

ICT Indicators Initiatives in Thailand: Progress and Lessons Learned

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Abstract

Information and Communications Technology (ICT) has already marked a new chapter in human history as its impact is affecting the whole society across the board. ICT is so pervasive that it changes the way we work, live, play, and learn. The term "information society" is adopted worldwide as a desirable goal of the UN Millennium Development Goal and the WSIS. It is impossible to move towards the ideal information society without some means of measuring it.

In Thailand, the government employs the National ICT Master Plan (2002-2006) as a framework for identifying the ICT indicators to be continuously measured and monitored. The National Statistical Office (NSO) has been assigned to be the focal point responsible for collecting, developing, and disseminating the ICT indicators. In its 2001 national household survey, the NSO introduced a few ICT-related questions in the questionnaire for the first time. Subsequently, these questions have become a regular part in most of the NSO surveys and censuses.

This paper presents some initiatives on collection and dissemination of ICT indicators in Thailand, including the Unified ICT Indicators Project which aims to set up a systematic mechanism in collecting, analyzing, and disseminating ICT indicators on a continual basis. The goal is to have available a core list of indicators to be used in monitoring the progress of our ICT Master Plan, benchmarking our ICT development with others, as well as helping in the policy decision making. Our experiences and lessons learned in this endeavor are also presented.

Introduction

The rapid development of information and communication technology (ICT) in the past few years has brought enormous changes to our daily lives. With its pervasiveness and profound impacts across sectors, ICT is now at the center of socio-economic

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transformation. ICT is indispensable tool for strengthening country's competitiveness as well as for propelling country to the information society. Under these circumstances, the Thai government has put tremendous efforts to assure that ICT-related activities are monitored and their statistical data are compiled and collected on a regular basis.

The concept of ICT statistical collection in Thailand is developed in alignment with the National Information and Communications Technology Master Plan. The Master Plan (2002-2006), formulated under the framework of National IT Policy 2001-2010 (IT2010), is the nation's blueprint to exploit the benefit of technology for national development. Approved by the cabinet in 2002, the Master Plan not only obliges the government with seven principal strategies to achieve in 2006 but also drives the establishment of the Ministry of Information and Communication Technology (MICT) to take a lead in monitoring and evaluating the progress and impact of the Master Plan. There are approximately 80 preliminary indicators which are to be used in monitoring the progress in ICT development, stipulated in the Master Plan.

ICT Indicators in Thailand

Thailand adopts three approaches to obtain ICT statistics and related data. The first approach is to use existing administrative records. The second approach is through survey technique either by adding questions on ICT to existing statistical surveys/censuses or conducting new surveys/censuses on ICT. The final approach is to make use of data prepared by private organizations. We will describe the details of each approach as follows.

1. Use of existing administrative records

Although administrative records are commonly collected by and maintained within government agencies, making use of those data for statistical purposes has not been at their best. Most of the data are often used limitedly by only compiling organizations themselves. Dissemination of ICT-related data to public as well as sharing data among organizations is not common. The data is, nevertheless, provided if and when requested. One of the examples of administrative data, albeit often drawn on, is import-export data, made available by Customs department.

The lack of coordination to bring together isolated data might due to lack of laws or regulations to enforce government agencies to regularly submit data to a single responsible body. Despite the existence of the Statistical Act 1965 granting the NSO with the authority to perform a variety of statistical functions, it excludes activities related to administrative data. Similarly, it might simply reflect the fact that the significance of ICT-statistics has not been appreciated and understood in the past. To ensure administrative records are collected, compiled, and presented on a continual basis, a concerted effort at the policy-level needs to be established.

Telecommunication-related data is the data which telecom operators normally do collect and monitor as part of their business routine. In Thailand, some of the data such as number of telephone lines and mobile subscribers are available. However, not all administrative data are reported partly because of the lack of independent regulatory as well as regulations to compel telecom operators, fixed and mobile alike, to do so. The recently formed regulator, *the National Telecommunications Commission*, might need to take this need for data into consideration.

2. Survey and census technique

The year 2001 is the first year that ICT-related questions were added to existing statistical surveys in Thailand. The NSO and the National Electronics and Computer Technology Center (NECTEC) worked together to developed three questions related to ICT usage and ownership and attached them to a labour force survey. The result of the survey brought the digital divide problem into the spotlight and emphasized the needs of

ICT statistics. Subsequently, ICT-related questions have become a regular part in several of the NSO surveys and censuses, such as household and business establishment surveys.

The government reform in 2002 resulted in the inclusion of the NSO under the MICT (previously, it was under the Office of the Prime Minister). The NSO's interest in ICT has naturally amplified. Eventually, the NSO opted for a full-scale ICT surveys on household and business establishments launched in early 2004.

3. Use of data provided by private organizations

Data on products and services provided by private sector play a limited role in the government's ICT statistics compilation. The data is generated for business use, not for serving government purpose. One of the outstanding and often quoted reports is the data on ICT market.

Thailand IT Market Outlook is an annual report published jointly by Thai IT consortia, namely the Association of Thai Computer Industry (ATCI), the Association of Thai Software Industry (ATSI), and the Information Networking Association (INA). It focuses on industry overview in sales--volume and value--by products as well as customer segments, supplemented with analysis specific to certain segments. Data presented in the report are estimated by and projected through a cooperation from the country's major IT enterprises.

In addition to those methods mentioned above, NECTEC has initiated a few other mechanisms to produce a set of ICT-related indicators. Examples are:

1. Truehits

Truehits (<http://truehits.net>) is advanced web statistics service that monitors and keeps records of web visitors. Statistical information of the visitors such as, their type of currently-used web browser and operating system, screen resolution of their monitor, or their spending time on the web site, along with the number of pageviews and unique visitors are automatically kept for each web site. Through this, we are able to observe behaviors of Internet users and speculate the kind of web sites which are most frequently visited. Recently, Truehits has expanded its statistical services to other areas such as, short message service (SMS) and banner. In its fourth year of operation, Truehits now has more than 7,000 web sites participated. Truehits have been well respected by the Thai Internet community as a reliable and neutral source of web and Internet statistics.

2. Service E-readiness Explorer (SEE) Evaluation Program

To complement with Thailand initiatives on e-Government, in early 2004 NECTEC has initiated the first online survey on government e-Services under "Service e-Readiness Explorer" or SEE evaluation program. The purpose was to evaluate the readiness of government web services, based on five-level of e-Government maturity, i.e. Information, Interaction, Transaction, Integration, and Intelligence, and to provide recommendations for future web service development to achieve high level of integration among various government agencies. A total of 267 government agencies were asked to assess the current status of their e-Services based on ability to provide different types and levels of e-Services via the designated web site.

3. Internet User Profile Survey

Since 1999, NECTEC has carried out an online survey of Internet users on annual basis. The survey helps to provide understanding on the profile of Internet users – who they are in terms of sex, age, location, occupation, etc. and their Internet behaviors – what they do while they are online. The questionnaire is posted on NECTEC web sites as well as other popular ones during September-October each year. The number of respondents has increased gradually, up to 15,000 for the past two years.

The Unified ICT Indicators Project in Thailand²

ICT-related data in Thailand are scattered in many agencies and database. Consequently, it is improbable for data users, being regulators, policy makers, business, etc. to obtain optimum benefits from the presence of data. With partial data available here and there, it is difficult to assess the overall ICT development status of the country. To make it more effective, all important ICT statistics should be gathered into one source and disseminated to the public regularly via a portal. This concept was well-accepted and supported by many agencies concerned and it later became a principal objective of the Unified ICT Indicators Project.

The Unified ICT Indicators Project, approved and supported by the MICT, is a collaborative effort between NECTEC and the NSO to develop a comprehensive ICT indicators database that allow us to assess the country's progress on many aspects of the information society. The project aims to set up a systematic mechanism in collecting, analyzing, and disseminating ICT indicators on a continual basis. Once these indicators are available, they will be put online at the MICT's Operation Center, which will then link to the Prime Minister's Operation Center, to help in the policy decision process. The thesis is that good policy can only be derived from having good information to support the decision making. In this effort, the NSO is responsible for collecting, compiling, and disseminating statistical data whereas NECTEC focuses on research front where most works are on the development of conceptual framework, definitions, methodologies, and survey implementations.

In developing the core list of ICT indicators to be collected, we looked at various sources, e.g., the ICT Master Plan, the OECD's proposal for a core list of indicators for ICT measurement, e-ASEAN Readiness Guide³, etc. After many consultative meetings with relevant agencies, we have agreed on 129 indicators, to be included in the core list. These indicators can be classified into seven categories as follows:

- Infrastructure
- Trade in ICT products
- ICT in human resources
- ICT in education
- ICT in government
- Research and development in ICT
- ICT-related patents

The indicators are then classified into three groups (Group I, II, and III) based on data availability and clear definition as main criteria. Group I and II altogether contain 95 indicators which have reasonably clear definitions and which data are presumably exist. Group III consists of 38 indicators that are ambiguous in terms of definition, data sources, and data availability. More research is thus needed before proceeding to discuss about data collection, analysis, and dissemination of these indicators.

Since the data component of indicators in Group I and II are from various sources, we proceed to seek cooperation from responsible agencies to verify data availability and validity, and, at later stage, to submit the data to the NSO. As a result, only 52 indicators, which can be classified into 8 groups, are collected. Some highlights are as follows:

² This project was introduced to the WSIS forum in "Understanding changes in the Information Society: working towards the internationally harmonized views" by Thaweesak Koanantakool, presented at "Monitoring the Information Society: Data, Measurement and Methods" in 2003.

³ The OCED's proposal for a core list of ICT indicators and e-ASEAN Readiness Guide were tabled at the 2nd ASEAN e-Measurement Workshop, 19 November 2003, Yangon, Myanmar.

1. Telecommunications (8)⁴
 - Number of fixed lines per 100 inhabitants
 - Number of mobile subscribers per 100 inhabitants
 - Number of telephone main lines in operation per 100 inhabitants
 - Monthly telephone usage cost in household
2. Internet (14)
 - Number of PCs per 100 inhabitants
 - Number of sub districts (Tambon) with telecenter
 - Number of Internet users per 100 inhabitants
 - Number of Internet hosts
 - Total Internet access
3. Broadcasting (1)
 - Number of community radio and television stations
4. e-Commerce (1)
 - Number of SME web sites
5. ICT market and industry (5)
 - Growth of exported ICT products
 - Growth of imported ICT products
 - Ratio of imported ICT products to total imported products
6. ICT human resources (13)
 - Number of people receiving ICT training courses from the Ministry of Labour
 - Number of people with IT skills training from the Ministry of Labour
 - Ratio of computers to students at all levels
 - ICT employment in all industries
7. ICT in government (3)
 - Government's IT budget (for both hardware and software)
 - Intensity of government e-Procurement
 - Ratio of government agencies with web sites
8. R&D and Patents (5)
 - Number of patents per population
 - Ratio of ICT patents to total patents
 - Expenditure on ICT research and development

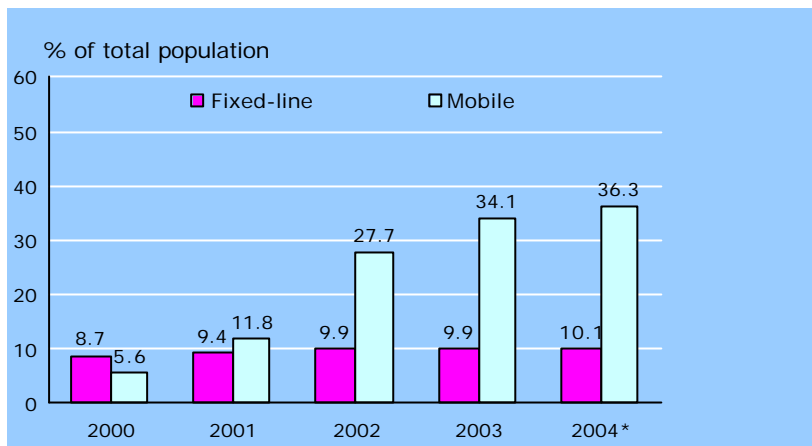
Current Status on ICT Diffusion in Thailand

This section provides some analysis on the data which we collected as part of the Unified ICT Indicators Project described above. We select indicators relating to the digital divide as bridging the digital divide is one of the main goals of our ICT Master Plan. This comprises of telecommunications, computer usage, and Internet penetration.

Regarding telecommunications, in recent years we have witnessed the extraordinary growth of mobile phone market. Its penetration rate has now reached 36.3% and surpassed that of fixed-line, which stood at approximately 10% (Figure 1). A rapid growth of mobile market in the past few years, nonetheless, has not yet solved the digital divide problem. Only 13.3% of population in the northeast region have access to mobile phones, compared to 42.4% in Bangkok (Figure 2). The gap in fixed-line penetration between people who live in Bangkok and its vicinity and the rest of the country is even more notable (Figure 3).

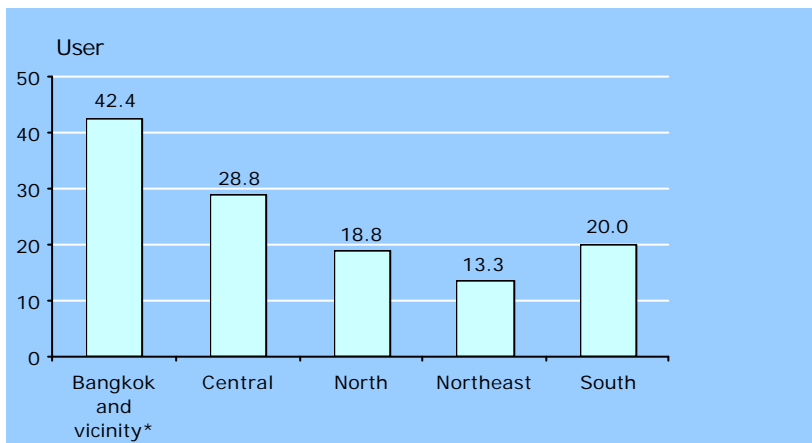
⁴ The figure in parenthesis indicates the number of indicators collected for each type.

Figure 1: Fixed-Line and Mobile Phone Penetration Rate (2000-2004)



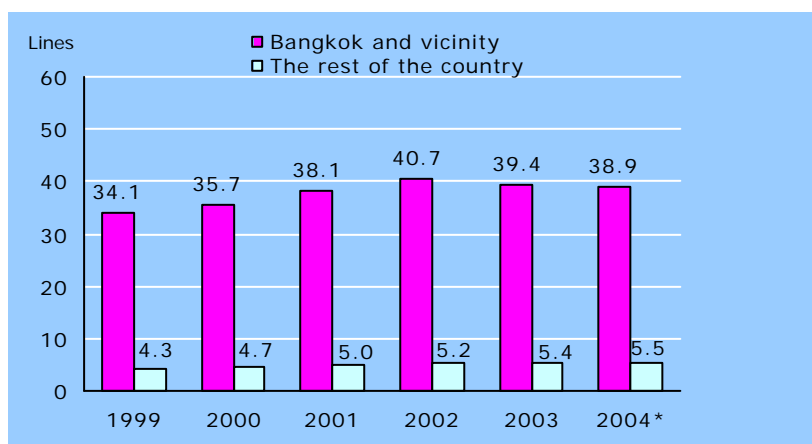
Source: TOT Corporation Plc. and CAT-Telecom Plc.
Remarks: * as of March 2004

Figure 2: Number of Mobile Users per 100 Inhabitants by Location (2003)



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

Figure 3: Fixed Lines per 100 Inhabitants by Location (1999-2004)



Source: National Statistical Office
Remarks: * Vicinity includes Pathumthani, Nonthaburi, Samut Prakarn, Samut Sakhon, and Nakhon Pathom
** as of March 2004

With regards to computer diffusion, the year 2003 marked the proliferation of computers in Thailand as a result of government intervention – the “low cost PC” initiative. The project made available PCs and software at affordable price to general publics. Nevertheless, the digital divides still prevails, with households and business establishments in Bangkok have better access than those in other regions (Table1).

Table 1: Number of Computers per 100 Households (2001-2004)

(Unit: Number of PCs)

	2001	2003	2004
Overall	5.8	9.6	11.7
Bangkok	23.3	29.4	30.6
Central	5.5	8.9	12.2
North	3.0	6.8	9.5
Northeast	2.3	4.9	6.5
South	2.3	6.6	8.8

Source: National Statistical Office

In terms of Internet usage, the number of users in 2004 has reached approximately seven million or 11.9 users per 100 population in 2004. There was apparently difference in the extent to which Internet was taken up in each part of Thailand. Approximately 26% of people who live in Bangkok use Internet, compared to 7.7% for those residing in the Northeast. (Table 2). Furthermore, the diffusion of ICT among business establishments is limited and uneven. On average, 11% of business establishments have computers, whereas only 4.2% and 1.2% access to the Internet and own web sites respectively (Figure 4).

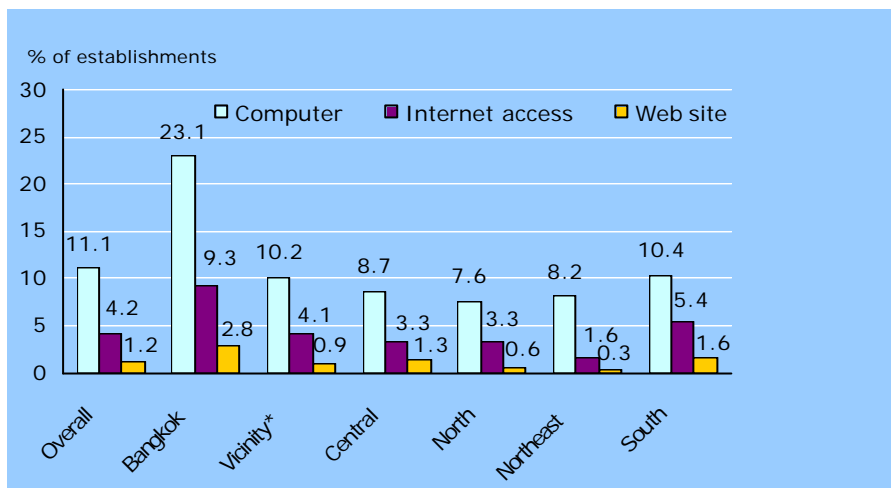
Table 2: Internet Penetration by Location

Region	No. of users (million persons)			Users per 100 inhabitants		
	2001	2003	2004	2001	2003	2004
Whole kingdom	3.53	6.03	6.97	5.6	10.4	11.9
- Bangkok	1.23	2.01	2.00	16.0	26.9	26.6
- North	0.52	1.34	1.52	4.6	10.1	11.2
- Central	0.83	1.00	1.21	5.9	9.7	11.4
- Northeast	0.56	1.07	1.49	2.6	5.6	7.7
- South	0.39	0.62	0.76	4.7	8.2	9.9

Source: National Statistical Office

Remarks: * Vicinity includes Pathumthani, Nonthaburi, Samut Prakarn, Samut Sakhon, and Nakhon Pathom

Figure 4: Percentage of Establishments with ICT by Region (2003)



Source: National Statistical Office

Remarks: * Vicinity includes Pathumthani, Nonthaburi, Samut Prakarn, Samut Sakhon, and Nakhon Pathom

As for e-Commerce, according to the survey conducted annually by NECTEC, the transaction value of 61 key players in B2B and B2C business in 2003 is approximately 58,529 million baht⁵, of which nearly 99% is B2B. For B2G, according to the report from the Comptroller General's Department, Ministry of Finance, the value of government e-Auction in 2003 is 4,907 million baht. Approximately 80% of this are from the State enterprises. The rest are from various government agencies.

Publications on Thailand ICT Indicators

NECTEC released the first issue of ICT statistics booklet "Thailand ICT Indicators Series I" in October 2003, during the APEC Summit Meeting in Bangkok. As one of the output of Thailand ICT Indicator Project, the book presents diverse ICT indicators compiled from several sources. The work was relatively successful as we received positive and enthusiastic responses as well as comments from both locally and internationally. The second installment of this series featuring more variety of ICT statistics and analysis is underway and expected to release in February 2005. The publications and other ICT-related statistics can be found at the web site, <http://www.nectec.or.th/pld/indicators/index.html>

Lessons Learned

"If you cannot measure it, you cannot improve it", Lord Kelvin (1824-1907)

The endeavor of Thai government to compile, collect, and disseminate ICT statistics on a regular basis has made good progress in the past two years. Based on our experiences from the Unified ICT Indicators Project, a few lessons learned have been identified as follows.

- Recognition of the importance of ICT indicators is a fundamental requirement for effective development of ICT statistics. To complete the list of ICT indicators demands coordination efforts, in a gigantic scale, among relevant organizations, from both government and private sector. Therefore, it is important to establish, from the outset, a common understanding on each agency's roles and contribution in such endeavor. At the same time, awareness and understanding of ICT and

⁵ 1 USD = 38.71 baht (as of January 24, 2005)

ICT statistics should also be promoted to the general public such as households, businesses, and individuals in order to increase their cooperation when and where needed.

- Initial cooperation needs to be turned into a long term partnership where regular communication and interaction is needed. To accomplish this, an endorsement and enforcement from the policy-level might be essential.
- In formulating and compiling the indicators, identifying and determining a list of indicators is an initial step that has to be taken very carefully in order to have a full coverage of ICT development situation in the country. Each indicator should have a clear purpose and, as shown in our case, relate to the information needed for policy decision.
- The definition and classification of indicators need to be clearly defined from the outset, otherwise the data collected might be unreliable and unusable. However, since a number of indicators are often employed for international comparison, the definition should be consistent with others. Through this effort, we have learned that some indicators stipulated in the ICT Master Plan may need to be redefined. Many of those fell in to Group III indicator, which means they are not clearly defined and no data are currently available. Further research are needed to conceptualize its meaning and to identify appropriate measurement.