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REPORT ON THE COMPUTER USE SURVEY 2009

Information Management Center, DGBAS, EY

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Contents

Preface

The public and private sectors have actively promoted IT development in recent years. As a result, information technology has been gaining more and more popularity in Taiwan. A significant progress has been made in the setup of hardware and software equipment or e-commerce applications. People are also getting more aware and protective to the threats of information security.

In order to understand the development trends in information technology applications, Information Management Center (IMC), Directorate-General of Budget, Accounting and Statistics (DGBAS), Executive Yuan (EY) has conducted a regular Computer Use Survey for the previous year. The survey is then statistically arranged and compiled into the “Report on the Computer Use Survey”. The information of this report provides the references to future decision making on IT policies for the government, marketing plotting and operating plans for IT software and hardware industries, computerization or constant replacement of software and hardware equipment for computer users.

This survey covers the overall application, development and changing trend of computer resources in government agencies, public & private enterprises, schools and research institutions. The object of the survey comprises all industries (**in terms of locations**, including enterprises and public sectors).

The contents of this issue in principle focus on the statistical key topics as follows: hardware (including PC and server), software (including types of operating system), information security, e-commerce online transactions (excluding C2C), allocation of IT

expenditures, IT outsourcing services, IT manpower distribution and earnings of IT staffs, etc. Moreover, the cross-analysis of data is also included, e.g. computer saturation rate, number of computer per person, average monthly earnings for IT staff and information security, and so on. However, the rapid progress of information technology and the growing prevalence of information applications have led to ambiguous definition of some key statistical items, such as personal computers, servers, and others. It is the reason why we have adjusted the definitions of questionnaire items in this survey. Comparison of the time series data was provided for public reference, but the users of this report are requested to exercise extra caution of the revisions when citing it. Moreover, in view of the growing popularity of outsourcing IT services, the questionnaire items and result tables relating to the employment of IT dispatching manpower were added to understand expenditure on the IT manpower in terms of outsourcing and/or self-own team. The contents are quite rich in this issue. It deserves your careful exploration

Since founding in July 1980, the Report has been published each year. Appreciate being valued and expected by the domestic IT sectors, which encourage us to keep striving for the best. In view of the advanced and renewed information technologies, the Report should be adapted for them.

Nonetheless, the defects of the Report may appear for the difficulty in obtaining the information from private enterprises. Despite the adversity, the editors and members in the taskforce involved in the Report will keep endeavoring for improving the design of questionnaires, coverage of objects, quality of statistical estimation and refinement of making and compiling the Report. Also, we are expecting your advices and opinions as well.

Finally, the maximal gratitude is dedicated to the units, enterprises and pertinent institutions involved in the survey for collaborations, spending time providing data and filling out the questionnaires. Please view the report on the internet at http://www.dgbas.gov.tw/imc61.

Planning and Implementation

1. Survey Planning Summary

(1) Basis: In terms of the pertinent provisions prescribed in the Enforcement Rules of Statistics Act and Letter Pu-3 No. 0970006402, DGBAS, EY

(2) Objective: Information Management Center (IMC), DGBAS, EY expects to understand the domestic computer uses, development and alteration through the collation, classification, compilation and statistic estimation by collecting the data relating to national computer uses; moreover, the Report on Computer Use Survey is compiled and serves as the references to the governmental computer-related policy-making as well as the indicators of computer use for IT users. In addition, IMC hopes to facilitate the national information infrastructure and hereby accelerates the establishment of information society via helping IT industries to plan the operating directions.

(3) Objects: The objects Included various units in private enterprises , government agencies (excepting military units), public enterprises, schools and research institutions.

(4) Scope：The Survey covered cities and counties of Taiwan Area (including Taipei Municipality , Kaohsiung Municipality), Kinmen County and Lienkiang County of Fukien area.

(5) Standard time:

i. Static data were collected at Dec. 31, 2009

ii. Dynamic data were collected within Jan. 1, 2009 - Dec. 31, 2009

(6) Cycle: once every year.

(7) Method: The competent authority of government units was in charge of distributing questionnaires among the subordinate units. The questionnaires for the private units were delivered by post and supplemented with telephone interviews.

(8) Content: General overview, computer systems, using status, e-commerce transactions (excluding C2C), information and communications securities, IT expenditures, IT staffs and the employment of IT dispatched manpower.

(9) Sampling design: The major industries prescribed in the "Standard Industrial Classification of R.O.C. (8th Amendment)" were served as sub-populations. The sample size is designed with confidence interval at 95% for the each sub-population. Samples were collected by truncated stratified sampling.

(10) Data processing and Report editing: The data of the Survey were processed by computer primarily and supplemented by manual collation. The Report on the Computer Use Survey was edited after confirming statistic results.

2. Survey Implementation Process

(1) Development of an Implementation Plan: In terms of the task list 2009 of IMC, the data were collected in the beginning of 2009 as the references to the design; moreover, the implementation plan and survey forms were developed to conduct survey scheduling, work executing, data processing and report editing of the survey for making it accomplished successfully.

(2) Adjustments of questionnaire contents and re-definitions of some items: With information technology trends and applications, the definitions of the following items have been adjusted.

A. Regular employees: Those who have been employed for 6 months or are expected to be employed for more than 6 months before the year end of 2009 are defined as “regular employees”, which do not include short-term temporary staff, janitors, drivers, security guards, students, dispatched workers by sending companies. However, the number of drivers hired by transportation companies and security guards employed by the security industry is included in the calculation.

B. Personal computers: When the item “Personal computers” is used, it does not include terminals, peripherals, automated teller machines (ATM), servers, multimedia machines, smart phone, PDA, POS.

C. Servers: The term “Servers” refers to the computers which have high computing power, which are installed with server-version operating system, and which can provide services to multiple clients through the network. It does not include personal computers that are used for file sharing or printer sharing; multimedia machines (such as ibon, FamiPort) are also excluded. Only the physical servers are calculated. Virtual servers are not counted in.

D. IT staffs: Only those who are mainly employed to work in the IT business are counted in. It does not include part-time workers and dispatched manpower by sending companies. Those who use computer equipment extensively for business needs but do not work in IT departments are not included, either.

(3) Sources of Populations: The populations were provided by the competent authorities in charge of each industry. The registered institutions were as follows:

i. Government units: Survey populations include authority and schools but excepting military units, they were taken from the Central Personnel Administration, EY.

ii. Private units: Excluding the small one-person proprietorships, those populations were taken from “Industry, Commerce and Service Census” and “Agriculture, Forestry, Fishery and Husbandry Census” of DGBAS, EY, the directoy of all levels schools in Education Ministry and the R.O.C. directoy on science and technology in National Science Council (NSC), EY.

Sources of Populations		Population size	Sample size	Sampling rate	Effective return number	Return rate
Government units	Central Personnel Administration	8,269	8,269	100.00	6,705	81.09
Private units	DGBAS, EY	660,598	11,490	1.74	10,197	88.75
	Ministry of Education	1,945	421	21.65	420	99.76
	NSC	114	114	100.00	112	98.25
Total		670,926	20,294	3.02	17,434	85.91

Notes:

1. Population has been updated.
2. The population of DGBAS, EY excluded the small one-person proprietorships.

(4) Sampling and estimation:

i. Government units:

(i) The government units included the government agencies, public enterprises, public schools and public research institutions. The overall survey was conducted with forwarding questionnaires by the competent authorities.

(ii) The institutions were classified according to the agencies and schools code provided by the Central Personnel Administration, and then reclassified in the light of the "Standard Industrial Classification of R.O.C. (8th Amendment)". The overall survey was conducted in principle. The unresponsive samples were interpolated in accordance with counties / cities, industry classification and employee number.

ii. Private units:

(i) The survey objects included industry, commerce & services, agriculture, forestry, fishery and husbandry, private schools and private research institutions. An overall survey was conducted in agriculture, forestry, fishery and husbandry, private schools(excluding private kindergartens) and private research institutions. As for industry, commerce & service, the population came from the data of Industry, Commerce and Service Census 2006; that is, the major industries served as the sub-populations. The employee number of sub-populations served as the stratified variables and

each sub-population was sampled by truncated stratified sampling method (6 strata). The overall survey was applied to those above the truncated point and the stratified random sampling was applied to those below truncated point. The D-H optimum stratification was applied to the stratification and the Neyman optimum allocation was applied to stratified sampling allocation. 10,712 samples were selected.

(ii) The overall survey was conducted in agriculture, forestry, fishery and animal husbandry, private schools(excluding private kindergartens) and private research institutions. The unreturned samples were interpolated pro rata in accordance with industry classification, employee number and regions. As for the estimation of industry & services, the major industries served as the sub-populations and the population thereof was estimated respectively in accordance with industry classification by stratified sampling.

(5) Questionnaire Return: There were 12,025 questionnaires delivered to private units with 10,729 effective ones returned and 8,269 to government units with 6,705 effective ones returned. The total questionnaires delivered summed up to 20,294 with 17,434 effective ones returned. The return rate was 85.91%.

(6) Compilation method:

i. After the returned data was processed through the manual examination and computer collation, the statistics analysis, the results tables and anslysis reports were compiled by applying words, graphs and tables in the content.

ii. On this report, the mean was rounded off to 1st digit after decimal point and the percentage was rounded off to 2nd digit after decimal point.

(7) General Rules

i. The meaning of symbols used in this report is as follows**:**

0: the number was less than 1 unit

-: no value

ii. Owing to the data being rounded off in advance, the sum total may not equal to the actual sum of the number in the detail items.

iii. Any updated number relating to the data in the Report will be corrected. Where there is difference with the contents in the previous issue, the number in this issue of the Report shall prevail.

Summary of Computer Use Survey

1. Explanation for adjusting definition of items

As rapid changes in IT and and popular application, our young people are getting more and more capable of installation and maintenance of personal computer systems, programming, or web page design. As a result, many respondents to our survey were ambiguously aware of some questionnaire items, such as the personal computers, servers, and IT staffs, etc. Thus, the definitions of questionnaire items have been appropriately adjusted and reiterated. In other words, we have reviewed those items more stringently than before. Users of this report are therefore asked to exercise extra caution on the following time-series data.

1. PC: The item "Personal computers" excludes some items, such as "terminals, peripheral devices, ATMs, servers, multimedia machines, smart phones, PDA, and POS".

2. Servers: Physical servers installed with server-version operating systems are added in, while virtual servers, personal computers used for file sharing or printer sharing, and multimedia machines (such as ibon, FamiPort) are excluded.

3. IT staff: The term specifically refers to those who are mainly employed to perform jobs of IT business, excluding part-time staff, manpower by sending companies, and those who use computer equipment extensively for business needs but do not work in IT departments.

2. Overview of Computer Installation

Item	2009	2008	2007
Total population by year end(persons) (Note 1)	23,119,772	23,037,031	22,958,360
Total households by year end (note 1)	7,805,834	7,655,772	7,512,449
Total computers installed by year end(sets)	12,467,489	12,039,966	11,579,237
Household (sets) (note 3)	7,340,414	6,816,476	6,464,956
Government institutions, enterprises and schools (sets)	5,127,075	5,223,490	5,114,281
PCs (sets)	4,818,303	4,903,882	4,832,544
Servers (sets)	308,772	319,608	281,737
Computers installed per thousand persons (sets/1,000 persons) (not	539.3	522.6	504.4
Computer saturation rate of household by year end (%) (note 3)	70.5	69.2	67.1
PCs installed per hundred households (sets/100 houses) (note 3)	95.1	90.0	86.8

Notes: 1. The source of the total population and households is Department of Household Registration, M.O.I.
2. The total computer installed per thousand persons = computers installed by year end / total population * 1,000 persons
3. Source: Reports on the Survey of Family Income and Expenditure per Household in Taiwan, Kinmen and Lienchiang 2009, DGBAS, EY
Compiling by: Information Management Center, DGBAS, EY

3. Overview of Information Technology (excluding families)

Item	2009	2008	2007
Overview of computer installed by year end			
PCs			
Total number of PCs (sets)	4,818,303	4,903,882	4,832,544
Saturation rate (%)	73.3	73.9	76.9
Servers			
Total number of servers (sets)	308,772	319,608	281,737
Saturation rate (%)	11.4	19.5	19.0
IT investment Expenditures			
Expenditure of IT operations a whole year			
IT expenditure (NT$100 million)	1,921	1,973	1,934
Rate of hardware expenditure (%)	26.1	25.5	25.1
Rate of software expenditure (%)	21.6	19.3	18.5
Rate of computer communications expenditure (%)	8.7	11.3	10.8
Rate of information staff expenditure (%)	31.7	30.5	30.2
Rate of expenditure for IT dispatched manpower(%)	1.7		
Rate of other expenditure (%)	10.3	13.5	15.4
Percentage of GDP (%)	1.5	1.6	1.5
IT outsourcing services			
Expenditure (NT$ 100 millions)	281	273	227
Percentage to that of IT expenditure (%)	14.7	13.8	11.7
Information manpower by year end			
Information staff (persons)	91,191	100,037	101,657
Changes in percentage (%) (note 3)	-17.1	8.2	-0.7
Average monthly earning (NT$ 10,000)	4.7	4.2	4.3
Proportion to that of e-commerce enterprises by year end (%)	22.4	22.5	18.6

Notes: 1. The data are round-off to 1st digit after decimal point, maybe there are the differet data, but the same percentage.
2. The source of GDP is the data issued by GDBAS, EY in August, 2010.
3. Change in percentage (%) = (the number of IT staffs this year - last year) / last year * 100%.

Computer Use Survey Analysis

1. Overview of Computer Installation

🗁 There were 12,158,000 sets of personal computers. The average number of computer sets per thousand persons was 525.9

At the end of 2009, there were 12,158,000 sets of personal computers installed, of which 7.34 million sets, or 60.37%, were in households while 4,818,000 sets, or 39.63%, were in administrations, enterprises, and schools. The average number of computer sets per thousand persons was 525.9. In comparison with the year end of 2008, there was an increase of nearly 524,000 sets in households. However, the total number of PC installations in administrations, enterprises, and schools reduced slightly by about 85,000 sets, due to the fact that the definition of personal computers has been modified to exclude terminals, peripheral devices, ATMs, servers, multimedia machines, smart phones, PDA, and POS. The average number of PC sets in administrations, enterprises, and schools was 9.8, of which the Public Administration and Defense (including the Compulsory Social Security) was at 144.3 sets, ranking the highest, followed by Electricity and Gas Supply Industry at 86.4 sets and Education Services at 67.5 sets. By employee number, the average number of PC sets increased as the employment scale grew; those institutions with more than 200 employees had an average of 442.9 sets of PC installed, leading all the rest, while the institutions with less than 30 employees owned an average of 3.7 sets of PC, ranking at the lowest echelon. In comparison with the year end of 2008, the average of PC sets installed grew for the institutions employing not less than 30 employees. (See Tables 1, 2, and 3; Figure 1, and Result Tables 9, 11, and 12).

At the end of 2009, the saturation rate for PC installation in Taiwan was 73.32%, of which the government administrative agencies, public enterprises, and public research institutions reached 100.00%, while the private sectors reached 72.97%, ranking at the lowest. By industry, the Public Administration and Defense (including Compulsory Social Security) was 100.00%, ranking at the highest, followed by Electricity and Gas

Supply industry at 95.27%, and Information and Communication at 94.61%. By number of employees, it was found that the larger the employment scale was, the higher the saturation rate was. The saturation rate of institutions not less than 30 employees was up to 99.33%, similar to that at the end of 2008. (See Table 2 and Result Tables 1, 3, and 4)

At the end of 2009, the computer set per person at those institutions using computers was 0.63 (sets / person), of which the private schools reached 2.13 (sets / person), ranking the highest, followed by the public schools at 1.54 (sets / person) and the public research institutes at 1.27 (sets / person). By industry, Education Services reached 1.45 (sets / person), ranking the highest, followed by the Arts, Entertainment and Recreation at 1.41 (sets / person). By employment scale, those institutions with more than 200 employees reached 0.75 (sets / person), ranking the highest.

Table 1. The number of PC sets Installed

Unit: set

Item	End of 2009	End of 2008	Change
Total number of PC sets	12,158,717	11,720,358	438,359
Households	7,340,414	6,816,476	523,938
Set/100 households	95.1	90.0	5.1
Authorities, enterprises and schools	4,818,303	4,903,882	-85,579
Average set per thousand persons	525.9	508.8	17.1

Table 2. PC Installation and Use

Unit: number; %

Item	End of 2009	End of 2008	End of 2007	End of 2006	End of 2005
Number of PC sets					
Households	7,340,414	6,816,476	6,464,956	6,149,480	5,621,369
Authorities, enterprises and schools	4,818,303	4,903,882	4,832,544	4,265,805	4,131,356
Saturation rate					
Households	70.48	69.24	67.11	66.09	63.09
Authorities, enterprises and schools	73.32	73.90	76.90	75.80	75.80

Source: Family Income and Expenditure Survey in Taiwan, Kinmen and Lienchiang 2009

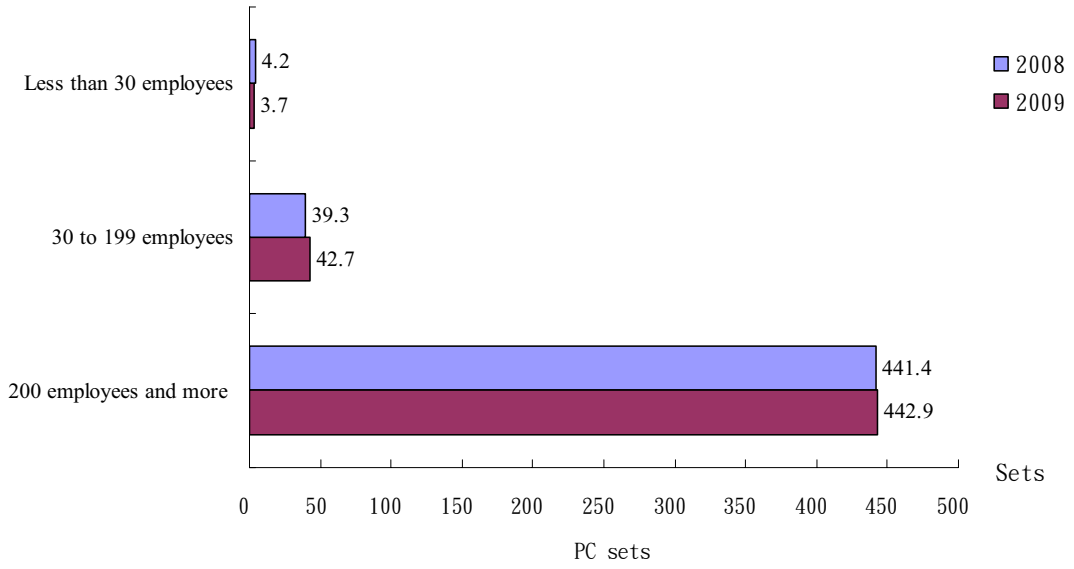
Table 3. PC Installation by Institution

Unit: set

Result / Institution	End of 2009		End of 200	
	Total sets	Average sets	Total sets	Average sets
Total	4,818,303	9.8	4,903,882	10.2
Private enterprises	3,157,462	6.5	3,344,793	7.1
Government administrative agencies	398,189	100.0	384,442	96.7
Public enterprises	146,569	333.1	144,150	323.9
Public schools	687,675	181.2	633,567	167.3
Public research institutions	16,264	318.9	15,902	311.8
Private schools	379,339	1,017.0	347,239	948.7
Private research institutions	32,805	295.5	33,789	291.3

Note: 1. Private enterprises exclude the small one-person entrepreneur and partnership (same to all result tables).
2. Governmental administrations exclude military units (same to all result tables).

Figure 1 PC Installations by Number of Employees



🗁 The number of physical servers installed in Taiwan was 309,000 sets, with an average of 4.0 sets in every household and a saturation rate of 11.44%

At the end of 2009, the number of physical servers installed in Taiwan was 309,000 sets, with an average of 4.0 sets in every household and a saturation rate of 11.44%. Regarding the average number of servers in use, the majority (56.37%) of households set up only one server. By institutions, the private schools, public schools, public enterprises, public research institutions, had a saturation rate over 90%, while the private enterprises had the lowest saturation rate at 10.57%.

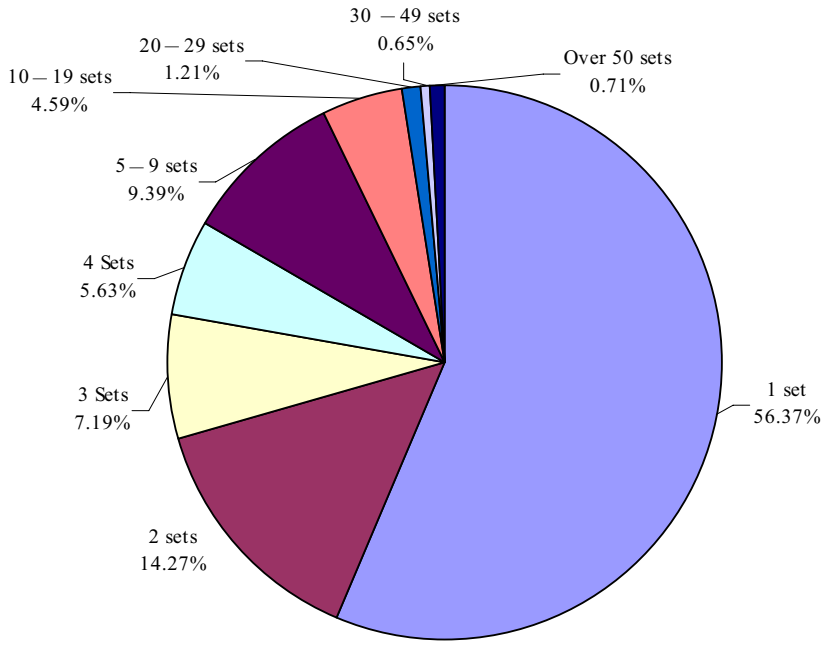
By employment scale, the institutions with more than 200 employees had the highest saturation rate at 95.39%, followed by those with 30 to 199 employees at 64.90%, while the institutions with less than 30 employees had the lowest saturation rate at 7.81%. (See Table 4, Figure 2)

Table 4. Server Installation by Institution

Unit: number; %

Result / Institution	End of 2009			End of 2008		
	Number of total sets	Average sets	Server saturation rate	Number of total sets	Average sets	Server saturation rate
Total	308,772	4.0	11.44	319,608	2.5	19.53
Private enterprises	235,224	3.4	10.57	250,869	2.1	18.76
Governmental administrations	27,125	11.5	59.18	25,865	11.1	58.57
Public enterprises	8,142	20.5	90.45	7,901	21.1	84.04
Public schools	21,110	6.0	92.57	19,271	5.5	92.76
Public research institutes	1,795	39.0	90.20	1,468	32.6	88.24
Private schools	12,604	34.4	97.86	11,433	31.5	99.18
Private research institutes	2,772	34.7	70.18	2,801	35.0	68.97

Figure 2 Server Installations



🗁 77.23% of the servers were installed with Windows operating system, still accounting for the majority but reducing by 1.21% when compared with that at the end of 2008, while Linux increased by 1.26%.

At the end of 2009, 77.23% of the servers were installed with Windows operating system, grasping the largest percentage , followed by Linux at 13.79%, and UNIX at 6.37%. Compared with those at the end of 2008, Windows decreased by 1.21%; Linux increased by 1.26 %; UNIX increased 0.96 %; others decreased by 1.01 %. By institutions using the Windows server operating system, the public enterprises accounted for 81.16%, ranking the highest, followed by government administrative agencies at 80.51%. The percentages of Windows server operating systems in the public research institutions and public schools dropped to 55.04% and 56.40%, respectively while those of Linux climbed to 37.10% and 31.06%, respectively. (See Table 5, Figure 3)

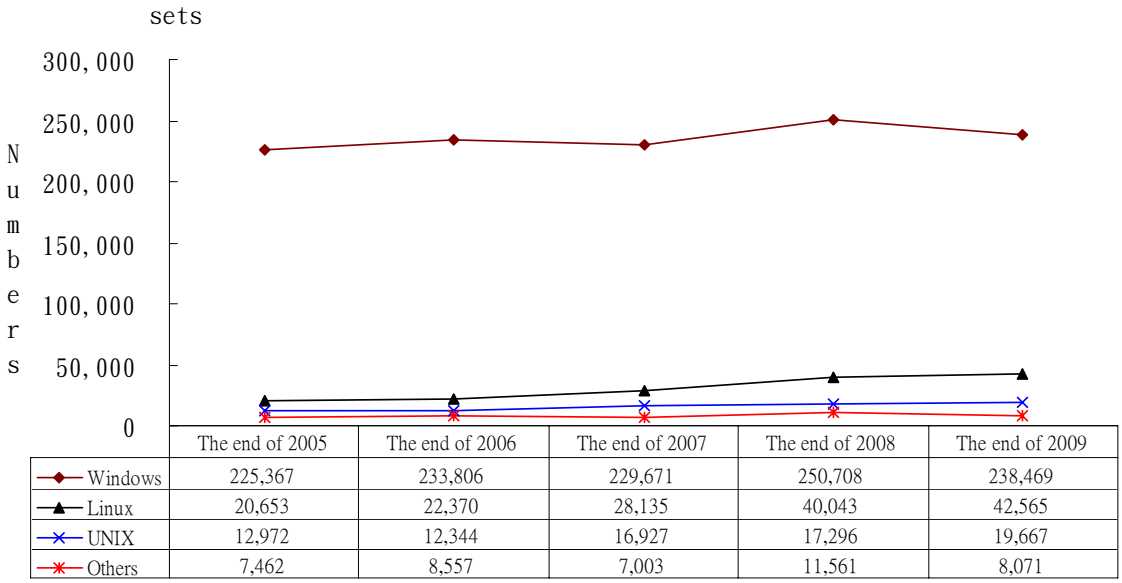
Table 5. Server Operating System

Unit: number; %

Result / Operating system	End of 2009		End of 2008	
	Number of total sets	Percentage	Number of total sets	Percentage
Total	308,772	100.00	319,608	100.00
Windows(note)	238,469	77.23	250,708	78.44
Linux	42,565	13.79	40,043	12.53
UNIX	19,667	6.37	17,296	5.41
Others	8,071	2.61	11,561	3.62

Note: Windows contains Windows NT, Windows2000 & Windows2003

Figure 3. Growth of Server Operating System



	The end of 2005	The end of 2006	The end of 2007	The end of 2008	The end of 2009
Windows	225,367	233,806	229,671	250,708	238,469
Linux	20,653	22,370	28,135	40,043	42,565
UNIX	12,972	12,344	16,927	17,296	19,667
Others	7,462	8,557	7,003	11,561	8,071

The household computer saturation rate reached 70.48%, with 95.1 sets per 100 households, while Internet connection rate reached 93.62%. All the numbers and rates grew slightly higher than those at the end of 2008.

At the end of 2009, the computer saturation rate in the household sector reached 70.48%, with 95.1 sets per 100 households. Compared with those at the end of 2008, both slightly increased by 1.24 % and 5.1 sets. By region, the home computer saturation rates were 78.56% in the northern Taiwan, ranking the highest, followed by the central region at 65.07%. In terms of computer sets owned in every 100 households, the highest ranking was the northern Taiwan, where people had 112 sets of computers per 100 households, showing that every family owned an average of more than 1 computer, followed by Kinmen and Matsu at 86.7 sets of computers per 100 households.

Among the households using PC, the Internet connection rate reached 93.62% at the end of 2009, growing by 0.91 % over that at the end of 2008. All the Internet connection rates were more than 90% in every region of Taiwan, of which the northern region reached 94.56%, ranking the highest, followed by the southern region at 93.22%. The eastern region ranked the lowest in all aspects, such as the saturation rate, the number of computer sets owned by per 100 households, and the Internet connection rate, which increased by 5.81 %, 8.6 sets, and 4.16%, respectively, when compared with those ratios at the end of 2008. In terms of growth rates, the eastern region ranked the highest in Taiwan, however. (See Tables 1 and 6)

Table 6. Household PC Use

Unit: household; %; set

Item / Region	Number of households	Household computer saturation rate (%)		Number of set per 100 households (set)		Percentage of internet connection (%)	
		End of 2009	End of 2008	End of 2009	End of 2008	End of 2009	End of 2008
Total	7,720,811	70.48	69.24	95.1	90.0	93.62	92.71
Taiwan Area	7,688,014	70.51	69.27	95.1	90.0	93.62	92.70
Northern Region	3,549,828	78.56	77.47	112.0	105.9	94.56	94.53
Central Region	1,745,968	65.07	64.05	82.8	78.9	92.03	89.02
Southern Region	2,193,940	63.59	62.43	80.7	76.8	93.22	92.39
Eastern Region	198,278	50.75	44.94	61.0	52.4	91.36	87.20
Kinmen-Matsu Area	32,797	63.71	62.78	86.7	80.0	92.56	96.98

Source: Family Income and Expenditure Survey in Taiwan, Kinmen and Lienchiang 2009, DGBAS, EY

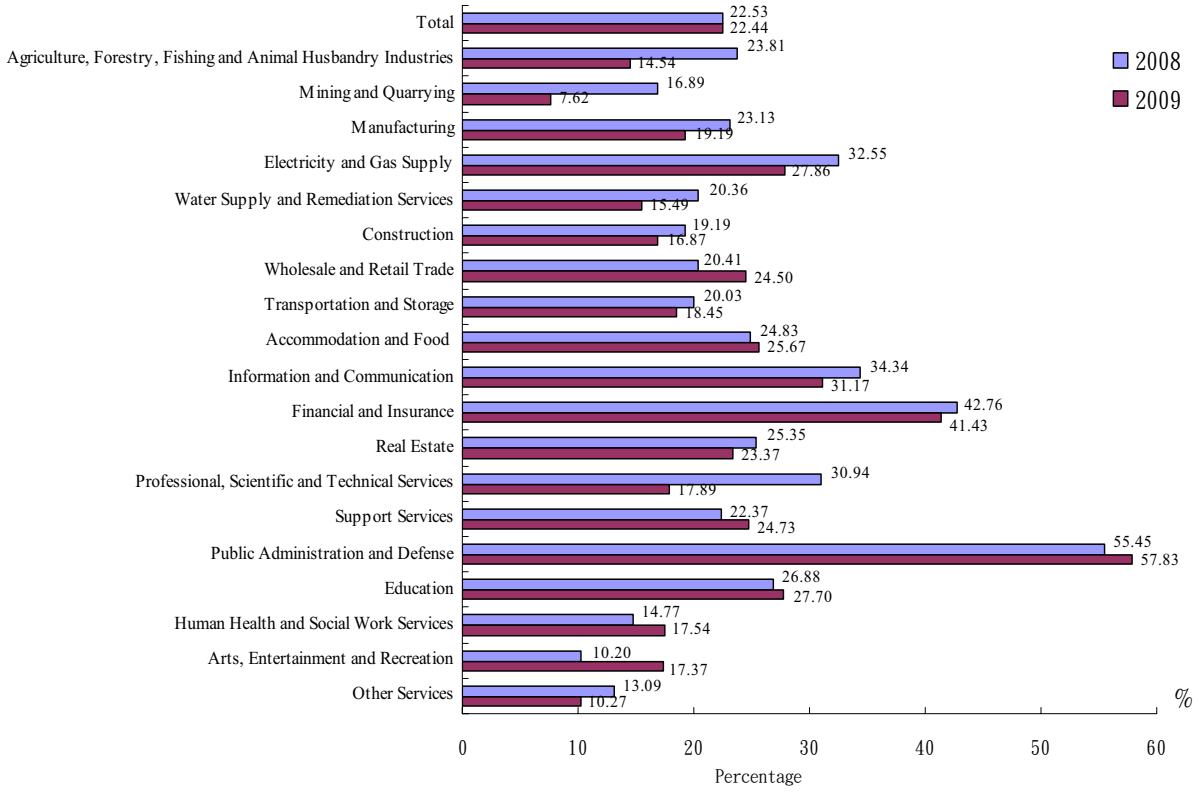
Note: Percentage of internet connection (%) = number of households with internet connection / number of households using computer *100%

2. Overview of E-Commerce Transactions

🗁 The total number of units engaged in e-commerce transactions was 110,400, accounting for 22.44% of the units using computer. The difference was not significant when compared with that of 2008.

At the end of 2009, the total number of units engaged in e-commerce transactions (excluding C2C) was 110,400, accounting for 22.44% of the units using computer, decreasing by an insignificant 0.09%, when compared with that of 2008. Through a comprehensive analysis on e-commerce transactions by industry, the Public Administration and Defense (including the Compulsory Social Security) reached 57.83%, still holding the top place, followed by Financing and Insurance at 41.43% and Information and Communication at 31.17%. When compared with 2008 in terms of growth rates, the Arts, Entertainment and Recreation and the Wholesale and Retail Trade increased considerably by 7.17% and 4.09 %, respectively while the Professional, Scientific and Technical Services decreased by 13.05%, suffering from the largest decline in all the sectors. (See Figure 4)

Figure 4. E-Commerce Online Transactions by Industry



🗁 There were 51,100 computer users conducting online sales for goods or services in 2009. However, 42.62% reported that their online sales amounts contributed less than 1% to their total sales turnover.

There were 51,100 computer users conducting online sales for goods or services in 2009, accounting for 10.39% of the computer users at the year end and representing a decrease of 1.33 % in contrast with that of 2008. By Industry, the Financial and Insurance sector ranked the highest at 38.54%, followed by Information and Communication at 16.92%. Compared to 2008, the Arts, Entertainment and Recreation enjoyed a 4.02 % growth rate, ranking the highest, and the Support Services sector enjoyed the second place by increasing 3.70 %. In terms of online sales amounts, the majority was less than 1% of their total sales turnover at 42.62%, ranking the highest and representing a decrease of 4.36 % in contrast with 2008. On the hand, 9.63% reported that their online sales accounted for 25% or more of their total sales turnover, representing a decrease of 3.28% from 2008. (See Table 7, Figure 5)

Figure 5. E-Commerce Online Transaction Sales Ratio

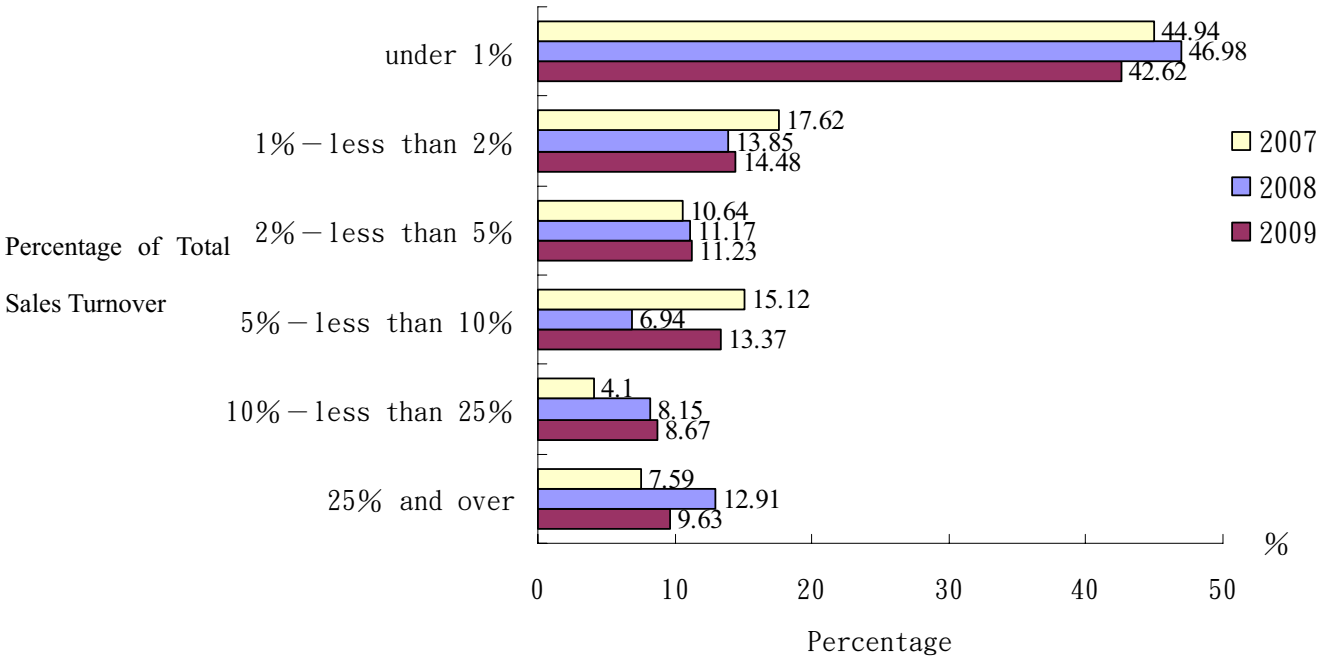


Table 7. E-Commerce Online Sales by Industry

Unit: number; %

Transaction / Industry	2009			2008		
	Number of units using computer at the year end	Number of units conducting online sales for goods or services	Percentage	Number of units using computer at the year end	Number of units conducting online sales for goods or services	Percentage
Total	491,925	51,098	10.39	482,583	56,547	11.72
Agriculture, forestry, fishing and animal husbandry	626	65	10.38	672	84	12.50
Mining and quarrying	315	7	2.22	302	7	2.32
Manufacturing	89,507	7,770	8.68	88,984	10,397	11.68
Electricity and gas supply	262	6	2.29	212	8	3.77
Water supply and remediation services	2,298	81	3.52	1,901	147	7.73
Construction	41,920	1,876	4.48	43,311	2,371	5.47
Wholesale and retail trade	194,189	22,683	11.68	186,067	22,840	12.28
Transportation and storage	13,981	1,650	11.80	10,790	1,086	10.06
Accommodation and food services	10,438	1,716	16.44	17,577	2,883	16.40
Information and communication	10,515	1,779	16.92	9,515	1,762	18.52
Finance and Insurance	15,090	5,816	38.54	14,607	5,567	38.11
Real estate	10,456	1,530	14.63	10,437	1,643	15.74
Professional, scientific and technical services	31,388	2,014	6.42	27,858	3,420	12.28
Supportive services	12,949	1,931	14.91	11,748	1,317	11.21
Public administration and defense (note)	2,369	173	7.30	2,366	139	5.87
Education	16,643	682	4.10	17,353	933	5.38
Human health and social work services	22,984	421	1.83	22,484	789	3.51
Art, entertainment and recreation	4,289	375	8.74	5,571	263	4.72
Other services	11,706	523	4.47	10,828	891	8.23

Note: Compulsory social security included

🗁 There were 85,600 units using computers to procure goods or services online, representing an increase of 1.48% over 2008 in terms of computer users.

There were 85,600 **units** using computers to procure goods or services online in 2009, accounting for 17.41% of the total computers users at the year end and also representing an increase of 1.48 % over 2008. By institution, 82.35% of the public research institutions conducted their procurements online, grasping the first place, followed by the public enterprises at 70.23%, while the private enterprises ranked the lowest at 16.77%. In terms of growth rates, when compared to those of 2008, the public schools enjoyed a 6.64% increase, ranking the highest, and the private research institutions had an increase of 4.02%, grasping the second place. (See Table 8 and Result Table 29)

Table 8. E-Commerce Online Procurement by Institution

Unit: number; %

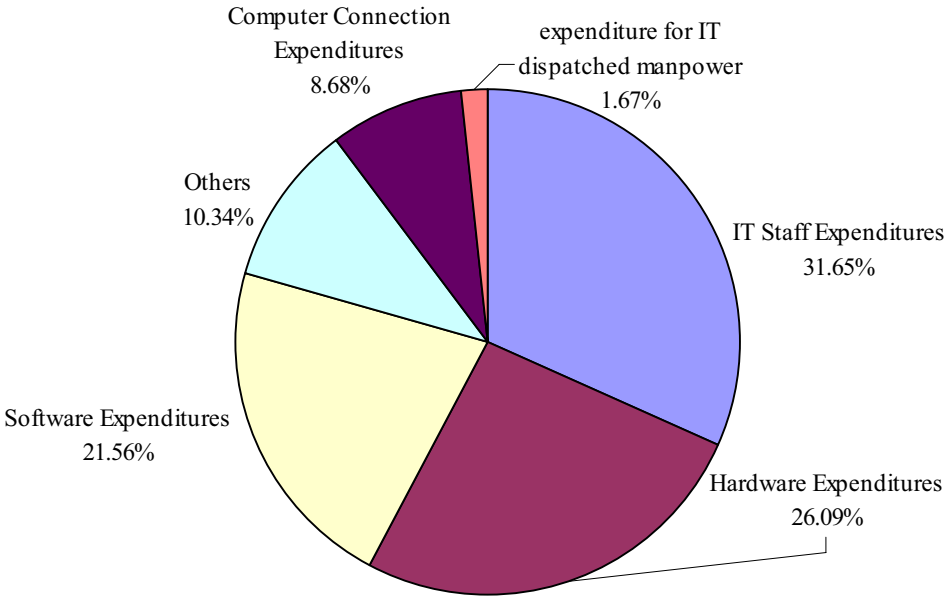
Transaction / Institution	2009			2008		
	Number of units using computer at the year end	Number of units conducting online procurement for goods or services	Percentage	Number of units using computer at the year end	Number of units conducting online procurement for goods or services	Percentage
Total	491,925	85,621	17.41	482,583	76,892	15.93
Private enterprises	483,173	81,025	16.77	473,843	72,621	15.33
Government Administrative	3,981	1,792	45.01	3,975	1,722	43.32
Public enterprises	440	309	70.23	445	315	70.79
Public schools	3,796	2,342	61.70	3,787	2,085	55.06
Public research institutions	51	42	82.35	51	42	82.35
Private schools	373	74	19.84	366	73	19.95
Private research institutions	111	37	33.33	116	34	29.31

3. IT Expenditures

🗁 Total IT expenditure achieved NT$ 192.07 billion, decreasing by 2.85% over 2008. However, expenditure on software and IT personnel grew in percentage over 2008.

In 2009, total IT expenditure achieved NT$ 192.07 billion, decreasing by 2.85% over 2008, in which the private enterprises significantly reduced their IT expenditure by approximately 4.54%. The entire IT expenditure constituted 1.5% of the gross domestic product (GDP), slightly lower than that of 2008. In terms of IT expenditure / total expenditure by industry, the first three places went to the manufacturing sector at 21.29%, the Financing and Insurance at 18.57% and the Wholesale and Retail Trade at 17.89%. The three industries with the ranking in IT expenditure was the same as last year, showing that they have much more expenditure than the rest of industries. When judged by average IT expenditure in each sector, the first place went to the Public Administration and Defense, which spent about NT$8,060,000 each unit. The second place went to the Electricity and Gas Supply at about NT$497,000 each unit. The third place went to the Finance and Insurance at about NT$2,360,000 each unit. The three industries have high degree of Informatization, so IT spending is also high. On the expenditure structure, the top three expenditures were IT Personnel at 31.65%, Hardware at 26.09%, and Software at 21.56%. These three grasped 79.30% of the total expenditure in 2009. Each of them grew higher than that of 2008. (See Figure 6)

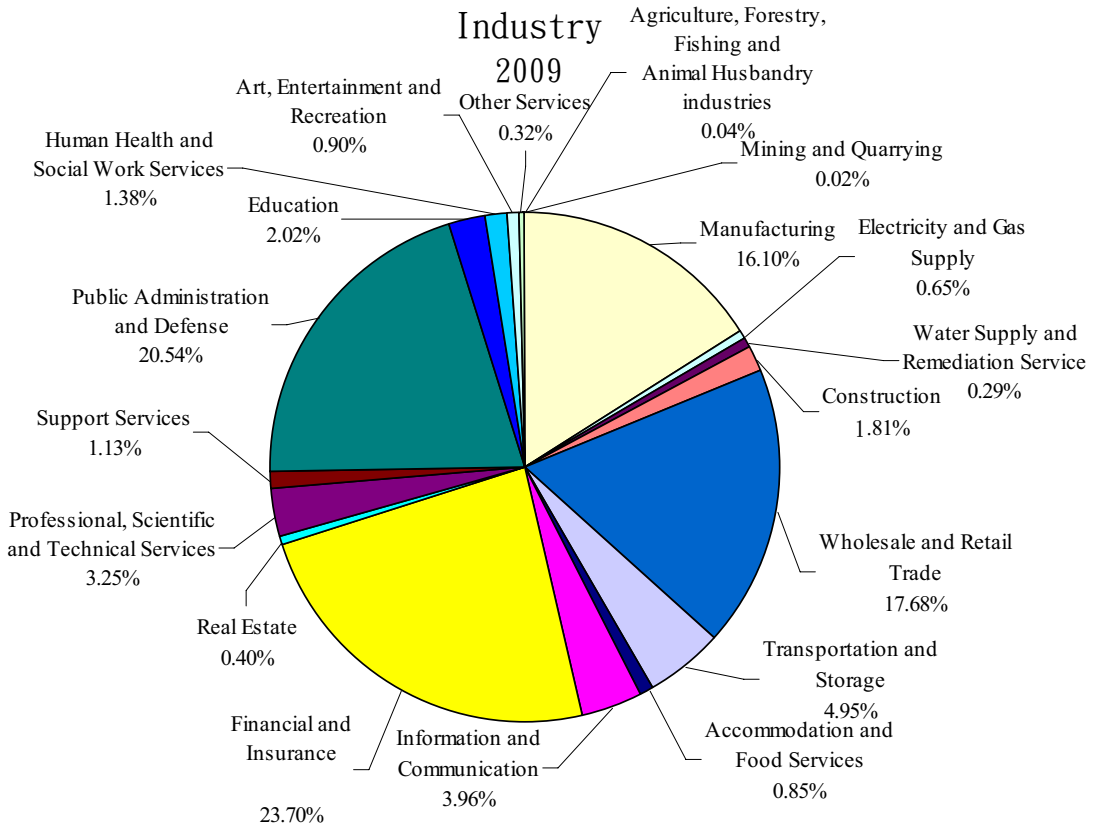
Figure 6. Framework of IT Expenditures 2009



🗁 Expenditure on IT outsourcing services achieved NT$28.15 billion in 2009, accounting for 14.65% of total IT expenditure, increasing slightly over 2008.

Expenditure on IT outsourcing services achieved NT$28.15 billion in 2009, accounting for 14.65% of total IT expenditure, increasing slightly from 13.85% in 2008. In general, the government administrative agencies spent more than one-third (34.66%) of their IT expenditure in outsourcing services. When judged by industry, the top three were Financial and Insurance at 23.70%, Public Administration and Defense at 20.54%, and the Wholesale and Retail Trade at 17.68%. These three industries accounted for 61.92% of total IT outsourcing expenditure, indicating that they had a high demand of outsourcing services. (See Figure 7)

Figure 7. IT Outsourcing Services Expenditures by Industry 2009



4. Overview of IT Staffs

🗁 There were 31,000 institutions hiring IT staffs or using IT dispatched manpower, accounting for 6.25% of units using computer.

There were 30,751 institutions hiring IT staffs or using IT dispatched manpower in 2009, accounting for 6.25% of the total units using computers. Among them, there were 8,761 institutions employing IT outsourcing services, accounting for 1.78% of the total units using computers. On the average, each of them demanded 0.61 persons to provide IT outsourcing services each month. By institutions, 41.18% of the public research institutions used IT outsourcing services, ranking the highest, followed by public enterprises at 15.23%, while only 1.64% of the private enterprises used IT dispatched manpower, ranking the lowest. (See Table 9)

Table 9. IT Staffs in Units or IT Dispatched Manpower by Institution

2009

Unit: number; %

Result / Institution	Number of units using computer at the year end	Units using IT dispatched manpower or with IT employees at the year end		IT employees in units at the year end		Using IT dispatched manpower at the year end	
		Number of units	Percentage	Number of units	Percentage	Number of units	Percentage
Total	491,925	30,751	6.25	23,198	4.72	8,761	1.78
Private enterprises	483,173	28,327	5.86	21,182	4.38	7,906	1.64
Governmental administrations	3,981	1,167	29.31	933	23.44	534	13.41
Public enterprises	440	250	56.82	238	54.09	67	15.23
Public schools	3,796	572	15.07	422	11.12	202	5.32
Public research institutes	51	27	52.94	16	31.37	21	41.18
Private schools	373	349	93.57	349	93.57	24	6.43
Private research institutes	111	59	53.15	58	52.25	7	6.31

🗁 There were 90,000 persons employed for IT jobs in 2009. On the average, 13 people per 1,000 employees were engaged in IT activities.

There were 91,191 persons employed for IT jobs at the end of 2009, comprising 1.33% of the total labor force, representing that approximately 13 people per 1,000 employees were IT staffs. Judged by type of institutions, the private research institutions hired on average 58.27 IT staffs per 1000 employees, employees, ranking the highest, followed by the public research institutions at 31.36 IT staffs per 1000 employees, while the public schools used 5.6 IT staffs per 1000 employees, employees, ranking the lowest. (See Figure 8)

Due to a more stringent definition on IT staff in 2009, the total number of IT staffs decreased when compared to that of 2008. The reduction, however, did not affect those institutions employing more than 30 employees. If they were analyzed by industry, standing at the first place was the Service Industry by hiring 48,801 IT staffs, which represented an increase of 346 people from the end of 2008. Ranking on the second place was the Industrial Sector at 22,434 IT staffs, increasing 885 people over 2008, while the Agriculture, Forestry, Fisheries and Animal Husbandry hired only 33 IT professionals, ranking the lowest. (See Figure 9)

F8. The Number of IT Staffs per thousand Employees by Institution

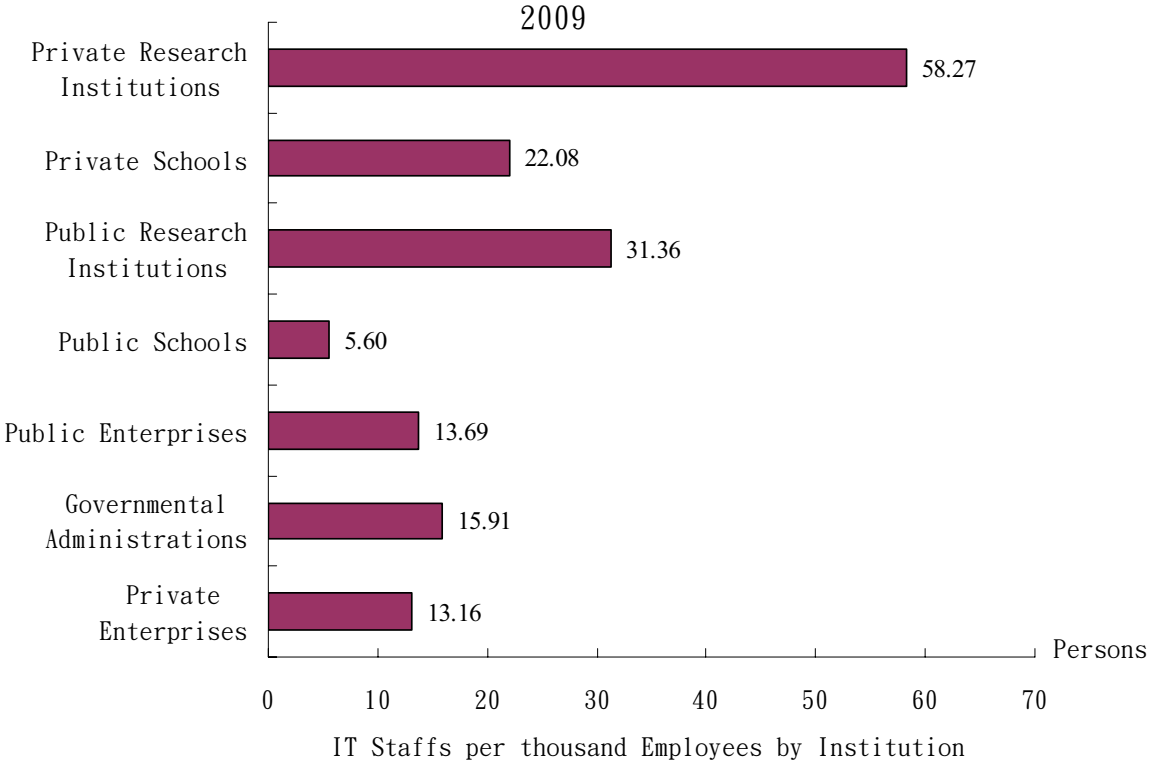
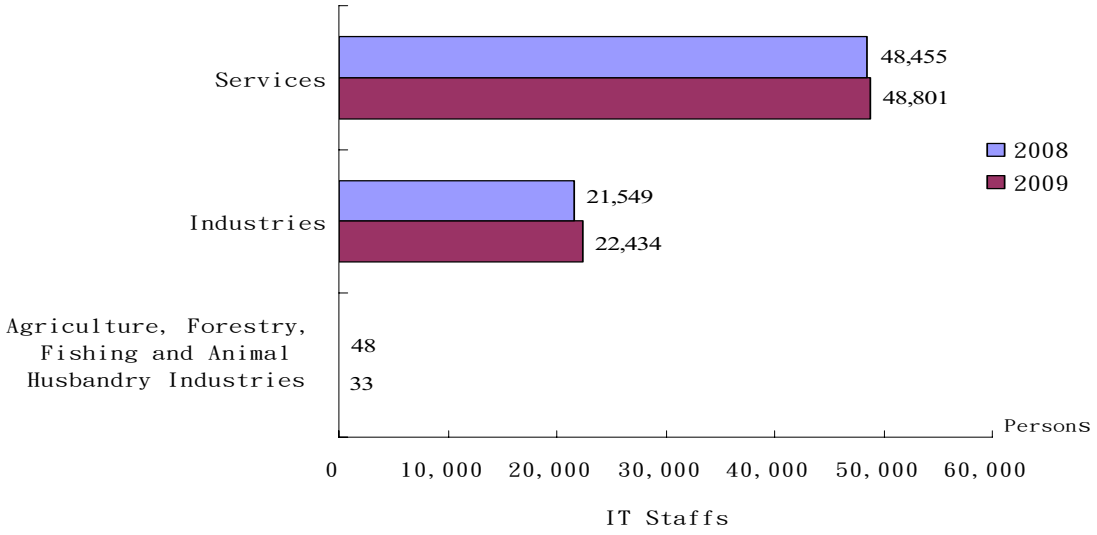


Figure 9. The Number of IT Staffs in units with 30 employees and more by Industry

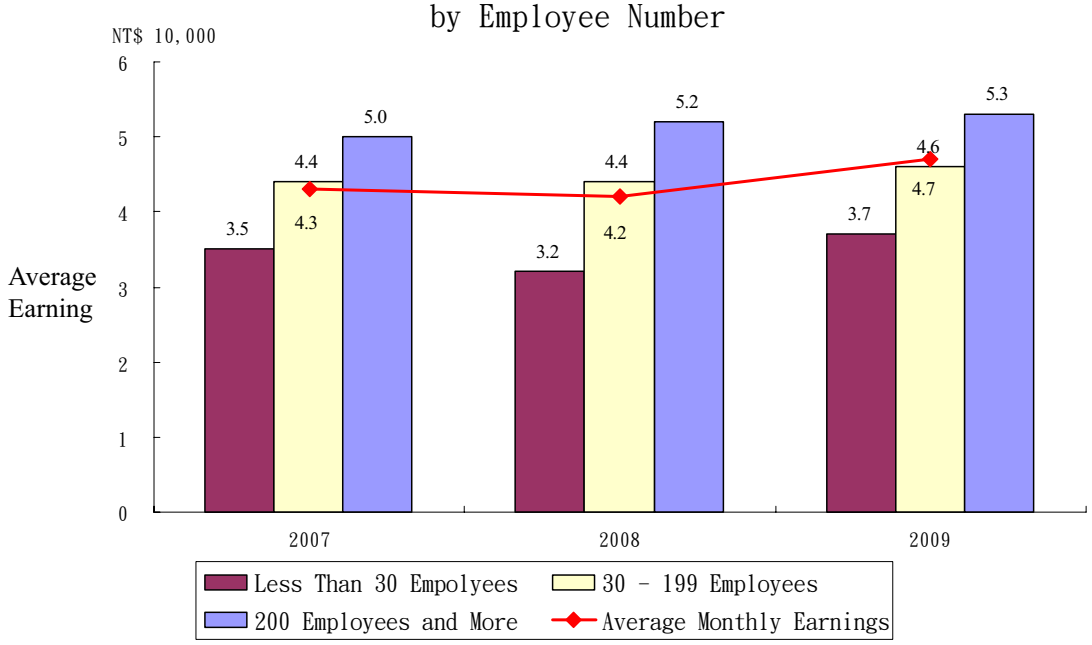


The average monthly salary for IT staffs was NT$47,000

The average monthly salary for IT staff was NT$47,000 in 2009, which slightly increased over 2008, because IT staff was re-defined to include only full-time IT staffs in 2009. This increase did not affect the statistics on those institutions hiring more than 30 employees too much. By employee in 2009, IT staffs working for institutions hiring less than 30 persons earned an average monthly salary of NT$37,000 while those working for firms hiring 30 to 199 persons made an average monthly salary of NT$46,000, increasing by NT$2,000 over 2008. On the hand, those hired by institutions with more than 200 people gained an average monthly salary of NT$53,000, representing an increased by NT$1,000 over 2008. (See Figure 10)

Judged by the job duty, the highest were those on management and supervision level by earning an average monthly salary of NT$66,000, followed by the system analysts at NT$52,000 while the others made an average monthly salary of NT$40,000, ranking the lowest.

Figure 10. Average Monthly Earnings for IT Staffs by Employee Number



5. Overview of Information Security

82.81% of units using computers have built up their information security systems, mainly focusing on measures for anti-virus.

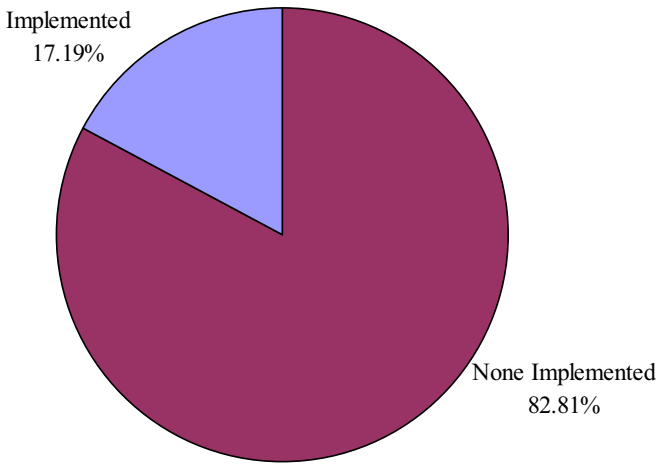
Up to the end of 2009, 82.81% of the units, including governmental administrative agencies, enterprises, and schools, have built up their information security systems, mainly focusing on installing anti-virus software whose installation accounted for 82.49%.

97.01% of those institutions hiring more than 30 employees have already built up computer information security systems, increasing 3.48% over 2008. Key measures that they have adopted were antivirus software at 96.08%, and firewall at 84.39%. Other measures, including spam filtering at 50.13%, intrusion detection and prevention at 30.55%, vulnerability detection (vulnerability scanning) at 19.93%, and information security controls (SOC) at 15.22%, have also gradually become the measures to prevent information security incidents.

Analysis

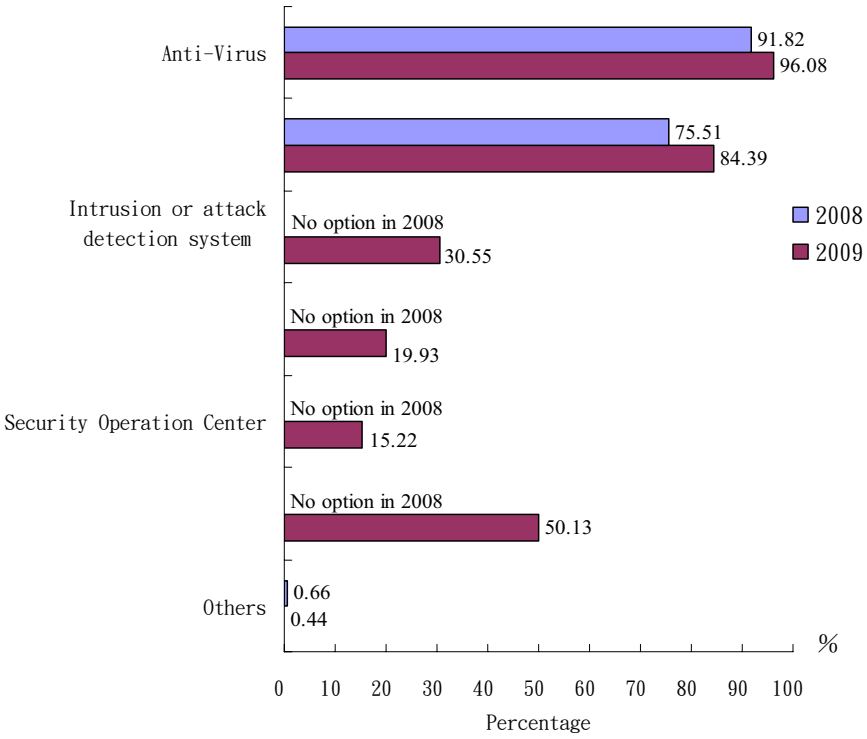
The builduping rate of information security protection systems in every region was gaining popularity increased in every region of Taiwan than 2008.. Compared to 2008, the central region increased by 6.49 % while the southern region grew by 5.99 %. (See Figures 11 and 12)

F11. Information Security Protection
2009



Vulnerability Detection (Vulnerability Scanning)

Figure 12. Type of Information Security Protection Devices used by institution with 30 employees and more



64.49% reported no information security events of units using computer failed to encounter information security events while 35.22% suffered from virus attacks.

35.51% of units of using computer, including government agencies, enterprises, and schools, reported that they encountered information security events, of which 35.22% were virus attacks and 3.07% were planted with backdoor programs.

For institutions hiring more than 30 employees, 45.46% reported that they encountered information security events in 2009, decreasing by 9.31% over 2008. Judged by institutions, 70.90% of the private schools said to have experienced information security incidents. It is obvious that they should enhance their prevention mechanisms. Categorized by information security events, 43.81% were virus attacks,

still the main cause of trouble. Other problems, such as backdoor programs at 6.59%, distributed denial-of-service attacks (DDos) at 2.47%, and data theft or destruction at 1.25%, showed a declining trend.

Analyzed by region, only 17.72% of those in the eastern region experienced information security events. (See Figures 13 and 14)

Figure 13. Encounter of Information Security Events

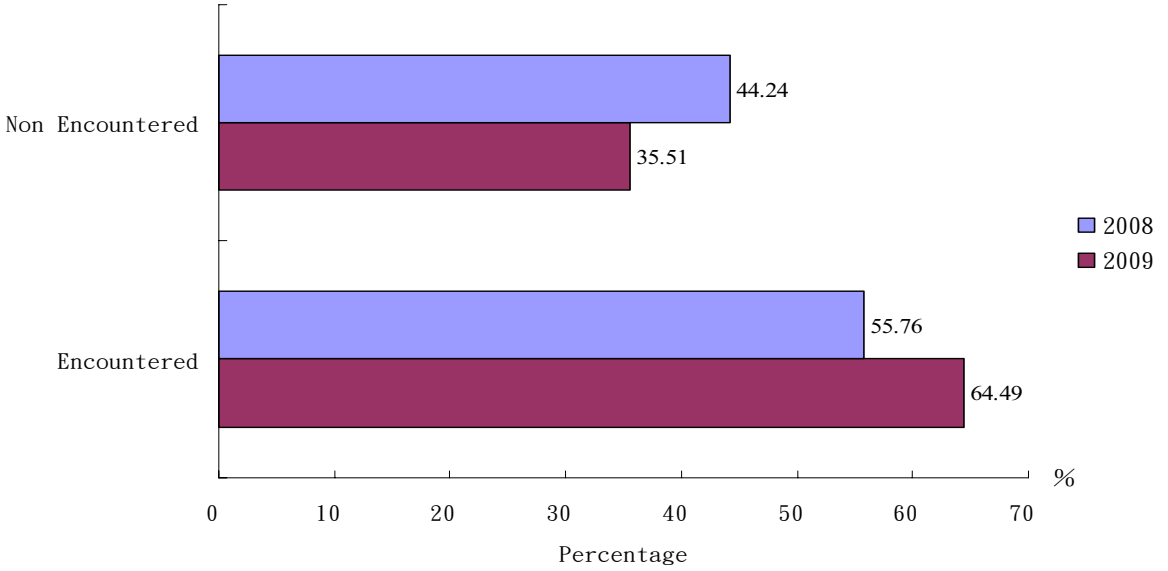
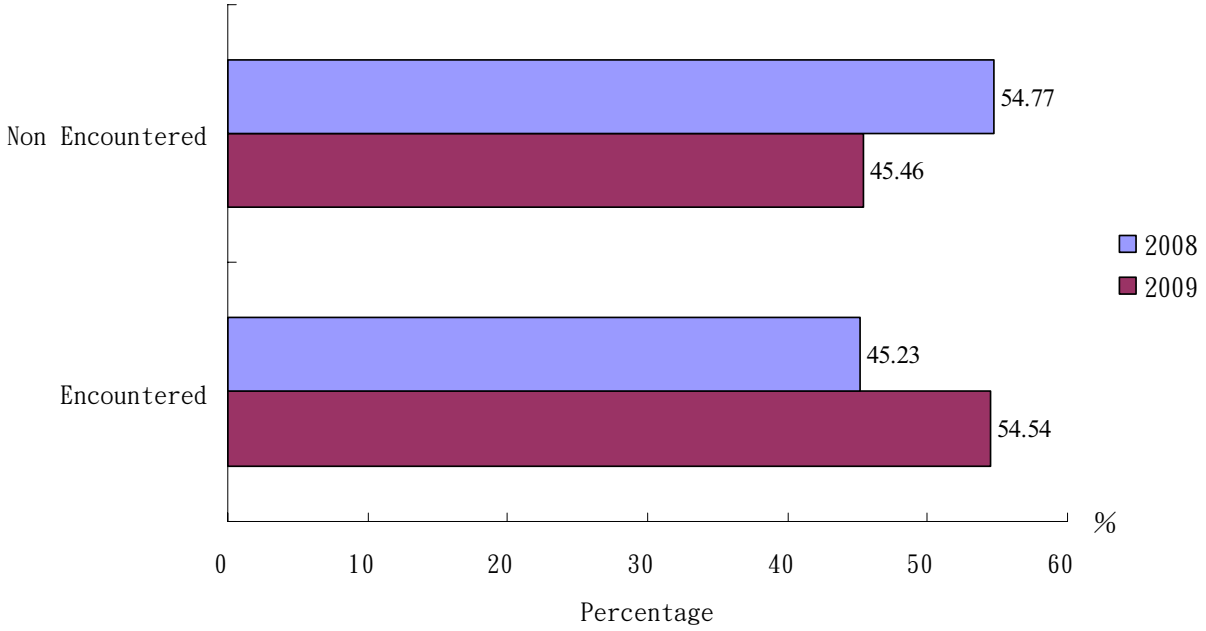


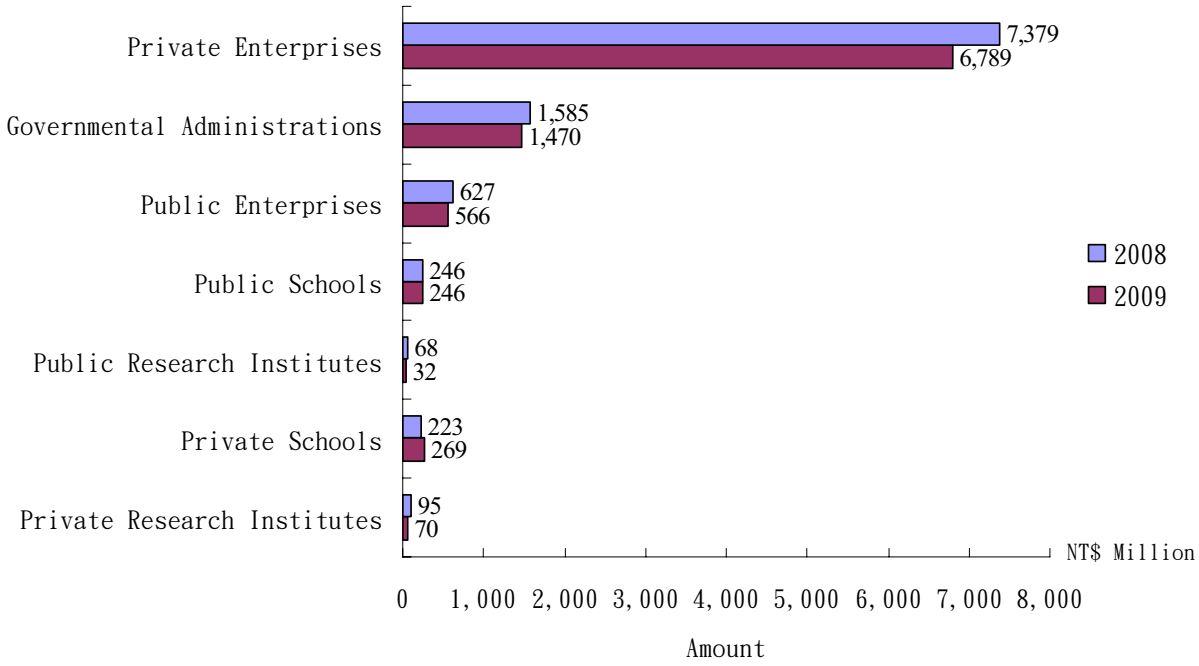
Figure 14. Encounter of Information Security Events in units with 30 employees and more



🗁 Information security expenditure reached NT$9.44 billion, accounting for 4.92% of total IT expenditures.

Information security expenditure reached NT$9.44 billion, accounting for 4.92% of total IT **expenditures** in 2009, decreasing by NT$780 million over 2008. Judged by institutions, the government agencies spent 7.68% of their total IT **expenditures** on information security, ranking the highest, followed by public enterprises at 6.10%. Observed by industry, the Public Administration and Defense (including the Compulsory Social Security) invested 7.71% of their total IT **expenditures** on information security, ranking the highest, followed by the Financial and Insurance at 5.46%. Analyzed by employment scale, the institutions hiring more than 200 employees invested 5.16%, a little bit higher than the other institutions. (See Figure 15)

Figure 15. Information Security Expenditures



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