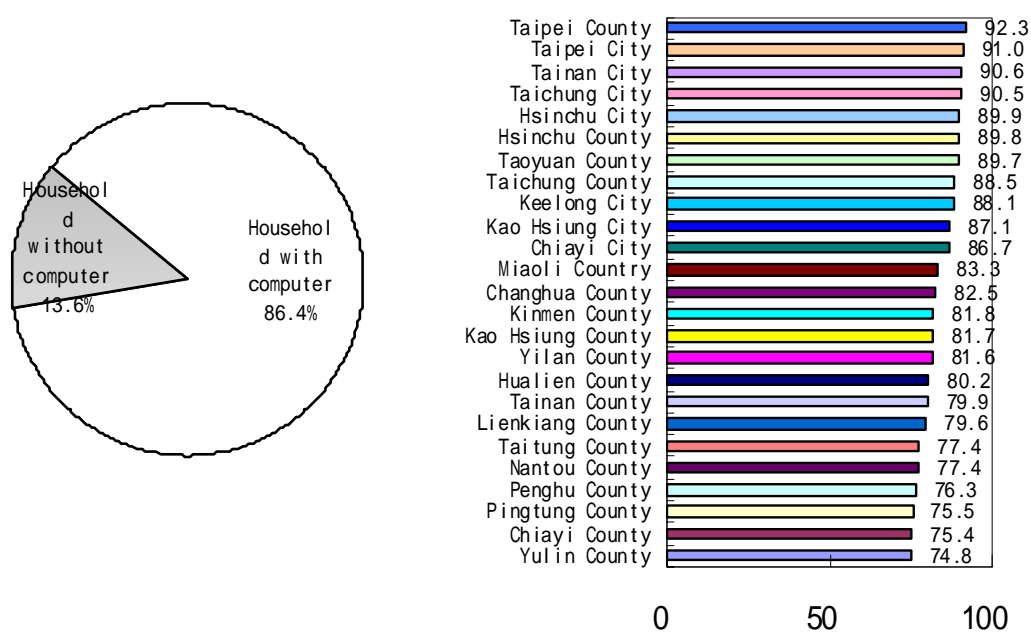
06. Among the respondents who have accessed the Internet before, 4.8% are now Internet drop-outs; among them, there are more females than males (55.8% vs. 44.2%), most are 41-60 years old (51.6%), with senior/vocational high school education (45.9%).
07. The drop-outs stop using the Internet because they have no time (39.3%) or the need (34.4%), have no computers or Internet access at home (17.5%), health-related reasons (7.8%), are not familiar with how (6.6%), are not interested (1.9%), believe it costs too much (1.7%), the hardware is used by other family members (0.9%), are concerned with their children being addicted to the Internet (0.4%), or family members can do so for them (0.1%).

## V. Current Status of the Household Digital Divide

### (1) Household Information Environment

01. Studies indicate that as many as 86.4% of the households in Taiwan have computer equipment. When the computer-ownership rates in the 25 cities/counties are compared, a large gap between counties and cities becomes evident. Taipei County and Taipei City ranked the highest in terms of household computer ownership (92.3% and 91.0% respectively); other locations where household computer ownership exceeds 90% are Tainan City and Taichung City. In contrast, the counterpart is lower than 77% in Yunlin County (74.8%), Chiayi County (75.4%), Pingtung County (75.5%) and Penghu County (76.3%).

Fig. 6 Household Computer Ownership



02. The household computer-ownership rate in highly remote areas is 71.4%, and though the rate in moderately-remote areas has been increased to 73.4%, it is still much lower than the 88.3% rate in non-remote areas. The household computer-ownership rate in highly remote areas is 71.4%, and though the rate in moderately-remote areas has been increased to 73.4%, it is still much lower than the 88.3% rate in non-remote areas.

03. Households whose providers work as managers, professionals, technicians, or white-collar positions have significantly higher computer ownership (more than 95%). Computer availabilities in households that are in farming, forestry, and fishery and non-technical labor work are lower (67.4% and 72.8% respectively);

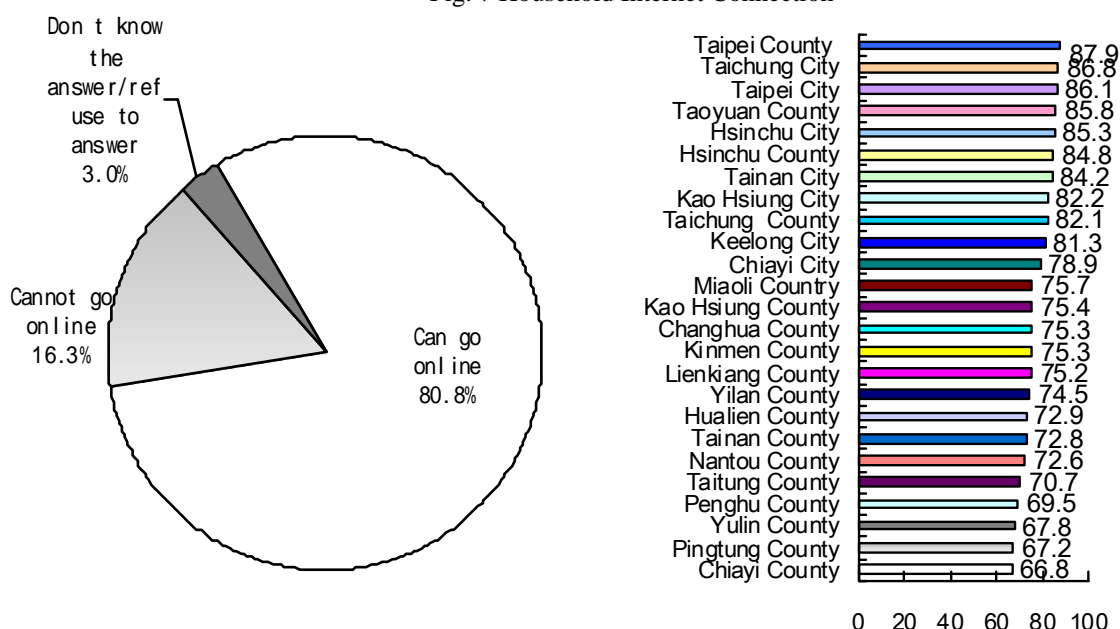
only 61.7% of the households whose providers are currently economically inactive have computers.

04. Judging from the monthly family income, for those households with a monthly income less than 17,280 NTD, the computer ownership rate is only 29.8%; for those households with a monthly income of 20,000-30,000 NTD, the computer ownership rate increases substantially to 77.4%, which, however, is still far lower than the national average of 86.4%.

05. Computer-ownership rate in households with foreign spouses is significantly lower than that in households without (79.7%: 86.7%); the difference in household information environment is limited between households with people who are with disabilities and those without (86.2%: 87.1%).

06. In terms of household Internet access, approximately 80 out of every 100 households have Internet connections (80.8%). Among these families with Internet access, 81.3% have broadband, only 1.3% still use dial-ups, 3.8% have wireless access through networks such as 3G, and 13.6% are unsure of what type of bandwidth they have at home.

Fig. 7 Household Internet Connection



07. Of the 25 counties/cities, the household Internet connectivity rate in Taipei County (87.9%), Taichung City (86.8%), Taipei City (86.1%), Taoyuan County (85.8%) and Hsinchu City (85.3%) all exceeds 85%; in contrast, the counterpart is lower

than 70% in Chiayi County (66.8%), Pingtung County (67.2%), Yunlin County (67.8%) and Penghu County (69.5%), indicating a significant difference between counties and cities.

08. When judging how remote a given household is, the same conclusion of “lower household Internet connectivity in more remote areas” can be drawn. Household Internet connectivity in non-remote areas is 83.0%, and is reduced to 61.1% and 66.6% respectively in highly-remote and moderately-remote areas.
09. Households in aboriginal and remote areas show the same pattern. Mountainside aboriginal towns have the lowest Internet availability since only 55.1% of the households can go online; Internet availability is, however, substantially increased to 72.5% in lowland aboriginal towns and 81.4% in non-aboriginal towns.
10. The availability of household Internet equipment is greatly increased in households whose providers are managers or professionals (more than 94%), and about 90% of the households whose providers work as technicians, at desk jobs, or are active-duty military personnel also have Internet connection. By comparison, Internet connection is least available (52.7%) in households whose providers are economically inactive, work in farming, forestry, or fishery (59.8%), or non-technical labor work (64.6%).
11. Monthly family income is an important influential factor on whether a household has Internet services; less than 50% of the households whose monthly family income is less than 20,000 NT, and 68.5% of the households whose monthly family income is 20,000 ~ 30,000 have Internet connection. More than 90% of the households whose monthly family income is 50,000 NT or more have Internet connection.
12. Internet connectivity in households with foreign spouses is only 70.1%, which is 11.1% lower than the 81.2% Internet connectivity in non-foreign spouse households; Internet connectivity in households with people who are with disabilities is 79.0%, which is only 3.0% lower than the households that are without.

## (2) Information Literacy of Family Members

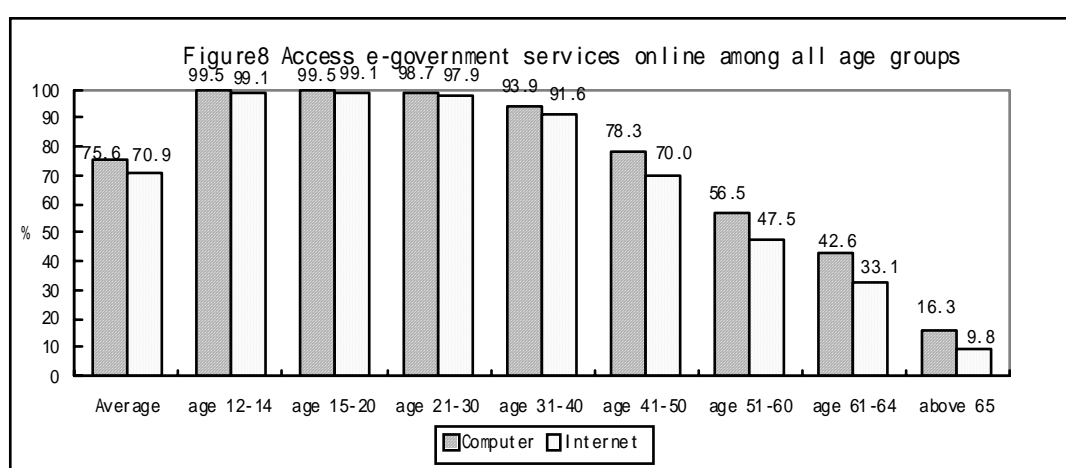
01. Among Taiwanese families, 63.9% of family members are capable of accessing the Internet. In other words, in a three-member family, 2 of them would know

how to go online; in a family of five, three would know how. When considering the degree of urbanization, the overall information literacy is lower in households that are in highly-remote and mountainside aboriginal areas, where less than 50% of household members know how to use a computer and access the Internet.

02. Households with enrolled students are most likely to have computer equipment; as high as 95.8% of the households with enrolled students have computer equipment, and the Internet access rate of these households also reach 91.8%. However, Yilan County, Taitung County, Chiayi County and Hualien County are the locations with the lowest access rate (85%); judging from the remoteness of an area, the computer-ownership rate drops to 88.3% and Internet-access rate drops to 74.8% in households in highly-remote towns/villages.
03. Close to 50% of the families (48.4%) have female members who are 40 years of age or older and do not know how to access the Internet, and on average each household has 0.6 middle/old-age female non-Internet users. In addition, among the families with foreign spouses, 45.8% indicate their foreign spouses use the Internet, 48.5% indicated their foreign spouses do not use the Internet, and 5.7% are unsure whether their foreign spouses use the Internet at all.

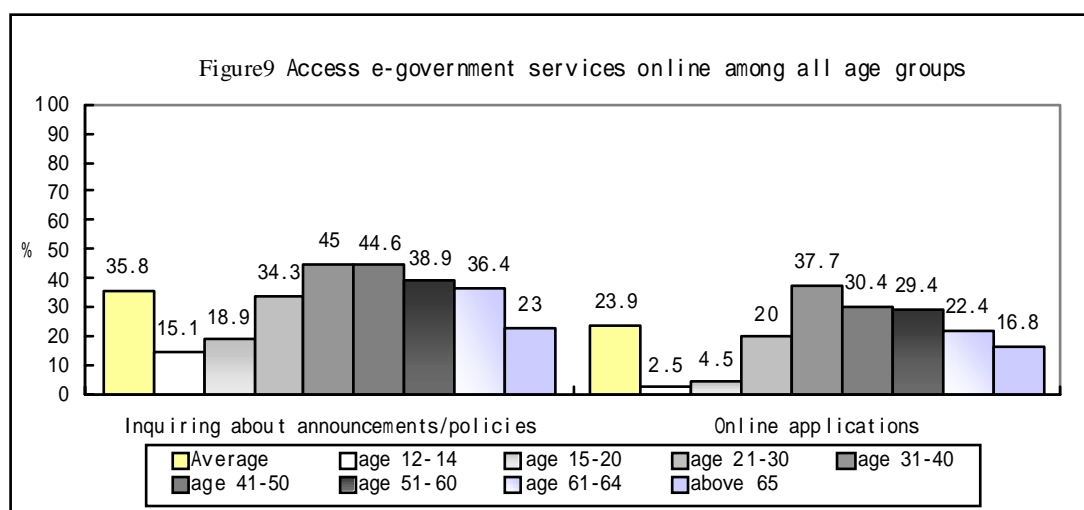
## VI. Current Status of the Generation Digital Divide

01. Whether it is about using a computer, accessing the Internet, or the digital capacity, a general pattern is that older people use computers less frequently and have weaker Internet capabilities.
02. The 2010 survey indicates that more than 93.9% of the 40-or-below age group use a computer, and the computer access rate drops to 78.3% in the 41-50 group, 56.5% in the 51-60 group, 42.6% in the 61-64 group, and 16.3% in the 65-and-over group.
03. In terms of Internet access, the middle-aged and seniors are less likely to access the Internet. The population of Internet access is reduced to 47.5% of the 51-60 age group, 33.1% of the 61-64 group, and 9.8% of 65-and-older. By comparison, more than 91% of people who are 40 or below access the Internet.
04. Middle-aged/senior individuals group not only have a lower information access rate, but even if they access information, the frequency is also lower than that of the younger generation. On average, those who are 51 years of age or older spend less than 2 hours online per day, which is significantly lower than the national average of 2.9 hours; judging from the years of Internet experience, the average among those who are 61 or older is less than 8 years, which is also lower than the national average of 9.1 years.



05. Among those between 21-30 years of age, more than 60% have accessed the Internet via mobile device before (61.6%), followed by the 31-40 age group (58.1%); in contrast, the counterpart in the 50-year-and-older group is lower than 43%.

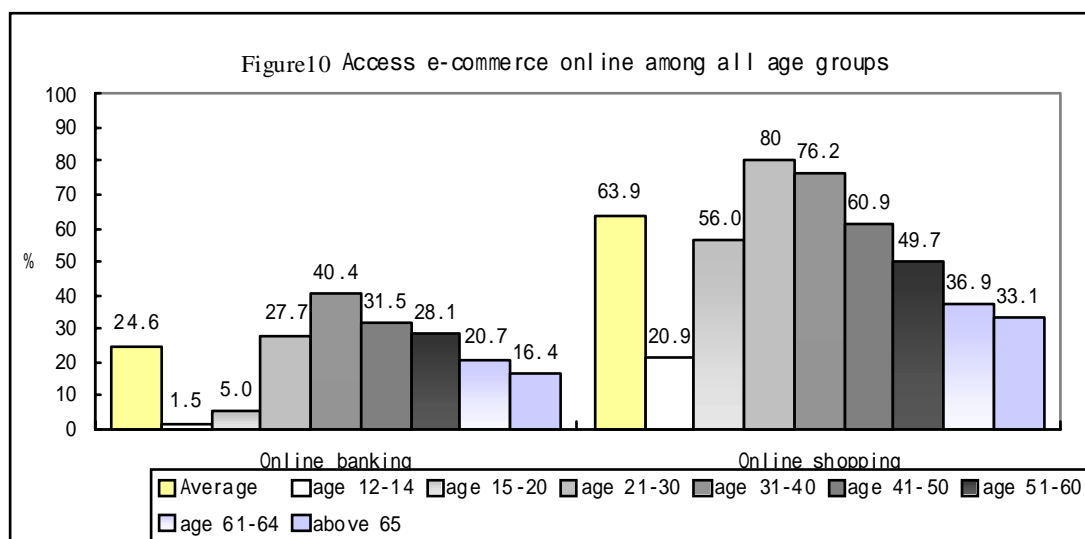
06. The 21-30 age group shows the highest confidence in going online and looking for needed information for friends or family members (84.4%); among the 50-year-or-older age group, less than 53% are confident in being able to look for specific information online. As for the ability to read websites in foreign languages, close to 40% of the 21-30 age group believe they can fully or partially understand most of such sites (38.8%), and the percentage drops to 20.1%~23.6% among the 40-year-or-older age groups. As for the ability to apply for accounts/PINs, about 80% of the 40-year-or-younger age groups know how to do so, whereas less than 65% of the middle/old-aged respondents have such abilities.
07. Internet users age 31 to 50 are the most active group in online citizenship; 44.6% ~ 45.0% of them browse governmental announcements, and 30.4% ~ 37.7% submit applications online.



08. Of all age groups, the 21-30 group is most interested in going online for browsing (38.7%) and participating in (6.4%) civil-issue related discussions; among the 12-14 and 65-and-older groups, less than 20% have commented on civil topics, and less than 3% have commented on political, social, or public issues.
09. The 21-30 age group is most likely to search for life-related information online as 88.9% go online to check the daily news, 75.2% go online to inquire/compare product information and prices, 57.7% go online to look for medical/health related information, and 69.7% go online to use e-maps such as GIS. In contrast, those who are below the age of 15 or above 61 are less likely to demonstrate such applications as less than 60% check online news, less than 40% look for consumer-related information or use e-map services, and the percentage of

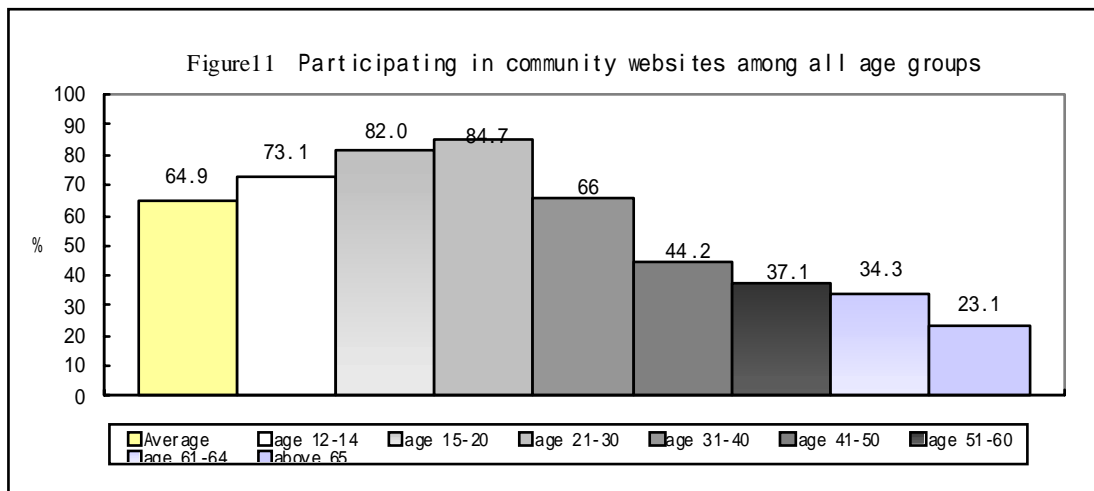
searching for health/medicine related information is also lower than the national average.

10. Online messaging software is quite common in the 15-30 age group (more than 90%); by comparison, less than 50% of those who are 50 or older use such software, indicating a wide gap between the two groups.
11. Of all age groups, 31-40 is most likely to use the Internet to deal with personal banking (40.4%), and 21-30 is most interested in online shopping (80.0%). E-commerce is not very popular among middle/old-aged respondents; about 16.4% ~ 20.7% have used online banking, and less than 40% have made online purchases or sales.



12. The new model of web 2.0 online participation is very popular among those who are 30 or younger, especially among the 15-30 age group; more than 80% have experienced community websites, followed by the 12-14 age group (73.1%). Those who are 40 or older have the least experience in community websites (lower than 45%).
13. As for online knowledge-sharing, the opinions provided by other Internet users have become an important reference for the 15-30 age group as more than 60% go online to ask questions or to consider others' opinions. Those who are 30 or younger are also most likely to provide personal knowledge or experiences for others to know, which is significantly different from the middle/old-aged respondents.





14. As for work-related applications, the 21-40 group is most likely to use the computer or the Internet for work; 65.1%~72.0% use computers at work, and more than 50% need the Internet for work. Among the middle/old-aged respondents, the percentage of computer-usage for work is 8.1%~56.6%, and 5.3%~47.0% for the use of the Internet.

## VII. Current Status of the Gender Digital Divide

01. The survey reveals that computer access rate in females age 12 or above is significantly lower than the male counterpart; 74.3% of females have used a computer before, which is 2.6% lower than the male counterpart. By calculating the population age 12 or above, the population of female computer-users is approximately 7.54 million, which is 280,000 less than the male counterpart.
02. The main difference in computer-usage between the two genders is mostly evident in the 50-year-old or older age groups. Females in the 51-60 group lags behind males by 2.3%, and the gender difference increases to 9.2% among those who are 61 or older.
03. 69.2% of females have accessed the Internet before, lagging behind the male counterpart by 3.3%. Similar to the gender difference in computer access, the Internet access rate in the below-50 age groups shows no gender differences; however, the Internet access rates in females age 51 to 60 and 61 or older are 3.9% and 6.9% respectively lower than the male counterpart.

Table 4. Gender differences in Computer/Internet Access Rate among Different Age Groups

Unit: %

	Computer Access Rate			Internet Access Rate		
	Male	Female	Difference (male-female )	Male	Female	Difference (male-female )
Total:	76.9	74.3	+2.6	72.5	69.2	+3.3
12-14	99.8	99.1	+0.7	99.3	98.8	+0.5
15-20	99.4	99.7	-0.3	98.9	99.3	-0.4
21-30	98.9	98.4	+0.5	98.5	97.2	+1.3
31-40	94.8	93.2	+0.4	92.7	90.7	+2.0
41-50	78.8	78.0	+0.8	71.3	69.0	+2.3
51-60	57.7	55.4	+2.3	49.4	45.5	+3.9
61 or older	26.6	17.4	+9.2	18.4	11.5	+6.9

04. The survey on gender-difference in computer-usage indicates the number of counties/cities where females are significantly less likely than males to use computers has dropped from 13 to 7, which are Lienchiang County, Penghu County, Hsinchu City, Taipei City, Yunlin County, Chiayi City, and Tainan City;

the gender-difference in Penghu County and Lienchiang County even reaches more than 10%.

05. Comparing both genders' Internet access rate throughout the 25 counties/cities, the number of counties/cities where females' Internet access rate is lower than the male counterpart has dropped from 10 to 7. The gender-difference in Penghu County and Lienchiang County even reaches more than 10%.

Table 5 Gender-difference in Information Access – in terms of Counties and Cities

Unit: %

County/City	Computer Access Rate		Internet Access Rate	
	Male	Female	Male	Female
Taipei	82.0	77.2	77.7	71.6
Yilan	74.4	69.6	69.3	63.9
Taoyuan	81.1	76.8	79.1	72.6
Hsinchu	78.6	74.4	74.0	69.9
Keelung	78.8	76.3	73.7	74.1
Hsinchu	85.1	76.3	80.6	72.5
Miaoli	74.5	73.1	67.8	66.1
Taichung	78.5	76.7	72.9	70.1
Changhua	71.7	68.0	66.3	62.9
Nantou	65.3	68.9	63.0	63.1
Yunlin	66.9	57.8	62.2	54.9
Taichung	82.5	80.1	79.9	76.2
Chiayi	57.7	64.7	53.0	60.9
Tainan	65.8	67.9	62.0	63.5
Kaohsiung	69.0	72.8	65.2	66.7
Pingtung	63.9	66.2	58.1	60.8
Penghu	72.7	61.3	69.7	56.3
Chiayi City	80.9	72.7	76.3	68.4
Tainan City	81.9	75.5	75.0	70.3
Taitung	72.2	72.8	67.7	66.7
Hualien	72.3	75.6	67.1	70.5
Taipei City	85.7	78.4	82.2	73.5
Kaohsiung	78.6	79.3	73.6	74.3
Kinmen	72.7	68.8	69.7	64.5
Lienchiang	80.0	66.7	80.0	66.7

06. Females not only show much lower information access rate than males do, but also demonstrate more regression in this regard. Among the females who have accessed the Internet, 5.5% no longer do so now, which is 1.3% higher than the male counterpart. The females who still access the Internet today spend an average

amount of 168 minutes online, which is 10 minutes shorter than the males' 178 minutes; no gender-difference is seen in terms of the years of Internet experience.

07. Though both genders use mobile Internet, there is a time difference in how fast they accept the technology. Except the 15-20 age group, all other age groups of female Internet users are behind males in terms of adopting new technologies; 50.9% of female Internet users have used mobile Internet, which is 4.1% lower than the male counterpart.
08. Females are also less confident than males in reading web pages written in foreign languages (27.2% vs. 32.5%); females are also slightly less capable in applying for accounts/PINs (73.9% vs. 76.2%); however, 72% of both females and males feel confident in looking for specific information.
09. Females know more about the purposes of governmental websites than males do (68.2% vs. 62.2%). As for practical applications, females are also higher than males by 5.7% and 3.0% in terms of making online applications and checking governmental policies/announcements online respectively. Age-specific analysis indicates that females in the 21-30 age group are more attentive towards e-government announcements than males in the same group do. They are 4.5% more likely to know the purposes of governmental websites but also 9.2% and 6.9% respectively more likely to engage in online inquiries and applications; in contrast, women aged 40 or above are slightly less likely than the male counterparts to access e-government.

Table 6 Gender-difference in the awareness of and access to e-government – divided by age groups

Unit: %

	Knowing the purposes of e-government			Inquired policies/announcements			Filing online applications		
	Male (A)	Female (B)	Difference (A-B)	Male (A)	Female (B)	Difference (A-B)	Male (A)	Female (B)	Difference (A-B)
Total:	62.2	68.2	-6.0	33.0	38.6	-5.6	22.5	25.5	-3.0
12-14	37.3	52.8	-15.5	10.6	21.4	-10.8	1.7	3.5	-1.8
15-20	51.2	56.8	-5.6	17.8	20.3	2.5	5.1	3.8	1.3
21-30	57.9	62.4	-4.5	30.1	39.3	-9.2	16.8	23.7	-6.9
31-40	66.5	73.1	-6.6	42.1	47.5	-5.4	37.2	38.1	-0.9
41-50	72.1	75.7	-3.6	45.3	44.0	1.3	30.5	30.4	0.1

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51-60	76.6	75.5	1.1	39.5	38.2	1.3	30.6	28.0	2.6
61 or older	72.2	67.9	4.3	30.7	27.7	3.0	23.8	11.7	12.1

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10. Although female Internet users know more about e-government and access it more frequently, they are less participative in online political and social discussions; whether it is about browsing civil-related issues (37.0%:29.2%) or public issues (6.0%:3.3%), males' participation is higher by 7.8 and 2.7% respectively.
11. As for applying the Internet in day-to-day life, there are significant gender differences in searching for medical/health information and using e-maps. Of females, 54.3% go online to search for medical/health information, which is 10.7% higher than males (43.6%); males are 6.3% more likely than females to access e-maps (57.4% vs. 51.1%).
12. The gender difference is less than 3% when it comes to browsing daily news online or searching for product information/prices; there is also no significant gender difference in using messenger software.
13. Gender difference is also insignificant in online banking as less than 30% of either gender has related experiences (25.4% vs. 27.6%). However, females age 21-30 are slightly more likely to try online banking than the male counterpart (higher by 5.5%); the opposite shows in the age 60-or-older group, where males' rate of online banking is 8.4% higher than the female counterpart.
14. Females are significantly more likely to engage in online transactions than males do (68.1% vs. 60.0%); however, females tend to make purchases. Among the female respondents, 67.8% have shopped online before, which is 8.1% higher than the male counterpart (59.7%), and only 10.5% of females have sold items online, which is lower than the male counterpart (12.2%).

Table 7 Gender difference in the use of e-commerce – divided by age groups

Unit: %

Age Group	Online Banking			Online purchases			Online sales		
	Male	Female	Difference	Male	Female	Difference	Male	Female	Difference
	(A)	(B)	(A-B)	(A)	(B)	(A-B)	(A)	(B)	(A-B)
Total	25.4	27.6	-2.2	59.7	67.8	-8.1	12.2	10.5	-1.7
12-14	1.9	0.9	1.0	17.7	24.5	-6.8	3.4	0.6	2.8
15-20	5.0	5.0	0.0	48.4	64.1	-15.7	11.1	4.1	7.0
21-30	25.2	30.7	-5.5	73.9	86.6	-12.7	19.9	20.7	-0.8
31-40	41.2	39.7	1.5	73.1	78.7	-5.6	16.6	15.0	-1.6
41-50	31.8	31.1	0.7	58.5	62.5	-4.0	7.8	4.6	3.2
51-60	28.8	27.6	1.2	51.2	47.5	3.7	2.0	3.0	-1.0
61 or older	22.0	13.6	8.4	37.9	27.7	10.2	3.8	0.7	3.1

15. An analysis of how payments and shipments are made in e-commerce indicates that both gender mostly pay through a post office or bank (45.8% in males and 43.8% in females), followed by paying with a credit card (about 40.1% in either gender). However, females are more likely to choose CODs and pay-and-pick-ups at convenient stores, whereas males are more likely than females (3.8% higher) to pay and pick-up from a seller in person.
16. Female Internet users are more enthusiastic about participating in community websites than males, and 66.5% of female respondents have or use community websites at the moment, which is 3.2% higher than the male counterpart (63.3%). Age-analysis indicates that except the 60-or-older groups, females of all ages are more likely to participate in community websites than males, and the difference is especially significant in the 12-20 age group (more than 8%).
17. Gender-difference in online-knowledge-sharing is insignificant as 50% of either gender group would ask questions or search for others' comments online; however, males are more enthusiastic about providing others with experiences or knowledge (23.2% vs. 20.8%).
18. Due to different occupational structures and the fact that most females work in white-collar or office positions, they are much more likely than males to use a computer or access the Internet to do their work (9% ~ 10% higher). Judging from occupational types, the difference between the two genders working as

professionals, service/sales personnel, workers in farms, forestry, or fishery, machinery operators and assembly workers, basic-level technical labor and ordinary labor is insignificant (less than 5%); however, females working as managers, technicians and assistant professionals, office support staff, and technical personnel are 6% ~ 14% more likely to rely on computers or the Internet at work, and this is perhaps due to the significant gender-specific task-delegation in an occupation.

Table 8. Reliance on Information Equipment for Job Purposes in the Two Genders --  
Classified by Age Groups

	Unit: %			
	Computer Application		Internet Application	
	Male	Female	Male	Female
<b>Total:</b>	53.2	63.3	43.3	52.2
Representative/Manager	80.3	86.2	73.8	80.3
Professional	90.2	92.6	80.6	82.9
Technician/Assistant	68.7	80.1	53.8	67.5
Office support staff	85.8	93.2	66.8	77.8
Service/sales personnel	32.8	29.4	23.5	18.8
Labors working in farming, forestry, or	7.5	5.2	5.8	3.9
Technique-related personnel	18.5	31.5	9.7	15.4
Machinery Operator/Installer	20.2	22.0	7.5	6.7
Basic-level technicians and labors	10.4	5.4	4.3	2.8

19. In households who primary providers are males, 87.7% have computers, and 82.4% have Internet access, which are 2.2% and 1.9% respectively higher than those whose primary providers are females.

## VIII. Scores of Individual/Household Computer-literacy Performance

### (1) Weighted indicators of digital divide

Different indicators are utilized in this survey to assess the access to computers and the Internet among the public who are 12 years of age or older. Since different indicators imply different significance of individual computer-literacy, the relative weight of each indicator must be determined before the respondents' computer-literacy performance can be assessed comprehensively.

We consulted twelve experts from the industrial, government, and academic circles who have been working on digital-divide related policies for years to provide input, and based on this we conducted AHP to determine the relative weight of each indicator. The determined weights allow us to calculate the performance of individual and household computer-literacy in Taiwan.

For the sake of comparison and demonstration, each sub-aspect and main-aspect is shown from a score of 0 to 100. When all the sub-aspects are summed up or all the aspects are summed up, the relative weight of each is utilized in the process. Equation of the calculation is as follows:

$$Y = \left[ \sum \alpha_i X_i \right] * 100$$

$\alpha_i$  is the weight of each indicator or aspect;  $X_i$  is the indicator score of each indicator or aspect.



Table 9 Weights of Indicators in the 2010 Individual/Household Digital Divide Survey

Weighted indicators of individual computer-literacy performance (0.792)						
			Sub-aspect	Third aspect	Indicator	Cross-indicator weight
Access to Information			0.257			
Access to information equipment				0.628		
Whether one has used a computer before.					0.235	0.03
Whether one has accessed the Internet before.					0.568	0.07
Whether one has accessed the Internet via mobile device.					0.197	0.03
Access to the Internet				0.372		
Hours spent online per day					0.728	0.06
Years of experience					0.272	0.02
Information Literacy			0.290			
Basic capabilities				0.589		
The ability to read websites in foreign languages					0.661	0.09
The ability to look for specific information					0.144	0.02
The ability to apply for accounts/PINs					0.195	0.03
Information-security awareness				0.411		
The ability to prevent the computer from being infected/hacked					0.47	0.04
The ability to back-up data and prevent data loss					0.53	0.05
Information Application			0.453			
Civil behaviors				0.230		
Experience of inquiring about government announcements online					0.222	0.02
Experience of submitting applications via government websites					0.336	0.03
Experience of posting one's thoughts on public policies/issues online					0.185	0.02
Experience of browsing other individuals' thoughts on public policies/issues online					0.257	0.02
Life applications				0.553		
Buying or selling products online					0.097	0.02
Online banking					0.115	0.02
Online paging					0.163	0.03
E-mail					0.324	0.06
Online news					0.076	0.01
Checking/comparing product information/prices					0.053	0.01
Search for medical/health information					0.107	0.02
E-map services such as GIS					0.066	0.01
Web2.0				0.217		
Participation in online communities.					0.209	0.02
Providing knowledge or personal experiences for others' reference					0.321	0.02
Experience of browsing the knowledge or experience provided by others					0.469	0.04
Weighted indicators of individual computer-literacy performance (0.208)						
			Sub-aspect	Sub-aspect	Third aspect	Indicator
Household information environment			0.381			
Information equipment				0.307		
Existence of household computers					1.000	0.02
Internet environment				0.693		
Whether a household has Internet connections					0.489	0.03
Method of household Internet connection					0.511	0.03
Household information awareness			0.619			
Percentage of family-members accessing the Internet					1.000	0.13

## (2) Individual Digital Score

01. The overall digital score of our nation's population age 12 and older is 37.6. The analysis of the components of the overall computer-literacy performance indicates the popular aged 12 or above perform the highest in "access to information" (57.4 points), followed by "information awareness" (39.3 points) and "information application" (25.4 points), indicating that the public have plenty of opportunities to access computers and the Internet, but there is still room for improvement in terms of the ability to use computers, the understanding of information-security, and the ability to apply information.
02. Males' overall score is 38.6, which is 1.9 points higher than the female counterpart.
03. Overall individual scores drop along with education level. Those who finished graduate schools have an individual score of 66.0, while those who are illiterate have a score of 0.7.
04. Of all age groups, the 21-30 group has the highest level of computer-literacy (57.5 points), followed by the 15-20 group (52.0 points) and the 31-40 group (51.9 points). On the other hand, digital divide is a bit more significant in the population age 40 and above; the 41-50 group's score is 35.1 points, the 51-60 and the 61-64 group's scores are respectively 22.0 and 14.3, and the average score in those who are 65 or older is as low as 4.0.
05. The degree of computer-literacy also varies in different industries. The industry of information and communication has the highest performance with a score of 65.5 points, followed by the finance/insurance industry (61.0 points); information-application is still the weakest among those working in farming, forestry, or fishery (11.3 points) or are retired (12.4 points). Computer-literacy is also very low among homemakers (19.2 points), those working in mining (27.4 points) and other service industries (29.5 points), with an average lower than 30 points.
06. In terms of occupations, professionals have the highest level of computer-literacy (61.1 points), followed by office staff (55.9 points) and managers (54.4 points); in contrast, computer-literacy is rather low among those who are economically inactive, working as laborers, or working in farming, forestry, or fishery, especially in the last (10.3 points).

07. The overall digital performance of government agencies is 55.5, which is far higher than that of private enterprises (46.7), employers (40.7), the self-employed (25.6), and unpaid homemakers (14.8).
08. The overall digital performance of the aboriginals is 36.9, which is slightly lower than that of the Hakka (38.1) and non-aboriginals (37.6).
09. As for county-city differences, Taipei City (44.4 points) is once again the most computer-literate location in Taiwan, followed by Hsinchu City (43.6 points) and Taichung City (42.0 points); in contrast, the average performance of Chiayi County (28.2 points), Pingtung County (29.2 points) and Yunlin County (29.5 points) is lower than 30 points.
10. A regression analysis indicates that when the influences of all other variables are controlled, gender, age, educational level, occupation, job position, and urbanization of residence are all important variables that predict a person's digital literacy; the interpretative power of model  $R^2$  is as high as .685; age and educational level have the strongest influences.

### (3) Household Digital Score

01. The overall digital score of households in Taiwan is 69.3, of which households whose providers are working in information/communication industries have the highest (86.2 points), followed by finance/insurance (85.8 points) and scientific/technological services (85.2 points). In contrast, household information literacy is significantly lower in families whose providers are working in farming, forestry, or fishery, homemakers, unemployed, or retired (34.7~ 50.8 points).
02. As for household monthly income, the performance of families with an income of 50,000 or above exceeds 80 points, making them the first-leading group; the score of those with an income of 30,000 ~ 50,000 is between 69.5 ~ 74.1, making them the second-leading group. The score of those with an income of 20,000 ~ 30,000 drops to 56.4, and is lower than 43 among those with an income of less than 20,000, indicating income-level affects the learning and application of information among an entire family.
03. Information environment and members' information awareness are also significantly poorer in households with foreign spouses (57.7), which, on average,

is 12 points lower than the non-foreign spouse counterparts (69.7).

04. In terms of county-city differences, computer-literacy is highest in Taipei City (76.8), Taichung City (76.7), and Taipei County (75.5), and lowest in Penghu County, Chiayi County, Pingtung County, and Yunlin County (55.7 ~58.0).

05. The development of household information-access is positively correlated with urbanization, and is the highest in Taipei City (76.8) and lower in hillside towns, remote towns/villages, and mountain towns (56.6, 54.8, and 36.6 respectively).

#### (4) Overall Individual/Household Digital Performance

01. Weighted calculations of individual and household scores indicate that the overall digital score in Taiwan in 2010 is 44.2, with a standard deviation of 26.1, indicating a rather high heterogeneity between different groups in terms of digital development.

02. Males' overall score is 44.9, which is 1.4 points higher than the female counterpart.

03. The overall digital-performance score rises along with one's education level. The overall score of people who finished graduate studies is 69.9, which is 5.4 times as much as that of people who finished elementary school or below.

04. Of all age groups, the 21-30 group has the highest digital performance with a score of 62.2 points. The score of those who are 51 or older is below 35.

05. When compared based on the industry, digitalization is highest in the information and communication industry (69.7), and still the lowest in the farming/forestry/fishing industry (17.0).

06. When compared based on the occupation, the overall digital score of professionals is the highest (66.1); on the other hand, the average score is below 40 among those who work in non-technical labor jobs or farming/forestry/fishing, especially the last (15.9).

07. The overall digital performance of government agencies is 60.9, which is far higher than that of private enterprises (53.0), employers (48.9), the self-employed (33.3), and unpaid homemakers (22.3).

08. In terms of regional differences, Taipei City (51.2) is once again the highest performing location in Taiwan, followed by Hsinchu City (50.0). Digitization is especially low in Yunlin County (34.9), Pingtung County (34.9) and Chiayi County (34.1), with an average score lower than 35.
09. Judging from the location, digitalization is highest in northern counties/cities (47.2), whereas central counties/cities, eastern counties/cities, and offshore counties/cities share a similar degree (40.7~41.7), and the southern counties/cities have the lowest degree (38.9).
10. In terms of the digital development in aboriginal towns, while lowland aboriginal towns perform better than the mountainside counterpart (40.1 vs. 35.0), both are worse than non-aboriginal towns (45.7).

## IX. Comparison of the Digital Divide Trends in Taiwan over the Past Years

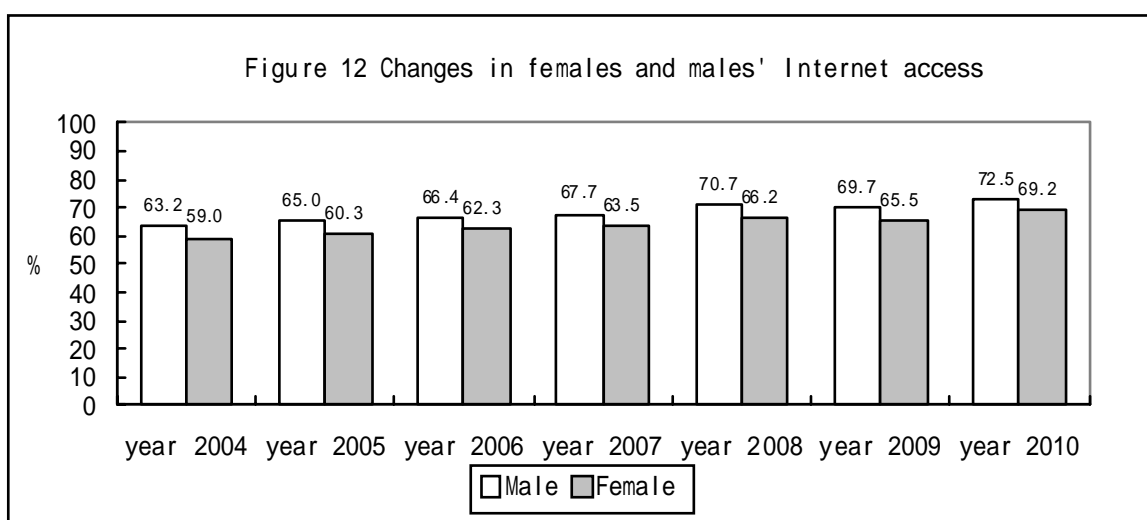
01. The 2010 Survey indicates that among those aged 12 or older, 75.6% have used computers before, and 70.9% have accessed the Internet before, an increase of more than 3% compared to 2009.

Table 10. Comparison of Information Access in Internet Population Age 12 or Above over the Years

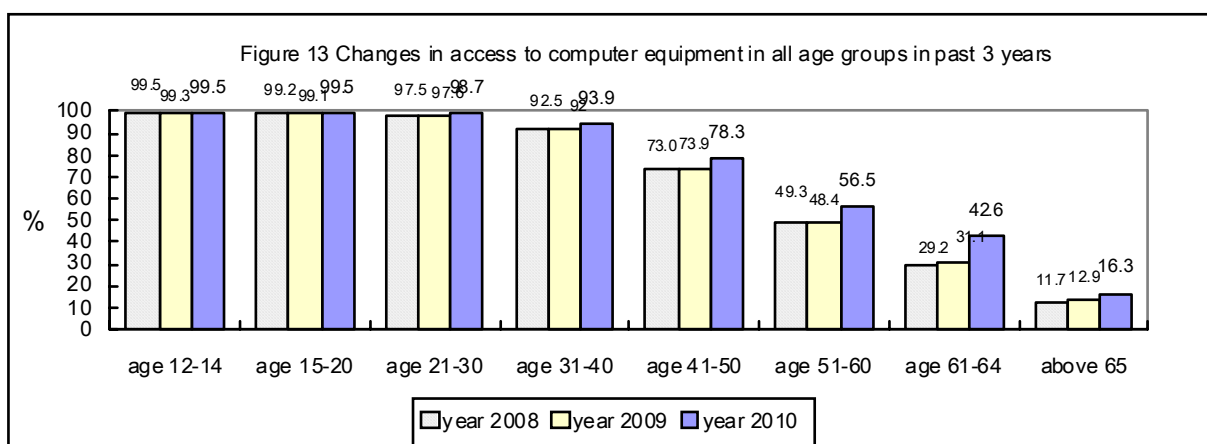
	2004	2005	2006	2007	2008	2009	2010
Number of valid samples	14,120	26,622	26,702	15,007	16,131	16,133	16,008
Computer Access Rate	68.2	66.8	70.1	71.0	73.4	72.6	75.6
Internet Access Rate	61.1	62.7	64.4	65.6	68.5	67.6	70.9

Unit: Persons, %

02. In terms of gender differences, the population of computer/Internet access has increased for both genders compared to 2009, especially with the rate of information access among females. The rate of computer-access among females increased from 70.7% in 2009 to 74.3%, and the rate of Internet-access increased from 65.5% to 69.2%; the male counterpart of computer-access and Internet-access respectively increased from 74.6% to 76.9% and 69.7% to 72.5%.



03. In terms of the age groups, digital divide between different generations is still prominent. However, when compared to last year, we can see a significant improvement in middle/old-aged individuals' information access, of which the computer-access rate and Internet-access rate respectively increased from 48.4% to 56.5% and 37.8% to 47.5%, showing the greatest magnitude of growth.



04. Information-access has improved throughout Taiwan in the past two years; computer-access rate has improved much in Penghu County, Tainan City, Taipei City, Taichung County, Yilan County, Kinmen County, Kaohsiung County, Changhua County, Lienchiang County, Chiayi City, and Hualien County (more than 4%); Internet-access rate has improved most in Penghu County, Tainan City, Lienchiang County, Yunlin County, Kinmen County, Yilan County, Changhua County, Kaohsiung County, Keelung City, Taipei City, Taichung County and Chiayi City (4.2% ~ 7.5%).
05. When compared to the results of the 2009 survey, the daily amount of time spent online in the population age 12 or above has slightly decreased from 2.95 to 2.88 hours. The average hours spent online among females is still 2.8 hours, whereas the male counterpart has decreased from 3.2 to 3.0 hours. Age-wide, the 15-20 group's time spent online has decreased from 3.5 to 3.1 hours; however, that of the 41-50 group has increased from 2.0 hours in 2008 and 2.1 hours in 2009 to 2.3 hours this year.
06. The trends suggest that although the Internet population is growing significantly among the 12-or-older population and the growth of online shopping has grown by 4.6%, the growth of using online messengers and banking services remains the same, and the changes are within the range of sampling error.

Table 11. Comparison of Internet Access in Internet Population Age 12 or Above over the Years

	2004	2005	2006	2007	2008	2009	2010
Online paging	56.2	67.6	73.0	76.4	74.3	75.9	75.8
Online banking	18.1	18.5	22.6	27.8	26.1	28.9	26.4
Online shopping	30.4	37.2	44.7	49.6	49.5	59.3	63.9

Unit: %

07. In the past year, 35.7% of Internet users inquired about governmental policies or announcements through e-government services, and 23.9% have filed online applications; the numbers are roughly the same as the 2008 counterpart.

Table 12. Online Citizenship Participation by the Internet Population Age 12 or Above

	2007	2008	2009	2010
Inquired about policies/announcements	35.1	35.0	50.8	35.7
Online applications	28.0	25.9	30.3	23.9

Unit: %

08. Comparing the 2009 and 2010 surveys, we see the household computer ownership rate has increased from 84.1% to 86.4%, and Internet connection rate has increased from 78.1% to 80.8%. Moreover, the computer-ownership rate is still high in households with enrolled students, and has increased from 94.1% to 95.8%.

Table 13 Past-year analysis of household information environment in Taiwan

	2006	2007	2008	2009	2010
Computer ownership rate	81.6	82.6	84.6	84.1	86.4
Household Internet connectivity	74.5	74.7	77.5	78.1	80.8
Computer-ownership rate in families with students	92.2	93.1	94.1	94.7	95.8

Unit: %