Final Report

"Determining the Impact of Information and

Communication Technology on Decent Work in Thailand"

Submitted to

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By

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Final Report

On

"Determining the Impact of ICT on Decent Work in Thailand"

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Chapter 1

Introduction

1.1 Background / Justification

The result of the fourth-round workshop of The ILO / JIL Networking of the National Institute for Labor Studies held in 2001, at Beijing, The People Republic of China reveals that the globalization has given the developed countries an increasingly economic advantage on the international free trade and global competition. The advantage, it has been a fruit of the ability and success of ICT production and employing it in operation. Then, their economic problems have been solved and the living quality in their societies has been improved. The developed countries have also gained more on their successes in making of economic influence to the international trade-relation based countries. Voices in the workshop agreed that the globalization and global competition are presently unavoidable and it is a mature time for Asia and Pacific region countries to produce and use ICT for surviving in this competitive world. However an initiation of ICT production and use in this region, are targeted to the economic development than realizing their social impacts, "Decent Work". Work must comprise with economic and social objectives, meaning that income and quality of life go together. For the reason to have experiences and information exchanged among the members of Institute, the issue on "the Impact of ICT on National Decent Work in the country" to be researched by all members was assigned.

Thailand's approach to the application of ICT in social and economic development is laid out in the IT 2010 Policy Framework, which has met with Cabinet approval; and the ICT Master Plan 2002-2006, drawn up in response to rapid technological developments. Both of these policy documents accord with the 9th National Economic and Social Development Plan. The master plan lays out administrative, monitoring, and assessment mechanisms, setting targets and achievement indicators for the overall plan, as well as for each strategy.

However, to date Thailand has not collected information or statistics in regard to ICT on a continuous basis. Any data that has been collected has been done in a piecemeal manner and, in several instances, has been conducted on an ad hoc basis, thus making it difficult and cumbersome to assess the overall ICT. It is thus necessary to conduct studies into approaches to conceptualizing and collecting data and statistics as mentioned in a systematic manner and on the basis of academic principles. After the suitable approach has been identified, it will be possible to propose these approaches and methods for collection to relevant organizations, which can then apply them to the collection of data and statistics for which they are responsible.

This study will provide some information to justify the determining of the impact of ICT on Decent work in Thailand , in the sense of ICT strong consumer and ICT weak or strong producer.

1.2 Objective of the study

This research aims to investigate the ICT penetration in Thailand and analysis the data in context of the opportunity and character of employment, conditions of work, employment security and the right to participate a social dialogue, and economic and social well living at the macro level. The researcher must analyze the

relevant data to determine the impact of ICT on the decent work in Thailand covering 3 efficient topics as follows;

      1. The proliferation of ICT in Thailand

      2. The state of "Decent Work" in the country prior to the advent of ICT in Thailand

      3. The impact of ICT on decent work in Thailand by analyzing the enterprises' Case study.

1.3 Scope and research methodology

      The survey and collection of primary and secondary data was made as following;

      1.3.1 Primary data

          (1) The data collection obtained through the depth interview with government executives as the director of the Thailand Software Park, export-based private sector executives, and executives of Ministry of Labor, Ministry of ICT, Ministry of Industry, Ministry of Commerce, and the Office of National Economic and Social Development, etc. The interview was made further with the administrators of employer associations and labor unions which using and producing of ICT for knowing of the fact and opinion on the employment situation, business complication concerning ICT and the impact of ICT on labor force in an enterprise in terms of "Decent Work".

          (2) The data also collected from enterprise where the ICT is used as users and the enterprises which produced the ICT production. Information is gathered through the provincial labor officers by mean of questionnaire specifying in 3 sizes, large (with 500 employees or more), medium (with 100 - 499 employees) and small (with lower than 100 employees) in accordance with ILO standards and definition. The

survey was covered 3 types of industries selected, a textile and garment production industry, an electronics and computer production (Hardware and Software) industry and a Hi-technology production industry, which 12 enterprise were connected. The questions provided in the questionnaire related to a general information of an enterprise, an actual fact of employees recruitment, obstacles and benefits of ICT used and ICT production and employment condition, etc. (see the details of the questionnaire in annex)

1.3.2 Secondary data

Secondary data obtained via the Desktop Based Study method by studying and collecting data from document, printing, publishing and other information, which gives the fact of types and levels of ICT production in industrial sectors including the use of ICT in government, private sectors and scholastic institutes involved as well. The secondary data was collected with the aim to answer the questions in harmony with the 3 topics provided in the researching terms as following;

(1) The data indicating the rapid increase of ICT production and ICT use in Thailand that exist in the government and private sectors and involving with the quantity increased of investment, cost, budget allocation, human resource providing, volume of working operation and the portion of ICT related operation from the whole cost and income. The data given was taken to the analysis process on the economic production system to find out what the step of national development is. The indicator recognized by international standards as Institute for International Measurement Development- IMD was used in making levels and comparative priority.

(2) The data relating national policy on ICT mentioned in the series of National Plan on Economic and Social Development, especially in the national plan No. 8 and No. 9 including the data in Thailand visioning, in government policy

declarations, specific master and action plans arrangement, in ICT development promotion in using and producing in the government sector, in resolution and encouragement on ICT policy for the private sector, these data is to indicate the interrelation between the movement in the economic sector and the changing of social structure.

(3) The national labor standards provided prior to the production and employing the ICT must be studied to find out whether any statistic indicator used in measuring "Decent Work". In this research, the data was collected from the out put surveyed by the Office of National Statistic, the existing reports of Ministry of Labor, document and information of government units and scholastic institutes including scholars' and other researchers' opinions.

1.3.3 Diagram on specific selected enterprise for case study
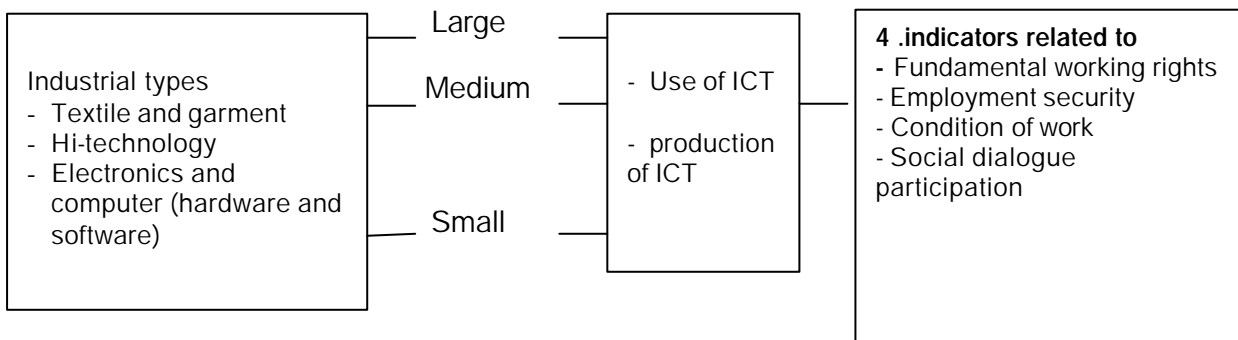
1.4 Definition and meaning of ICT

1.4.1   ICT under the International Labor Organization (ILO)'s Definition

Statement in "the World Employment Report, 2001," ICT defines as following;

(1) The production of ICT and using of ICT are separated. First, the ICT production, it comprises with an assembling product industry and the servicing

industry. The first is as the production of telecommunication parts, computer, semi conductor and electronics accessory etc. The latter is a core of ICT production and means the detail requirements in service concerning telecommunication, computer and software industries that make ICT followed the program put in. Second, the using of ICT, it means working with ICT in every character, which partly of its operation also needs other matters as an efficient component. The industry with an intangible or weightless product likes information technology or knowledge is classified as an ICT-incentive industry and such product is able to produce and purely deliver in a digital form. Seen obviously in a financial industry, a media, an entertainment business, an advertisement undertaking and other industries with the contents, where the modern entrepreneur creates an interrelation between the new contents and some of them are put together. Finally, the connection via a network that spread in distribution (software production)

(2) In the meaning related to the professional in electronics based industry with production and communication of ICT, the ILO Report also defines that ICT is a type of computer based industry under the production codes provided in chapters 30, 32, 64 and 72 of the International Standards of Industrial Classification - ISIC (see the detail in an annex)

1.4.2 The understanding meaning of ICT in Thailand

In Thailand, the ICT meaning is ambiguous and used in both a wide term and a narrow term as following;

(1) In accordance with the description of Dr. KANCHIT MALAIWONG's IT dictionary (an abridged edition, 2543). It states that the IT (Information technology), describing 2 main areas of technologies, is the computer technology and telecommunication technology. The both types of technologies are integrated components in their operation, the first one is facilitated in data collecting

and data processing whist the latter is able to have information and knowledge fast and economically delivered into remote-users. Namely, the IT now is an instrument that transforms the educational, political and cultural appearances and, thus, it is a subject that a man in modern world is undeniably to learn.

(2)   Based on the statistic report of Pritchett, it states that the integrated combination of the progressive of 2 types of technologies leads the technology information increased world-wide. Enlightenment and knowledge also come as its fruits and lead the extent of knowledge expanded, making the technologies moved forward rapidly and progressively. In consequence, the volume of new information technology in previous 30 years is larger than the last 5,000 years accumulation. It, especially, causes the production of information technology and the communication in several forms made with low price and makes the Information Technology and Communication (ICT) more widespread rapidly into micro-domestic users than ever thereof. ICT, subsequently, is an instrument that transforms the educational, political and cultural appearances and for the complete development and the whole balance, thus, it is an undeniable-to-know subject that a man in modern world should learn.

(3) According to the introductory document on product and service issued by The National Electronics and Computer Technology Center (NECTEC) during 1997 - 2000 for disseminating the research, development and engineering information in product and service technology of the internal research and development unit, the document presents the electronics, computer, telecommunication and information results coming out of the strategic master plan. It is to be the framework and direction of the research and development that enabling the production and consumption completely done through the results given. It points out 6 divided groups of ICT as following;

First, the techno-electronics group covers technology, micro-electronics, electro-optics, electronics industry, electronics system and controlling, automatic production, medical instrument and environment matters.

Second, the computer technology group covers the geographic information technology system and area data base, the data house, the computer science and the cluster computing.

Third, the telecommunication technology covers the signal processing technology, the data network parts, the wire and wireless communication systems and the third series mobile phone.

Forth, the information technology group covers the sound and scene technology, the processing of basic-structure research information and the general software.

Fifth, the applied technology covers the agricultural and environmental information technology, the production and energy industries, the service and commerce, the organization administration and management, the education and human resource development, the handicap support, the medicine, the public health and the national security. And,

Sixth, the special project group covers the product, the pattern of matters, the service, technology, and the product experiment and certification.

(4) Stated in the document on "the Framework on Information Technology Policy during 2001 - 2010 in Thailand (IT 2010)" the definition of Information Technology is the product based knowledge or the knowledge in any process operation relied on the hardware and software computers, the communication, and the information collection and implication for making of the efficiency in production, service, administration and operation, and the education and learning. The

advantage in economy, trade, living quality improvement, and population quality will be given.

1.4.3 The assessment of country development level through the type and economic production process of the intensive ICT

There are different levels of ICT impact on the economic and social prosperity in several countries through its application. The differences, in accordance with the summary report of the ILO Workshop on ICT impact held in Beijing are able to level in these following groups;

(1) The group of industrial countries with the progression in the information and communication technologies, and the ability in terms of economic and social matters. Namely, the readiness of the capital and personnel in producing and applying of computer at supper level is existed. This group is able to apply the ICT system for the good of the economy and social interests. It means the national manpower with capacity in the economic and social developing that enabling to produce and develop by them the technology and, also, the national telecommunication infra-structure with efficiency in connecting world-wide is operated that makes people acknowledged the information technology equally regardless of time and place. The efficient production of information technology means the information and statistic data are brought in processing to create the benefit knowledge for human resource, economic, social and environmental development, then, manpower supply and human resource development system are gained also. The countries of this group such as USA, Canada and countries in Europe are strongly in studying of the ICT impact on Decent Work(DW) at macro level while ones in Asia region, Japan and Singapore for example are highly progressive in ICT development.

(2) The group of countries with policy and capacity in proving of the 2 fields of technologies where their social costs are better existed; the application

of technology needs to develop their products for increasing the economic added value. The countries in this group have the high ratio of manpower/labor force with education and capacity, the complete ICT composition in terms of national infrastructure and technology to create new products, and the economic and social investment system. The combination of the technologies, this group is able to be the ICT Consumer or ICT Producer. However, the different levels of ICT buying and producing demands in the countries are found severally. Some are classified in the group so-called the Strong ICT Consumer and the Strong ICT Producer; Australia, Korea, India and Malaysia etc. whereas Thailand enables into the group only in the part of ICT parts production industry.

(3) The group of new developed countries, it has the well economic and social development in providing and buying of ICT. It, however, faces the problem of social investment - the human resource development and the economic investment to provide the 2 fields of technologies - that the assistances of developed countries are needed. In this group, the economic and social costs are currently high. Its countries level in classification is the Strong ICT Consumer but, the software in particular, Weak

ICT Producer that the cost of product is higher than the profit come out. The economic and social capacity in the international competition will expectantly up level to the higher-advantage group if, in the future, the human resource is suitably developed. In this group, the countries such as the Philippines, Indonesia, Vietnam and also Thailand

have the volume of ICT development based products for exporting is higher than the importing of the cost products and technology.

The government of Thailand is currently urging in the policy and the implementation to raise the economic and social capacity building of ICT based industry into the higher-advantage group for international competition. The production

volume and the product cost for exporting, therefore, are higher than the cost product and technology imported in consequence.

(4) The group of less developed countries, it normally poor and outmoded in terms of economy and society where the application and production of ICT for the economic reward is rarely existed. These countries have faced the difficulty based on the under-capacity to gain equally to the progressive countries any information, which leads them classified into the group with the high Digital Divide. The difficulty is consequently an obstacle to the economic and social prosperities in the national and international levels. Many countries in the Asia and Pacific region such as Nepal, Pakistan and Sri Lanka etc. are classified in this group.

1.4.4 In this document, "ICT" means all industries and occupations mention forgoing, which the impact of ICT application and production in the industrial enterprises in Thailand were studied. The definition of the information and statistic is followed the Industrial Standards Classification (Thailand), 2001 and also to the Occupational Classification Standards (Thailand), 2001 of the Department of Employment, Ministry of Labor, which the categories of ICT based industry and occupation provided are harmonized with the definitions stated in the ILO World Employment Report, 2001. Number of ICT enterprises and employees are supplemented in the Table No. 1.1 - 1.5, they are used as the framework of this study.

TABLE 1.1   **Number of ICT Related Enterprise and Employees by Industry , 2003**

(at June,2003)

code	Industry	Size of enterprise							
		1 - 99		100 - 499		500 and more		Total	
		Est.	Emp.	Est.	Emp.	Est.	Emp.	Est.	Emp.
30000	Manufacture of office , accounting and computing machinery	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	171	7,735
32100	Manufacture of electronic valve and tubes and other electronic component	661	17,351	220	52,405	147	263,172	1,028	332,928
32200	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy	8	82	-	-	1	700	9	782
32300	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods	9	115	-	-	-	-	9	115
64000	Post and telecommunications	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,754	105,233
72000	Computer and related activities	473	5,460	8	1,341	1	730	482	7,531
	??s							3,453	454,324

Source: Department of Labor Protection and Welfare, Ministry of Labor

TABLE 1.2 **The Employment Situation and Unemployment in whole Kingdom ,**
in November 1999-2003

(Unit : 1,000,000 persons)

Situation / year	1999	2000	2001	2002	2003
Total Population	**62.00**	**62.60**	**63.13**	**63.66**	**64.24**
1. Over 15 years old population	45.86	46.67	47.28	47.91	48.57
1.1 Total labor force	32.47	33.15	34.15	34.44	35.28
- Employment persons	31.23	31.74	33.19	33.75	34.50
- Unemployment persons	1.05	1.20	0.81	0.51	0.54
- Seasonally inactive labor force	0.19	0.21	0.15	0.18	0.24
1.2 Not in labor force	13.39	13.52	13.13	13.47	13.29
2. Person under 15 years of age	16.14	15.93	15.85	15.75	15.67
3. Unemployment rate	3.25	3.63	2.40	1.50	1.50
4. Labor force participation rate	70.81	71.03	72.23	71.68	72.64

Source: Report of the Labor Force Survey Whole Kingdom (in November) 1999 - 2003 , National Statistics Office

Table   Population by Labour Force Status for Whole Kingdom

In thousands

Labour Force Status	Quarter				Quarter			
	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Total								
Current labour force								
Employed								
at work								
with job but not at work								
Unemployed								
looking for work								
Available looking for work								
Seasonally inactive labour force								
Not in labour force ≥ years of age								
Household work								
Studies								
Too young old or incapable of work								
Others								
Persons under years of age								
Unemployed Rate								

Source: Report of the Labour Force Survey, National Statistical Office

Table   Employed Persons by Occupation for Whole Kingdom   :

In thousands

Occupation	Quarter				Quarter			
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
Total								
Legislators senior officials and managers								
Professionals								
Technicians and associate professionals								
Clerks								
Service workers and shop and market sales workers								
Skilled agricultural and fishery workers								
Craft and related trades workers								
Plant and machine operators and assemblers								
Elementary occupations								
Workers not classifiable by occupation								

Source : Reports the Labour Force Survey   National Statistical Office

TABLE 1.5 Employed persons by level of educational attainment , 2001-2002

(In thousands)

Level of education attainment	2001 (Quarter)				Average	2002 (Quarter)				Average
	1 (Jan-Mar.)	**2** (Apr. -Jun.)	**3** (Jul-Sep.)	**4** (Oct-Dec.)		**1** (Jan.-Mar.)	**2** (Apr. -Jun.)	**3** (Jul.-Sep.)	**4** (Oct.-Dec.)	
None	1,093.1	1,089.7	1,146.0	1,135.1	1,116.0	1,203.1	1,185.5	1,151.0	1,168.3	1,778.0
Less than Elementary	12,183.8	12,432.8	13,527.5	13,106.1	12,812.6	12,492.9	12,612.4	13,489.8	12,979.1	12,893.6
Elementary	6,706.2	7,003.8	7,536.7	7,486.4	7,183.3	7,003.2	7,213.5	7,825.4	7,853.4	7,473.9
Lower Secondary	3,840.2	4,036.3	4,251.2	4,248.0	4,093.9	4,051.8	4,209.8	4,436.9	4,511.1	4,302.4
Secondary	2,957.7	3,160.4	3,159.2	3,300.2	3,144.4	3,114.1	3,324.1	3,437.2	3,324.1	3,299.9
- General Academic	1,923.0	2,088.1	2,067.3	2,205.7	2,071.0	2,055.6	2,281.3	2,341.5	225.4	2,233.5
- Vocational	1,009.6	1,054.0	1,070.0	1,073.5	105,108.0	1,041.9	1,029.4	1,078.9	1,052.6	1,050.7
- Teacher Training	25.2	18.4	21.9	21.0	21.6	16.6	13.4	16.8	16.1	15.7
Higher Level	3,618.3	3,576.8	3,773.1	3,719.3	3,671.9	3,791.9	3,705.1	3,826.5	3,923.1	3,811.7
- Academic	1,737.2	1,708.0	1,814.1	1,786.7	1,761.5	1,844.7	1,800.3	1,866.0	1,940.7	1,862.9
- Higher Technical	1,117.2	1,106.3	1,170.1	1,154.3	1,137.0	1,169.7	1,154.8	1,224.8	1,222.5	1,193.0
- Teacher training	763.8	762.5	788.8	778.4	773.4	777.5	750.0	735.7	759.9	755.8
Others	9.4	10.9	13.7	15.4	12.4	9.9	17.1	21.8	17.0	16.5
Unknown	36.0	77.5	76.4	89.9	70.0	101.2	84.9	73.8	84.9	86.2
Total	30,444.7	31,388.2	33,483.7	33,100.4	32,104.3	31,767.9	32,352.3	34,262.4	33,060.9	33,060.9

Source: Report of the Labor Force Survey Whole Kingdom 2001-2002, National Statistical Office.

Chapter 2
The Proliferation of ICT in Thailand

At present ICT is progressively in moving forward and causes the economic and social changing in order to leap over the production weakness and build the labor productivity through ICT application. In Thailand, the identification of ICT dissemination is the policy and vision making with the aim that the access of public to government sector is easily and rapidly regardless of time and place, which not only the people habitat in Thailand but also Thai around the world are given the state's information services. Even though the ICT is now known by every group in Thailand, the information collection and documentation point out the economic expansion and the better quality of social changing through benefits of ICT are irresponsible to any of the government's unit. The objectives of this study mostly concern and cite that ICT application will leads the overlapping and the digital divide of urban and remote public more increased.

The study in this chapter aims to contemplate the economic impact through the expansion of ICT, which 2 groups of relevant labor force are divided. First, the group with application of ICT, it has the objectives to improve the work and develop the human resource through ICT application for enabling more efficiency to access the sources of information. Instead of the scale, its purpose focuses on speed of application thus; the ICT used labor force should be personnel with the ICT knowledge either on information technology or communication. On the other hand, the group with ICT production, it means the industrial group producing ICT either in terms of hardware or software that the macro and micro economic added value is brought into account. It is the growth of gross national product and the income increased of an enterprise and labor force employed in such ICT industries. Based on the study of data collected in Thailand, it is found that there is the serious trouble in knowledge processing on the ICT application and production because of the small volume of data

collection that differed and overlapped in the meaning, and some also are collected for internal using merely. To make the clear picture of the dissemination of ICT in Thailand, This study refers to the document namely "Thailand ICT Indicators" which has been jointly worked by The National Electronics and Computer Technology Center (NECTEC), The National Science and Technology Development Agency (NSTDA), Ministry of Science and Technology (MST) and Ministry of Information and Communication Technology (MICT).

2.1 Use of ICT

2.1.1 ICT users in Thailand are comprised of;

(1) The Government units / organizations, they are the main of ICT users in Thailand. The application is carried out in the manner of eGovernment for

Providing better information services to business and citizen , The Ministry of ICT informs that the government's IT budget has risen continually , the total ICT budget is approximately 3 % of the annual national expenditure. ICT can serve as a tool to leapfrogging the country's development into a knowledge - based society.

(2) The state enterprises, they have ICT used as IT industry and e-industry for the working capacity building.

(3) The private sector, the application of ICT is for the purpose of e-business eindustry and ecommerce, They is made in order to have the work completely reached the goal. This sector comprises of the ICT production and service industries and the ICT application for increasing the efficiency of an organization' operation, rapidly.

(4) The public, they use the personal computer in benefits of the knowledge and educational improvement, and social development through e-Education and e-Society.

2.1.2 ICT Human Resources

The most important factor that will enable ICT to drive economic and social development in the desired direction is the development of the quantity and quality of ICT personnel. Not only must there be sufficient number of skilled personnel, they must also be prepared to act as part of a global drive toward technology development. Furthermore, they must be able to apply this technology appropriately to the type of society in which they are operating. However, the rapid strides currently being made in IT have forced many countries to make urgent adjustments simply to keep up. This has led to an intense demand for IT personnel, both in terms of numbers and in terms of skills, with demand way outstripping supply. The inability to keep pace with these rapid changes will lead to loss of competitiveness and will have a negative impact on current and future economic and social-development projects. According to the study done by NECTEC and Thammasat University the demand for ICT personnel in year 2003 is estimated to be 106,992. However, problems remain in terms of the quality of the personnel with skills that matches the industry's demand
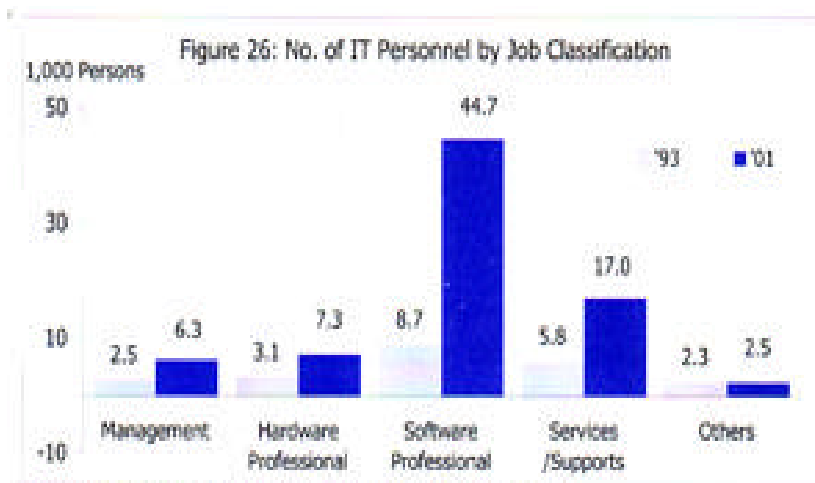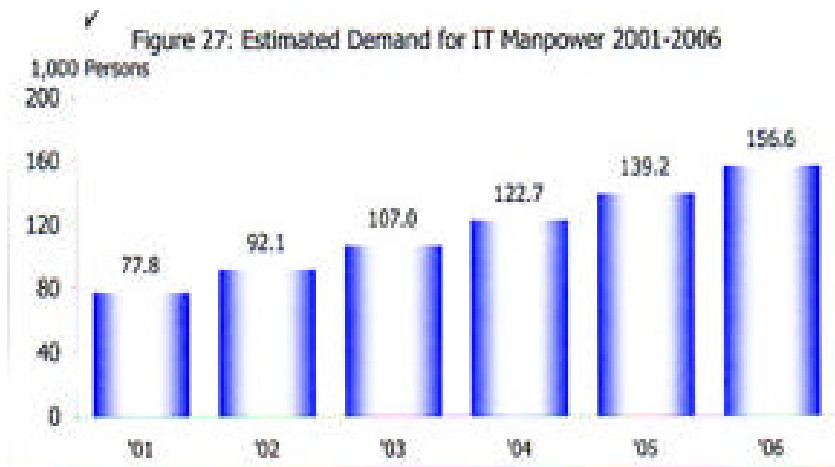
Figure 26: No. of IT Personnel by Job Classification

Source: The Demand for IT Manpower in Thailand, NECTEC, 2001

Figure 27: Estimated Demand for IT Manpower 2001-2006

Source: The Demand for IT Manpower in Thailand, NECTEC, 2001

Figure 28: Estimated Demand for IT Manpower in 2006 by Job Classification
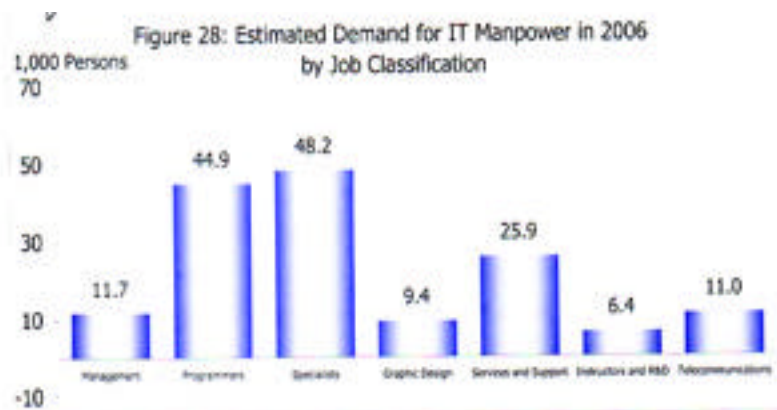
Source: The Demand for IT Manpower in Thailand, NECTEC, 2001
Remarks : Specialists = Data Communications Specialist, Database Specialist, IT Security Specialist, Quality Assurance Specialist, Information Audit Specialist, System Software Support Specialist, Distributed System Specialist and System Integration Specialist

2.1.3 Computer Usage

The National Statistical Office, Ministry of ICT, shows the survey result of the Trade and Service Business Census related to the expansion number of the households with computers, in the year 2001, 2003 and 2004. and also the percentage of business enterprises with computers, as the following figures ;

Percentage of Business Establishments with Computers (2003)

% of Establishments

Source: National Statistical Office

Remarks: *Vicinity includes Pathumthani, Nonthaburi, Samut Prakarn, Samut Sakhon and Nakhon Pathom
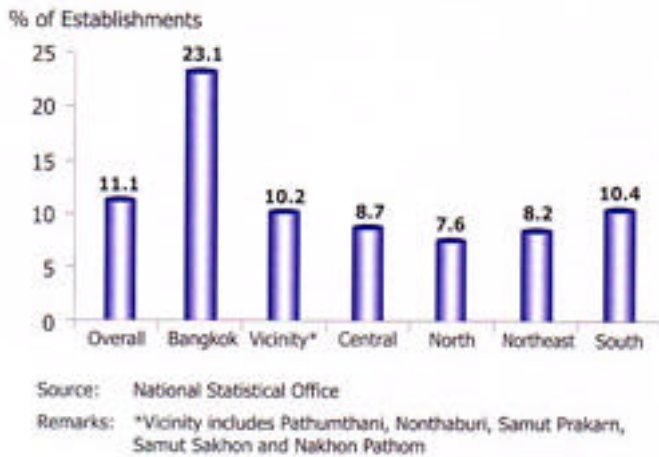
The possession and application of ICT in the year 2001, the replied enterprise (89.5%) reported that working without computer where only 10.5% have work performed by computer, which 40.6% among them have the internet applied for their business running, 9.4 for other purposes and 50% work without the internet. The enterprises that have the computer employed are 7.6% with their business website while mostly (92.4%) are without.

The percentage of enterprises classified in possession and application of computer set
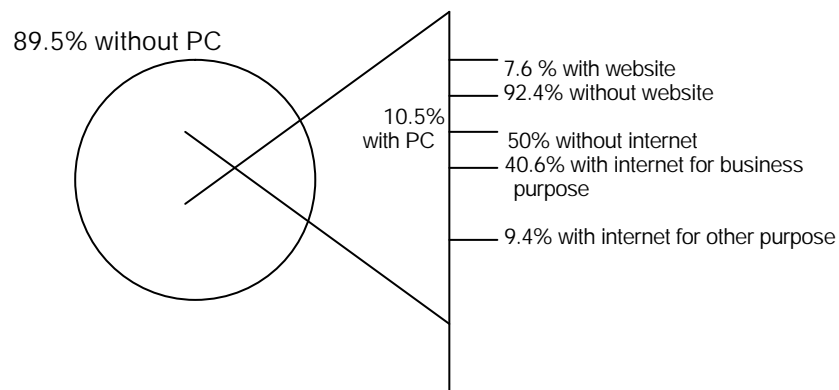
2.1.4 Internet

Internet was first used in Thailand in 1987, when an e-mail communication was used between Prince of Songkhla University's Hat Yai campuses and Melbourne university in Australia, in a cooperation project with Australian government called the International Development Plan (IDP). Asian Institute of Technology (AIT) joined the program and established the early network and .th domain in Bangkok. In 1992, the National Electronics and Computer Technology Center took the central supportive role for the whole academic and research network in Thailand under the name of "ThaiSarn". By 1994, all state-owned universities were online with the Internet. In 1995, the first commercial Internet Service Provider started its operation.

Since 1995, the growth of the international bandwidth of Thailand was more than 200% each year. The popularity of Internet usage in Thailand has soared during the period 1999-2003, with the average annual growth in Internet usage stood at 58.3 percent. There are 13,116 domain names under .th in August 2003. The popularity of the Internet can be attributed to the fact that it is a new form of borderless communication technology offering a diverse range of services, such as the opportunity to keep up with new information, the use of instant messaging (ICQ, MSN) and chat services, the use of Web boards, the search for information, the purchase of goods, the chance to play online games, or to download games, software, and music.

Yet despite the drastic increase in Internet usage, a wide gap has developed between the population of Bangkok and other provinces in terms of Internet Bangkok indicating that people living in upcountries have fewer opportunities to gain access to new information and knowledge via the Internet than do people living in Bangkok and the surrounding areas.

However, efforts are made to expand Internet access, whether through the Thailand School Net Project linking up schools, the enterprise of community telecenters, or the Internet Tambon Project. In addition, the new low-cost computer program initiated by the Ministry of ICT added more than 150,000 new computers to the market, all with the capability to access the Internet. All of these projects will help support the use of ICT and increase the number of Internet users in different regions of the country.

Figure 5: Computer Users, Internet Users, and PC in Household (2003) in Thailand

Source: National Statistical Office (NSO)

Figure 6: Internet Users in Thailand

Sources: ISP Club, NECTEC, NSO
Remarks: * The NSO calculation for the year 2001 and 2003 are based on the number of population at 6 years of age and over.
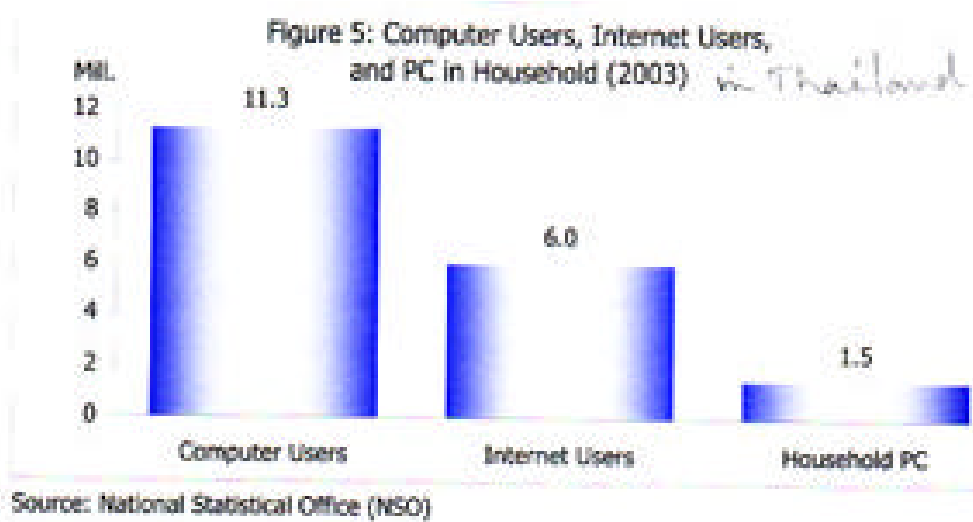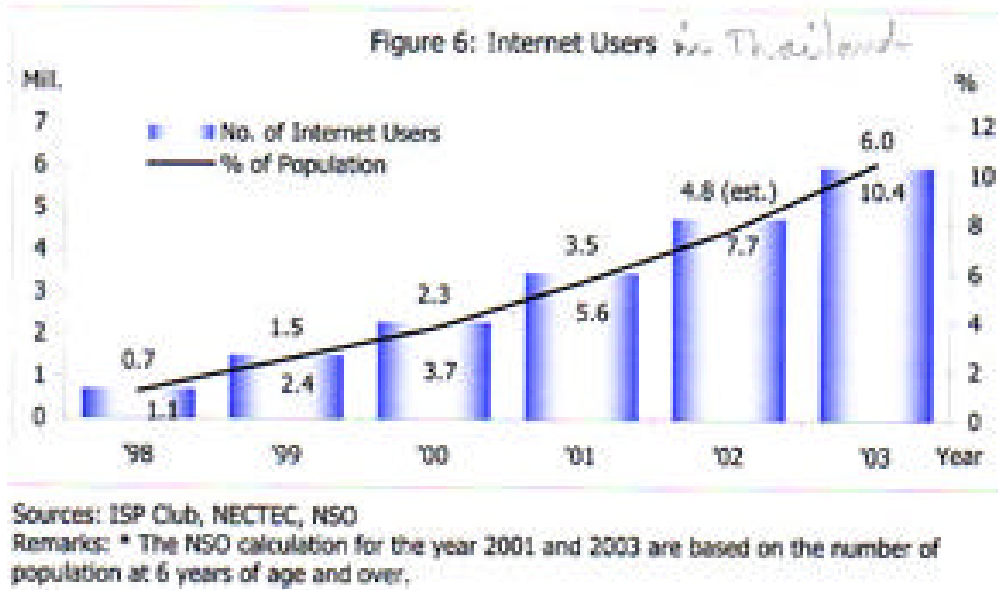
2.1.5 Telecommunications

Telecommunications are a vital factor in linking social communities. Forms of communication change in line with technological progress, and today telecommunications services range from basic telephone services to mobile-telephone, data, and Internet services.

In Thailand, the use of telephone has risen steadily, with the penetration of fixed-line phone equivalent to 13.1 percent of the population in the first quarter of 2003. However, in recent year the growth has been slowed, due to the rapid expansion of mobile-telephone services.

Today the major fixed-line service providers include TOT Corporation Public Company Limited, formerly a state enterprise under the Ministry of Transport and Communications unit it was privatized in 2003. There are also two private companies that have been awarded concessions to operate fixed-line services: Telecom Asia Corporation, which serves Bangkok and its surrounding provinces; and TT&T

Co., Ltd., which operates in the upcountry. As for international telephone services, the Communications Authority of Thailand (now CAT Telecomm Public Company Ltd.) is the sole provider, with the exception of services to countries that share a border with

Thailand, namely Myanmar, Laos, Cambodia, and Malaysia, which are covered by TOT Corporation.

Analog wireless telephone services were introduced to Thailand in 1986, and these early analog services later went digital. There are at present seven mobile telephone service providers as follows:

Digital mobile phone service providers

- Advanced Info Services Plc. (AIS): GSM 900-MHz and GSM 1800-MHz mobile phone,

- Total Access Communication Plc. (DTAC): cellular and digital 1800-MHz mobile phone,

- Thai Mobile Co., Ltd.: 1900-MHz CDMA mobile phone,

- Hutchison CAT Wireless Multimedia Co., Ltd., which has received a concession from the Communications Authority of Thailand to operate digital CDMA mobile phone.

Analog mobile phone service providers

- TOT Corporation Co., Ltd.: 470-MHz or cellular 470 mobile phone,

- The Communications Authority of Thailand: cellular AMPS 800 A-Band mobile phone.

Number of Telephone Lines

Million lines

Note: All data presented in telecom section from 2002 onwards are collected in the calendar year. Previous data are in the fiscal year, which is the 12 months beginning October 1 of the year stated.

Legend: Telephone line capacity | Public pay phone | Fixed line in operation

Source: TOT Corporation Plc. (formerly the Telephone Organization of Thailand)
Remarks: *as of March 2004

Number of Fixed Lines per 100 Inhabitants

Lines

Legend: Telephone line capacity | Fixed line in operation

Source: TOT Corporation Plc. (formerly the Telephone Organization of Thailand)
Remarks: *as of March 2004

Fixed Lines per 100 Inhabitants by Location

Lines

'99 '00 '01 '02 '03 '04** Year

34.1 35.7 38.1 40.7 39.4 38.9

4.3 4.7 5.0 5.2 5.4 5.5

Bangkok and vicinity* The rest of the country

Source: TOT Corporation Plc. (formerly the Telephone Organization of Thailand)
Remarks: *Vicinity includes Pathumthani, Nonthaburi and Samut Prakarn
**as of March 2004

Number of Mobile Users

Million persons %

Postpaid
Prepaid
% of population

'00 '01 '02 '03 '04* Year

2.7 4.4 4.6 4.4 4.6
0.8 1.4 11.7 17.1 18.6

5.6 11.8 34.1 36.3

Source: CAT-Telecom Plc. (formerly Communications Authority of Thailand)
TOT Corporation Plc. (formerly the Telephone Organization of Thailand)
Remarks: *as of March 2004

Number of Mobile Users per 100 Inhabitants by Location (2003)
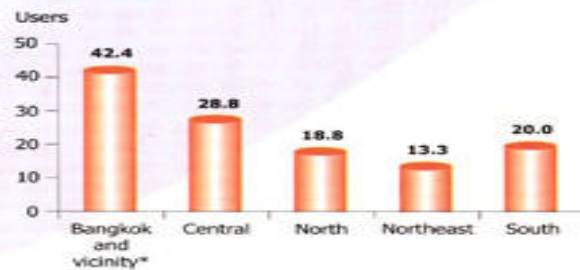
Users

Bangkok and vicinity* Central North Northeast South

42.4 28.8 18.8 13.3 20.0

Source: National Statistical Office
Remarks: *Vicinity includes Pathumthani, Nonthaburi,
Samut Prakarn, Samut Sakhon and Nakhon Pathom

2.2   Production of ICT

The data of ICT production in Thailand is classified into 2 groups as follows;

First, the Hardware Industry, it produces several kinds of products as;

(1) Wafer fabrication

(2) Fiat panel display

(3) IC designs

(4) Network equipment

(5) PCB design and fabrication

(6) Computer wholesales and retails

Second, the Software Industry, it produces several kinds of products as;

(1) Class 5 Switches

(2) Wireless Local Loop

(3) Wireless Handset

(4) Manufacturing Software

(5) Telecommunication Software

(6) Education and Thai Multimedia Software

2.2.1 The Hardware Industry

(1) The indicators signify the ICT expansion in Thailand are as follows : Data collected by the Department of Labor Protection and Welfare (See Table No. 1.1)   there are 3,453 enterprises under ICT related code ,where the 454,324 of relevant employees employed .

(2) The value of ICT market in Thailand collected by the Association of Thailand Computer Industry (ATCI) and the Association of Thailand Software Industry (ATSI) identifies the IT expansion with 100% of market value increased during 1999 to 2002 . The comparison between the IT markets

expansion and the economic growth Thailand during 2000 to 2002 found that the economic grew 5.3% in 2002, the IT market expanded 14% in estimate while the Software market was 2.8% increased.

(3) The top 10 list data of the principal product value in exporting in Thailand during 1998 to 2003 found the 1st level was the electronics sector followed by the textile and garment sector and other sectors were in last. These main products involved with ICT production and ICT application also was taken in working system . The clear picture though not existed, the important of ICT in changing of economic structure in Thailand into the electronics and computer industries, however, that led the higher skill in operation was able to conclude (Table 2.6 - 2.8).

2.2.2 The Software Industry

(1) Software is divided into 2 types; the Custom developed Software and the Package or Generic Software Product. The software production needs human resources as its significant factor.

The software production in value chain form comprises of 6 steps as follows;

1st step; concept building

2nd step; need analysis

3rd step; high design

4th step; low design

5th step; program writing, and

6th step; test and support

The sixth step is the lowest level and the first step is the highest. At present, India, still focuses in the low level while Ireland's production is in the medium and Israel is in the highest.

(2) Based on the interview with Dr. Rom Hirunyapauk, the director of
the Software Park Thailand, the number of ICT personnel at present increases only
in the group of people with bachelor degree or more, or specific ICT training, which
not less than 50,000 people with some more of freelances plus estimated by the
Association of Computer Industry. Furthermore, the comparison between the
expansion of IT market and the expansion of the Gross Domestic Product (GDP) is
obviously shown the IT based industry particular in Software is remained an efficient
industry in Thailand as mentioned. The ATSI proposed target for Thai software
industry in the next 5 years illustrated by Figure below;

Proposed Target for Thai Software Industry (ATSI 2002)
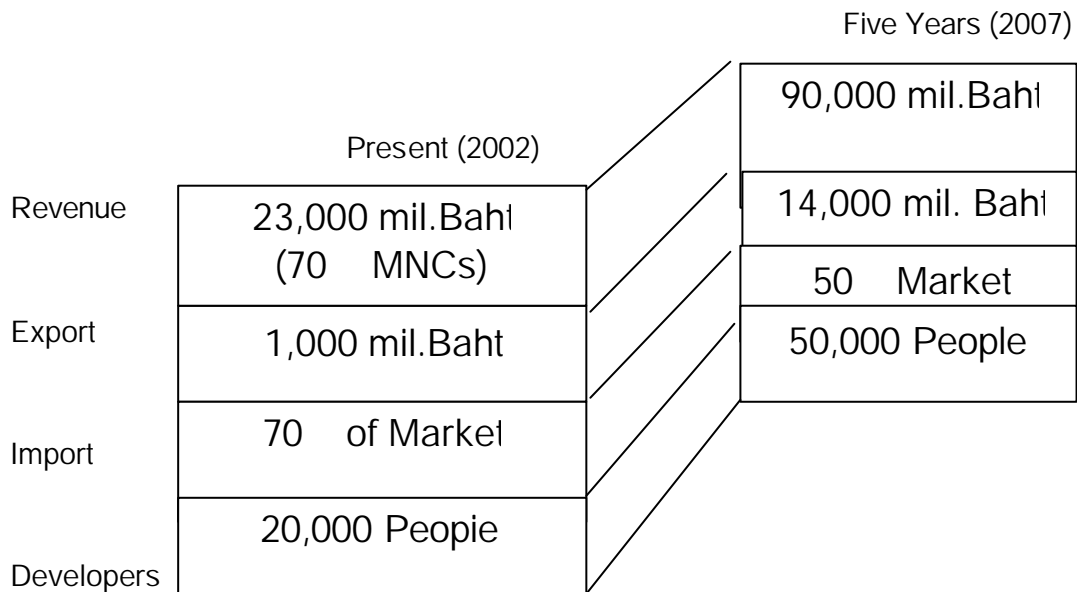
(3) The conclusion of the workshop on "The Strategy of Information Technology and Communication Development" concluded by NECTEC is a mechanism proving the social and economic development where the software is hidden inside. Software is a significant industry or product , its production was once made only in the powerful countries as U.S.A. or European countries etc. At present, the software making is changed and the outsource method is replaced where the countries with production capacity, India, Ireland and Israel etc. are hired. In Thailand, data collected by The Department of Employment service , Ministry of Labor concludes that there are about 800 companies producing software with merely 50,000 of personnel.

2.2.3 ICT Market and Industry

Thailand's IT market is steadily expanding, with state agencies, state enterprises, and the industrial sector representing major customers. The growth of the hardware market, in particular personal computers, continue to rise steadily. From ICT Market Outlook, an annual report published jointly by three Thai ICT associations, namely the Association of Thai Computer Industries (ATCI), the Association of Thai Software Industry (ATSI) and the Information Networking Association (INA), in oder to show the size of the market and the nation's industry situation. The information is

taken from estimates drawn up by the country's major producers. It is forecasted that the growth rate for this market will be around 15 percent in 2003.

The software market, meanwhile, is expected to grow by approximately 23 percent. Most of the software is imported, as Thai software industry is still in an infancy stage. This is due to shortages of ICT human resource as well as the problem of the software piracy. However, successful software companies are not selling just software; they bundle software services with the developed software systems. According to the Business Software Alliance (BSA), the piracy rate in Thailand is

falling (from 82 percent in 1998 to 79 percent in 2000). In early 2001, Thai authorities imposed more stringent measures which ordered the public sector to use only legally licensed software. The policy also promoted the development and use of an open-source software.

As a result of the government's support for the use of ICT within the public sector, the demand for IT professional services is expected to increase. Consequently, this will lead to a significant growth in the software industry, training, IT professional services and systems maintenance.

Figure 23: ICT Market

Figure 24: ICT Market by Sector

Figure 25: Thailand Exports
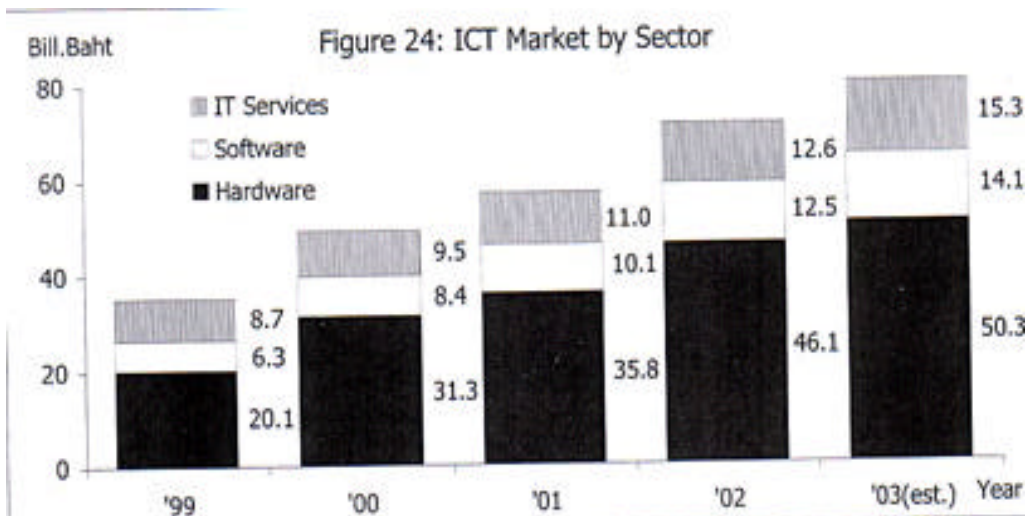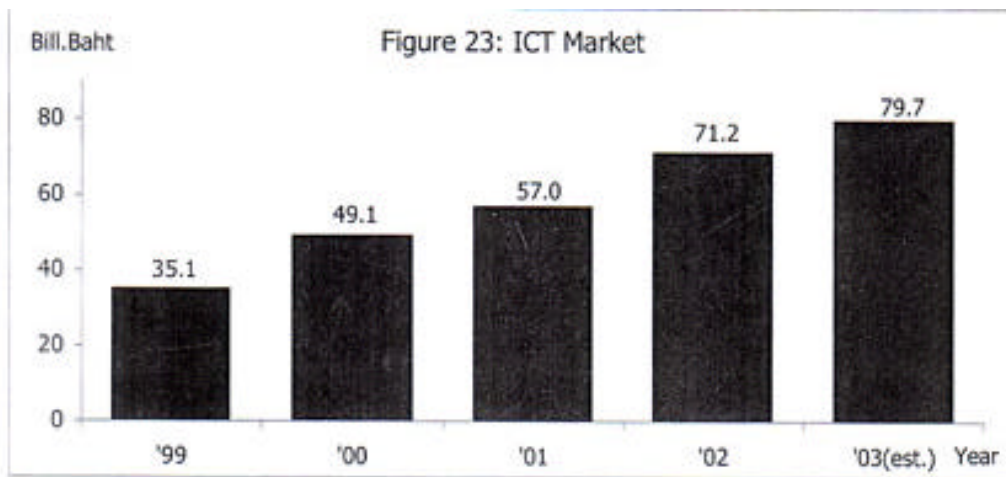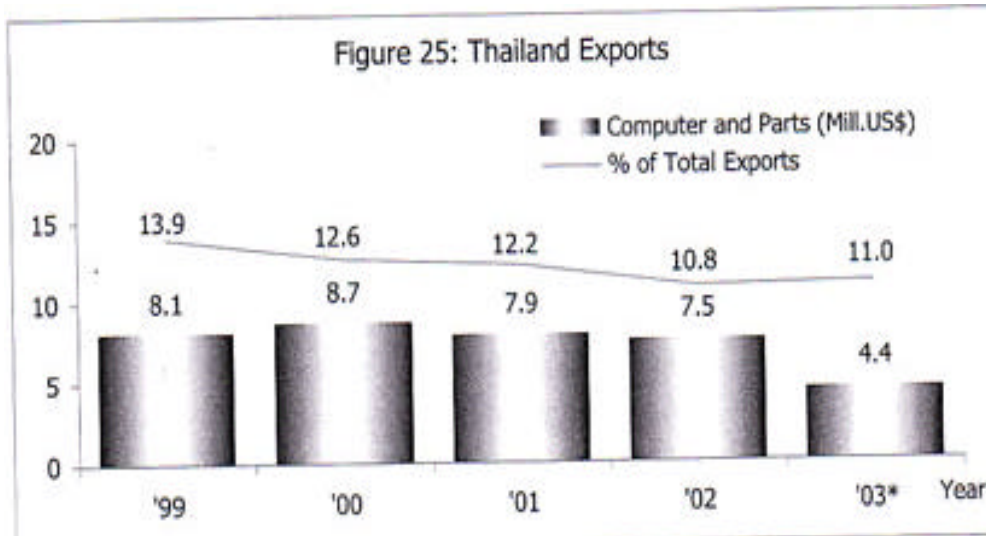
2.3 National policy on ICT in Thailand

The government of Thailand has paid attention to the development of information technology consecutively since the first policy on information technology was made (1997 - 2001) whereas the Eighth Plan on National Economic and Social Development (1997 - 2001) was implemented simultaneously. Later, the government vision was announced in 2001 that led the direction of the Ninth Plan on National Economic and Social Development (2002 - 2006) clearer particularly in the issue of the technology development for the production, the IT promotion on human resource development research, the ICT improvement into the infrastructure for the knowledge and information dissemination. It leads to the arrangement of the National Master Plan on Technology and Communication in Thailand (2002 - 2006), drawn up in responsets rapid technological development which 3 urgent issues are emphasized, the software industrial development, the IT program on human resource development, and the administration and services in government sector for being the e-government. Then, the Ministry of Information Communication Technology (MICT) was established on

October, 3, 2002 for responsible to make the ICT policy moved following the plan designed and reaching the goal decided. In this

regards, the fast-track development strategy of the MICT approved by the cabinet comprises of 3 significant strategies as following;

1. Improve the public living quality and raise the Thai society up to the knowledge based society

2. Strengthen the competition of Thailand through the application of technology and communication

3. Encourage the ICT application in the administration and service of the government sector aiming to be the ICT leader in Asian region by 2008 (Thailand, at the present is at No. 4 in following of Singapore, Malaysia and Brunei)

2.4 Future overview of ICT use and production in Thailand

2.4.1 Infrastructure investment tendency in Thailand

In sequence of the obstacle of insufficient infrastructure to serve the economic expansion, the budget on infrastructure investment (4 types are included : power and energy, communication, transportation, and public utilities) is increased continuously since the Sixth National Economic and Social Development Plan (1987-1991) at the budget of 521,868 million baht. Reports from The Thai Budget Bureau stated that budgets of the Seventh National Plan (1992-1996) and the Eighth National

Plan (1997-2001) on infrastructure are increased up to 1,313,376 and 1,937,281 million baht respectively.

2.4.2 Investment expansion in the ICT production industry

The executives of world class computer companies investing in Thailand inform the Thai government that they are prompt to expand the production power of Hard Disc Drive (HDD), which will up to 25, 513 million Baht totally in investment. According to this expansion, the HDD exporting will be 220,000 million Baht per

annum with 100,000 of employment will create. Replace of Singapore, Thailand is expected to be the HDD production base within 2006.

      2.4.3 In accordance with the Master Plan on Thailand Information and Communication Technology (2002-2006), the ICT situation is analyzed and concluded that the national strengths are efficient to the universal competition. The significant ones exist in Thailand are as follows;

- The better-condition high ways as the basic infrastructure (97.5% - 14th of the world rank)
- The hard disc production base - 2nd in world rank
- The source of electric-electronics parts exporting - 14th of the world rank (1.73% of global market)
- The source of parts and electronics accessory - 12th of the world rank (1.83% of the global market)
- The source of office appliance and accessory - 15th of the world rank (2.6% of the global market)
- The lower of the scientific and engineer brain flow - 17th of the world rank
- The suitable atmosphere for the investment - 19th of the world rank (30 days in average)
- The gender equality is better - 13th of the world rank
- The rapid expansion ratio of mobile phone application - 15th of the world rank
- The better expansion ratio of the employment during 1999 - 2000, 3rd of the world rank

      2.4.4 The workshop matter of "the strategy on information technology and communication development" stated by the Prime Minister (Pol. Major Lieutenant

Taksin Shinawattra) on February, 4, 2002 as the workshop chairperson can be concluded as the following:

"Thailand has enough volume but scattered in the ICT application. It also has lacked of the power of application for social benefits and the preparation into the global system of knowledge based society as well. In the future, ICT will be the center of dynamic interrelation where the all knowledge converging to the computer science. The internet based communication will much change the human life. At the present, Thailand remains outmode in technology, the system management for the benefits of ICT application as a mechanism is needed. Where the differences of the information access and knowledge give the negative impact to the national and global economic systems, the benefits thereof must be allocated to the grass-root level in order to fill the economic gap between knowledge and non-knowledge.

In previous day, the Economy of Scale was chosen to be the principle economic theory for Thailand. At present where the ICT is applied, the Economy of Speed come instead both policies as it is able to link with scale. Then, automatically the Economy of Speed and the Economy of Scale are finally taken."

2.4.5 The Survey on "The Demand For IT personnel in Thailand, 2001" reported the number of IT employed person in 2001 were 78,000 which an expectation of increasing employment demand to more than 100,000 person. The preliminary report on "The vision and strategy on science and technology in Thailand, 2000 - 2020" concise the demand for high quality of ICT personnel and increased in the volume of every ICT sectors at 10 - 20 times of the present year.

Table 2.1 : Number of Enterprises classified by ICT use and Type of Industry : 2001

Legal Forms	No. of Est.	Computer possession	Use of Computers					
			Total	Internet user			Web site	
				Business	Other objectives	NO	Yes	No
Total	**817,691**	**731,697**	**85,994**	**34,594**	**8,070**	**42,970**	**6,565**	**79,429**
Wholesales and retail trade, repair of motor vehicles,motorcycles and personal and household goods.	322,450	352,184	37,266	13,630	3,865	19,771	2,657	34,609
Hotels and restaurants.	116,827	111,780	5,047	1,924	490	2,633	569	4,478
Real estate , renting and business activities.	66,422	51,289	15,133	5,549	1,217	8,367	857	14,276
Computer and related activities.	3,763	764	2,999	2,085	228	686	389	2,610
Other community , social and personal service activities.	83,651	78,463	5,188	2,572	573	2,043	288	4,900
Manufacturing.	118,829	104,697	14,132	6,247	1,197	6,688	1,288	12,844
Construction.	9,464	6,127	3,337	1,416	278	1,643	207	3,130
Transport and tourist agencies.	29,285	26,393	2,892	1,531	222	1,139	310	2,582

Source : The 2001 Survey of Information Technology , National Statistical Office

Table 2.2 : Number of Enterprises classified by ICT use and Legal Forms of Foundation : 2001

Legal Forms	No. of Est.	Computer possession	Use of Computers					Web site	
			Total	Internet user				Web site	
				Business	Other objectives	NO		Yes	No
Total	**817,691**	**731,697**	**85,994**	**34,594**	**8,070**	**42,970**		**6,565**	**79,429**
Private	733,566	699,420	34,146	10,251	4,473	19,422		718	33,428
Co.,Ltd	25,346	15,134	10,212	3,613	989	5,610		393	9,819
Corporation Limited	56,532	15,435	41,097	20,921	2,566	17,610		5,422	35,675
Government , Public Enterprise , Co-operatives , Others	2,247	1,708	539	169	42	328		32	507

Source : The 2001 Survey of Information Technology , National Statistical Office

Table 2.3 : Number and Percentage of Computers in Household, classified by types of computer , Region and Area : 2001

Region and Area	Computers in Household						Computer : 100 Household	Computer : 100 Population
	No. of Computers			%				
	Total	PC	Notebook	Total	PC	Notebook		
Whole Kingdom	**927,875**	**890,305**	**37,570**	**100.0**	**100.0**	**100.0**	**5.75**	**1.48**
Municipal Area	742,761	713,210	29,551	80.0	80.1	78.7	14.23	3.65
Non-municipal Area	185,114	177,095	8,019	20.0	19.9	21.3	1.70	0.44
Bangkok	461,758	441,500	20,258	49.8	49.6	53.9	23.34	5.98
Central Region	201,301	191,172	10,129	21.7	21.5	26.9	5.53	1.42
Northern Region	94,873	92,587	2,286	10.2	10.4	6.1	2.99	0.84
Northeastern Region	120,324	116,205	4,119	13.0	13.0	11.0	2.31	0.57
Southern Region	49,619	48,841	778	5.3	5.5	2.1	2.34	0.59

Source : The 2001 Survey of Information Technology , National statistical Office

Table 2.4 : Number and Percentage of Household with Mobile Phone and Number of Mobile Phone in Household 2001

Region and Area	Household with Mobile Phone			Mobile Phone in Household			
	Number	%	Mobile Phone : 100 Household	Number	%	Mobile Phone : 100 Household	Mobile Phone : 100 Population
Whole Kingdom	**1,894,100**	**100.0**	**11.74**	**2,442,821**	**100.0**	**15.14**	**3.89**
Municipal Area	1,286,609	67.9	24.64	1,739,523	71.2	33.32	8.54
Non-municipal Area	607,491	32.1	5.57	703,298	28.8	6.44	1.66
Bangkok	666,100	35.2	33.67	989,377	40.5	50.01	12.82
Central Region	604,435	31.9	16.59	729,679	29.9	20.03	5.14
Nortnen Region	175,711	9.3	5.53	205,083	8.4	6.45	1.81
Northeastern Region	234,921	12.4	4.50	280,194	11.5	5.37	1.33
Southern Region	212,933	11.2	10.06	238,488	9.7	11.27	2.84

Source : The 2001 Survey of Information Technology, National Statistical Office

Table 2.5 : Number and Percentage of Household and Population Used Internet, Classified by Region and Area, 2001

Region and Area	Household use Internet									Persons used internet from every places		
	No. of Household Use Internet			%			Internet use Household every places : 100 Household	Household used internet at home : 100 Household	Household used internet other places : 100 Household	No.	%	Persons used internet : 100 population
	Total every places	Home	Other places	Total every places	Home	Other places						
Whole Kingdom	**2,277,046**	**490,158**	**1,786,888**	**100.0**	**100.0**	**100.0**	**14.11**	**3.04**	**11.07**	**3,536,001**	**100.0**	**5.64**
Municipal Area	1,404,654	414,197	990,457	61.7	84.5	55.4	26.90	7.93	18.97	2,341,433	66.2	11.50
Non-municipal Area	872,392	75,961	796,431	38.3	15.5	44.6	7.99	0.70	7.30	1,194,568	33.8	2.82
Bangkok	680,297	290,098	390,199	29.9	59.2	21.9	34.39	14.66	19.72	1,234,542	34.9	16.00
Central Region	566,795	96,201	470,594	24.9	19.6	26.3	15.56	2.64	12.92	830,389	23.5	5.85
Nortnen Region	380,267	42,088	338,179	16.7	8.6	18.9	11.97	1.32	10.64	516,114	14.6	4.57
Northeastern Region	384,169	40,998	343,171	16.9	8.4	19.2	7.36	0.79	6.58	559,193	15.8	2.64
Southern Region	265,518	20,773	244,745	11.6	4.2	13.7	12.54	0.98	11.56	395,763	11.2	4.72

Source : The 2001 Survay of Information Technology, National Statistical Office

Table 2.6 : Value of Thailand Electronic Commodity Exports, First 5 Priority, 3 rd Quarter, 2003

Commodity	Export Value 3 rd quarter/2003 (Million U.S. dollars)	Percentage change		Principal Export Country
		2 nd quarter/2003 (%)	3 rd quarter/2002 (%)	
1. Computer, Parts and accessories	2,070.90	6.1	14.9	Singapore, U.S.A., Chaina
2. Electrical and Electronic integrated circuit	1,045.50	-8.1	8.5	Taiwan, Netherlands, U.S.A.
3. Electricity distribution, Electric motors, generators, transister and Diode	305.4	-23.7	-25.1	Japan, Hong Kong, Singapore
4. Fasimile, Telegraphy, Telephone, Parts and accessories	255.1	25.7	4.6	Japan, U.S.A., Malaysia
5. Products of Computing, Printing	198.5	23.1	-20.8	U.S.A., Japan, Hong Kong

Source : Department of Trade Negotiations, Ministry of Commerce

Table 2.7 : Value of Thailand Electronic Commodity Imports, First 5 Priority, 3 rd Quarter, 2003

Commodity	Import Value 3 rd quarter/2003 (Million U.S. dollars)	Percentage change		Principal Import Country
		2 nd quarter/2003 (%)	3 rd quarter/2002 (%)	
1. Electrical, and Electronic intergrated circuit	1,511.1	8.6	1.8	Japan, U.S.A., Singapore
2. Computer, Parts and Accessories	1,016.9	0.2	15.4	Chaina, Malaysia, U.S.A
3. Electricity Distribution, Electric motors, Generators Transister and Diode	181.6	9.4	4.4	Japan, Singapore, Taiwan
4. Product of Computing Printing	151.5	58.0	62.0	Japan, Taiwan, U.S.A.
5. Transformer, Parts and Electrical Equipment	120.7	6.3	0.5	Chaina, Japan, Malaysia

Source : Department of Trade Negotiations, Ministry of Commerce

TABLE 2.8 : PRINCIPAL EXPORTS : THAILAND 2000 - 2003

Item	2000	%	2001	%	2002	%	2003	%
Total Exports	**2,768,064.8**	**25.0**	**2,884,702.7**	**4.2**	**2,952,066.9**	**2.3**	**3,333,928.6**	**12.9**
1. Automatic data processing machines and parts thereof	384,118.1	13.3	351,787.8	1.1	320,571.9	-8.9	340,076.4	6.1
2. Garments	124,212.4	12.6	129,128.9	4.0	116,612.2	-9.7	114,912.8	-1.5
3.Electronic integrated circuits	179,302.1	60.4	154,879.5	-13.6	148,064.2	-4.4	191,606.5	29.4
4. Rice	65,556.6	-11.2	70,095.2	6.9	70,005.5	-0.1	76,678.1	9.1
5. Motor cars, motor vehicles , parts and accessories	96,520.0	34.1	117,613.8	21.9	125,270.8	6.5	165,104.4	31.8
6. Canned fish	82,840.1	8.10	89,378.8	7.9	86,513.1	-3.2	88,860.4	2.7
7. Fresh,chilled or frozen shrimps prawns and lobsters	73,973.2	60.7	71,428.7	-3.4	77,082.1	7.7	89,261.8	15.8
8. Radio- broadcast receivers, television receivers and parts thereof	77,968.8	52.3	74,911.4	-3.9	90,057.6	7.9	103,782.5	15.8
9. Precious stones and jewelry	69,396.9	2.8	81,312.2	17.2	93,081.3	14.5	104,543.8	12.3
10. Rubber	60,712.0	38.2	58,708.0	-3.3	74,603.6	27.1	115,822.7	55.3
Total (20 Items)	**1,194,664.0**	**21.7**	**1,275,794.5**	**6.8**	**1,316,356.0**	**3.2**	**1,425,396.6**	**8.3**

Source : www . moc . go. th

Chapter 3

State of Decent Work in Thailand Prior to the Advent of ICT

In this study the data indicating that Thailand has first applied the ICT system was not found. It, however, should be at least 30 years in introducing and developing regarding to the relevant circumstances. In the beginning, the IT was applied for technical work in government sector and, then, in 1983 it was obvious seen when the application of ATM card introducing in banking system, the account deposit and withdrawal. IT has expanded more into the private entrepreneurs as the IT producers and service sources when the information technology policy and the strategy on scientific and technology changing development under the Ninth Plan on National Economic and Social Development was provided.

Similarly, the statistic data indicating the differences between the working conditions of ICT based and non-ICT based employees. However, there is the significant information showing of the decent work under ILO definition in Thailand as following;

3.1 Quantity of labor force in whole country

Based on the report of the workforce population survey in whole Kingdom during 2000 - 2002 made by the National Statistic Office, the population in Thailand was 62 - 63 million with 33 - 34 million of labor force or 53%. In 2002 data, the 33.8 million of 34 million of labor force is the employed, which 13.05 million in the agricultural sector and 19 million in the industrial sector.

3.2 Quantity of labor force with medium and high education

Based on the educational based classification of 33 million employed found that there are 26 million (79%) without education and under the junior secondary education, 3 million (9%) with medium education (the senior of ordinary and vocational secondary education) and 4 million (16%) with high education (bachelor degree).

3.3   Legislation and amendment of labor law in 1956 to the present

In the past, no specific labor existed in Thailand but the worker requirements controlling in the specific groups and specific matters. The attention in labor issue was seriously paid in 1932 when the national administration regime was changed, which 2 issues of the laws, the Job Placement Act, and the Local Placement Act. Later, in 1936 the government passed the Worker Situation Investigation Law and collected the fact concerning workers′ living to frame the policy and the labor law promulgation. During 1941 - 1945 of World War II period, the government encouraged the people earned their living by trading and industrial undertaking and supported its policy by delivering another law, the Law of Vocational Promotion 1942. After the War passing by, the government paid more the attention to the economic and social problems, which many of labor disputes existed during and caused the draft of labor law issued thereby. The draft provided the protection and the enterprise of association to the employees and was the source of the first labor law, which its merit was harmonious to the national need and problem. Similar to other countries, it, however, followed the Conventions and the Recommendations of the International Labor Organization arranged since 1919. The law was modified and the other labor laws were legislated later on in order to give employees the protection and the fair employment including the more suitable working conditions and safety standards of the International Labor Organization as well. The legislation of labor laws has been chronologically developed as following;

3.3.1 The Labor Act 1956. It is the first labor law in Thailand, which drafted by the Tripartite committee and comprised of the provision on both labor Protection and labor Relations It clearly provided the protection in the matter of working hour, rest time, day off, sick leave, child and female labor, wage payment, and overtime work.

3.3.2 The Occupational Welfare for Thai People Act, 1956.

3.3.3 The Notification of National Executive Council No. 19 (issued on October, 31, 1957) amended the Labor Act, 1956. It empowered the Ministry of Interior to issue a labor protection notification. In this Notification, the Department of Labor had authority to make a decision on the labor dispute settlement and brought the labor association enterprise coming to the end.

3.3.4 The Act on Labor Dispute Settlement Procedure 1965. It provided the rules on bargaining, demand, and labor dispute in supplementary to the Notification No. 19 that remained application.

3.3.5 The Employment and Job Seekers Protection Act 1968. It was issues in order to replace the Job Placement 1932 and the Local Job Placement 1932.

3.3.6 The Notification of the National Executive Council No. 103 (issued on March 16, 1972). It was issued after trying to announce the Labor Protection and Labor Relation Act, which not succeeded as the Coup de'ta was occurred. The law empowered the Ministry of Interior to issue the ministerial notifications in the matter of labor protection and labor relation that, however, not covered the seasoning employees in the agricultural sector and domestic employees. In this law, the contractor and the sub contractor were jointly responsible to an employee in liability, the provision of minimum wage, the compensation for occupational injury, and the provision on labor relation and the registration of trade union and employer association.

3.3.7 The Notification of the National Executive Council No. 322 (issued on December 13, 1972). It provided occupational rules and employment scope to permit to the alien.

3.3.8 The Labor Relations Act 1975. It amended the Notification No. 103 only on the matter of labor relation that was separated from the labor protection.

3.3.9 The Alien Occupation Act 1978. It was issue replacing the Notification No.

3.3.10 The Labor Court Enterprise and Labor Procedure 1979. It was issued for labor cases and disputes hearing.

3.3.11 The Employment and Job Seekers Protection 1975. It was issued replacing the Employment and Job Seekers Protection 1968.

3.3.12 The Social Security Act 1980 by the law, the Social Security Office was set up in order to manage the Social Security Fund in the 7 matters of sickness an

injury, maternity, disability, dead, child allowance, old age, and unemployment. 6 of those have been under the implementation of the Office and the rest, the unemployment insurance is on the process of contribution collection.

3.3.13 The Labor Protection Act 1998. The law was issued to coup the problem following of the economic crisis occurred in 1997 that led to the gross lay off in reason of economic competitiveness, changing of technology, cost deduction, and relocation of business place, which the social problem and employment insecurity were the severe impact to the employees with long period of work. This more protection and stronger sanction law with mostly close to international standards was replaced the Notification of National Executive Council No. 103 and the relevant ministerial notifications. It is in current enforcement that covers the general protection,

the child and woman labor, and the occupational safety and health, which some provision, the provision of severance pay for example, is provided with higher than such standards in protection.

3.4 Labor administrative policy, program and project involving with Decent Work development in Thailand

Apart of labor laws, Department of Labor Protection and Welfare in order to promote and improve the decent work effected practically set up the Labor Standards Development Bureau with responsibility to conduct the comparative study on labor standards, develop the labor standards harmonized with international level, and promote the network creation on the labor standards development cooperation.

The Labor Standards Development Bureau a long with employer organizations, employees, NGOs, government units and scholastic institutes have jointly set up the Thai Labor Standards (TLS) that follows the principles of the international labor standards, the social accountability and ethic, and the standards set up as international trade conditions. TLS comprises of 2 standard levels in application, the basic level and the complete level, which 500 of enterprises have applied for the TLS certificate and 25 of them were approved for completing the basic level.

3.5 Study, analysis, research and other opinions involving with "Decent Work"

3.5.1 according to the thesis on the Quality of Working Life and Labor Migration, by Dr. VIPAVEE SRIPIAN in 2544 (2001) that the quality of labors' life that work at provincial-level enterprises in 5 dimensions; working interest, working condition, internal participation, working security and working serenity were the matters studied, found that mostly of employees working in provincial area were being with lower participation, medium interest and condition but not-higher quality of life whereas the security and serenity were at the high level.

3.5.2 The research on the project of employment survey and demand of labor employment in industrial enterprises in 5 years (2546-2550) made by Prof. VICHIT RAVIWONGSE and team, surveying of the enterprises based on 8 industrial standards approach through the random scheme, concluded that, inter alia, the tendency of employment in the next 5 years (2546-2550) will focus on the able-to-operation personnel than administrative field. The enterprises will demand the labor with higher education and skill. They will realize on the important of technology change and, also, training program which up to the readiness of each industrial sector.

3.5.3 In the interview with ROM HIRANPRUK Ph.D.,Director Software Park Thailand, the quantity of company and staff working in the Center, working condition and quality of staff were disclosed that the numbers of ICT personnel were higher employed (See the Table). They mostly work for enterprises located in the center of the region, Bangkok and vicinities. The education those possess mostly is a bachelor level while a certificate of vocational education and a certificate of higher vocational education staff with ICT knowledge and/or training partly are.

According to the Computer Industrial Association of Thailand, the numbers of them are over 50,000 and plus with numbers of the free lances, and they earn high income with

independent in work. However, the economic and social impacts on work and living quality of ICT involved those people have never been studied.

3.5.4 The 4 principles indicating "Decent Work" of the ILO expert's opinion can be classified into at least 12 topics as following;

1. employment opportunity

2. unacceptable work

3. sufficient income and productivity

4. reasonable working hour

5. working security

6. fair practice

7. occupational safety

8. social protection

9. balance of work and private life

10. social relation (Social dialogue) and working relation

11. working capacity building

12. economic and social situations

The holistic situation in Thailand in terms of legislation and macro policy seen that the national labor standards in the decent work are nearly closed to the standards of the ILO Decent work. In practice, according to the annual reports of Department of Labor Protection and Welfare , statistics from labor inspectors indicated the higher regally of enterprises comply to the law, Any how , 20 - 30% of enterprise always found not comply the law. These statistics do not provide data to classify the occupation sectors they belong to.

Further, in accordance with the employment contract issue it is found that almost of people with ICT qualification are employed by the individual contracts that the opportunity to associate collectively with others in same group of occupation is lacked. They cannot increase the economic and social levels either for themselves or their occupational on industrial sector through the collective bargaining mechanism, and also have no participatory chance to play their roles as the social actors (Social dialogue).

3.5.5 Labor Security Program

Social Security System

Since April 1, 2002, enterprises having one or more employees have to be registered under the Social Security Act. There are 7 types of benefits under the Act

including sickness, maternity, old-age pension, child allowance, death, handicapped allowance, and unemployment benefits. At present there are approximately 6.82 million employees covered by the social security system, or 19.5 percent of total labor force (as of August 2002). There are also 620 provident funds, which are voluntary, covering 1.22 million employees (September 2002).

Labor Protection

Under the Labor Protection Act B.E. 2541 (1998), there are provisions on workplace, woman and child labor (minimum age), as well as minimum wages (which vary by region) to be paid to employees or workers. At present, the minimum wage for workers in Bangkok and its surrounding provinces is at 170 Baht/day.

3.5.6 Development Vision

Thailand's development vision for the next 20 years focuses on the alleviation of poverty and the upgrading of the quality of life for the Thai people, so that sustainable development and well-being of all Thais can be achieved. This vision of Thai society, characterized by a "strong and balanced society", comprises three aspects:

Quality Society: a balanced, moderate and self-reliant society with its members being moral, responsible, and skillful.

Knowledge-based and Learning Society; creative and rational thinking, life-long learning, and application of local wisdom as appropriate.

United and Caring Society: preserving Thai values regarding harmony and interdependency, while focusing on loving families and networked communities as core development.

3.5.7. Development of Indicators on Economic Strength and Well-Being of Thai People

NESDB has developed two major indicators to evaluate the successfully of the national economic and social development activities. Within the 9th National Social and Economic Development Plan, objectives can be measured by Economic Strength Index and Well-Being Index. These two index can be implied identically on explanation of decent work. At the macro level the evaluation of decent economic social situation can be estimated by looking into the index compositions which have some indicators involving decent work. (See details in Table 3.3 - 3.4)

Economic Strength in Thailand

Development level
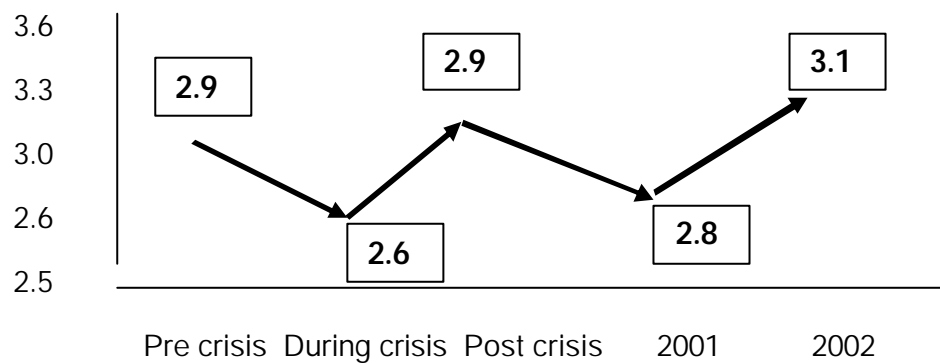
Economic Strength in whole kingdom		

Level of well living of the Thai people

Development level

5

4   3.59
        3.32   3.01   ?
        ?   ?   ?
3   ?
                                2.89   2.93
                                ?
2

   Pre crisis During crisis Post crisis   2001   2002
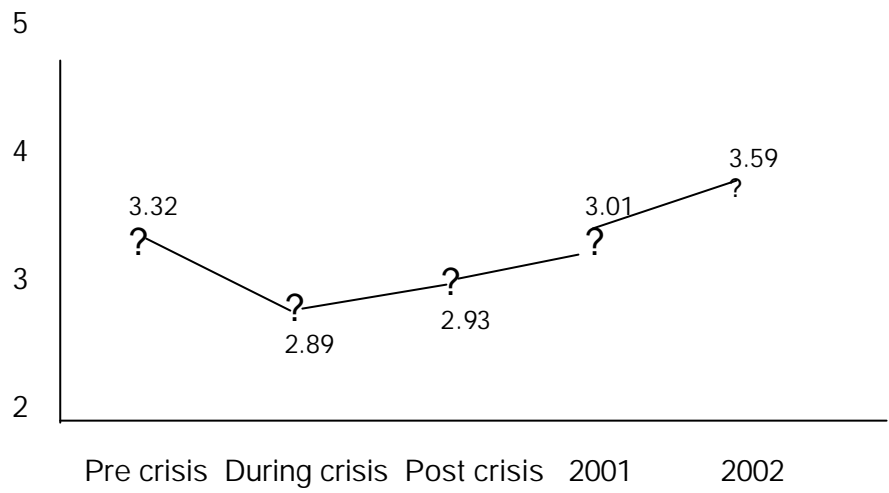
┌─────────────────────────────────────┐
│   ? Well living level   │
└─────────────────────────────────────┘

Table 3.3   index of economic strength and development level

	Development index (%)					Development index (%)				
	Pre-crisis 35-39	crisis 42-43	Post-crisis	2544	2545	Pre-crisis 35-39	crisis 42-43	Post-crisis	2544	2545
1. economic self-reliance	68.0	72.0	73.5	67.5	68.3	2.80	3.20	3.35	2.75	2.83
• Value-add in agriculture sector/GDP	78.0	75.5	74.0	70.0	73.0	3.80	3.55	3.40	3.60	3.30
• Material & product cost import/GDP	74.8	69.8	61.5	51.2	55.2	3.48	2.98	2.15	1.71	1.84
• trade balance/GDP	51.2	73.5	85.0	75.5	76.8	1.71	3.35	4.50	3.55	3.68
2. economic immune	**83.1**	**62.8**	**61.2**	**62.1**	**87.9**	**4.31**	**2.28**	**2.12**	**2.21**	**2.79**
• Level of Country openess	83.7	74.7	54.6	56.1	60.4	4.37	3.47	2.48	1.87	2.04
• Financial balance/GDP	77.6	60.8	56.8	59.2	58.0	3.75	2.08	1.96	1.97	1.93
• Foreign debt/GDP	87.9	52.9	60.3	70.9	85.4	4.79	1.75	2.03	3.09	4.54
3. global modification	**65.9**	**60.3**	**66.1**	**65.7**	**67.4**	**2.59**	**2.03**	**2.51**	**2.57**	**2.74**
• Total productivity efficiency	70.0	55.7	69.9	70.8	75.8	3.00	1.86	2.99	3.08	3.58
• Development & research expense/GDP	56.7	55.0	56.7	56.4	56.5	1.89	1.83	1.86	1.88	1.66
• Ratio in global market	71.1	70.1	69.5	69.9	70.0	3.11	3.01	2.98	2.99	3.00
4. consistency growth	**69.8**	**59.5**	**85.6**	**80.2**	**83.9**	**2.96**	**2.95**	**4.58**	**4.02**	**4.39**
• Inflation	70.7	62.7	96.4	83.6	87.2	3.07	2.27	4.64	4.36	4.72
• Eco-rate growth (GDP)	84.7	59.2	78.3	73.5	79.5	4.47	1.97	3.83	3.35	3.95
• Current account balance per GDP	54.1	94.0	92.2	83.5	85.0	1.80	4.40	5.00	4.35	4.50
5. equal & fair development allocation	**60.8**	**68.8**	**62.7**	**69.0**	**58.0**	**2.08**	**2.88**	**2.27**	**2.90**	**2.80**
• Unequal in development	60.6	70.7	69.3	69.3	70.7	2.06	3.07	2.93	2.93	3.07
• Income allocation	60.9	67.0	56.1	68.7	65.4	2.09	2.70	1.87	2.87	2.54
Economic stability in whole	**69.5**	**66.9**	**69.6**	**68.9**	**71.1**	**2.95**	**2.69**	**2.96**	**2.89**	**3.11**

Source: the National Economic and Social Development Board (NESDB)
Remark: 5 levels of development divided by the index value;
Level 5 (5.0)   = 90.0 - 100%   = better   Level 3 (3.0)-3.9) = 70.0 - 79.9% = good or unchanged
Level 4 (4.0 - 4.9) = 80.0 - 89.9% = well   Level 2 (< 3.0) = below 70.0% = improve require
                                                 level 1 (< 1.0) = below 50.0 % = worse

Table 3.4   index of well living of the Thai people

	Development index (%)					Development index (%)				
	Pre-crisis 35-39	crisis 42-43	Post-crisis	2544	2545	Pre-crisis 35-39	crisis 42-43	Post-crisis	2544	2545
1. health	61.4	54.3	54.6	54.1	59.8	4.14	4.43	4.48	4.41	4.98
2. knowledge	63.9	69.3	72.4	73.5	74.1	2.39	2.93	3.24	3.35	3.41
3. working life	79.8	38.3	45.8	50.3	71.3	3.96	0.77	0.91	1.03	3.13
4. income and income allocation	83.0	77.6	73.4	76.4	90.5	4.30	3.76	3.34	3.84	6.00
5. environment	73.7	70.1	69.4	70.7	70.0	3.37	3.01	2.94	3.07	3.00
6. family life	68.5	66.9	63.3	62.9	63.2	2.85	2.89	2.33	2.29	2.32
7. good governant	02.9	57.9	83.9	59.7	60.7	1.29	1.79	2.39	1.97	2.07
Well living in whole kingdom	**73.2**	**68.9**	**69.3**	**70.1**	**75.9**	**3.32**	**2.89**	**2.93**	**3.01**	**3.59**

Source: the National Economic and Social Development Board (NESDB)

Remark: 5 levels of development divided by the index value;

Level 5 (5.0)   = 90.0 - 100%   = better   Level 3 (3.0)-3.9) = 70.0 - 79.9% = good or unchanged

Level 4 (4.0 - 4.9) = 80.0 - 89.9% = well   Level 2 (< 3.0) = below 70.0% = improve require

level 1 (< 1.0) = below 50.0 % = worse

TABLE 3.1 LABOUR INSPECTION IN WHOLE KINGDOM BY SIZE, 2002

????????????????????? Size of Enterprise	?????????????????? ? ?????????? Inspected Enterprise		????? ?????????? Inspected Employees				??????????? Illegal		??????? ????????????????? ? Enforcement of Labour Inspectorate				
	??? Est.	??? Times	??? Total	??? Male	? ? ? Female	?? Child	??? Est.	????? %	????? Advice	??????? ???? Issue And Summon	??????? ??? ????? Issuance And Order	???? ?? ????? Fine	????????? Case Proceding Conducted By Inquiry Official
1 - 4 ??	11,225	12,511	26,720	15,152	11,417	151	1,943	17.31	1,610	299	27	4	3
5 - 9 ??	7,509	8,761	50,831	29,222	21,475	134	1,597	21.27	1,279	277	34	4	3
10 - 19 ??	5,198	6,485	71,165	40,522	30,446	197	2,085	40.11	1,752	291	38	2	2
20 - 49 ??	5,610	7,055	177,781	101,419	76,056	306	2,181	38.88	1,767	317	90	4	3
50 - 99 ??	2,508	3,312	179,388	98,244	80,943	201	949	37.84	759	129	59	1	1
100 - 299 ??	2,619	3,453	444,204	229,411	214,109	684	780	29.78	640	81	57	2	-
300 - 499 ??	587	799	220,835	99,999	120,491	345	137	23.34	103	17	14	3	-
500 - 999 ??	433	572	293,183	115,805	177,073	305	99	22.86	69	23	7	-	-
1,000 ?????? and Over	238	298	458,953	141,343	315,921	1,689	46	19.33	34	5	7	-	-
??? Total	35,927	43,246	1,923,060	871,117	1,047,931	4,012	9,817	27.32	8,013	1,439	333	20	12

? ??   : ?????? ??????????????? ????????????????? ?????????

Source : Office of Labour Standard Development , Department of Labour Protection and Welfare.

TABLE 3.2 LABOUR INSPECTTION IN WHOLE KINGDOM BY INDUSTRY, 2002

????????? Industry	????????????????? ??????????? Inspected Enterprise		??????????????????? Inspected Employees				????????? Result			?????????????????????? Enforcement of Labour Inspectorate				
							???????? Legal	??????????? Illegal						
	??? Times	??? Est.	??? Total	??? Male	??? Female	?? Child	??? Est.	??? Est.	????? %	????? Advice	???????? ????? Issue a Summon	??????? ??? ????? Issue and Order	???? ??????? Fine	????????? ???????????? Case Proceeding Conducted by Inquiry Official
??? **Total**	**35,927**	**43,246**	**1,923,060**	**871,117**	**1,047,931**	**4,012**	**26,110**	**9,817**	**27.32**	**8,013**	**1,439**	**334**	**20**	**12**
???????? ????????????????????? Agriculture, hunting and forestry	124	149	4,197	2,503	1,693	1	93	31	25.00	29	2	-	-	-
???????? Fishing	11	12	184	141	43	-	7	4	36.36	4	-	-	-	-
??????????????????????????? Mining and quarrying	226	266	8,499	6,948	1,538	13	161	65	28.76	58	5	2	-	-
?????? Manufacturing	10,754	13,286	1,239,403	495,076	741,653	2,674	7,479	3,275	30.45	2,667	426	168	7	7
??????? ?????????????? Electricity , gas and water supply	187	220	5,099	3,862	1,235	2	146	41	21.93	35	5	1	-	-
????????? Construction	1,783	2,176	68,807	51,498	17,085	224	1,191	592	33.20	470	106	14	2	-
???????? ????????? ????????????????? ?? Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	14,979	17,643	273,853	145,963	127,205	685	11,290	3,689	24.63	3,030	559	95	4	1

TABLE 3.2 LABOUR INSPECTTION IN WHOLE KINGDOM BY INDUSTRY, 2002

????????? Industry	?????????????????? ???????????? Inspected Enterprise		??????????????? Inspected Employees				???????? Result ???????? Legal / ?????????? Illegal			?????????????????????? Enforcement of Labour Inspectorate				
	??? Times	??? Est.	??? Total	??? Male	??? Female	?? Child	??? Est.	??? Est.	????? %	????? Advice	???????? ????? Issue a Summon	??????? ??? ????? Issue and Order	???? ??????? Fine	????????? ???????????? Case Proceeding Conducted by Inquiry Official
???????????????? Hotels and restaurants	2,177	2,643	86,879	41,447	45,355	77	1,430	747	34.31	632	94	16	3	3
??????? ????? ?????????????????? Transport, storage and communications	1,347	1,666	58,371	38,655	19,669	47	950	397	29.47	318	72	7	-	-
??????????????? Financial intermediation	1,052	1,162	25,617	12,223	13,394	-	958	94	8.94	77	15	2	-	-
?????????????????????????? ?????????????? Real estate, renting and business activities	1,724	2,104	79,160	40,773	38,380	7	1,253	471	27.32	344	112	13	1	1
??????? Education	205	241	5,288	2,142	3,146	-	165	40	19.51	32	6	2	-	-
???????????????????????????????????? Health and social work	224	296	24,276	5,567	18,708	1	171	53	23.66	46	5	1	1	-
?????????????? ???? ????????????????? Other community, social and personal service activities	1,025	1,250	38,179	21,763	16,364	52	740	285	27.80	242	30	12	1	-
????????????????????? Private households with employed persons	109	132	5,248	2,556	2,463	229	76	33	30.28	29	2	1	1	-

???   : ?????? ?????????????? ??????????????????????????

Chapter 4
Case Study

4.1   Number and Types of Enterprises Selected

Due to the lack of systematically cottected statistics and information regarding ICT firms the sampling frame for case study is limited to three types of industries which have a reputation for high economic volume of either import or export transaction listed in the MOC Tables of Thailand. Thus, the sampling method used therefore is purposive sampling.

Primary data investigation were organized and conducted by questionnaires for the sampling target group. The 3 types of industries selected are textile and garment industry, an electronic and computer industry (hardware and software) and Hi - technology industry. Each type of industries are classified by size x - large, medium and small The number of workers in each size of the enterprise is determined according to the ILO standard.

Questionnaires designed for the Case Study aim at getting   facts and information related to employment and conditions of work in the workplace in 4 major dimensions:

(1)   standard and fundamental rights at work,

(2)   employment and gender equality,

(3)   labor protection,

(4)   social dialogue.

The questionnaires were sent through labor officers to 12 enterprises in Bangkok , Nakornpathom , Ratchaburi , Nakorn Rachasima and Ayudhya , selected as   respondents (Table 4.1). The questions posed in the questionnaire contain 5 topics namely general information of the enterprise, employee' qualifications, the use of ICT, the production of ICT, problems/obstacles and the advantage or disadvantage of ICT.

The 12 participating enterprises chosen are classified into 4 groups as follows :

(1) Software sale and service sector or software house - consists of 3 enterprises located in Bangkok

(2) Computer production or assembly sector - consists of 3 enterprises located in NakhonRachasima Province

(3) Textile industry sector - consists of 3 enterprises located in the joint area of Nakhonpathom and Ratchaburi Provinces, and

(4) Other industrial sector - consists of 3 enterprises located in the industrial estate, Ayudhaya Province.

4.2 Summary of the Findings

The result of the investigation clearly indicates different qualifications of workers needed by each type of industries, being divided into two separate groups as follows:

1st Group

This group of enterprises provide software sale and services which comprise software consultancy or software house. All of them require human resources with high level of education, at least bachelor's degree in IT or ICT. These jobs require to use ICT to create new products. In other words ICT is an important tool to run the business. At present, the employees' conditions of work both economically and socially are very good because of Their high level of education and knowledge of personnel. Especially, the one with high level of skill and experience get high salary and income. However, no investigation or survey has been made on the adequacy of quality of working life and quality of life. Most of the programmers and computer system designers are given high salary and income because of their hard work with

more working hours than the others. In practice, they can not stop working until their final programme is settled.

2<u>nd</u> Groups

This is the group of enterprises that use x IT or ICT as users or operators. Employees required are only those with knowledge and skill to run the computer according to the system available. They hire only few personnel with ICT major programme experience. The employees with IT/ICT knowledge have a better chance for a good working conditions. They also have a better opportunity to be promoted progressively.

4.3 Analysis of the Case Study

Issues in this study on the relationship between ICT and Decent Work are concluded as follows :

4.3.1   Information concerning Enterprises

(1)   Almost all of them are over 5 years in the business (Table 4.2)

(2)   Eight enterprises are 100% owned by Thais.

(3)   Eleven enterprises have their head quarters in Thailand while only one enterprise with head quarter in Japan.

4.3.2   Information concerning Employees

(1)   Number of employees in every enterprise in previous year has not much changed and only a slight change is expected in the future.

(2)   The enterprises in software house sector employ a large portion of staff with IT knowledge, with bachelor's degree, and those with no certificate but possess IT skill. However, They rarely have qualified employees which is different from other sectors which require employees which basic knowledge of IT rather than the programmers .

(3)   Almost all of the enterprises consider that the employees with IT knowledge gain high job prosperity and better chance, while the rest believe that They gain only moderately.

(4)   Almost all of the enterprises have never made any agreement with trade unions, because there are no unions set up. Only one enterprise reveals that a demand for setting up a trade union has been submitted.

4.3.3   Future plan

The enterprises in software house sector have planned to expand the business, employed more employees in IT section, and set up the training program for new service system such as the out-sourcing program, the program on employees' skill development, and an introduction and installation of new technology programs. Whereas the above plans are less found in enterprises in other sectors.

4.3.4   Additional comments

(1)   Problems and obstacles.

-    Respondents give the following comments :

-    The newly graduates demand higher salary than their ability whereas the expenditure and time for training courses are shouldered by the enterprise.

-    Corruption in the government causes the lack of suitable equipment and adequate technology.

-    The computer cost remains high, and

-    Older staff are left behind as far as the technology is concerned.

(2) Advantage and positive impact of IT in Thailand.

- One hundred percent of the responses agree that IT will

  be beneficial to and have positive impact on the enterprises

  provided the government :

- prevent and eliminate corruptions

- increase the support on IT education

- reduce computer tax, and

- keep balance between wage and skill development.

On the other hand, the employees must always actively try to gain more knowledge (detail in annex).

Table 4.1 List of Enterprises by Types, Sizes and Location

Type of enterprise	Location (Province)	Enterprise's Name	Size of enterprise		
			Large	Medium	Small
1. Textile industry	Nakornpathom	1.1 KONGKIJ TEXTIL INDUSTRY CO.,LTD.			33
	"	1.2 L.V.W. GROUP CO.,LTD.		386	
	Ratchaburi	1.3 SORTIN TEXTILE INDUSTRY CO.,LTD.	610		
2. Manufacture of Computers	Nakon Rachasima	2.1 N.K. MECHATRONICS CO.,LTD.	642		
	"	2.2 ARROW MITSUTANI (THAILAND) CO.,LTD.			64
	"	2.3 KORAJ MATSUSHITA CO.,LTD.		227	
3. Software consultantcy, Software Design	Bangkok Metropolis	3.1 IMAGIMAX CO.,LTD.		91	
	"	3.2 CDG SYSTEM CO.,LTD.	343		
	"	3.3 AROON SAWAT DOT COM. CO.,LTD.			8
4. Others	Industrial Estate in Ayudhya	4.1 KING BRIGHT CO.,LTD.			19
		4.2 BANGKOK RUBBER (PUBLIC) CO.,LTD.	2289		
		4.3 SHOWA ALUMINUM (THAILAND) CO.,LTD.		273	
4	5	12	3,884	977	124

TABLE 4.2   NUMBER OF YEAR IN THE BUSINESS OPERATION

(Unit : Enterprise)

Type of enterprise	Year of bussiness			
	less than 1 years	1-4 years	5-9 years	over 10 years
1.Software consultant	-	2	-	1
2.Manufacture of Computer machinery	-	-	2	1
3.Textile industry	-	-	2	1
4.Others Manufacturing	-	-	1	2
Total	**-**	**2**	**5**	**5**

TABLE 4.3   OWNERSHIP STATUS

(Unit : Enterprise)

Type of enterprise	The ownership				
	100% Local owned	Predominantly Local owned 51%or more	Equally 50% Local & foreign owned	Predominantly foreign owned 51% or more	100% foreign owned
1.Software consultant	3	-	-	-	-
2.Manufacture of Computer machinery	-	1	1	1	-
3.Textile industry	3	-	-	-	-
4.Others Manufacturing	2	-	-	1	-
Total	**8**	**1**	**1**	**2**	**-**

TABLE 4.4   LOCATION OF THE HEAD OFFICE

(Unit : Enterprise)

Type of enterprise	Head office	
	Thailand	others country
1.Software consultant	3	-
2.Manufacture of Computer machinery	2	1 (Japan)
3.Textile industry	3	-
4.Others Manufacturing	3	-
Total	11	1

TABLE 4.5   NUMBER OF EMPLOYEES

(Unit ： Person)

Type of enterprise / Type of employee	Employees		
	Previous (2003)	Current (2004)	Anticipated (2005)
Software consultant	469	442	544
1.Permanent-Full time	387	378	453
2.Permanent-Part time	-	-	40
3.Temporary-Full time	82	64	51
4.Temporary-Part time	-	-	-
Manufacture of Computer machinery	1048	1090	70
1.Permanent-Full time	1048	933	70
2.Permanent-Part time	-	-	-
3.Temporary-Full time	-	157	-
4.Temporary-Part time	-	-	-
Textile industry	843	1029	1190
1.Permanent-Full time	843	1029	1190
2.Permanent-Part time	-	-	-
3.Temporary-Full time	-	-	-
4.Temporary-Part time	-	-	-
Others Manufacturing	2769	2581	2358
1.Permanent-Full time	2769	2581	2358
2.Permanent-Part time	-	-	-
3.Temporary-Full time	-	-	-
4.Temporary-Part time	-	-	-
Total	5129	5142	4163

TABLE 4.6   NUMBER OF CURRENT IT RELATED EMPLOYEES

(Unit : Person)

Type of enterprise / Type of employee	Qualification and skill		
	Qualification in IT	Certificate, Diploma in IT	IT skills (without qualification)
Software consultant	265	38	78
1.Permanent-Full time	265	38	78
2.Permanent-Part time	-	-	-
3.Temporary-Full time	-	-	-
4.Temporary-Part time	-	-	-
Manufacture of Computer machinery	-	-	-
1.Permanent-Full time	-	-	-
2.Permanent-Part time	-	-	-
3.Temporary-Full time	-	-	-
4.Temporary-Part time	-	-	-
Textile industry	-	7	47
1.Permanent-Full time	-	7	47
2.Permanent-Part time	-	-	-
3.Temporary-Full time	-	-	-
4.Temporary-Part time	-	-	-
Others Manufacturing	13	1	2
1.Permanent-Full time	13	1	2
2.Permanent-Part time	-	-	-
3.Temporary-Full time	-	-	-
4.Temporary-Part time	-	-	-
Total	278	46	127

TABLE 4.7 NUMBER AND TYPE OF IT RELATED EMPLOYEES

(Unit : person)

Type of enterprise / Type of employee	Employees		
	Previous employees(2003)	Current employees(2004)	Anticipated employees(2005)
Software consultant	414	430	481
1.Permanent employees	271	255	307
2.Temporary employees	82	64	51
3.Contract and agency workers	59	76	111
4.trainers	2	35	12
Manufacture of Computer machinery	-	1	8
1.Permanent employees	-	1	4
2.Temporary employees	-	-	-
3.Contract and agency workers	-	-	-
4.trainers	-	-	4
Textile industry	36	53	65
1.Permanent employees	36	53	65
2.Temporary employees	-	-	-
3.Contract and agency workers	-	-	-
4.trainers	-	-	-
Others Manufacturing	7	13	16
1.Permanent employees	6	12	14
2.Temporary employees	-	-	-
3.Contract and agency workers	1	1	2
4.trainers	-	-	-
Total	457	496	562

TABLE 4.8   NUMBER OF RELATED EMPLOYEES WHO HAVE LEFT

(Unit : Person)

Type of enterprise / skill — Qualification and	Employees who have left		
	Emigrated	Resigned to take up a job elsewhere in Thailand	Employment terminated
Software consultant	-	13	1
1.University qualification	-	8	1
2.Certificate in IT	-	1	-
3.with IT skill but without qualification	-	4	-
Manufacture of Computer machinery	-	-	-
1.University qualification	-	-	-
2.Certificate in IT	-	-	-
3.with IT skill but without qualification	-	-	-
Textile industry	-	2	-
1.University qualification	-	-	-
2.Certificate in IT	-	2	-
3.with IT skill but without qualification	-	-	-
Others Manufacturing	-	1	-
1.University qualification	-	1	-
2.Certificate in IT	-	-	-
3.with IT skill but without qualification	-	-	-
Total	-	16	1

TABLE 4.9   DIFFICULTY IN RECRUIT AND RETAIN IT RETALED EMPLOYEES

(Unit : Enterprise)

Difficulty in recruit and retain	Qualification and skills					
	University qualification		Certificate in IT		IT skilled (without qualification)	
	men	women	men	women	men	women
Difficult	3	4	4	3	4	5
Not so difficult	7	5	4	5	1	-
Easy	-	1	1	1	2	1
Total	**10**	**10**	**9**	**9**	**7**	**6**

TABLE 4.10 OPPORTUNITIES FOR IT EMPLOYEES PROMOTION
IN THE ORGANIZATION

(Unit:enterprise)

Opportunities Promotion	Qualification and skills					
	University qualification		Certificate in IT		IT Skilled (without qualification)	
	men	women	men	women	men	women
Very good	2	1	-	-	-	-
good	5	5	2	2	2	2
Fair	2	2	4	3	2	2
Not at all	1	1	1	1	2	2
Total	**10**	**9**	**7**	**6**	**6**	**6**

TABLE 4.11 A COLLECTIVE AGREEMENT AND OTHER DEMANDS

(Unit: enterprise)

Type of enterprise	Collective agreement		Demands from IT employees	
	Yes	No	Yes	No
1.Software consultant	-	3	1	2
2.Manufacture of Computer machinery	-	3	-	3
3.Textile industry	1	2	-	3
4.Others Manufacturing	-	3	-	3
Total	**1**	**11**	**1**	**11**

TABLE 4.12   PLAN TO EXPAND, HIRE MORE ICT WORKERS

AND TRAINING PROGRAMMIES

(Unit : Enterprise)

Type of enterprise	Expand	Hire more ICT workers	Training program
1.Software consultant	3	3	3
2.Manufacture of Computer machinery	-	-	-
3.Textile industry	2	2	2
4.Others Manufacturing	3	2	1
Total	8	7	6

Chapter 5
Conclusions and Recommendations

5.1   Conclusions

The Thai government has stepped in to take a role in the application of ICT in social and economic development is laid out in the IT 2010 Policy Framework, and the ICT Master Plan 2002-2006, has drawn up in response to rapid technological development. Both of these policy documents are in accord with the 9th National Economic and Social Development Plan. The master plan maps out administrative, monitoring, and assessment mechanisms, as well as setting targets and achievement indicators for the overall plan and for each strategy.

However, to date Thailand has not collected systematic information or statistics concerning ICT on a continuous basis. Any data that has been collected has been done in a piecemeal manner and, in several instances, has been conducted on an ad hoc basis, thus making it difficult and cumbersome to assess the overall ICT situation. This lack of data and statistics has been a crucial obstacle to the assessment of results findings following the objectives of the study.

Anyhow, The investigation from previous chapters reveals some major ICT indicators in Thailand leading to the following conclusions;

5.1.1   The proliferation of ICT in Thailand has been expanded both, the use of ICT and the production of ICT. According to the " Thailand ICT Indicators" at the macro level demonstrated by the quantity of ICT users (both the enterprises and individuals) such as increasing in ICT import and exports parts and accessories and industrial manufacturing machines, increasing in the number of enterprises and individual person with computers and internet users, increasing in ICT infrastructure and telecommunications; increasing in demand for ICT employment, etc., One of the important policies of the government is the establishment of the Ministry of Information, Communication and Technology (MICT) in October 2002.

ICT framework for 10 years, ICT Master Plan for 2002 - 2006 and Thailand Development Vision for National Competitiveness have been developed under the close and mutual understanding. These policies are contributive to the increase and expansion of electronic and computer production and users which correlate with the increase of software and networking. Thus, Thailand is considerately to be in the position of ICT strong consumer and strong producer . Anyhow, the most important factor is the sufficient number of quantity and quality of ICT personnel but these data and statistics have not yet been collected. This lack of data and statistics has been a crucial obstacle to estimate the real position of ICT labor market.

5.1.2 The state of Decent Work in Thailand prior to the advent of ICT. has met with the same problem. There are no official indicators for Decent Work due to the fact that the data and statistics collected are piecemeal or on ad hoc basis . Moreover, some significant data and statistics that may related to ICT and decent work have not yet been collected such as data on workforce employed in the ICT Sector, the expansion of education in the form of e- learning, the number of students graduation with qualifications in network computing, and the number of employees who are able to access ICT. These data and statistics are necessary for the analysis of this ICT research study.

At present, Decent Work in Thailand can be measured by looking indept into the provisions of past and present labor laws and labor administration regulations, Thai labor laws today cover such activities and facilities as employment promotion, employment services, alien occupations, skill promotion and development, labor protection, labor relations and social security. These labor laws are drafted in compliance with the ILO Constitution and international labor standard. By and large, working conditions of the labor force in Thailand, is considered decent enough. "Decent work" means the work that constitutes an economic growth and leads up to a

better level a social quality of labor. For example, statistical report used as bases for economic and social indicators shows a changing trend at macro level towards the increase. Therefore, the ICT impact, instead of being adverse, has given positive results.

Additional data on general Economic Information (Table 5.1) shows Thailand's economic environment and imply the national economic policy. Several indicators mean a revival of the economy in terms of economic growth , a reduction in unemployment . Thus , the ICT policy for national economic growth and social development and social strength are confirmed.

On the other hand, the micro level data collected by a case study method finds that ICT employed persons involved are the people with high level of education, knowledge and skill. Generally, these persons have qualification and capabilities of getting higher pay than other. Furthermore, there are several studies giving the facts that economic status of employees normally correspond with the improvement of their standard of living and their families' quality of life. Similarly this research also find that workforce with ICT qualifications benefit from ICT positive impact both economically and socially .

With reference to the World Employment Report 2001, mentioning the possibility of ICT negative impact on the decent work is able to happen in the Thai society this study sees that it is too early to make such conclusion before systematic surveys by competent authorities are taken place.

5.1.3 Analysis of the Case Study has been based upon the responses to the questionnaires At the micro level, the responses not much differed from the macro level. All of the respondents answered in favor of the use of ICT. They referred to the impact of ICT on employment as a new instrument for job creation. However,

the relationship between ICT and decent work is not too impressive. This may arise from some unclear questions in the questionnaires.

5.1.4 As a rule, following the ILO investigation method is the best way to get more information for the analysis. Unfortunately, in the case of Thailand, the constraints of time and scarcity of data and statistics are the obstacles to gain more workable.

Data and information gathering for use as a sample of case study method conducted in 12 enterprises , in different region of Thailand cannot be the representative for the whole Kingdom, They can provide some facts as follows:

First , application of ICTS in Thailand do not destroy employment trends. There is a new economy , the perspectives for a durable reduction of unemployment and expanding international trade and creating more jobs.

Second , there is a positive impact of both the use of ICT and the production of ICT in relation to the answering for future perspective of more employed personnel and new employment generating activities emerge too.

Third , the potential for an international division of labour base on the relative costs is enormous in ICT - enabled services as high - cost economics move up the value chain , leaving lower value - added activities to be contracted out to lower - cost developing economics.

Fourth , most of workers - and contrary to the popular image of widespread insecurity and rapid change - employment stability remains the norm. This is because these rapid changes are taking place within firms, so that instability is internalized,

Employment prospects will depend eritically on sustained growth in the world economy which also rely on many factors, but among them there has been considerable debate and discussion on the potential of ICT for raising growth rates, productivity improving living standards, and lowering unemployment. The Thai Government has clearly indentified 4 priority issues to be handled in a systematic manner ; they are : strengthening the country competitiveness , improving social capital , reducing poverty , and promoting sustainable development by ICT is a means.

5.2   Recommendations

5.2.1 As some institutions in Thailand are jointly working on the compiling of necessary data for a systematic analysis of the nation's ICT situation, this project should get more support from the relevant ministries and organizations concerned to ensure a thorough picture of ICT in the country.

5.2.2 Special mutual collaboration should be encouraged among Ministries and private organizations concerned in studying the ICT is economic and social impact on the labour force in Thailand .

5.2.3 The Thai Ministry of Labour, should give attention to the results of this study, as well as studies relating to indicators and measurement on ICT and decent work from others countries for the improvement of labor administration in Thailand.

5.2.4 The ILO should continue its role and effort on contributing to the investigation and further debates and discussions on life at work and the well-being of the workforce and human resources development   at   the national level besides regional and global.

Table : General Economic Information

	Year					
	1997	1998	1999	2000	2001	2002
Population (Million)	60.82	61.47	61.66	61.88	62.31	62.80
Unemployment rate	1.5	4.4	4.2	3.6	3.2	2.2
Real GDP growth (%)	-1.4	-10.5	4.4	4.6	1.9	5.2
GDP at current prices (Bill. Baht)	4,733	4,626	4,637	4,916	5,123	5,430
Exports (Bill. Baht)	1,789.8	2,181.1	2,150.0	2,730.9	2,807.9	2,871.5
- as % of GDP	37.8	47.1	46.4	55.6	54.8	52.9
Imports (Bill. Baht)	1,874.6	1,678.0	1,800.1	2,513.5	2,695.6	2,722.7
- as % of GDP	39.6	36.3	38.8	51.1	52.6	50.1
Trade balance (Bill. Baht)	-84.8	503.1	349.9	217.4	112.3	148.6
- as % of GDP	-1.8	10.9	7.5	4.4	2.2	2.7
Current A/C (Bill. Baht)	-40.2	592.2	470.0	371.5	276.1	328.5
- as % of GDP	-0.8	12.8	10.1	7.6	5.4	6.0
Balance of payments (Bill. Baht)	-299.2	57.6	172.7	-58.4	57.6	180.8
Baht/US$ (Selling rate)	31.48	41.58	37.95	40.26	44.58	43.11
SET index (Close)	372.7	355.8	481.9	269.2	303.9	356.5
Market cap.* (Bill baht)	1,133.3	1,268.2	2,193.1	1,279.2	1,607.3	1,986.2
- as % of GDP	24.0	27.4	47.3	26.0	31.4	36.6

Source: NESDB, BOT, MOC, SET

Remarks: * As of September 2003, the market capital of Thai Stock Market was well over
2,600 billion baht.

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Appendix 1
Occupations related to ICT in Thailand

The 2003 Standard Classification of Occupations of Thailand defines ICT Related as The following grouping:

Group 213   Computing Professionals

The professionals in this group are the officials who research, plan, develop and improve the system of computing database and several types of related software, e.g. designing the structure of information and database, the calculation by the set of instruction (Algorithms), the data communication in several types of computing configuration for the specific use. They test and maintain the computing programs including supervising other workers' jobs.

The occupations in this group are as follows:

2131   Designers and Analysts of Computing System

2132   Programmers, Program Writers

2133   The computing professionals who are not classified elsewhere

Unit 2131   Computing Systems Designer and analyst

The occupations in this unit are the officials who research, improve, develop the idea and the method of operation in computer. They analyse, plan and design the system of computing works including several techniques that is related to the system of database, calculation the data, making the network of development and software programs. They design the maintenance of hardware and software including doing other related jobs and supervise other workers.

The occupations in this unit are as follows:

2131.10   Computer Systems Analyst and Designer

The professionals plan, study, analyse, design, apply, test, assess and maintain the computer systems to supply what the users have demanded.

2131.20   Application Software Specialist

The professionals plan, study, analyse, design, apply, test, assess and maintain the application software including solving several happened problems.

2131.30   Data Communication Specialist

The professionals plan, study, analyse, design, apply, test, assess and maintain the networking and data communication systems including solving several happened problems.

2131.40   Database Specialist

The professionals plan, study, analyse, design, apply, test, assess and maintain the system of database and the systematic arranged database program including solving several happened problems.

2131.50   IT Security Specialist

The professionals plan, study, analyse, design, apply, test and assess the information technology security including solving several happened problems.

2131.60   Software Engineers

The professionals research, analyse, design, apply and test the method or process including technology for supporting the development of the mainframe software to be most quality.

2131.70   CAD & CAM Specialist

The professionals plan, study, analyse and create the jobs of designing and production by computer including applying, testing, assessing and giving the advices technically.

Unit 2132   Computer Programmers

The occupations in this unit are the officials who write the computer programs as the users have wanted or by the advices or as the computer designers and analysts have fixed. They test and maintain the computer programs, write and

make the documents of instruction, e.g. the machine's codes, necessary computer languages and the testing programs to correct it. They do other related jobs and supervise other workers.

The occupations in this unit are as follows:

2132.10   Programmers

The professionals write, create, alter, test and correct the applied software and/or systematic software to conform to the regulations of the program. It includes giving the technical advices and the advices to solve some related problems.

2132.20   Web Masters

The professionals design, create, alter, test, correct and improve the website and several information deriving from the websites to be updated.

2132.30   Computer Trainers

The professionals give the computer subject's training courses, both short and special courses including the scientific and technical consultation.

Unit 2139   Computing Professionals Not Elsewhere Classified

The occupations in this unit are the people who generally well know both hardware and software of computer. They design and practice in the field of hardware and software computer application

The occupations in this unit are as follows:

2139.10   Sale Engineers

The professionals plan and operate in the fields of sale and marketing. They analyse the need of customers and give the knowledge and support the technique and development of business.

2139.90   Computing Professionals Not Elsewhere Classified

The professionals in this group include the people who do their jobs in the field of computer that are not classified elsewhere.

The project -- including the problems of expenditure that may happen during the operation. They write the reports submitting to the engineering department of the company to acknowledge the problems of expenditure and the investment.

3119.90   Physical scientific and Engineering Technicians Whom Are Not Classified Elsewhere

The occupations in this group include the physical scientific and engineering technicians who not classified in the other sections.

Group 312   Computer Associate Professionals

The professionals in this group are the workers who give the service to the users of microcomputers and computer programs concerning the installation, solving the problems, maintaining the programs including recording the information, managing the system of processing, saving the information, writing and putting the programs to the robots. They operate and control the operation of the robots; they may receive the advice from the managers or the other related professionals along with supervising the other workers.

The Professionals in this group are as follows:

3121   The assistant in computer work

3122   The workers in computer equipment

3123   The technicians who control the industrial robots

Unit 3121   Computer Assistants

The occupations in this unit are the workers who give the service to the users of microcomputers and software. They look after the installation and solving the problems that happen; they install the new programs in the hardware and the system of each type. They install the connected equipment, maintain, correct and improve the programs that are being used to be modem. They could bring the

knowledge of program writing and the processor to use in solving the problems that happen to work properly. The operation is under the instruction of the computer professionals who do the related jobs and oversee the other workers.

The occupations in this unit are as follows:

3121.20 Computer Assistants

The professionals help the computer professionals in the installation, maintenance of the computer, its equipment and various programs. They improve or install the new programs in the computers or install the connected equipment according to the command or instruction of the computer professionals. They give the advice or help to the service users when the new system has b een set up or has a problem.

The analysis of quality and the use of new or old products. They order to research the development of products by the cooperation with the sale and producing units and the operation in accordance with the advices of the two departments. They consider the resources to analyse the products or make the deal about the research and study with the companies that consult about the projects. They consider the scientific reports about the products to be the way of the selling plan.

Unit 1238   Information Technology Managers

The professionals in the unit are the officers who control, cooperate, order, follow, inspect, assess and take responsibility in the information technology in various parts including being the representatives of th e organizations to run business. They also do other related jobs and supervise other workers as well.

The occupations in this unit are as follows:

1238.20   Project Managers

The professionals control, cooperate, order, follow, inspect, assess and take responsibilities in the information technology of the project. They administer the projects, create, apply or repair the system by managing the resources, e.g. personnel, equipment and the suitable budget that is enough for

running the projects. They are th e leaders of personnel teams of the project, fix the limitation of works, and make the plan of works. They also give the advices, follow the progress and control the quality of operation. They analyse and develop the system for applying the work and they may take part in fixing the policy of the skill development and the knowledge of personnel.

1238.30 System Managers

The professionals control, cooperate, order, inspect, assess and take responsibility in the information technology of the system of work. They plan, manage and control the administration of program and develop the system. They reconsider or revise and assess the need of service providing and give the help to the system users in accordance with the need of the business information technology. They direct, oversee and approve the analysis. They design and develop the applied program including giving the technological advice, make the system and practical documents public. They may oversee; they train the workers about the management of th e information technological system - technically.

Unit 1239 Other Department Managers Not Elsewhere classified

The professionals in the unit include the managers who are not classified elsewhere. For example, the specialists of a specific science or of specific job of the working places of industry, commerce, agriculture, services, infrastructure, transport, or communication within the individual organizations or the government organizations or in more than one office, e.g. commerce, finance, publication, infrastructure, welfare, property, dwelling place and so on.

3121.30 Sale Representatives, IT

The professionals sell the goods or service of information technology (IT). They analyse the need, contact the customers or the people who are interested in, present and show how to use a computer and its equipment. They cooperate between the customers and the manufacturers; they study the new techniques in the information technology computers. They may install the programs; give the advices,

technical services and solving the problems that may happen to the customers after sale.

Unit 3122   **Computer Associate Professionals**

The occupations in this unit are the workers who control the connected equipment and which is related to the computers that are used to record, storage, produce and process the data, the demonstration of data in the form of alphabets, digits or graphs showing on the monitors, papers or the films. They manage the system of data processing to be effective to make the service users get impressed. They look after the installation of magnetic recording tapes and the data discs; they record the data in the programs that the computers could read the information and they save the data. They store the discs, tapes and the data processing; they bring the knowledge in computers to apply to the work and to solve the problems that happen during the operation. They do the related jobs and oversee the other workers

The professionals in the unit are as follows:

3122.10 Technicians, Computerize

The professionals test and solve the problems that affect the use of computer system and the related equipment to work normally.

3122.20 Computer Operators

The professionals operate, control, look after and test the work of computer system and the system of computer's woks. They operate with computer system; they control, look after the operation of computer system to make it usable in full efficiency. They record the data in by typing or using the graphic reader equipment and proceed with working according to the fixed order in the programs, e.g. the use of the graphic pictures design, the presentation of the result of works via computers or the showing-result equipment. They control the data processing including the maintenance of equipment primarily to make it usable.

Unit 3123   Industrial Robot Controllers

        The occupations in this unit are the workers who control the operation of the industrial robots. They design and improve the specific commanding programs for the operation of each type of robot. They control the operation, maintain and improve the operation of robots; they do the related jobs and oversee the other workers.

Unit 4111   Stenographers and Typists

        The professionals in this group are the workers who keep the information from speeches and written information in shorthand or by typing including the arrangement of document files, photocopying and so on. They do the related jobs and oversee other workers.

    4111.20 Stenographers

        The professionals record the speeches or several subjects in shorthand and write them down. The work in shorthand or using the shorthanded typewriters; they write them down from the shorthand or the shorthanded typewriters or send them to the typists.

    4111.30 Typists

        The professionals type the documents by the typewriters. They type the Thai documents or the foreign language documents, e.g. letters, reports, notice, forms and so on. They revise and correct the typed documents rightly before making the copies. They arrange the document files and make the accounts of document; they may do other jobs on assignment.

Unit 4112   Word - Processor and Related Operators

        The professionals in this unit are the workers, who type the subjects, arrange the outline or patterns of printing jobs. They correct, rewrite and print out the subjects by the computers. They receive and send the documents by the fax

machines, telex machines or other equipment. They do the related jobs and oversee other workers.

The occupations in this unit are as follows:

4112.20 Clerks, Word Processing

The professionals put the information into the computer system by keying in or scanning. They check the recorded information and then correct and print it out. They look after the machines to be usable all the time.

4112.30 Clerks, Computer Graphic

The professionals type the manuscripts by using the computers to key the information in. They arrange the pages and columns of article; they make the width of letters in each line to be suitable and easy to type and read. The may fix

the pattern and sizes of the used font; they put the pictures as illustration after arrange the sizes. They may use the scanners to import the pictures into the computers and use the page maker program to design the pages according to the artists design. They may consider doing it by themselves.

4112.40 Clerks, Telegraph/Tele fax

The professionals receive and send the messages or information via the fax or telex machines. They type the messages according to the manuscripts rightly and sent to the addresses of the addresses. They receive the messages and pass to the receivers after making the daily registration. They may read and translate the codes before sending to the receivers.

Unit 4113   Data Entry Operators

The professionals in this unit are the officials who record the numerical information and other by using the computers. They record the information into the

cards or tapes by the punching machines for the data processing and sending the information. They check and correct the recorded data rightly; they do the related jobs and oversee other workers

The occupations in this unit are as follows:

4113.20 Clerks, Computer-Data-Entry

The professionals record the information, numbers and others by the computer. They record the data into computer, cards or magnetic tapes according to the types of equipment for the data processing and sending the information to several units. They revise and correct the information for the correctness of the recorded information.

Unit 4114   Calculating-Machine Operators

The professionals in this unit are the workers who keep and check the accounts or the record of running business by using the electronic machines or calculators for calculating the numbers. They do other related jobs and oversee other workers.

The occupations in this unit are as follows:

4114.20 Clerks, Accounting Machine

The professionals use the calculators for calculating in the field of mathematics or accountancy. They check the documents of information to know the forms they have to calculate it. They use the calculators to work on the basic mathematics, or on the complex calculation according to the types of work. The check and record the results of calculation.

Unit 4115   Secretaries

The professionals in this unit are the officials, who check and make the copies of letters or the meeting reports and others, by the typewriters or computers. They receive and send the letters, manage sending the documents or letters by mail. They make the appointments; hold the meetings and help holding the meetings.

They look after the rights and leave of absence of the workers and control managing the system of filing documents. They write and reply the letters in the names of organizations and companies. They do the related jobs together with overseeing other workers.

Questionnaire for employers

Survey on the impact of Information and Communication
Technology
On Decent Work in Thailand 2003

Location : _____

Contact Detail

Company or Trading Name :	
Postal Address :	
Street :	

Telephone :		FAX :		Mobile :

E - mail :	

Manager or Lead of Establishment

Name :		Title :	

Person available to answer and inform about personnel issues

Name :		Position :	

Part 1 : Workplace Characteristic

1. Year of commencement

2. Main activity or service provided at this establishment

3. Industial Category (tick one only – indicate the main establishment's activities)

1. ☐ Manufacturing
2. ☐ Construction
3. ☐ Retail Trade
4. ☐ Wholesale Trade
5. ☐ Community Services
6. ☐ Sport & Recreation
7. ☐ Business Services
8. ☐ Hospitality
9. ☐ Personal Services
10. ☐ Other _____

4. Status of this establishment

1. ☐ Family Owned
2. ☐ Independent Organisation
3. ☐ Franchise
4. ☐ Branch of a private owned company
5. ☐ Government department or public enterprise

5. Has this establishment changed ownership in the last 12 months ?

  1. ☐ Yes
  2. ☐ No

6. Selact the following status which is the best description of ownership

  Private Sector :

  1. ☐ 100% local Owned
  2. ☐ 51% or more (Predominantly local owned)
  3. ☐ Equally 50% (Local and Foreign Owned)
  4. ☐ 51% or more (Predominantly Foreign Owned)
  5. ☐ 100% Foreign Owned

  Public Sector :

  6. ☐ Public Service Department
  7. ☐ Public Enterprise
  8. ☐ Authority Public Organisation
  9. ☐ Public Independent Organisation

  Others :

  10. ☐ Non – Commercial Benefit _____
  11. ☐ Commercial Benefit _____

7. Location of Head Office of this Establishment :

  1. ☐ Thailand
  2. ☐ Foreign Country (please specific name) _____

Employee Characteristics

Employee means all person who works on salaries or wages at the establishment and has names on the payroll list. This includes managers, all employees on paid leave and those on workers compensation but exclude sub-contractors and their employees, out workers who work on a contract for service and free lanch.

8. Please indicate your establishment's employee characteristics

	Previous Employees (Before 2003)			Current Employees (2003)			Anticipated Employees (next year – after 2003)		
	Males	Females	Total	Males	Females	Total	Male	Females	Total
Permanent – Full Time									
Permanent – Part Time									
Temporary – Full Time									
Temporary – Part Time									
Total employers									

Part 2 : Qualification of your IT staff.

9. How many of your current IT related employers are in each of the following groups?

	Qualification in IT			Certificate/Diploma in IT			With IT Skills but no formal Qualification		
	Males	Females	Total	Males	Females	Total	Male	Females	Total
Permanent – Full Time									
Permanent – Part Time									
Temporary – Full Time									
Temporary – Part Time									
Total employers									

10. Please indicate the number of employees who have IT related in the follow groups

(Previous, Present and Future)

	Previous Employees (2002)			Current employees (2003)			Anticipated Employees (2004)		
	Males	Females	Total	Males	Females	Total	Male	Females	Total
Full Time workers									
Temporary workers									
Contractors and their employees									
Trainee									

11. Please indicate the approximate number of IT related employees who have left your enterprise to migrate or to work for other employees.

	Emigrated			Resigned to take up job elsewhere in Thailand			Employment Terminated		
	Males	Females	Total	Males	Females	Total	Male	Females	Total
With University Qualifications									
Certificate in IT Vocational Education									
With IT Skills but no formal Quatification									

12. How difficult is it for you to recruit and retrain IT employees ?

	University Qualification		Certificate in IT		Skilled but without IT formal qualification	
	Male	Female	Male	Female	Male	Female
Difficult						
Not so difficult						
Easy						

13. How do you rate the growth opportunities for IT employees in your organization ?

	University Qualification		Certificate in IT		Skilled	
	Male	Female	Male	Female	Male	Female
Very Good						
Good						
Fair						
Not at all						

14. Do you have a collective agreement with trade unions ?

     1. ☐ Yes

     2. ☐ No

15. Do you have any grievances from IT employees ?

     1. ☐ Yes

     2. ☐ No

16. Are there any other comments you would like to make ?

_____

_____

17. What are the potential of growth of ICT in Thailand

_____

_____

18. From your point of view, what are the constraints of ICT growth :

     1. ☐ in your organization : _____

     2. ☐ in Thailand : _____

Part 3 : Reproduction of ICT

19. Do you have any plans to expand your ICT production ?

    1. ☐ Yes

    2. ☐ No

20. If yes, what are your plans ?

_____

_____

21. Do you have plans to hire more ICT workers ?

    1. ☐ Yes

    2. ☐ No

22. What sort of ICT training programmes do you had/nave will have?

    1. Previous plan   _____

    2. Present plan   _____

    3. Future plan   _____

Part 4 : Problems/obstacles/constraints of ICT used

23. What are the major obstacles of ICT used in Thailand ?

_____

_____

24. Is financial a constraint ?

_____

_____

25. Do you faced any problems from the state/government efficials when introducing ICT in your firm ?

_____

_____

26. What are your views on ICT technical support?

1. ☐ Good
2. ☐ Satisfired
3. ☐ Unsatisfired

Part 5 : Advantages of ICT

27. Has ICT improved your production/services in your organisation ?

1. ☐ Yes
2. ☐ No

28. How does ICT helped your establishment ?

_____

_____

29. Does ICT saved/reduced time ?

1. ☐ Yes
2. ☐ No