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**ANALYSIS OF E-GOVERNMENT AND ICT POLICY
IN INDONESIA: LESSONS FROM COMPARATIVE
EXPERIENCE**

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Let $y(x)$ be a function defined on the interval $[a, b]$ such that $y(a) = \alpha$ and $y(b) = \beta$. Consider the functional $J[y] = \int_a^b F(x, y, y') dx$. The Euler-Lagrange equation is given by $\frac{\partial F}{\partial y} - \frac{d}{dx} \frac{\partial F}{\partial y'} = 0$. If F does not depend explicitly on x , then the Hamiltonian $H = y' \frac{\partial F}{\partial y'} - F$ is a constant of motion. This leads to the Beltrami identity $y' \frac{\partial F}{\partial y'} - F = C$, where C is a constant. This equation can be used to reduce the order of the Euler-Lagrange equation.

For example, consider the functional $J[y] = \int_a^b \sqrt{1 + y'^2} dx$. The Euler-Lagrange equation is $\frac{d}{dx} \frac{y'}{\sqrt{1 + y'^2}} = 0$. Since F does not depend on x , we can use the Beltrami identity to get $\frac{y'}{\sqrt{1 + y'^2}} = C$. Solving for y' gives $y' = \frac{C}{\sqrt{1 - C^2}}$, which is a constant. Integrating this gives $y = \frac{C}{\sqrt{1 - C^2}} x + D$, where D is a constant. This is the equation of a straight line, which is the extremal of the functional.

Another example is the functional $J[y] = \int_a^b (y'^2 + y^2) dx$. The Euler-Lagrange equation is $y'' - y = 0$. The general solution is $y = A e^x + B e^{-x}$. Applying the boundary conditions $y(a) = \alpha$ and $y(b) = \beta$ gives a system of linear equations for A and B . Solving this system gives the extremal $y(x)$. The second variation $\delta^2 J$ can be used to check if the extremal is a minimum or maximum. In this case, $\delta^2 J$ is positive definite, so the extremal is a minimum.

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အချက်အလက်များ

အချက်

၁။ အချက်အလက်များကို အောက်ပါအတိုင်း ဖော်ပြထားပါသည်။
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List of Abbreviations and Glossary*

ADB	-	Asian Development Bank
APJII	-	Association of Internet Service Providers (in Indonesian)
BAPPENAS	-	Badan Perencanaan Pembangunan Nasional (National Planning Agency)
CARD	-	Computer-aided Administration of Registration Department
CCA	-	Central Coordinating Agency
CIO	-	Country Information Officer
ESD	-	Electronic Service Delivery
FYAP	-	Five-Year Action Plan
GITN	-	Government Integrated Telecommunication Network
GoI	-	Government of Indonesia
GoM	-	Government of Malaysia
HR	-	Human Resources
IIDP	-	Information Infrastructure Development Project
ICT	-	Information and Communication Technology
IT	-	Information Technology
		"There is a slightly different in using the word IT and ICT. In North America, it uses the word IT while in Europe it uses ICT, in term of IT will be useful if only for communication"
IFIs	-	International Financial Institutions
ISPs	-	Internet Service Providers
ITCT	-	Indonesia Telematika Coordination Team
JG	-	Japanese Government
MAMPU	-	Management Modernization Planning Unit
MCI	-	Ministry of Communication and Information
MDC	-	Multimedia Development Corporation
MIT	-	Ministry of Information Technology
MHA	-	Ministry of Home Affairs
MNE	-	Ministry of National Education
MSC	-	Multimedia Super Corridor
NFM	-	New Funding Mechanism
NCB	-	National Computerization Board
NGOs	-	Non Governmental Organizations
NIIT	-	New Delhi IT Training Major (a Leading Global IT Solutions)
NITF	-	National Information Technology Framework
NITP	-	National Information Technology Plan
NPM	-	New Public Management
N-21	-	Nusantara 21
PC	-	Personal Computer
R&D	-	Research and Development
SG	-	Singaporean Government
S&T	-	Science and Technology
UNDP	-	United Nations Development Programme
UNI	-	Union Network International
USDC	-	United States Department of Commerce
WB	-	World Bank
WMRC	-	World Markets Research Center

* that appear more than one time in the paper.

Chapter 1 INTRODUCTION

E-governance is not just another facet of governance or one more interface between citizens and government. It is a whole new opportunity
(Kiran Bedi, et al. 2001: 1)

I.1 Background

The citizen's experience with the institutions of governance usually leaves much to be desired. In many parts of the world, people dealing with government agencies have to engage in dreary and time-consuming activities they would much rather avoid. The growing complexity of the society requires improvement of public administration performance. The growth and development of new Information and Communication Technology (ICT) give a new opportunity for this. As Slevin (2000:1) argues, the rise of new media, spearheaded by the Internet, is beginning to contribute significantly to the complexity of the channels of communication in an uncertain modern world. If we wish to understand the transformation taking place in modern societies, we must recognize the central role such media play and are aware of the impact they have (*ibid.*).

Nowadays, there have been some fundamental changes in the working of government, particularly the e-government, which have resulted in major and visible management innovations in the organizational structures and systems of government. Governments make policy with and for other important stakeholders in the information age (Bellamy & Taylor, 1998: 148). The aim is to move service delivery to the World Wide Web, "to enhance information to citizens and to make public sector workplaces smarter for the benefits of citizens, politicians and civil servants alike" (OECD, 2001:1). Regardless of the type of political system that a country has, the public benefits from interactive features that facilitate communication between citizens and government are large.

Stakeholders accept the existence of the ICT in development in different ways. Many are very optimistic, while the others are still not sure about it. The job opportunities around the world become borderless. There is a shortage of high quality of human resources (HR) who are expert in ICT while on the other side, there is also a lot of lay-off due to the changing of the system from the human power to network power. In terms of protecting the mobile worker's right in this new economy, the Union Network International (UNI) has launched the UNI passport that supports their moving among countries (Howel, 2001).

In Indonesia, the Internet was first introduced in 1994 through an academic institution (IPTEKnet, 2002:4). The ICT and e-government were first mentioned in

Nusantara 21 (N-21) initiative (1997), then in Telematika¹ (1998), and now in Telematika version 2 (2000). Indonesia Telematika Coordination Team (ITCT) is the Government of Indonesia (GoI)'s high level coordinating team for Telecommunications, Media and Information Technology (IT). Made up of stakeholders and representatives from both the public and private sectors, ITCT is established through Presidential Decree 50/2000 and mandated to support the ICT development and coordinate the formulation of national ICT policies. It is also coordinating bilateral and multilateral ICT assistance and receiving technical assistance under the World Bank Information Infrastructure Development Project (IIDP) (*ibid.*). In 2001, the National IT Framework (NITF) and a Five-Year Action Plan (FYAP) for Development and Implementation of ICT in Indonesia² were formulated. To help the President in formulating the policy and coordinating the national ICT, the GoI entrusted the task to the Ministry of Communication and Information (MCI) through the Presidential Decree 101/2001.

The implementation of ICT and e-government policy in Indonesia is believed can improve the national capacity in facing the global competitiveness. The Internet subscribers, users and service providers have increased, from 110.000 users and 31.000 subscribers in 1996, to 8.000.000 users (estimated) and 1.000.000 subscribers in 2002 (APJII, 2000), and from 87 domains of Internet Service Providers (ISPs) in 1995, to 4264 in 2000. These figures indicate the progress in implementing Electronic Service Delivery (ESD) in Indonesia.

The GoI is trying to make a network system that connects the central government to district governments, which is coordinated by the Ministry of Home Affairs (MHA). In local area, government implemented an integrated e-government concept to manage and empower regional resources to support regional autonomy. Till 2002, it has already been implemented in Sidoarjo, Medan, Balikpapan, Makassar, DKI Jakarta and Bandung³. The effort of government was supported by private sector⁴ through providing the hardware and software at special price.

I.2 Research Problems

The potentials of ICT in improving public administration performance and offering a solution to public sector inefficiencies are being questioned when they are

¹ Telecommunication, Multimedia and Information

² Part of Presidential Instruction 6/2001

³ R&D PTelkom, Risti Online, 2002

⁴ PT. Microsoft and PT. Compaq Indonesia (IPTEKNet, 2002)

hampered by lack of trained staff, lack of appreciation by senior administrators of using computers, unfavorable implications for employment, initial high cost of introduction of ICT, etc. These obstacles appear not only in implementation but also in formulation phase (Bisnis Indonesia, 2002). In Indonesia, there is only a small percentage of budget available for ICT, and low capability of ICT units in gathering funds for ICT development (ITCT, 2001). Indonesia's ability to invest in science and technology (S&T) policy has become worse due to the crisis of mid 1997.

In terms of HR, there is a lack of quality and quantity of people who are expert on ICT in public sector (Rahardjo, 2001). Of some 3 million people working for the government, training is available for only a few on a sporadic basis and less than 10% have awareness of ICT (IPTEKnet 2001:12). The other problem is the absence of regulations and laws on ICT. In the global e-government survey which was conducted in 196 countries⁵, it is mentioned that Indonesia is only ranked 88 out of 196, whose government website consists of 4 online services, 87 publications and 52 data bases, without privacy and security policy and handicap accessibility. This shows that it has to accelerate its activities in this area.

The level of e-government adoption in Indonesia is still very low. There are only 3% of people living in major cities who have used the Internet to access Government Online, out of which 2% used it for information seeking and 1% use to print off government forms which they then send by post or fax⁶. 57% of Internet users consider that it is unsafe to use Internet to provide personal information to government. Internationally, Indonesia has one of the lowest e-government usage levels amongst all 26 countries surveyed, which was ranked 24 and its usage was well below the average (26%)⁷. Compared to other countries in Asia, e-readiness⁸ in Indonesia is still far behind its neighboring countries such as Singapore, Malaysia, South Korea, Taiwan, India, and China, but has made a little more progress than Pakistan and Vietnam.

National Planning Agency (*Bappenas*) (2001) argues that the main problem of ICT development in Indonesia is lack of coordination. Therefore, an ICT national policy in terms of planning, development, and implementation is essential. Lack of coordination of ICT projects thus results in overlapping and lowers intra system integration and there are also obstacles in ICT management and administration. The failures in government policies

⁵ Darell, 2001

⁶ Mellor, *et. al*, 2001

⁷ *ibid.*

⁸ the capacity of a nation to participate in the digital economy (McConnell International, 2000)

are often one of the reasons why public benefits from ICT are wasted. In order to harness effectively the diverse ICT capabilities there is a need to establish coherent strategies at the national and regional levels (Wescott, 2001).

Based on these facts we can judge that the problem of e-government and ICT policy in Indonesia is not only at implementation but also in the formulation phases. Problems or failures in implementation, are as much a consequence of flaws in the policy formulation process and in the environment in which implementation takes place as they are due to specific problems of administration per se (Palumbo & Calista, 1990:6). Therefore, it is necessary to analyze the policy by looking at the resources and environment when it was being formulated and implemented.

I.3 Research Objectives

This research has two objectives. First, it aims to analyze the ICT and e-government policy in Indonesia and its implementation by using the policy analysis framework. Second, to highlight lessons from the experiences of e-government and ICT implementation in improving public administration performance in some countries, which have already applied the policy such as Singapore, Malaysia and India.

By going through some lessons from other country's experiences, it is expected to contribute in improving the performance of e-government and ICT policy in Indonesia.

I.4 Research Questions

The questions to be raised in this research are:

1. What is the ICT policy in Indonesia?
2. How is the Indonesian Government's ICTs policy being implemented? What are its results, problems and issues?
3. What lessons can be drawn from the experiences of other countries, which have implemented such policies?
4. What changes are needed in Indonesian ICT policy in the future?

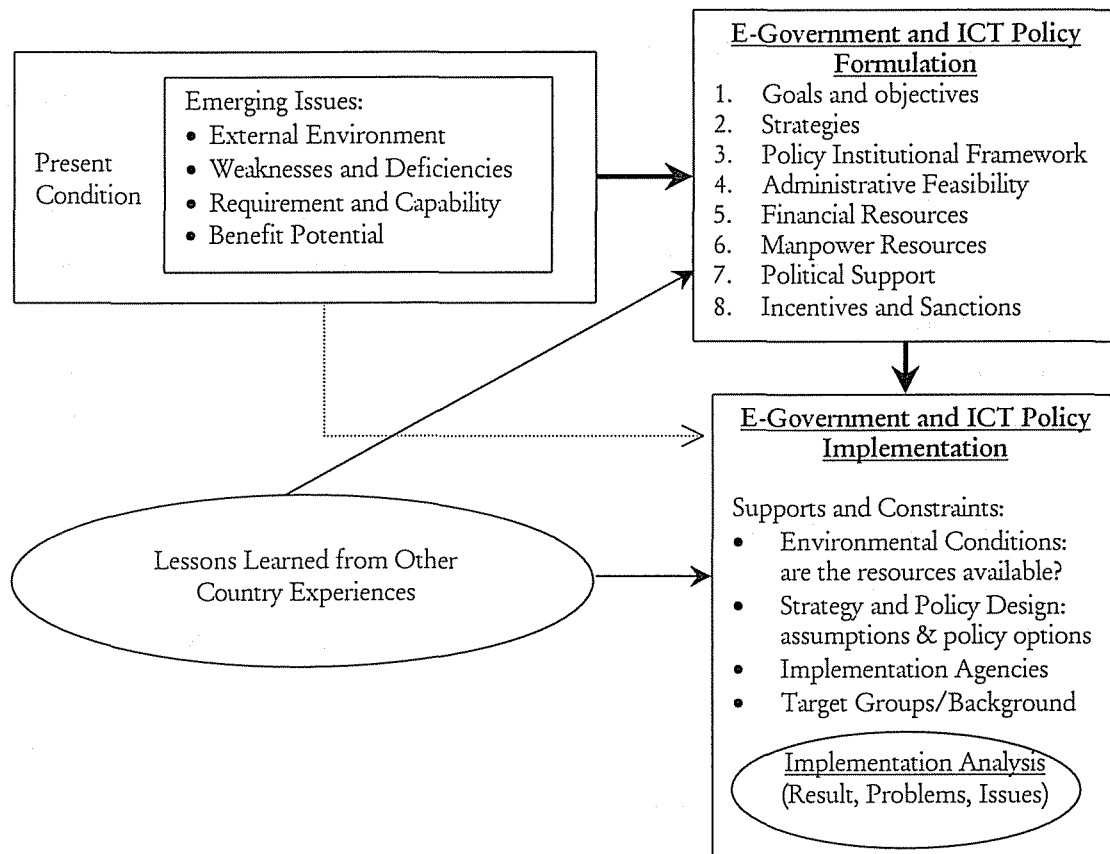
I.5 Research Methodology

This is a limited comparative and exploratory research⁹ that will be approached by using the framework in figure 1.1. The e-government and ICT in public administration are quite new topics especially in developing countries and there are not many researches done

⁹ Exploratory research is conducted because its real scope and methodology are as yet unclear.

on this before. It will be conducted on the two aspects of e-governance, namely improving government processes and connecting with citizens, with a focus on e-government in improving delivery services to its citizens¹⁰.

Figure 1.1 Approach to the Study of E-Government and ICT Policy in Indonesia



Source: Author's Framework of Analysis, July 2002

In analyzing policy formulation, the goals, objectives, strategies, financial and manpower resources, and political support for the policy, will be analyzed. For policy implementation, the vision, mission, environmental conditions, including support and constraints, strategy and policy design, structure and orientation of implementing agencies, concerning the emerging issues in present condition, will be analyzed. In drawing the lessons from other country experiences, a descriptive case study method that is based mainly on a survey of some published case studies will be used.

The Internet as an ICT platform becomes the prominent source of information. The research is also based on the available information in the literature and statistics that are found in the most recent reports, official documents, secondary surveys of articles in

¹⁰ Heeks (2000) points out the 3 main domains of e-governance, these are: e-Administration, e-Citizens and e-Services, and e-Society.

developed and developing countries, and short interviews (through e-mail and telephone). The differences and similarities in country experiences will be used to review the policy in Indonesia. A literature survey was done at the International Institute of Administrative Sciences.

I.6 Importance of the Research

This study would be helpful to the governments in developed and developing countries, public managers and administrators in finding a framework through which they can devise their own strategy for institutionalizing an integrated information system that can help the improvement of public administration. The experiences of some countries in implementing ICT in development will provide information on possibilities, limitations and their success or failure. To the GoI, it can be useful in improving the policy performance and formulating the policy and strategy in the future.

I.7 Scope and Limitations of Research

The analysis of NITF and FYAP will be done by viewing NITF framework as a whole. Thus, the analysis per framework will not be done. It will emphasize on the review of e-government and ICT policy in improving the ESD to the citizens and rely mostly on secondary data. It is limited to analysis at the national level and does not look at the local policy separately. Since the subject is a new topic in development studies, therefore, in doing this research, the literature relevant to the ICTs, e-government and development is scarce and difficult to find. Other possible limitations are about the limited time and the problems that are inherent in using secondary data, and relying on published experiences of e-government in some countries without personally studying a specific case.

I.8 Organization of Research

This research will be divided into five chapters, these are:

- Chapter 1: Introduction
- Chapter 2: ICT Use in Development: Literature Review and Concepts
- Chapter 3: Lessons Learned on ICT Policy from Selected Country Experiences
- Chapter 4: ICT and E-Government Policy in Indonesia: The Problems and Issues
- Chapter 5: Policy Recommendations on Indonesian ICT Policy

Chapter 2

ICT USE IN DEVELOPMENT: LITERATURE REVIEW AND CONCEPTS

This chapter will introduce the importance of using ICT in government, the new opportunities of Internet in the public sector, the differences of using ICT in public and private sectors, the information policy on ICT and the concept of policy analysis.

II.1 ICT in Public Sector and E-Government: the New Opportunities

There is an inextricable link between human beings and ICT usage, -the computing and telecommunications technologies that provide automatic means of handling information (Heeks, 1999: 15)-, in daily life. The explosive entry of the new technology has been one of the most important factors that changed how people live, how they work, how companies do business and how governments serve their people. In the public sector, the origin of ICT is often traced back to Herman Hollerith, who worked for the US Census Bureau in the 1880s (*ibid.*). He developed a tabulating machine based on punched cards, which was first used for the 1890 national census, and subsequently for tabulating military payroll. The company Hollerith founded to produce his machine is IBM, the largest ICT firm in the world (*ibid.*).

By the end of 1960s, most large-scale organizations applied ICT into their internal business processes. Main frame computing was well adapted to the fundamental requirement of them to store and manage large quantities of data and was rapidly integrated into the administrative functions¹¹. By the end of 1980s, the personal computer (PC) and equivalent machines became ubiquitous throughout governmental organizations, just as they were throughout the world of work.

ICT in the public sector has been the key to new and innovative public administration. It has a positive impact on economic and social welfare bypassing often-inefficient bureaucratic institutions and enabling local public and private organizations to perform more efficiently at lower costs. It solves the basic problem of boundaries separating departments, governments and even the public sector from the third sector (non-government, non-for-profit organizations) because it makes integrated services more possible (Alcock and Lenihan, 2001:8).

Kudo (2001: 2) states that ICT enables governments to store more precise data, utilize them in many ways, and bring together various information that was kept separately in different agencies in a disorganized way. The introduction of PC and construction of

¹¹ Fulton Report 1968: Vol. 5 in Bellamy & Taylor, 1998

network system in offices can improve efficiency of individual work and the communication among public servants, different offices, and between public administration and citizens, or business (*ibid.*). Since 1990s, public sector leaders have been grappling with how to best use ICT to build relationships and deliver services (Accenture, 2001).

Bellamy & Taylor (1998:11) highlight the three innovations in government through ICT. First, the commodification of information. Governmental organizations are innovating the ways in which they provide information to the public. Information is being directed primarily at addressing the needs of their service customers, and can also be aimed at enhancing levels of civic and political awareness. Second, the innovation in delivering the services to public. Government search for greater efficiency and enhanced quality by using ICT in public sector. New ICT capabilities are being harnessed to secure enhancement of other kinds of services. Third, the innovation in electronic citizenship and democracy. ICT is involved in innovations designed to recast the relationship between citizens, citizens groups, politicians and government (*ibid.*).

World Bank (1999), argues that e-government refers to the use by government agencies of ICT (such as wide area networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. It is a way of making the delivery of government services more efficient by “integrating” or perhaps “clustering” them, and making them available through a single point of access on the Internet: the so-called “single-window” that provides “one-stop shopping” (Alcock and Lenihan 2001:9). Simply speaking, e-government can make government work faster and smarter.

Through new power of ICT, the data collection, processing and integration are vastly improved. It is more than a tool for making government operations more efficient and involves major changes to internal organizational structure of government and makes information more accessible to ordinary citizens. To implement it, governments need committed leadership, a full understanding of e-business principles and a clear strategy for overcoming the barriers to change the fears of individuals, the departmental rivalries, the hostility of unions and the sheer size of the thing. The technology, although crucial to making it all possible, is the least of their worries (Silcock, 2001: 88). Right now, a number of countries have been investing in ‘e-government’ projects, with a particular emphasis on using ICT to improve the Electronic Service Delivery (ESD), combining the aims of increasing efficiency and becoming more customer-responsive (Heeks, 1999).

II.2 ICT in Developing Countries and Using ICT in Public and Private Sector

II.2.1 ICT in Developing Countries

Applications of ICT emerged first in the science and defense sectors, later extending to public and private administrative and industrial systems. They became essential to the effective conduct of business and government in industrialized countries, leading to improvements in productivity and to a wider range of consumer products and services (Gassmann, 1981). For developing countries, it has given the opportunity to participate in a global economy and enabled the services through online network provided by them for developed countries.

Right now, almost all developing countries can access the net and many countries have national networks (Ghimire, 1997). It has been implemented in various sectors, including the health sector, with the concept namely telemedicine that provides the medical information and services. It brought a new idea for developing countries, where one medical attendant has to serve 3130 patients on an average and the physical facilities for health services are very poor (*ibid.*). Another sector is the administrative process. ICT was used to achieve modernization in administration that can make administrative work more efficient, which enhance the quality of existing services and create new services. It can reduce the operational costs by obtaining information on markets, beneficiaries and partner organizations, and enhance the organizational productivity and competitiveness.

Developing countries are generally characterized by high number of population, low literacy of people, and lack of infrastructure and human resources (HR). These make big obstacles in utilizing ICT to build up information systems required for planning. From about 4000 data banks throughout the world in 1990, there were only 40 that were established in developing countries (*ibid.*).

Okot-Uma (1992)¹² mentions the limitations on the use of ICT in developing countries. First, the operational problems that arise from the lack of infrastructure facilities. Moreover, unavailability of skilled manpower impedes the rapid implementation, and this is coupled with financial resources. ICT investment needs a big budget, while many developing countries still must rely on big loans to fund their development. Second, the structural problems. Administrative system in developing countries is generally supporting the peripheral applications such as inter-sectoral applications supporting office automation and communication and not the core applications (agricultural information system, environmental information system and geographical information system).

¹² in Ghimire (1997)

Therefore, ICT has had little impact on rural development and other programmes on meeting the basic needs of the people. Third, the strategic problems. ICT management from a longer perspective requires a comprehensive ICT policy. The nonexistence of a policy consistency in developing countries leads mostly to role conflicts between the public sector and private enterprises. The unwillingness of governments to realize an enabling framework for capacity building becomes a problem. A further limitation is the fact that developing countries still face the digital divide.

II.2.2 ICT in Public and Private Sector

There are major similarities between e-business and e-government (Bartels, 2002). First, the main benefits lie in terms of improving efficiency of operations, lowering costs, and improving relationship with customers, suppliers and partners. Second, the process change is essential, and the processes that need to be changed are similar. Third, the impacts are more evolutionary than revolutionary. ICT is increasingly used by administrators and managers in both the public and private sectors to assist the decision making and resource control. In some cases the ICT use has led to revolutionary improvements in the quantity and the quality of information available to administrators and managers.

Citizens expect that e-government can serve them better as they experienced it from private business. However, there are some differences between them (table 2.1). Public sector is often argued to be inefficient due to the reason that, whereas departments are vertically aligned, the majority of services that they deliver require complex collaboration between civil servants across departments (Silcock, 2001: 89). ICT, both in ESD and policy, requires a re-thinking and perhaps a re-engineering of government. As its core, information is horizontal while government is vertical. The challenge facing governments, then, is to realign the policy-making, service delivery and program evaluation along a horizontal axis.

While e-business has faded in the private sector, e-government still flourishes in the public sector Bartels (2002:1). On the policy side, government has been even slower to consider the implications of ICT (Schachter, 1999). Governments is behind the private sector in adopting the Internet and it gives advantages to governments, such as learning from the mistakes of the private sector, starting with mature technology and using more economical ICT. It operates with different goals, constraints and parameters for success than business (*ibid.*).

Table 2.1
Using ICT in Public and Private Sector

No	Public Sector / Government	Private Sector / Business
1	All citizens are customers (have to provide universal access)	Can choose the customers
2	Social motive (give the service without profit motive)	Profit motive, therefore can absorb ICT more quickly
3	No competition	High competition among private sector organizations
4	Limited budget	Enough money to fund the e-business
5	Technology investment has only led to increased transaction intensity and, in some cases, the slicing off of government activities to new forms	The significant changes in organizational structure have followed technological investment
6	Organization cultures (when it does the business and the ways people do their jobs): bureaucracy	Supporting organization cultures for implementing ICT
7	Constrained by regulations and laws in their action	Does not have complex regulations and laws
8	Lack of HR: public officials may have a lack of understanding and computer skills	High quality of HR: people work in private sector mostly use computer every day
9	Take the second route in modifying the software	Take the first route in modifying the software to fit the way they do business

Source: Adapted from Wescott, 2001; Bartels, 2002 and Author's analysis, 2002

The analysis and systemization that occurs when computerization takes place can be recognized as a most significant contribution to improve management decision making and resource allocation (Bogod, 1979¹³). There is then, a strong argument on using ICT in the public sector in developing countries to improve the quality and timeliness of information available to decision makers. It has largely been driven by the international donor communities. They argue that public sector in developing countries needs to use ICT to join the global information society.

II.3 Public Policy on ICT

ICT is perceived to be the center of the revolution from the industrial age to information age, since it brings new flexibility in the workplace and improves the performance of the organization. Putting the ICT on the high-level policy agenda has emerged within the governments in developed and developing countries. Government has been involved in the ICT partly through support for research and development (R&D) and partly through policy and procurement initiatives designed to support the equipment industry and its technology diffusion. Many nations had difficulties to integrate new technologies into existing institutional structures. As Ogburn (1957)¹⁴ argues that the pace of the technological change is usually much faster than the pace of social or cultural change.

Governments should notice that new technology is making information on government operations and decision making more available, therefore governments have less control over who knows what and when. In terms of technology, there are many studies on the changes in and around government, including innovations centered on ICT

¹³ in Roche & Blaine, 1996

¹⁴ *ibid.*

and their relationships to changing structures, processes and values. The information age disjunctures in the principles of management in government are summarize below:

Table 2.2.
Information Age Disjunctures in the Principles of Management in Government

	Traditional principles of 'old' public administration	Emergent principles of the 'new' public management (NPM)
1.	Uniformity of provision: <i>the administrative or equity principle</i>	Targeted provision in search of economy, efficiency and effectiveness: <i>the business principle</i>
2.	Hierarchical structure in bureaucratic organization: <i>the top-down control principle</i>	Loose-tight structures in enabling public service: <i>the network management principle</i>
3.	Division of work: <i>the dominance of the functional principle</i>	The convergence of services: the growing significance of the <i>integrative principle</i>
4.	Paternalistic relationships to clients etc.: <i>the professional principle</i>	Responsive relationships to customers and citizens: <i>the 'whole-person' principle</i>

Source: Bellamy & Taylor, 1998

The ICT affects government management cycle: planning, implementing, reporting and evaluating (Alcock and Lenihan, 2001). The biggest change at the planning phase involves the shift to a more horizontal or government-wide approach to policy development. The emerging technologies allow huge amounts of data to be integrated and mined, therefore enhances government's capacity to identify and monitor longer-term social trends. Such developments are radically changing the way government's plan and make policy.

In implementing phase, ICT is revolutionizing the way government's report and it is not just a matter of putting reports online. As with reporting, ICT is extremely important in the evaluation phase of management cycle. Good performance measurement requires sophisticated data, which is often drawn from a number of sources. Integration and processing of this data is only possible with high-powered ICT. The impact of ICT on management cycle is that it makes government more "horizontal" or holistic in the way it thinks and acts.

International information policy¹⁵ issues arise not only as a result of information within a nation's internal affairs, but also as a logical consequence of the growing international exchange of information, in terms of goods and services. There are three possible approaches to understand the information polity (Bellamy & Taylor, 1998): mapping and measuring technological division, analyzing the business logic of ICT, and an institutionalist approaches to ICT. The three key sets of relationships, which lie at the heart of the policy, are (*ibid.*):

¹⁵ Information policy is a heuristic device for analyzing the ways in which the institutions of governance are shaping, and are shaped by, new information flows and new modes of communication which are commonly associated with information age technologies (Bellamy & Taylor, 1998).

- relationships within and around government, concerned with the production of policies and services
- relationships between governmental organizations and the consumers of their services
- relationships between governmental organizations, political leaders, and citizens

From public policy point of view, information can affect relationships in two important ways (Gassmann, 1981): to mediate and change relationships. The government policies have an important positive and negative influence, on the choice of techniques (James & Watanabe, 1985). The government can increase the supply of appropriate technologies by encouraging their importation and development, and related information services. It can also make such technologies more attractive to entrepreneurs by raising their relative profitability in comparison with other alternatives. More important is the role of government policies in providing a socio-political and institutional climate, as well as an industrial structure, more favorable to the adoption and spread of such technologies.

II.4 Concept of Policy Analysis

Nagel (2001: 133) defines public policy analysis as determining which of various alternative public or governmental policies will best achieve a given set of goals in light of the relations between the policies and the goals, while policy studies is related to describing policies, explaining their existence, and evaluating them. In analyzing and studying ICT and e-government policy in Indonesia, I will examine the ICT policies and explain their existence for improvement in the future.

Dunn (1994:70) points out that the policy system involves interrelationships among 3 elements: public policies, policy stakeholders, and policy environments. Public policies are long series of more or less related choices made by governmental bodies and officials, such as law enforcement, economic, welfare, and personnel. Policy stakeholders are individuals or groups, which have a stake in policies because they affect and are affected by governmental decisions, e.g. citizens, labor unions, political parties, government agencies, and policy analysts. Policy environment is specific context in which events surrounding a policy issue occur such as crime, inflation, unemployment, and discrimination. It influences and influenced by policy stakeholders and public policy.

Policy formulation and policy implementation are the two important phases in policymaking process (Dunn, 1994). Policy formulation, is a phase in which public administrators formulate alternative policies to deal with a problem, while policy implementation is a phase in which an adopted policy is carried out by administrative units

which mobilize financial and HR to comply with the policy (*ibid.*). In implementation, there will be some alternatives as policy options, which need to be sensitized to the environmental constraints and opportunities (Moharir, 2002).

Acceptance of policy analysis depends upon how well the problem is described (Turner & Hulme, 1997), which values and norms are considered important, what type of information is used, which criteria are used for evaluating options, and to what extent feasibility of options suggested have been worked out. Moharir argues that the framework for policy analysis becomes ideal if it is integrated at 3 levels, namely, process integration, time integration, and criteria integration, while Meltsner (1972) states the 3 important dimensions of policy: substance or content, time and visibility.

The policy makers must frequently rely more on intuition and experience than on solid information when making decisions, due to the shortage of data and information they need (Grindle & Thomas, 1991). The intuitive decisions tend to be heavily subjective. Because of the inadequate and unreliable data in developing countries, policy makers lack the capacity successfully to project their plans into a highly unpredictable future (Saasa 1985:314).

Based on the above literature review on use of ICT in government and policy analysis, policy formulation and implementation, we have developed an analytical framework for examining the Indonesian ICT policy and its implementation. The details of this framework are summarizing in Figure 1.1, page 5.

II.5 Concluding Remarks

Many countries are aware of the crucial importance of an ICT Policy in their national affairs, but they realize that there are some obstacles in implementing it. Some of the resistances inhibiting the reorientation of government toward information age scenarios are: huge costs, complexity of technical task of government to connect the multitude of bureaucratic codes and transaction files, and information systems have spawned the actor networks: project managers, ICT specialists, external contractors and equipment manufacturers, etc. There is also a problem in training to improve the quality of HR in ICT, since it needs a high budget. The experiences of some countries in implementing the ICT and e-government policy will be discussed in the next chapter.

Chapter 3

LESSONS LEARNED ON ICT POLICY FROM SELECTED COUNTRY EXPERIENCES

*The technological triumphs of the past few years have not solve as many problems
as we thought, and have brought us new problems we did not foresee.*
(Henry Ford)

This chapter will focus on the experiences of some countries, which have already implemented e-government and ICT policy. The analysis of what lessons can be drawn, both for their successful and unsuccessful experiences, will be used in critical analysis of Indonesia's ICT policy.

III.1 E-Government in Developing Countries: An Opportunity for Improving Public Sector Performance

Diffusion of the "e" (electronic) world has created a new world without boundaries (Mundy, 1996). The government realizes that ICT is essential for development in facing the globalization. Heeks (1999) argues that up to US\$500 billion per year is being spent worldwide on ICT-based information systems in the public sector. More than US\$27 billion is spent by the US government, US\$6.5 billion by the UK central and local governments, US\$100 million by the Malaysian Government, and US\$50 million by the Philippines central government (*ibid.*). Some of the ICT policies that were formulated in the public sector are (Heeks, 1999; Trauner, 2002): the Government On-Line project in 1995 that is initiated by the G7 group of industrial nations, ICT blueprint for the public sector that is launched by Australian Government, the Leadership and Excellence in Andhra Pradesh in the 21st century (LEAP 21) initiative in 1997 that is launched by the Indian Government, and the IT2000 Intelligent Island Master Plan in 1991 by the Singaporean Government (SG).

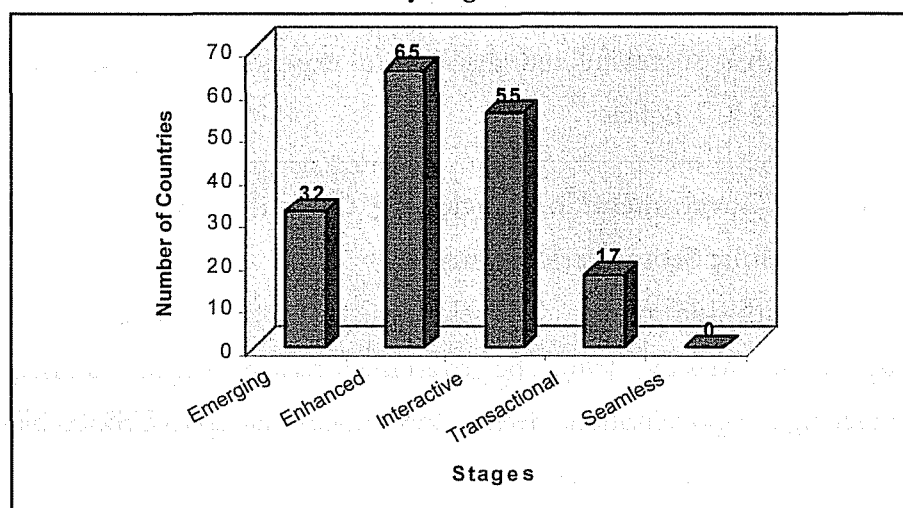
Table 3.1
Main National ICT Policies in Southeast Asia and India

Country	Policy	Year
Singapore	National Computerization Plan	1980
	National IT Plan	1986
	IT2000	1992
	Singapore One	1996
	Infocomm 21 Masterplan	1999
Malaysia	Multimedia Super Corridor (MSC)	1996
Thailand	IT2000	1995
	The Greater Phuket Digital Paradise Project	2000
Indonesia	Nusantara 21	1997
	National IT Framework	2001
	Five Year Action Plan	2001
Philippines	IT21	1997
India	IT Action Plan (IT for ALL by 2008)	1998
	Information Technology Act	2000

Source: Adapted from Yomiuri Shimbun, 2000 in Yamada (2001) and Author's analysis (2002)

In Southeast Asia, awareness of ICT has been increasing over the past few years, especially at government level¹⁶. Following the 1997 economic crisis, commitment to ICT has been consolidated further because ICT is expected to lead to new economic growth. All governments in this area formulate the national ICT policy to enter the information age (Table 3.1).

Figure 3.1
Country Stages for 2001



Source: UN, *Benchmarking E-Government: A Global Perspective*, May 2002

Due to many reasons, ICT's wonderful potential has been hardly used in most Asia Pacific countries. Depending on the background, resources and capacity of a country, implementation of e-government reaches different stages. Ronahagan (2002) studies the country's online presence and categorizes it by one of the five stages: emerging, enhanced, interactive, transactional, and fully integrated or seamless¹⁷ (Figure 3.1). He points out that no country has achieved the seamless stage. Countries in Asia Pacific, especially Southeast Asia and India are mostly in the interactive stage (Malaysia, Thailand, Philippines and Brunei). Indonesia, together with Vietnam, Papua New Guinea and Cambodia are still in enhanced stage. Singapore, together with developed countries, is the only one that is included in transactional group. To establish a reference point for which a country can

¹⁶ Yamada in Kagami & Tsuji, 2001, Hanna, *et al*, 1996

¹⁷ "Emerging" = a country commits to become an e-government player; "Enhanced" = a country's online presence begins to expand as its numbers of official website increase; "Interactive" = a country's presence on the Internet expands dramatically with access to a wide range of government institutions and services; "Transactional" = complete and secure transactions and secured sites. "Seamless" = capacity to instantly access any service in a "unified package"

measure future progress, and to quantify the critical factors¹⁸ in implementing e-government program, we need to measure e-government index (Ronahagan, 2002). The e-government index of Southeast Asian countries and India can be seen in table 3.2.

Table 3.2
The 2001 E-Government Index in Asian Countries

No	Country	E-Government Index	E-Government Capacity
1	Singapore	2.58	High
2	Malaysia	1.63	Medium
3	Brunei	1.59	Minimal
4	Philippines	1.44	Minimal
5	Indonesia	1.34	Minimal
6	India	1.29	Minimal
7	Vietnam	1.10	Minimal
8	China	1.04	Minimal
9	Thailand	0.94	Deficient
10	Cambodia	0.67	Deficient

Source: UN, *Benchmarking E-Government: A Global Perspective*, May 2002

In implementing ICT and e-government, Singapore is the leader in Asia Pacific and prominent in information infrastructures (WMRC, 2001). It has achieved the status as one of the most successful ICT countries in the world (table 3.3) since ICT is spreading into every field of the society (*ibid.*). Apart from Singapore, among developing countries in Asia, Malaysia, has made e-government a high priority as it seeks to attain developed nation status, while India becomes one of the leading advocates of e-governance in the developing world, although India has enormous infrastructure and human capital challenges that must continuously be confronted (table 3.4).

Table 3.3
Diffusion Rates of Information Infrastructure (1999)

Country	Per 100 inhabitants				
	Main Telephone Lines	Cellular Mobile Phones	Internet Users	PCs	GDP Per Capita (1998) US\$
Singapore	48.20	41.88	29.45	52.72	21,413
Malaysia	20.30	13.70	6.87	6.87	3,333
Thailand	8.57	3.84	1.31	2.27	1,859
Philippines	3.88	3.66	0.67	1.69	898
Indonesia	2.91	1.06	0.19	0.91	605
Vietnam	2.68	0.42	0.12	0.89	335

Source: ITU Telecommunication Indicators, <http://www.itu.int/ti/industryoverview/index.htm>

Malaysia and India are included in the critical economies that have recognized potential of ICT but have a great deal of work ahead (McConnell International, 2000). They represent the source of the next phase of world economic growth and serve as two

¹⁸ The critical factors are: country's telecommunication infrastructure, the strength of its human capital, the political will and commitment of the national leadership and shifting policy and administrative priorities

examples of countries that have been particularly forward-looking in the realm of ICT legislation. Both are notable for the comprehensiveness of recently enacted legal frameworks designed to create predictability about information security. Based on these facts, Singapore, India, and Malaysia's experiences are selected to be the sources of some lessons in implementing e-government and ICT policy in Indonesia.

Table 3.4
E-government Ranking by Country

Country	Percentage of e-Government	E-government Ranking (out of 196 countries studies)
Singapore	43.4	8
Malaysia	39.0	16
India	31.8	69
Indonesia	30.0	88

Source: WMRC, 2001

III.2 Selected Country Experiences on Implementation ICT and E-Government Policy

III.2.1 Singaporean Experiences

ICT development in Singapore started in the early 1980s. The policy makers saw ICT as a key strategic factor in restructuring its economy from a manufacturing and service operation center to a higher value added economy, with aim to sophisticate industrial structure and keep its competitiveness in global markets. The Committee for National Computerization was formed to map out the national-level policy for ICT development (Hioe, 2001). It recommended the establishment of a National Computerization Board (NCB) to implement National Computerization Plan. The Civil Service Computerization Program was implemented in 1981 to demonstrate the benefit of computerization by computerizing the activities of government institutions (Yamada, 2001)¹⁹.

The NCB, cooperated with private sector, university and government, formulated a National IT Plan (NITP) in 1986, with aims to maintain an export-oriented ICT industry and increase the productivity and competitiveness in all economic sectors by applying ICT. The government shifted its focus to more integrated strategies among hardware manufacturing, telecommunications and software services, and manpower development. The number of people working in ICT sectors increased from 850 in 1987 to 14,300 in 1991 (*ibid.*).

In 1992, the SG launched a Masterplan "IT2000" to transform the country into an intelligent island where ICT is exploited to enhance the quality of life at every place as well as in economic activities. It aims to make Singapore more competitive economically, with

¹⁹ in Kagami and Tsuji, 2001

the 4 million citizens enjoying a better quality of life. Afterwards, in 1996, Singapore ONE was launched to build the world's first broadband multimedia networks and applications covering the whole country. As of October 2000, Singapore ONE is accessible by almost 100% of households, all schools, most public libraries and community centers, and major commercial buildings (*ibid.*).

IT2000 and Singapore ONE have laid a solid foundation. The success of IT2000 is not due to sole effort of the government, but through a close partnership among government agencies, private industry, academia, research institutes, community groups, and civic and voluntary organizations. More than 200 people from various groups cooperated to formulate it. Each of them has an important contribution towards developing the initial concept, refining the strategies and plans, and playing a critical part in realizing the vision (Hioe, 2001).

Today, Singapore is moving into a new stage with its Infocomm 21²⁰ that is expected to lead Singapore into the ICT Hub of the new economy by the year 2010. In December 1999, NCB was merged with Telecommunications Authority of Singapore, to become one agency namely Infocomm Development Authority of Singapore whose task is to spearhead the development of Infocomm 21²¹. The idea of merger was part of the government's strategies to respond to the converging ICT and telecommunications markets and industries. It was argued that a single agency is required to provide the integrated focus on strategy and policy for infocomm development in Singapore.

In implementing Infocomm 21, government adopts an integrated approach to define various building blocks to ensure that all necessary inter-relationships among the components are considered. The government believes that the successful implementation depends on the entrepreneurship and innovativeness of the private sector, with the government assisting as a facilitator and a catalyst (Hioe, 2001). It actively helps to attract new international players in the infocomm marketplace to invest in and set up the operations. As the first step of implementation, the government liberalized the telecommunication market in April 2000.

With two decades of ICT experiences, creating innovative and better e-government services for the public became a second nature. The government launched e-government Action Plan on June 9, 2000 with the vision: "To be leading e-government to

²⁰ ICTs for the 21st Century (Yamada in Kagami & Tsuji, 2001)

²¹ The Infocomm 21 has 3 strategic objectives: a dynamic and vibrant infocomm sector that is a strong contributor to Singapore's economic performance growth, a competitive e-economy where every sector harnesses infocomm technologies to generate and deliver innovative products and services, and a lively e-society where everyone lives the e-lifestyle and there is no problem of the digital divide.

better serve the nation in the digital economy.” The announcement of the policy was backed up by the government committing S\$1.5 billion to ensure programme objectives become reality (Accenture, 2001).

The transformation of reinventing government cuts across all aspects of the public sector from leadership, delivery of e-services, internal government operations and ultimately economic competitiveness. The leadership ensures the policy development and e-government implementation. As a nation-state, Singapore has the ability to capitalize on the benefits offered by a reasonably small (650 km²), well informed and wired public (*ibid.*). It has a stable government and a long-term commitment to ensuring that the benefits technology offers are maximized and has excelled in the establishment of a high-level structure to drive the e-government policy. It has a clear plan and structure within which government can spearhead e-government development programmes, and has achieved its leadership position as a result of these programmes having been in place for several years (*ibid.*).

At present, SG provides 130 kinds of ESD, such as selling government publications, providing real-time traffic information, bookings for driver's test and submitting various application forms (Yamada, 2001). This condition was supported by high level of PC penetration (59%) and high level of access (57%) for the Singaporeans²². The government encourages citizens to access e-government through e-Citizen Center, which offers a host of citizen services that integrate related processes across different government agencies. The citizen can have a one-stop access to government services without having to navigate through the bureaucratic jungle. During the implementation of e-Citizen Center, all institutions involved in some specific services and information gathered together to reorganize and reclassify their possessing information and tried to design a new hierarchy from the user viewpoint.

Through the ICT policy especially e-Government Action Plan, SG claims itself to be one of the best e-governments in the world. The government sees ICT as a key issue for government, industry, and society. Education of ICT literacy (revised university curriculum in order to include ICT), construction of ICT infrastructure, and promotion of ICT, are given priority.

²² IT household survey in 1999, by NCB (Yamada, 2001)

III.2.2 Malaysian Experiences

The ICT policy in Malaysia was first launched in 1996, when the government promoted the NITP²³, called Multimedia Super Corridor, which is considered as a main vehicle to achieve Vision 2020²⁴. ICT was defined as a strategic development tool, which enabled balanced development of people, information structure and its application. Conceived in the early 1990s, it is one of the main initiatives expected to provide economic growth (Accenture, 2001).

The aim of MSC is to build the necessary environment for the new era and maintain knowledge-based industry in conjunction with the manufacturing sector by attracting both multinationals and domestic world-class players. The specific feature is that the government decided to develop certain areas as a concentration of ICT infrastructure and industries. The corridor configures 15 km-wide and 50 km-long starting from Kuala Lumpur City Centre to Kuala Lumpur International Airport, where the cities Cyberjaya and Putrajaya, are being developed (Kagami & Tsuji, 2001:129) and the 6 cyberlaws²⁵ are enacted. With creation of new federal government administrative centers, they developed the physical infrastructure and next-generation multimedia network to attract foreign investment, establish cyber laws and related policies (Kudo, 2001).

With 22 million population and area of 330,000 km², the Government of Malaysia (GoM) committed to implement MSC. The key projects of MSC have 2 flagship applications, which would change how people live and increase the efficiency in public sector, i.e.: multimedia development that contains 4 flagships, with aims to realize e-government and provide ESD for the public, and multimedia environment that contains 3 flagships, with aims to provide optimal environment for the company entering MSC to facilitate high value added activities (table 3.5 and table 3.6).

Government agencies have begun to utilize the services provided by the Government Integrated Telecommunication Network (GITN). Security policy was formulated to safeguard government information system and its hardware. Security and standards were the focus of the deliberation of the Government IT and Internet Committee, which is the highest authority for formulating ICT policy and monitoring ICT and Internet.

²³ NITP is a framework of national development in the information age: supported by 5 thrusts, which have been identified by the National IT Council; Each era is promoted by one specialized working group (Kudo, 2001).

²⁴ A national agenda aimed at making Malaysia a fully developed nation by the year 2020.

²⁵ The 6 laws are digital signature act, computer crime act, copyright act, telemedicine act, e-government act, and multimedia communication act.

Table 3.5 “Multimedia Development” Flagship Applications

Flagship Applications	Lead Agency
Electronic Government	Malaysian Administrative Modernization & Unit
Multi-Purpose Card	Bank Negara
Smart Schools	Ministry of Education
Telemedicine	Ministry of Health

Source: <http://www.mdc.com.my/msc/flagship/index.html>

Table 3.6 “Multimedia Environment” Flagship Applications

Flagship Applications	Lead Agency
R&D Cluster	Ministry of Science, Technology & Environment
Worldwide Manufacturing Webs	Ministry of International Trade & Industry
Borderless Marketing	Multimedia Development Corporation (MDC)

Source: <http://www.mdc.com.my/msc/flagship/index.html>

The whole plan of NITP is divided into three phases, from 1996-2003, 2004-2010 and 2011-2020²⁶. The most significant aspect of this project is e-government plan, which enabled the public administration to implement reform policy, including institutional reorganization and change of management style. It will improve how the government operates internally as well as how it delivers services to citizens, and the convenience, accessibility and quality of interactions with citizens and businesses. The information flows and processes within government to improve the speed and quality of policy development, coordination and enforcement, and play an essential role in catalyzing MSC development, as well as furthering political and economic development goals in Vision 2020 will be improved as well. The different instruments and strategies of NPM have been adapted to the governmental organizations. Personnel management in government becomes similar to private sector, with budget system and accounting procedure in public sector shifting towards those of business²⁷.

The commitment of GoM to getting information online is supported by the availability of 59 services (Accenture, 2001). It has taken the first step in adding the complexity with the establishment of a government homepage. The government's site is designed with the intentions of the citizens in mind and acting as a single access point. It allows citizens to access information on Federal and State Government agencies and is organized around key factors including banking and finance, business, education and courses and employment (*ibid.*).

The vision of e-government is a vision for government, businesses and citizenry working together for the benefit of Malaysia and all citizens. It calls for reinventing government in using multimedia to improve productivity and creating a collaborative environment that fosters the ongoing development of Malaysia's multimedia industry. It focuses on effectively and efficiently ESD from the government to citizen. Under GITN

²⁶ <http://www.mdc.com.my/mdc/index/html>

and e-government Net²⁸, the civil service has been changing in its characteristics (Kudo 2001:10).

Five pilot applications²⁹ have been identified to lead the development towards the e-government. These projects were designed using solutions offered by responding organizations to the Concept Request for Proposal. Each of them has different implementing agency(s) and led by Management Modernization Planning Unit (MAMPU). The projects are being monitored very closely to ensure implementation and development of application in order to meet the government's requirements and objectives of the flagship projects. It is supported through establishment of strong programme management structure, acquisition of necessary manpower requirements, suitable training programmes, effective transfer of technology, upgraded capacity and capability for project management.

The limitations of e-government in Malaysia

Against the ambitious vision to implement ICT policy in building the vision 2020, the GoM faces the fact that the PC and Internet penetration is still low (7% each). Among the Malaysians, only 11% have used the Internet to access e-government in 2001 (Mellor *et. al*, 2001). This condition is worse by the existence of financial and basic infrastructure problem. Yamada (2001)³⁰ argues that the diffusion of ICT in Malaysian society is still at the initial stage. Without laying the solid ICT foundation in society, the MSC will benefit only the upper level of society, as the effect is concentrated in Kuala Lumpur and some of the other large cities.

III.2.3. Indian Experiences

India has been a significant ICT consumer since 1950s and a significant ICT producer since 1970s (Heeks, 2000). A clear link between computing and reform of Indian public administration has been made since Rajiv Gandhi's first period as Prime Minister, in 1984. This has continued to date with India's IT Action Plan, in operation since 1998 (*ibid.*). He had called on India to become an ICT superpower and one of the largest generators and exporters of software in the world within 10 years (Wescott, 2001).

²⁷ MAMPU, Prime Minister's Department, 2000

²⁸ A virtual private network to be built to cater for all government agencies in implementing the e-government pilot application

²⁹ They are: Project Monitoring System, HR Management Information System, Generic Office Environment, E-Procurement, and ESD (<http://www.mdc.com.my/>)

³⁰ in Kagami & Tsuji, 2001

In India, e-governance³¹ creates an avenue for citizens to communicate with top political leaders and local ministers through such tools as video-conferencing, online grievance channels and complaint cells (Wadia, 2000). The government has introduced citizen's charter under which the ministries and departments at both national and state levels are required to adopt charters specifying their respective service provision, time frames, service standards and channels for redressing grievances. It encourages the establishment of ISPs to provide access to even the most remote locations and will produce a series of documentaries to generate awareness of the advantages of ICT and ESD by collaborating with the private sector to put in place secure electronic fund transfer systems (Haque, 2002). Among 98 countries, in which the national parliaments have their own websites, Indian Parliament's website is quite comprehensive and ranked 7th at the global level (Norris, 2001).

Government has undertaken major policy initiatives at the national, state and local level, namely IT Act and Freedom of Information Bill. One of them is the appointment of senior civil servants as ICT managers³² in various ministries and departments, and this has become the essential institutional aspect of e-governance. The ministries and departments support it by undertaking initiatives to introduce and expand the structures and processes of e-governance.

The websites maintained by different ministries, departments and state governments have considerable implications for the interaction of citizens with public servants, involved in the ESD related to agriculture, health and food supply (Haque, 2002). The websites of public sector organizations at the national and state level not only provide information but also offer feedback options. These are apparently favorable changes toward a more interactive relationship between public servants and citizens.

The government has set the target of delivering at least 25% of its dealings and ESD (MIT, 2001a) and has strong leadership in emerging e-governance implementation. It has decided to boost 'computer density' by making computers easily affordable; increase 'connectivity' by improving the telecommunication system based on optic fiber networks; upgrade 'content' by making government sources on computers readable by ordinary

³¹ The CARD is one of the major success stories of e-governance in India. About 214 registration offices have been completely computerized since April 1998. Deeds are registered in 1 hour & other services are accomplished in 15 minutes. As of February 2000, about 700,000 documents had been registered under CARD. India has continued to pursue its goal of "IT for All Indians by 2008." (Wescott, et. al. 2000).

³² They cannot only facilitate the realization of e-governance in their respective organizations, but also enhance the relationship between these public organizations and citizens

citizens; cover the 'cost' of ICT by ensuring adequate allocation in the national budget; and introduce cyberlaw by adopting the IT Act.

Some series of institutions and official positions were established to implement the vision of policy initiatives and legal measures related to e-governance. The Government has introduced a National Task Force on IT and Software Development, a Committee on Improving Efficiency in Government Through IT, a Ministry of IT (MIT) and a Center for e-governance in order to promote ICT and e-governance in the country (Haque, 2002). The MIT plays an important role in facilitating e-governance through reinforcing knowledge-based enterprises, encouraging coordination among users, adopting procedures based on international standards, promoting the internet and introducing ICT education (*ibid.*). The Center for e-governance has the main functions to identify the appropriate forms of ICT necessary for better ESD, conduct training for generating ICT awareness among government officials and help state governments in implementing policies and reforms based on best e-governance practices. To enhance capacity building at all administrative levels, the government has established a National Institute of Smart Government. The various departments have created Information and Facilitation counters as one-stop shops to make varieties of information available to citizens through e-links (MIT, 2001).

The central and state governments are strongly committed to transform their governance system based on ICT. The central government plans to set up 500 Community Information Centres in a hilly northeast part of India to let the local people have access to the Internet (Singh, 2000). Computers and the Internet will be made available in every school, polytechnic, college, university, and public hospitals by the year 2003 (Wescott, 2001). Projects will be integrated across departments to provide a single point of contact for ESD to citizens. Maximal transparency in governance through citizens' charters for every government department and public body will be available to citizens over the Net.

The limits and hazards of e-governance in India

The implementation of e-governance in India has not shown any promising results even in terms of ESD. India is a poor country with severe problems of poverty, inequality, illiteracy and external dependence, that become the obstacles to implement e-governance in ensuring equal public access to state institutions, empowering ordinary citizens to exercise their basic rights and obliging political and administrative officials to be

responsive and accountable. With population over 1 billion and area of 3.29 million km², the Internet penetration in major metropolitan cities is only 13%³³. The limited citizen's access to the Internet becomes one of the most critical reasons for ineffective e-governance. Only 0.1% of the population has Internet access at home (Haque, 2002). India has one of the lowest per capita Internet hosts (0.01 per 1000 people) in the world (UNDP, 2000:200). Factors constraining access to e-communication are: high cost of the access for the poor, low rate of literacy, limitations of infrastructure³⁴, the access of non English-speaking population due to the dominance of English on the net, and some adverse implications of e-governance, including inequality in gaining access to public sector services between various sections of citizens, especially between urban and rural, the educated and illiterate, and the rich and the poor.

III.3. Lessons Drawn from Selected Countries Experiences

Some lessons on ICT and e-government policy of the three countries can be seen in table 3.7. The conditions and situations in each country are different. They started to implement ICT policy at different times. For the small country with stable government and good economic condition like Singapore, ICT policy could be implemented easily. With the clear vision, strong leadership on government and given high priority to e-government policy, Malaysia is successful on implementing the policy. However, low PC and Internet penetrations among population impede the ESD implementation to the citizen. In India, the obstacles to implement ICT policy are more complicated. Although India has a strong leadership among governments in all level and has the support from all institutions and governments at lower levels, it still faces the problems such as lack of basic infrastructure, financial problems and low literacy rate of population. With the condition of one of the lowest per capita telephone lines in the world, the Government of India should fix this problem first to spearhead the ICT revolution in the country.

³³ 13% of Indians who live in the major metropolitan cities and belong to the upper socio-economic class are regular Internet users (Mellor, et.al, 2001)

³⁴ 22 telephone lines per 1000 people (UNDP, 2000.)

Table 3.7
ICT Policy Lessons from Selected Country Experiences

N o	Singapore	N o	Malaysia	N o	India
1.	Unique characteristics. Benefits by small size, well informed & wired public	1.	Government commitment to implement ICT in public sector	1.	Willingness of government and top policy makers E-government in all levels to join global competitiveness
2.	Supporting political environment Has stable government & a long term commitment to ensure the benefits of ICT are maximized	2.	High priority of e-government policy Malaysia put e-gov strategy in high priority of policy to reach the developed nation status	2.	Introduce e-government in all levels. There is a good coordination among governments in national, state and local levels.
3.	Clear vision and plan Has a clear plan & structure within government	3.	A clear vision of ICT policy It is implemented to achieve the vision 2020	3.	Interactive websites
4.	Strong leadership in government	4.	The existence of National IT Council To identify National IT Plan	4.	Strong leadership in government
5.	Pioneer in implementing ICT in public sector Started to use ICT since 1980s	5.	The establishment of Strategic Thrust Implementation Committee	5.	Governance encourage ISPs to provide access everywhere
6.	Existence of National IT Task Force A single agency is required to provide the integrated focus on ICT strategy and policy	6.	Creation of the new federal government administrative center Help the development of ICT infrastructure, formulation of ICT security and policy standards	6.	Appointment of senior civil servants as IT managers in various departments and ministries.
7.	Good cooperation among stakeholders All players have important contribution towards developing the initial concept of IT2000	7.	Formulation of security policy	7.	Establish the programs supporting e-government policy Government decided to boost computer density by making computer easily affordable, increase connectivity by improving the telecommunication system, upgrade content of government resources, cover the cost of ICT, introduce cyberlaw.
8.	Consensus among policy makers Agree that ICT is a strategic factor in its economy	8.	A lead agency in implementing e-government projects with different implementing agencies in each project	8.	Establishment of some series of institutions and official positions to implement the vision of policy initiatives and legal measures related to e-governance.
9.	Government creativity in using the approaches	9.	Establishment of the programs supporting e-government policy	9.	Establishment of National Institute of Smart Government to enhance capacity building in e-governance at all administrative levels.
10.	Coordination among institutions	10.	An ambitious plan Internet & PC penetration is still low	10.	ICT policy not an integrated part of government and administrative reform
11.	Education of ICT literacy Government revised the university curriculum	11.	ICT Policy as part of the overall government and administrative reforms	11.	Early start of ICT policy but slow implementation
12.	Priority in construction of ICT infrastructure and promotion of ICT	12.	Acceptance of ICT by all civil service		
13.	ICT Policy as a response to labor shortage	13.	Early start of ICT policy in favorable environment.		
14.	ICT Policy as an integral part of government and administrative reform				

Source: Author's Analysis, 2002

III.4 Concluding Remarks

Experiences of Singapore and Malaysia show that ICT programmes are successful as part of general program on public administration reform. They started the ICT policy before the crisis in Southeast Asia happened. There is a strong need to change the system from human to computer due to the labor shortage. Malaysia has security policy that is formulated to safeguard government information system and its hardware. Singapore, with a reasonably small and rich in public services with entrepreneurship spirit is a unique case. It has the National IT Task Force that is required to provide the integrated focuses on ICT policy. In India, the e-government is introduced in all levels and the appointment of ICT managers in various departments and ministries has become the essential institutional aspect of e-governance.

Indonesia started later after them, and the condition is different. There is labor surplus that becomes a big issue in changing the system by implementing ICT. Based on the experiences of the three countries, the analysis of the ICT and e-government policy in Indonesia will be done in the next chapter. However, in drawing some lessons, we still need to be careful since the environment is different. Indonesia is a big country with large population. It has export orientation but limited only for oil and agriculture exports and has political and economic turmoil. Right now, the issue of decentralization is also very demanding, whereas the implementation of ICT and ESD are slightly centralized. The other characteristic is the manufacturing and other industries are not internationally oriented. The limited comparison of Indonesia with other countries studied will be done in the last chapter.

Chapter 4

ICT AND E-GOVERNMENT POLICY IN INDONESIA: THE PROBLEMS AND ISSUES

In this chapter, the analysis of ICT policy and the problems and issues of ICTs and e-government policy in Indonesia will be discussed. The implementation analysis of the policy so far will be done as well.

IV.1. ICT in Indonesia

Indonesia has already tried to use ICT in development since 1994 (Kristiadi, 2001). The numbers of Internet users, subscribers and .id domains are increasing from time to time (table 4.1 and table 4.2). In 2002, the Internet users were estimated to become 8 million people and this underscores the opportunities of Electronic Service Delivery (ESD) from government to citizen. The GoI set a framework for accelerating the development of ICT industry with the aims of increasing the capacity of the nation in exploiting the ICT to achieve higher economic growth. Both government and public organizations realized the need to deliver ESD by developing the sites that are rich in facts, relevant, and timely in order to represent the mission of their organization.

Table 4.1
Subscribers and Internet Users in Indonesia

Year	Subscribers	Users
1996	31.000	110.000
1997	75.000	384.000
1998	134.000	512.000
1999	256.000	1.000.000
2000	400.000	1.900.000
2001	581.000	4.200.000
2002* (estimated)	1.000.000	8.000.000

Source: APJII, <http://www.apjii.or.id/eng/statistics.html>

Unfortunately, the Internet density in Indonesia is focused primarily only in large cities, with little penetration throughout the rest of the country (IPTEKnet, 2002:5). The low level of Internet density is due to the low level of computer ownership. In some large cities in Indonesia, the PCs penetration is only 9.9%³⁵ (WB, 2002) and this condition is worse at the remote locations. The ISPs cannot provide the access to the people in the remote areas because of the problems of high cost and connectivity. The Internet utility rate is also still low compared to other countries in Asia. This is indicated by only 2 million people or less than 1% of the total 210 million population³⁶.

³⁵(9.9 per 1,000 people)

³⁶ Indonesia Cyber Industry and Market, 2002

Table 4.2
Number of .id Domains in Indonesia

Year	# of Domain
1995	87
1996	240
1997	723
1998	1485
1999	2165
2000	4264
2001	3501

Source: <http://www.idnic.net.id>

The capacity of telecommunication lines in Indonesia, which is indicated by only 3 telephone lines per 100 persons³⁷, is insufficient for ICT development. However, in contrast to this condition, there are quite a high number of web pages in Indonesia. In 2000, there were 4265 domains using Indonesian addresses (IDNIC, 2001). This was excluding the number of GoI's go.id directory, with around 325 web sites³⁸.

The concept of delivering services online was pioneered by a regional government, Takalar (South Sulawesi Province), in 1999. Afterwards, in 2000, the Kutai Government (East Kalimantan Province) launched its e-government services. These two regional governments gave a good start to ESD. In central government, almost all government institutions already have their own homepages, which are mainly used for general information, services and news about the organizations³⁹. Most of the sites have comprehensive information on important issues relevant to the government agency's mission, and provide rich content and sometimes complete with the search engine function. This kind of service was spread tumultuously in many government institutions and local governments without any coordination or control through a policy or framework for Indonesian environment. It is supposed to be the task of the State Ministry of Communication and Information (MCI).

Siskom Dagri, the National Governmental Communication Network System that is coordinated by MHA, connects the central government to district governments. It is used for email, as well as applications in such areas like personnel, finance and inventory. The IPTEKnet, the S&T network for the country, which serves S&T agencies, universities, government agencies and some private firms, is being promoted as the GoI's ISP provider. It has been designated as the e-government technical and support platform. Its staffs have received training in technology, engineering, business and other related topics at many prominent universities both inside and outside the country.

³⁷ PT. Telkom, 2000

³⁸ <http://www.developmentgateway.org>

³⁹ IPTEKnet, 2002

IV.2 ICT and E-Government Policy in Indonesia

The GoI evolved ICT development in national development plan. The policy to use ICT in development was first launched in 1997 when government declared a concept called N-21. Under the tutelage of the department of tourism, post and telecommunication, there has already been three parallel activities to realize the implementation of ICT policy for national importance such as N-21 that is sponsored by YLTI (R&D on IT Agency), Telematika Nasional (Presidential Decree 30/1997) and IIDP funded by the World Bank. These were expected to be the motivation in transforming the society to become a knowledge-based society (Parapak, 1998). In order to anticipate the citizen's needs in terms of the advance of ICT and ICT usage to support the nation in global competitiveness, GoI considers coordination and synergy of infrastructure development, application and ICT resources important⁴⁰.

Through Presidential Decree 186/1998, GoI established ITCT, the coordinating team for ICT development, whose structure and members were renewed through the Presidential Decree 50/2000. The tasks of ITCT that is led by the Vice President of RI are to formulate the government policy in ICT area, determine the stage and priority of development and usage of ICT, monitor and control the ICT development and implementation, and report the ICT development to the President. The financing for the ITCT operations comes from the budget at the Office of the Ministry of State Apparatus Empowerment (Kantor Menpan)⁴¹.

In February 2001, the ITCT formulated NITF, a framework which guides and explains the coordination of ICT planning, development, and utilization that gives corridor for ICT development on various important sectors, namely governmental sectors, business, society empowerment, education, and democracy. The basic framework contains of vision, mission, objective, strategy and policy. It provides a basic structure for developing other frameworks including infrastructure, regulatory, organizational and financial framework. The contents of the framework are as follows (ITCT, 2001):

Vision:

"Building up a knowledge-based Nusantara Telematika society in year 2020"

This means that the society should be capable to utilize both technology and knowledge toward equal opportunity. ICT must be able to support the efforts of sustaining the

⁴⁰The ICT resources are: Industrial support, standardization, HR, laws and regulations and ICT culture (Asian Development Bank (ADB), 2002)

⁴¹ Presidential Decree 50/2000

concept of Republic of Indonesia where the unity enthusiasm is considered as the most important factor.

Missions:

The six missions of NITF are:

1. Providing universal access of information to the entire society
2. Improving the coordination and using information efficiently
3. Enhancing efficiency and productivity
4. Enhancing quality and quantity of human resources (HR)
5. Enhancing the utilization of ICT infrastructure including the implementation of supported regulations
6. Motivating economic growth through development and utilization of IT

Objectives

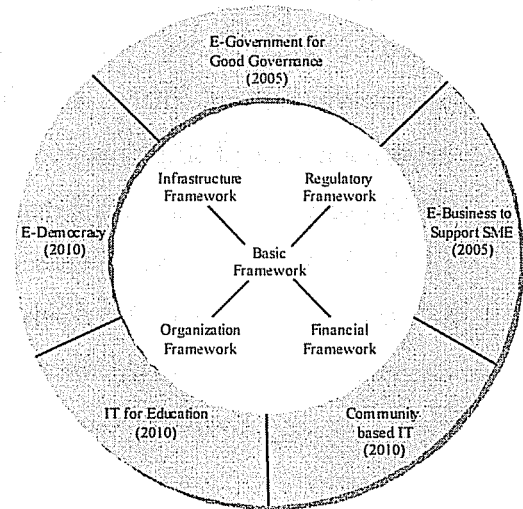
This framework has five objectives, which are as follows: e-government for good governance (2005), e-business to support SME (2005), community-based IT (2010), IT for education (2010), and e-democracy (2010).

General Policy

The general policies of NITF are as follows:

- Applying a new paradigm in funding mechanism
 - To establish an independent institution that has credibility to do various tasks in arranging funding mechanism within the new paradigm
 - To apply the New Funding Mechanism (NFM) for government investments, which is already started in the fiscal year 2002
 - Within 5 years, the government should have realized at least 75% of ICT investment using the NFM
- Strengthen the IT supporting structure
 - Physical infrastructure development is first implemented at the most prepared locations. The left-behind locations must be trained and developed gradually
 - The development and establishment of ICT education in higher education, including training and ICT HR development in the government and private organizations

Figure 4.1 NITF in Indonesia



Source: ITCT, February 2001

- Putting into effect and implementing the legislative regulations about e-commerce, information act, and patent right (*hak atas kekayaan intelektual* = HAKI).
- Guidance and focus on ICT R&D to support and search the cheapest ICT solutions for infrastructure and service
- Establish the Central Coordinating Agency (CCA) for national ICT development
 - The establishment of CCA, which is assigned to socialize, implement, monitor, and update the NITF
 - The quality prerequisites and the required HR expertise category, including funding clarity for CCA
 - The formation of Country Information Officer (CIO) in every governmental institution which is able to coordinate with CCA to ensure the implementation of NITF
- Motivate the ICT industry development
 - The establishment of database of ICT industry and business conditions that are available presently
 - The establishment of local ICT industry, which has an orientation to the local needs
 - The preparation of local ICT industry support such as infrastructure, stability, innovation, facilities and incentives for ICT R&D, and university participation

The general policy of each framework that supports the basic framework can be seen at appendix figure A. Apart from NITF, the FYAP⁴² for the ICT development and implementation in Indonesia has been issued as part of the Presidential Decree 6/2001. The plan identifies projects and associated timetables in four areas: policy and legal framework, HR, infrastructure and applications. It is a detailed plan that has policy statement on telecommunication and ICT, legal framework on ICT and institutional development, human capacity building and applications for the government. Some of the programs are ongoing (10 out of 42 programs) while the others have not been implemented. There is no information available on these. The action plan that addresses priority needs over the next 5-year for extending ICT benefits throughout Indonesia are:

1. Extending transparency and equal access to information
2. Improving access to services and opportunities

⁴² Appendix: Table A. The Five-Year Action Plan

3. Implementing measures to foster the realization of individual potential across society.

These needs are addressed by policy innovation and through support to human and institutional capacity building, legal framework reform, partnership of private sector in infrastructure and services including government online and other measures to improve. The government's effort was supported by international donor agencies that are actively involved in formulating the idea of ICT and e-government policy in Indonesia.

The GoI also established the MCI to help the President in formulating and coordinating the policy in the national ICT area. Through Presidential Decree 101/2001, the government emphasized the task of MCI. One of its missions is to improve the quality of public services by using and developing ICT to spread information. It represents as Country Information Officer (CIO), whose roles are to coordinate information among government; publish the actual and objective news; socialize, advocate, facilitate and evaluate the ICT network, infrastructure, ICT human resource, and information usage (Presidential Decree 101/2001).

IV.3 Actors in ICT Formulation and Implementation

There are some stakeholders and actors in formulating and implementing ICT development in Indonesia, such as: government, civil society, private sector, donor agencies and educational sector (IPTEKnet 2002:11; Depdiknas 2002).

Government

The GoI, both local and central governments have already realized to make their services online for public. Most ministries or departments have their own websites, although they are still built separately. They provide information and make one way communication. There is no single portal of central government that can be accessed by citizens to use only one address and linked to other sites of government. This is a little bit behind other countries in Asia that already have more interactive websites. Some country's experiences discussed in the previous chapter show they have already provided interactive sites that can conduct transactional processes such as payment of the taxes or reactions comments to the government on its proposals. In the eCitizen in Singapore, the services are already divided per type of service and not per department or ministry. This kind of integrated service information makes citizen easier to use the public services provided by public sector agencies or government.

Civil Society

Civil society can be defined as a group of people who conduct social, cultural, scientific and educational activities. There are many kinds of civil societies in Indonesia. In terms of ICT, civil society needs were identified as follows⁴³:

- The need for current and up-to-date reliable information on government related issues
- The need to coordinate activities in different programs.
- The demand for participation in order to involve more varieties or layers of local community activities on existing local problems. The establishment of online communications that would provide easy access to the information is emphasized.
- The need for online tools enabling civil societies to conduct extensive discussions and forums on various issues with authorities, citizens, and local communities, unifying citizens in an activity of civil societies, assisting in achieving positive results in solving local problems, collecting feedback, etc.
- The need to get easy access to relevant legislative acts that would make it possible to provide e-business and e-commerce in country that will positively affect the efficiency of Civil Societies operation.

Private Sector

The use of Internet in private sector is known as e-commerce. In Indonesia, the e-commerce awareness is also still low among Indonesian Internet users. They still have not realized that Internet can be a powerful media for business and making transactions. The obstacles to implement e-commerce are lack of infrastructure, legislation, awareness, security, culture and habit, and lack of online providers (Boerhanoeddin, 2000).

The private sector and investors are interested in products and services of information where they can find business opportunities as well as background information on trade, investment, finance and legal issues and regulatory matters. They are interested in knowing about what projects are being funded by International Financial Institutions (IFIs) as well, because an online access to marketplace for international competitive bidding opportunities and e-procurement market for them is of great importance.

Donor Agencies

The donor agencies both domestic and international have a lot of programs in addressing the problems of development in Indonesia. Most of them try to accommodate the needs of Indonesia in terms of the changing situation. There is a website⁴⁴ that has

⁴³ IPTEKnet, 2002:14

⁴⁴ <http://www.un.or.id/recovery/default.htm>

been developed by Bappenas and UNDP, to improve information exchange and networking among the donor community in Indonesia and to serve as a vehicle to match donor assistance to the emergency and development needs of the country. The site is intended to focus on the international assistance, which is being provided, or will be provided in the near future (IPTEKnet, 2002). There are also many other IFIs websites and it was observed that each of them is approaching government in its own way. There is a need for donor agencies to work together more closely.

Some of the needs of donor agencies relating to ICT development are as follows:

- The need to complement one another, avoid duplication of fund allocations, gaps in program areas and disbursement schedules
- The need of accurate, current information on related research findings from both government institutions and non governmental organizations (NGOs)
- Accurate and up-to-date information on donor development programs.

Educational Sector

The awareness to enhance the quantity and quality of HR in ICT has already spread among government institutions in Indonesia. Concerned with the low capability of HR in ICT, the Ministry of National Education (MNE) has taken the initiative to include the technology education in curriculum in schools. Development in ICT capability will improve Indonesia's ability to compete with other countries. MNE says that the objectives of technology education should go along with the objectives of national education that were stated in Chapter 4 of Law 2/1989 and Chapter 3 of Government Regulation 27/1990 (Depdiknas, 2002). The scopes of technology education that can be developed are: "technology pillar", "technology domain" and "technology area" (*ibid*).

The University of Indonesia, a famous state-owned educational institution, together with the NIIT, offers world-class ICT Education (NIIT, 2002). It set up a high-tech computer education center that would offer globally recognized industry relevant ICT education programs designed and developed by NIIT. The center will also offer its ICT literacy program – SWIFT (Short Work Programs in IT). These initiatives are expected to improve the condition of HR in ICT in Indonesia.

IPTEKnet built Indonesia Development Gateway as an umbrella organization and catalyst of any future ICT initiatives. It is backed by the majority of Indonesia's prominent ICT organizations and business associations, including senior government executives from the coordinating Ministry of Industry and Trade, State Ministry for Research and

Technology, Ministry of Foreign Affairs and The Investment Coordinating Board (BKPM). The relevant stakeholders for country gateway are⁴⁵:

- Government agencies, including ministries and agencies for S&T, telecom, finance, personnel, planning and the various economic sectors.
- Private firms, including Small and Medium Enterprises, potential investors, potential and existing traders
- NGOs, including information-oriented organizations and development organizations
- Donor agencies, including local World Bank (WB) office, The US Agency for International Development, Japan International Cooperation Agency, etc
- Other stakeholders as suggested by WB local office.

IV.4. Analysis of ICT and E-Government Policy: The Problems and Issues

IV.4.1 Analysis of the Policy

NITF is comprehensive in scope and contains all major technical dimensions of an ICT policy. It provides major objectives, sectoral programmes, specification of organizations, infrastructure, and regulation required. It has the long term and short-term plan with a 20-year vision to build up a knowledge-based Nusantara Telematika society, and 5-year policies, which are explained in objectives of the framework. However, from the policy analysis viewpoint, it is not so specific as guidance for policymaking, taking notice of political, social, administrative and financial feasibility of the strategy. In this respect it has to use the experiences of Singapore, and Malaysia, by formulating the NITP which is a comprehensive concept and concerns all aspects that support ICT development.

NITF provides the general high-level guidance for the government agencies, which in reality still needs clear and practical guidance in developing government online initiatives. The vision of “building up a knowledge-based Nusantara Telematika society in year 2020” is clear. In order to face the global nation competitiveness, it is necessary to have the information society. Based on the condition of Indonesian society right now, 20 years since the policy was formulated is quite a long time to build the knowledge-based society. But the problem is, there is no further practical guidance on how to reach this vision, in spite of many organizations like ITCT and MCI. It does not provide the mechanism of how to implement it. With respect to this, Indonesia can learn from the

⁴⁵ <http://www.developmentgateway.org/node/322783/interpage/index.html>

experiences of the 3 countries, especially India, where government produces a series of documentaries to generate awareness of the benefit of ICT and ESD.

The six missions of NITF are feasible if resources are available. In providing the universal access to the entire society, the GoI has already defined the universal access policy and targets in FYAP, which is an ongoing program, through MCI, ITCT and telecommunication operators. Through FYAP, the GoI is trying to strengthen the institutional capacity of ITCT to accomplish its mandate (until 2003). For other missions, the GoI is trying to improve telecommunications regulatory framework through MCI and ITCT, accelerate the enactment of telecommunication-related ministerial decrees through MCI, remove barriers to competition in the telecommunication market through MCI (until 2003), develop regional ICT centers of excellence (until 2005) through MNE, Ministry of Industry and Trade, Research and Development Technology Agency (BPPT), local government, universities and private sector, facilitate the use of internet for more efficient teaching and learning (e.g. School 2000) through MNE, schools, universities and private sectors (until 2005), and complete implementation of government online strategy prepared under IIDP through ITCT (until 2003). In removing the barriers to competition in the telecommunication market, Indonesia can adopt Malaysia's experience when it liberalized the telecommunication market. In terms of developing ICT centers of excellence to strengthen institutional development, the experience of India in building the Center for e-governance in order to promote ICT and e-governance in the country, can be used for ICT development in Indonesia.

The main weakness of the policy is that the strategy is not tested against future socio-economic scenario of Indonesia. Grindle & Thomas (1990) argue that the political, financial, managerial and technical resources are required to produce multiple potential outcomes of a policy. When the strategy was formulated, it was based on the assumption of the constant flow of resources in the future. The policy was first formulated in 1996⁴⁶ (before the crisis), when the condition was different. The political and economic conditions in Indonesia were unstable afterwards. GoI is still lacking of the resources, especially in financing the IT development. Right now, the total amount of public debt are around US\$ 140 billion and it is about 40% of total government budget (Tobing, 2002). With the big amount of budget that has to be paid for the loan, it is difficult to expect the government doing more.

⁴⁶ under the IIDP, that is approved in 1997 (<http://www.worldbank.org/html/extdr/extme/1541.htm>)

The framework does not provide sources of financial resources required to implement it. The independent institution that was supposed to apply a New Funding Mechanism (NFM) is still not there. The implementation of NFM itself is an ongoing process now. The development of physical infrastructure is still far from perfect (ITCT, 2001). For HR development, the MNE has taken the initiative to include ICT in national curriculum and the UI is initiating training on ICT.

The MCI is now formulating regulations and laws that are needed on ICT development in Indonesia. For establishing the central coordinating agency, GoI set up BKIN, but it cannot function very well due to lack of capable HR. The formulation of CIO in every government agency still cannot be realized for quite sometime. In this sense, Indonesia can learn from India that successfully implemented the idea of ICT manager in each department or ministry, with appropriate background. In terms of regulation and law, the experiences of Malaysia, Singapore and India, which have already implemented the comprehensive and complete cyberlaws, can be a lesson for Indonesia.

Most of the government agencies do not follow any particular government ICT framework. The guidelines seem to be unpopular among government agencies. This is because of lack of publicity on that. This can be an obstacle to successful implementation of government online initiatives and collaboration among government agencies and also with business community and public. In order to achieve common objectives, all government agencies, both the central and local government, should follow the same road map. Since 2002, the MCI has asked all government institutions including ministries, departments, government and non government agencies, both at local and central level to utilize their own websites. They were asked to optimize the services through providing latest information. Unfortunately, this mandate is not supported by giving the incentives to the agencies.

It is important for the GoI to provide incentives for individual agencies to develop online systems, following the NITF. The GoI could begin by promoting and socializing the NITF to all government agencies both central and local and then providing incentives which could be in the form of technical assistance for the local government, such as free training and consultancy in various aspects of e-government initiatives which are in line with the NITF and infrastructure and organization development. Since the financial problem is a big issue in all ministries, the GoI could be providing individual agencies with access to international donors who could assist them to overcome budgetary problem as long as the government online initiatives they undertake are in line with NITF. Another

approach is those government agencies, which provide more online services to citizens, can be given more autonomy in budgetary matters.

Table 4.3
Summary of Analysis E-Government and ICT Policy in Indonesia

Policy Assessment	Importance	Theory/Concept/Experiences of other country
Content of the policy: The strategy hasn't been subjected to political and administrative feasibility, only concerns the technical dimension	A good policy should concern all dimensions: political, administrative and technical feasibility	Meltsner (1972) argues that content of the policy, that facilitates the definition of the policy issue area is one of the 3 important dimensions of a policy
It does not provide the mechanism how to implement it, specially sources of finance	It is a general high level guidance for government agencies, which in reality still need practical guidance to implement it	Learn the experiences of the 3 countries, especially India, where government produced a series of documentaries to generate awareness of the benefit of IT and ESD
It is not testing the strategy against future socio-economic scenario of Indonesia	Concern to the Indonesian political condition right now, it still lacks of resources. It should assume that in the future there would not be more resources.	Visibility is one of the 3 important dimensions of a policy (Meltsner, 1972)
The Vision is clear The six missions of NITF are feasible technically	In order to face the global competitiveness, it is necessary to have the information society 6 missions are feasible if resources are available	Clear vision and mission are important in implementation phase. Like the experiences of Singapore and Malaysia those have clear vision and plan of ICT policy, so that policy can be implemented successfully
One action plan to strengthen institutional development is develop ICT centers of excellence		India's experience in building the Center for e-governance in order to promote ICT and e-governance in the country can give a good contribution for ICT development in Indonesia.
Policy environment: remove barriers to competition in the telecommunication market	To support ICT development, it needs to create a conducive and enabling legal and regulatory framework	Learn from Malaysia's experience when it liberalized the telecommunication market. Policy environment is one of the overall institutional pattern (Dunn, 1994)
<ul style="list-style-type: none"> - Lack of capable resources: finance, infrastructure and HR - It does not have the program on increasing the quality of HR (such as training) - The framework does not provide the financial resources required for implementing it. How will ICT be financed? What are the resources? From Where? 	Some programs that are ongoing now: <ul style="list-style-type: none"> - facilitate the use of Internet for more efficient teaching and learning (e.g. School 2000) - develop national backbone infrastructure - the initiative by MNE to include ICT in national curriculum; and training given by UI 	<ul style="list-style-type: none"> ▪ Available and capable resources are the most important factors in policy formulation and implementation ▪ Learn from Singapore's experience to revise national curriculum (include ICT on that) ▪ The training can be done by inviting experts from abroad to improve the quality and knowledge of the government officials
Unavailable regulations & laws that are needed on ICT development in Indonesia	To support ICT development, it needs to create a conducive and enabling legal and regulatory framework	The experiences of Malaysia, Singapore and India which have already implemented the comprehensive and complete cyberlaws, can be a lesson for Indonesia
The idea of CIO in every government agency is good but not implemented	Still cannot be realized due to lack of capable HR	Learn from Indian experience: appointment of ICT manager in each department.
The policy is not popular among government agencies: lack of publicity and incentives	Become an obstacle in implementing the policy	<ul style="list-style-type: none"> ▪ In order to achieve common objectives, all government agencies, both the central and local government, should follow the same road map. ▪ Government can give non-monetary incentive for the agencies
Too many agencies with no clear division of work	Can create the coordination problem among them	<ul style="list-style-type: none"> ▪ Learn from Singapore case that have a single agency (merged from some agencies) ▪ A single agency is required to provide the integrated focus on strategy and policy for infocomm development in Singapore
Building the development task force on ICT	Important in supporting the development of ICT, but it has not functioned well	Learn from Singaporean experience on National IT Task Force; Malaysian experience on National IT Council
It lacks the supporting program in promoting e-government	It is important and GoI needs to be creative due to lack of resources	Learn from Indian experience which established the programs to support the policy, in fact India also faces the problems of resources

Source: Author Analysis, 2002

The GoI could also provide incentives in the form of higher quality but low cost ICT communication infrastructure, which could be specifically designed for government agencies to communicate and collaborate. It could develop and promote an e-procurement platform available to individual agencies to procure ICT products and services provided they again adhere to the NITF. This will substantially save costs, while maintaining quality. These activities should be coordinated by a single agency with sufficient power and authority to ensure successful implementation of the NITF. This goes along with the idea that, instead of having too many agencies with no clear division of work that can create coordination problem, it is better to have a single agency. In this respect, Indonesia can learn from Singapore's experience that merged some agencies to become a single power agency and maintains a good coordination among the institutions.

In order to develop e-government, the MCI has already set up the e-government development task force that involves government institutions, technology experts, higher education sector and business sector, to decide on the standard policy guidelines (Damanik, 2002). The task force has already formulated and arranged the policy and strategy to develop e-government that will be launched as a Presidential Instruction. In order to support the development of systematic and integrated e-government policy, right now, the standardization and consistent guidelines are being arranged. The laws include government portal, management system guideline, secrecy and security of electronic documents, and participation of private sector (*ibid.*).

Schware (2002)⁴⁷ argues that Indonesia is currently in phase 2 "presence" of the e-Government roadmap. In order to move to the subsequent phase, it needs the critical next steps, one of which is to develop a prioritized list of pilot projects and outline a phased implementation strategy. In terms of citizen services, there are some potential e-government pilot projects for Indonesia (*ibid.*), such as: "National Government Portal" by IPTEKnet, "Wartel to Online Warnet" by Directorate General of Post and Telecommunication (PT Telkom), "National ID card" (including authentication) by MHA, "Telemedicine System for Clinics" by the Ministry of Health, "Online Flood Management" by Bureau of Meteorology and Geophysics, "Online Teacher Community" by MNE, "e-Libraries for Schools" by MNE, and "e-Legislation" by Ministry of Justice and Human Rights of the State Secretariat. These potential e-government pilot projects were arranged based on the situation and the needs of Indonesia.

IV.4.2 Role of ICT in Development: The Problems and Issues

The initiative of the GoI to implement e-government and ICT by formulating NITF and establishing different organizations shows that e-government is really desired. Unfortunately, it is still far from being feasible because of the situation in Indonesia. It needs the availability of substantive financing technology and high public acceptance. Currently in Indonesia, the infrastructure and HR that can support the ICT development are limited and the Internet penetration is still low. The aim of ICT investment is still not clear and it also involves high capital costs to government, while government is still not able to measure the impact of ICT expenses in terms of efficiency and productivity.

The problems appear not only at the implementation phase but also at the formulation stage. There is a gap in terms of the timing when the policy was formulated and implemented. The policy was prepared before the economic crisis when the economic condition was good, but the implementation and the initiative to use ICT in development came after Indonesian development crisis. It does not take into consideration the resource constraints, agreements with IMF or World Bank to reduce expenditure, and other urgent issues requiring government's attention and allocation of resources. The debt to international donors has increased and the people living under poverty line have also increased. GoI had also other priorities like regional autonomy, reducing public expenditure, privatization, etc. In Propenas 2001⁴⁷, it is mentioned that the five main problems that should be given high priority by the GoI are: growing social conflict & emerging symptoms of national disintegration, weak enforcement of laws & human rights, slow economic recovery, declining level of social welfare, increasing social illnesses, weakening level of the national resilience, and slow progress in strengthening the capacity of regional and community development. This shows that the development of ICT is not given high priority in present Indonesian development. In this respect, Indonesia can learn from Malaysian Government that put e-government strategy on high priority of policy to reach the developed nation status.

To understand why ICT policy in Indonesia lacks political feasibility and is only concerned in the technical dimension, we should review the composition of the team that formulated it. The idea of promoting e-government and ICT policy in Indonesia mostly came from international donors. In 1997, the World Bank approved the loan to Indonesia for the IIDP to enhance private sector participation in the provision of IT, postal, and

⁴⁷ He is from an international donor agency who argues that the Indonesia's Roadmap to e-Government contains of 5 major phases: "preparation", "presence", "action", "participation" and "transformation".

⁴⁸ <http://www.lin.go.id/detail.asp?idartcl=180502TJdA0001&tby=IndBangun>

tourism services by removing barriers to market entry⁴⁹. The GoI invited some international and domestic consultants to participate in bidding activity, and one of them would be the partner of GoI in formulating the ICT policy in Indonesia (Department of Culture & Tourism, 2000). In formulation phase, there were mostly foreign consultants, international donors, and only a very few local staff. There was a lack of capable local staff who really understood the situation in Indonesia. In this respect Indonesia should learn from Singapore's experience when it formulated the IT2000. More than 200 people from various groups cooperated to formulate it (see p.19).

In terms of financing, the GoI does not have enough money for supporting ICT, whereas the implementation of the new technology needs a lot of money. There is no estimate of total finances required for realizing policy objectives and some specification as to how these resources are to be obtained. The NITF only mentions the financial general framework that aims to provide direction to obtain an optimum benefit from the investment and keep it sustainable. It proposed 7 ways to deal this, which consists of: the participatory approach of funding mechanism, strategic planning for the ICT investment, block grant contract, self-funding preparation, tiered competition for the investment submission, transparency in using investment fund and matching grant (ITCT, 2001).

In year 2001, the government's budget and actual implementation on S&T sector were 537.5 billion rupiah and 590.9 billion rupiah (1,5% of the total budget), meanwhile, the government budget and actual implementation on information, communication and mass-media sub-sector was 50.6 billion rupiahs and 141.7 billion rupiahs (0,36% of the total budget) (MoF, 2002). These statistics show that the ICT development in Indonesia is lacking financial support. To get the funding for IT development, GoI has also rely much on international donors⁵⁰. There is no specific information on government budget on ICT, because the process is still in the beginning stage. The only information available is from World Bank (2002), about the government expenditures on ICT as percentage of GDP (2.2% of GDP) in the year 2000.⁵¹

Due to the crisis in mid 1997, Indonesia suffered from political and economic instability. It has affected Indonesia's ability to invest in S&T policy as well. Before the crisis, Indonesia made significant progress in terms of development of advanced technology, including telecommunication equipment, but after that, the total expenditure of GoI on R&D especially in S&T area decreased from time to time. In FY 1999-2000, it

⁴⁹ <http://www.worldbank.org/html/extdr/extme/1541.htm>

⁵⁰ 65% cost for the IIDP will be financed by the IBRD loan (World Bank) of US\$34.5 million

⁵¹ Data are from the ITU World Telecommunication Development Report 2001.

decreased by approximately 10% from the previous year, under Indonesia's "survival" zero-growth budget, that relied heavily on foreign loans (USDC, 2001).

Other problems that face the GoI at implementation phase, are limited number of skilled programmers and limited numbers of existing industries producing software and hardware. According to PKI Conference (2001), the various problems that may impede the e-government and ICT development in Indonesia are: low number of PC compared to the population, low number of telephone lines in comparison with population, low awareness of the benefit of using ICT, limited availability of skilled personnel, limited availability of capital venture companies specializing in Internet, weak capital structure, and difficulties for universities to benefit from royalty for researches. The formulation of subsequent policy within every framework of NITF should be appropriate to the present condition. The internal and external factors that affect the success of ICT implementation must be analyzed in order to identify solutions for the emerging issues. The current condition in each framework of NITF can be seen in table 4.4.

Table 4.4
ICT Current Condition of Each Framework in Indonesia

ICT Infrastructure	ICT Law (Regulatory Framework)	ICT Organization	Finance in ICT Development
<ul style="list-style-type: none"> ▪ The condition of ICT infrastructure presently is still far away from perfection, such as: data duplication, low interoperability of a system, unfeasible telecommunication infrastructure, unfeasible quality and quantity of HR, low optimization of a system, lack of information access support for the society, and less participated ICT industry in procuring infrastructure 	<ul style="list-style-type: none"> ▪ Unavailability of feasible regulations in the matter of national finance management especially in ICT fields causing ICT units in governmental sectors highly dependent on government assistance ▪ Unavailability of a clear structure and status of ICT units esp. in governmental sectors causing those ICT units which cannot independently carry out their tasks optimally ▪ Unavailability of feasible regulations on electronic commerce, esp. for the electronic transaction and security management ▪ Unfeasible regulations about the type of information to be shared with other organizations and to be accessed by public society ▪ The regulations on telecommunication still have monopoly characteristics ▪ Unfeasible law in the matter of information privacy and computer crime protection ▪ Low public awareness of the copyright of ICT products causing piracy products to be highly used. 	<ul style="list-style-type: none"> ▪ Unavailability of organization that arranges policy, coordination, planning, utilization, and evaluation in ICT field nationally, causing ICT development to become segmented and disintegrated with other systems ▪ National ICT concepts such as Nusantara 21 and Telematika that have been formulated are lowly executable because of lack of coordination ▪ There is lacking in making efficient use of ICT units within organization. It causes ICT units to only become a cost center instead of a profit center 	<ul style="list-style-type: none"> ▪ Low percentage in ICT from the available organization budget causing lack of ICT support to the organizational operation, which includes the procurement, maintenance, and training ▪ Unavailability of cost/benefit analysis and investment justification to the ICT investment proposals ▪ Low capability of ICT units in gathering fund for ICT development that makes ICT units not having the sense of belonging to the existing ICT

Source: Executive Summary of NITF, ITCT, February 2001

A country's success in promoting e-government in its national strategy can be determined through its "e-readiness". McConnell International (2000), argued that global e-readiness for one country can be assessed through indicators such as: connectivity, e-leadership, information security, human capital, and e-business climate. In Indonesia, the

connectivity, information security, and e-business climate, still need substantial improvement in the conditions necessary to support e-business and e-government (*ibid.*). For e-leadership and human capital it is the same with some improvement relative to the prior periods. Compared to other countries in Asia, Indonesia is still far behind particularly its neighboring countries such as Singapore, Malaysia, South Korea, Taiwan, India, and China, but has a little more progress than Pakistan and Vietnam (*ibid.*).

HR is one of the most important factors in ICT development. Without capability and good quality of HR, Indonesia will be left behind other developing countries in Asia Pacific and the entire world. The quality of HR in Indonesia is still inadequate in response to the needs. Of the 203 million Indonesian population, 92.7 million are the labor force, consisting of 87.67 million (70%) people working and the rest still unemployed (Sakernas 2000, quoted in Sulistyaningsih, 2001). More than 63% of labor force were graduated from elementary school (*ibid.*). The funding for research in ICT is still very small compared to other countries in Southeast Asia (Depdiknas, 2002). For IT services, Indonesia spends US\$M 115, while Malaysia, Singapore and India spend US\$M 249, US\$M 503 and US\$M 772 (WITSA, 1998). For IT as a whole, Indonesia spends US\$M 4775 while Malaysia, Singapore and India spend US\$M 5380, US\$M 7404, US\$M 7805 (*ibid.*). The Indonesian's ICT capability is also still low, ranking only 33 out of 48 countries surveyed (World Competitiveness Report, 1995). In this matter, Indonesia should develop its capability in ICT, especially improve the quality of HR, and particularly, among public sector agencies and government officials. The government should also include ICT education in national curriculum in Indonesia.

One way to improve quality of HR in ICT in Indonesia is through training. This effort was supported by the Japanese Government (JG), which is already many steps ahead of other countries in Southeast Asia. The JG decided to contribute 1,270 million Yen to ADB in 2001, to help developing countries of Asia and Pacific region in promoting ICT⁵². JG will provide funds-in trust to UNESCO in order to implement training courses on the effective usage of ICT in education for schoolteachers and other professionals in Asia and Pacific region. In FY 2000, JG gave a loan to Indonesia for Institutional and HRD for ICT related to Customs Services Improvement Project (up to 4,108 million Yen)⁵³.

⁵² The Ministry of Foreign Affairs of Japan, 2001

IV.5 Concluding Remarks

The commitment and desire of GoI to formulate and implement ICT and e-government policy in development are unquestionable. Unfortunately, both in formulation and implementation stages, the GoI faces the problems, due to the lack of infrastructure, lack of capable and trained staffs, limited budget, low acceptance of public in ICT area, and the timing. It is different from Singapore, Malaysia and India, which had already started their ICT programs several years before. Timing of ICT policy in Indonesia is not optimum. Singapore and Malaysia did it when the economic conditions were good. Indonesia has just started it right after the crisis, while economic growth was negative. There are a lot of people still living under the poverty line that need more attention and for whom it is difficult to have access to ICT. The policy was being implemented when the constraints were strong. In other countries, the implementation of ESD is intended to have interactive decision making. Indonesia still could not make it since the awareness of civil servants is still low. As a result, although Indonesia can learn from the experience of other countries, it is difficult for it to put all of them in to practice in the short period.

Right now, e-government and ICT in Indonesia are still in the initial stage. However, ICT is expected to answer or help to solve development problems especially in the delivery of services to citizens and make the relationship between government and citizen more interactive. The limited comparison with the three countries and Indonesia on ICT Policy and the recommendations and conclusion will be done in the next chapter.

⁵³ *ibid.*

Chapter 5

POLICY RECOMMENDATIONS ON INDONESIAN ICT POLICY

Using ICT in development is unavoidable for a country facing the global competitiveness, not only for developed countries but also for developing countries; not only in the private sector but also in the public sector. The choices facing by developing countries are not there, implement the ICT policy in development or be left behind other countries in the world. From the study of some countries, including the transitional and developing countries, and focusing analysis on Indonesia, in the context of experiences of Singaporean, Malaysian and Indian, we can draw some lessons.

V.1 Status of ICT in Indonesia and the Policy on E-government and ICT

Initiative to use ICT in Indonesia started several years ago. By getting the funding from international donors, GoI tried to formulate the policies and strategies to use ICT and e-government in development. By introducing such kind of policies, it was expected could improve the delivery of services from government to citizens. However, the GoI faces the problems in formulating and implementing the policies. The private sector, that introduced ICT earlier than the public sector, also faces some problems as the awareness among them is also still low. The donor agencies and foreign consultants are the actors who were mainly involved in formulating and implementing the ICT in Indonesia. The educational sector is trying to improve the quantity and quality of HR in ICT by putting the ICT in national education's curriculum but the output is limited. There is no information on interest of labor unions on using the ICT in Indonesia.

Many actors in development support the ICT formulation and implementation in Indonesia, but some of them are still feel not sure about it. Although the Internet subscribers, users and service providers are increasing from time to time, the average of the PC and Internet penetration are still low compared to total population in Indonesia. In some areas, especially in the remote locations, public acceptance on ICT is still low and many people do not have access to ICT. In government or public sector itself, the awareness and skill of civil servants in using ICT are still low. There is no shared culture among the people in government and uncommon culture to documented information. Lack of infrastructure, technology, HR and budget, become obstacles both in the formulation and implementation of ICT and e-government policy in Indonesia. The present emphasis on implementation of ICT is on organizational and legislative matters, rather than on substantive implementation of different components.

In order to control and coordinate the implementation of ICT in development, it needs the National IT Task Force and Laws and Regulations. A single agency is required to provide the integrated focus on ICT strategy and policy. Indonesia still could not realize these things. Although it is said that the MCI has already set up the e-government task force to arrange the standard policy guidelines and has formulated the policy and strategy to develop e-government in 2002, they are still in very early stage. The commitment to implement them in ICT development is a crucial factor. Unlike in Singapore and Malaysia, in Indonesia high level political push is missing.

Based on the above explanations, it is argued that e-government and ICT policy in Indonesia is still in the initial stage. To reach the further step of ICT in order to take its advantage in helping to solve the development problems, we need to review the policy and guidelines and make critical next steps. To review and see what other countries have done in this area become important factors in future approach.

V.2 What Indonesia Can Learn from Other Country Experiences

The literature on ICT in public sector mostly describes the situation of ICT implementation in developed countries where rapid introduction of ICT was a response to the high level of incorporation of their economies in global environment and to the need of making their export industries more competitive. It is argued that many countries have the awareness of the role of ICT in their national affairs, but they realize there are some obstacles in implementing it. The conditions and situations in each country as well as the timing when it started to use ICT are different. As a unique case with small size and entrepreneurship spirit in public services, the Singaporean Government could implement ICT and e-government policy easily. It started much earlier than other countries in the same region. The government is creative in using the approaches and there is good coordination among institutions. Malaysian Government, with a clear vision of ICT policy and implementing it as part of public administration reform, gives high priority on e-government policy. It has the strong commitment and security policy to safeguard government information system and its hardware. In India, the government in all levels and top policy makers has the willingness to implement the ICT and e-government policy. The appointment of senior civil servants as ICT managers in various departments and ministries has become the essential aspects of e-governance.

The theoretical literature does not provide much guidance to policymakers in developing countries as how to design their strategies in the context of acute resource

constraints, insufficient skilled manpower and lack of high level, continued political, active support. There are only very few references that address themselves to the problems of developing countries, like we have seen in chapter 2. They are mostly adopting the western literature to the needs of developing countries without concern to what actually happened in developing countries. The only concern shown is about technical dimensions. Generation of literature on this subject by experts and scholars from developing countries has only recently started but even this literature concentrates on technical aspects without touching on issues like what should be priorities in case of resources constraint, how to increase the awareness of civil servants in terms of ICT, how to interest the politician in ICT policy, etc.

The ICT experience of Singapore and Malaysia was successful because it was part of their strategies to improve their competitiveness in the global environment and as a response to the labor shortage. Changing the system from human power to network power would bring the opportunity for such situation. The developed countries, including Singapore and Malaysia initiated the ICT programmes during the time when they did not have much resources constraint, had only few other problems that need to be tackle urgently and had either capable manpower of their own or ability to get it on payment from other countries. All these characteristics cannot be found in developing countries, particularly in a country like Indonesia. GoI and its public administration already have the formal commitment to implement ICT and e-government policy. They have a clear vision of NITF, implementation strategy and set up of the ITCT, a coordinating team on ICT development. However, GoI still faces many problems. Instead of becoming the factor that supports the policy formulation and implementation, the active involvement of international donor agencies can also be the constraint factor if there is lack of involvement of local groups and staffs who really know the situation in Indonesia. The experiences of the three countries compared to the Indonesian experience are summarized in table 5.1.

Table 5.1
ICT Policy in Selected Country and Indonesia

No	Singapore	No	Malaysia	No	India	No	Indonesia
1.	Unique characteristics. Benefits by small size, well informed & wired public	1.	Government commitment to implement ICT in public sector	1.	Willingness of government and top policy makers	1.	Government & public administration commitment to implement ICT in public sector
2.	Supporting political environment Has stable government & a long term commitment to ensure the benefits of ICT are maximized	2.	High priority of e-government policy Malaysia put e-gov strategy in high priority of policy to reach the developed nation	2.	E-government in all levels to join global competitiveness	2.	Not given high priority for ICT in development
3.	Clear vision and plan Has a clear plan & structure within government	3.	A clear vision of ICT policy It is implemented to achieve the vision 2020	3.	Introduce e-government at all levels. There is a good coordination among governments in national, state and local levels.	3.	Vision of ICT Policy Clear vision of policy but still not feasible
4.	Strong leadership in government	4.	The existence of National IT Council To identify National IT Plan	4.	Interactive websites	4.	Implementation Strategy Through formulation of FYAP, 2001-2005
5.	Pioneer in implementing ICT in public sector Started to use ICT since 1980s	5.	The establishment of Strategic Thrust Implementation Committee	5.	Strong leadership in government	5.	Coordinating team in IT development (ITCT) To monitor and control the development & implementation of IT & report it to the President
6.	Existence of National IT Task Force A single agency is required to provide the integrated focus on ICT strategy and policy	6.	Creation of the new federal government administrative center Help the development of ICT infrastructure, formulation of ICT security and policy standards	6.	Governance encourage ISPs to provide access everywhere	6.	Active involvement of international donors in formulating and implementing the policy
7.	Good cooperation among stakeholders All players have important contribution towards developing the initial concept of IT2000	7.	Formulation of security policy	7.	Appointment of senior civil servants as IT managers in various departments and ministries.	7.	Low acceptance of public, lack of resources (HR, infrastructure, budget)
8.	Consensus among policy makers Agree that ICT is a strategic factor in its economy	8.	A lead agency in implementing e-government projects with different implementing agencies in each project	8.	Establish the programs supporting e-government policy Government decided to boost computer density by making computer easily affordable, increase connectivity by improving the telecommunication system, upgrade content of government resources, cover the cost of ICT, introduce cyberlaw.	8.	Low awareness of civil servants and lack of capable local staff on ICT
9.	Government creativity in using the approaches	9.	Establishment the programs supporting e-government policy	9.	Establishment of some series of institutions and official positions to implement the vision of policy initiatives and legal measures related to e-governance.	9.	No interactive website & no single portal of government
10.	Coordination among institutions	10.	An ambitious plan Internet & PC penetration is still low	10.	Establishment of National Institute of Smart Government to enhanced capacity building in e-governance at all administrative levels.	10.	Setting up the e-government development task force and formulating the standard policy guidelines Still in the very early stage (2002) and does not have any substantive progress yet
11.	Education of ICT literacy Government revised the university curriculum	11.	ICT Policy as part of the overall government and administrative reforms	11.	ICT policy not an integrated part of government and administrative reform	11.	Low connectivity, e-leadership, information security and e-business climate.
12.	Priority in construction of ICT infrastructure and promotion of ICT	12.	Acceptance of ICT by all civil service	12.	Early start of ICT policy in favorable environment.	12.	ICT policy not integrated with government and administrative reform.
13.	ICT Policy as a response to labor shortage						
14.	ICT Policy as an integral part of government and administrative reform						

Source: Author's Analysis, 2002

V.3 What Indonesia Should Do in Implementing the ICT and E-Government Policy: Conclusions and Policy Recommendations

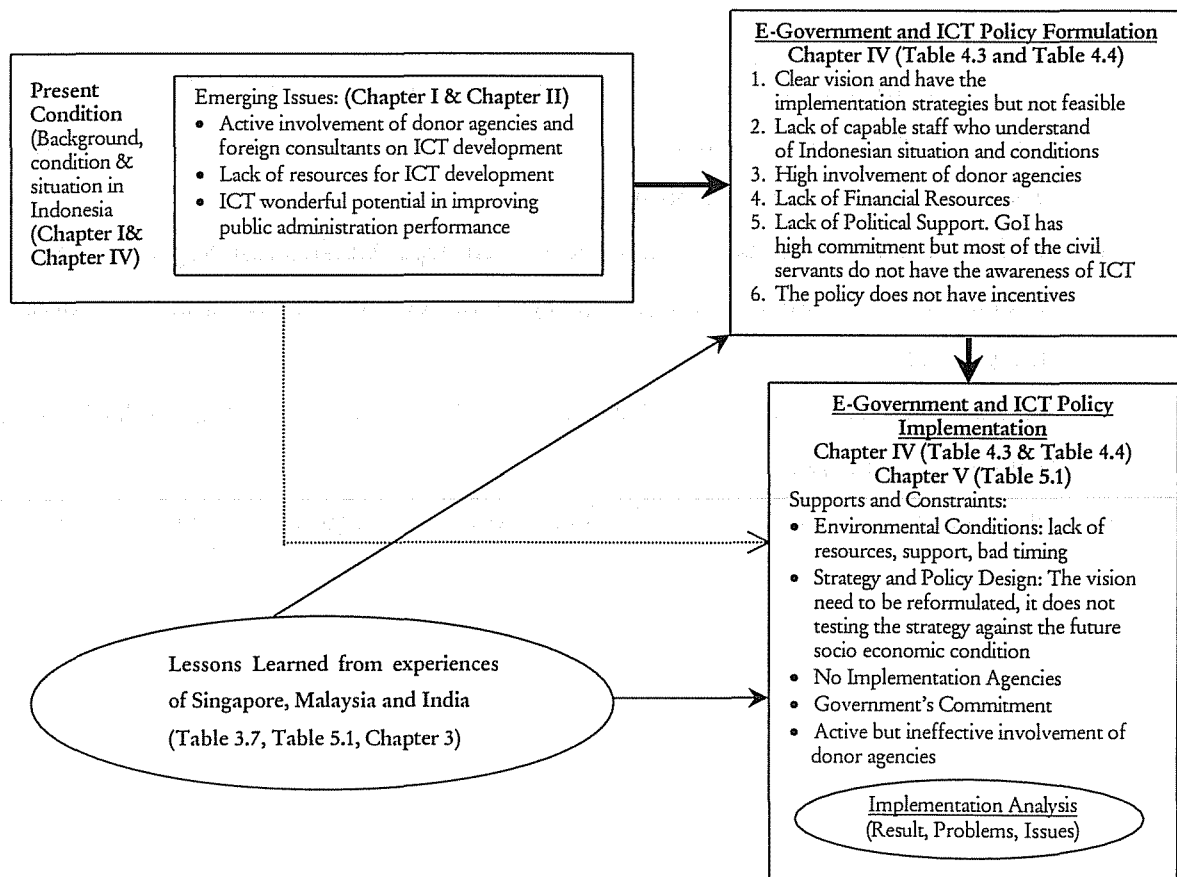
Based on the facts that have already been discussed before, there is a need to review what GoI should do in developing the ICT and E-government policy. All the stakeholders in development should support the desire and commitment of government. The citizen who is the target of online service delivery must have high acceptance and awareness of using ICT. The government hand in hand with private sector, citizens, and other actors in development should face the obstacles that appear during the formulation and implementation of the policy including the culture of people that could be a constraint in using ICT. Therefore, some recommendations that are based on appreciation of the present reality of Indonesia are necessary. With the current political situation in Indonesia, the assumption is that for all practical purposes, the resource constraint is likely to continue and in fact increase in the future. Some future strategies, which are recommended in this study, are as follows:

1. There is less possibility that more funds can be allocated for ICT, e-governance, due to continued financial constraints. As such strategy should be to utilize available resources on few priority components like using of ICT in delivery of services.
2. From available bilateral and multilateral scholarships, a part should be set aside for developments of HR for ICT
3. Instead of sending the Indonesian scholars abroad to study ICT which is very expensive, the trainers should be brought to Indonesia and train a large number of people to improve capability on ICT
4. In all in-service training programmes at the Lembaga Administrasi Negara (LAN) – the national administrative training agency-, instruction on computers should be incorporated
5. For e-commerce, the supportive legislation can be drawn soon, using similar legislation in Singapore, Malaysia
6. All external consultants in ICT field should be required to have a group of counterparts who should be trained by them, as part of their terms of reference
7. Providing access to all people, even in the remote areas. Second hand computers, which are being scrapped in industrialized countries, can be used in schools, rural areas for education.
8. Building telecommunication infrastructure and networks to expand and intensify connectivity

9. Establishing a sound regulatory framework (cyber law) combining provisions that stimulate the use of ICT with those which protect consumers, prevent tax evasion, respect property rights and ensure the security of payments.
10. Creating e-Leadership
Leadership plays an important role. Government should facilitate and support the ICT development. Democratization of knowledge is important, in order that all citizens have access to computers. Therefore, the partnership among states, international organizations, the private sector, academia and NGOs is considered crucial.
11. Activating the National IT Task Force. It is still in the very early stage (2002) and does not have much progress yet
12. Reformulating the vision that is more feasible in situation and condition of Indonesia today
13. Developing more interactive websites and building the single portal of government (like Singapore) that comforts the citizens in using the services

The results of our analysis and main observations on the ICT policy of Indonesia, using the framework suggested in chapter I, are summarized in the figure 5.1.

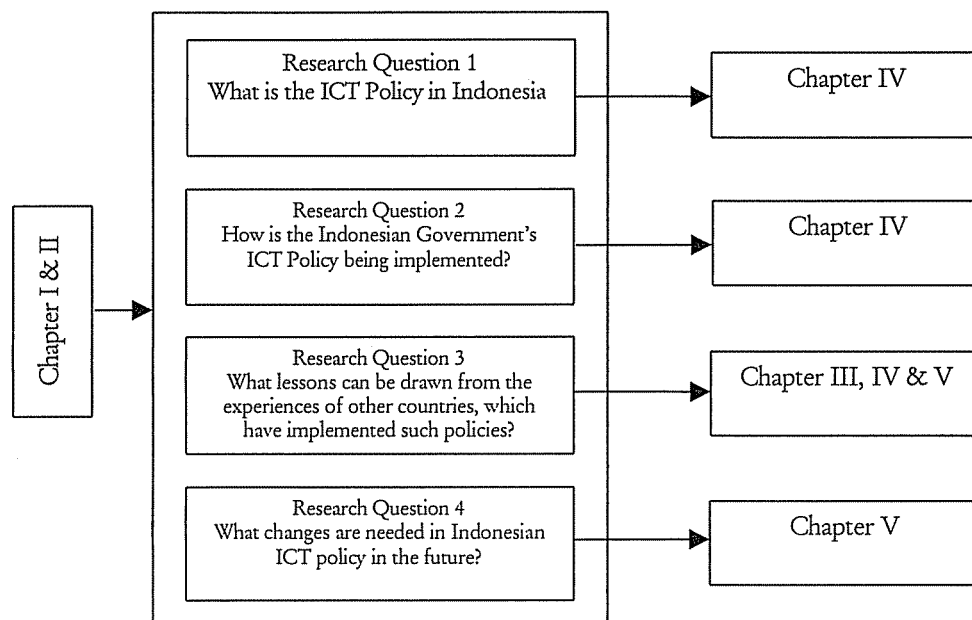
Figure 5.1 Analysis of E-Government and ICT Policy in Indonesia



Source: Author's Framework of Analysis, 2002

Similarly, the four research questions stated in chapter 1 have been discussed and answered in different chapters of the research paper, as shown below:

Figure 5.2
Response to Research Questions



Source: Author's Analysis, 2002

To sum up, it is not easy to formulate and implement the ICT and e-government policy in development. The government, public and private sector, citizens, and other stakeholders in development need to be ready in responding and using the potential of new technology. The supporting environment, including condition, situation and local culture also become crucial factors. The rationale for using ICT in the public sector is to reduce cost and give better services to the citizens and also make the relationship between government and citizens more interactive. However, in the beginning, it needs high investment and a lot of money. Government should give high priority to this. It also needs high capability in HR and infrastructure.

We can take the advantage of ICT potential in improving public administration performance but having the full awareness of the latent dangers behind it. If we are not careful in using the ICT, it can make the digital divide become wider and the gap larger between developed and developing countries.

1. The first part of the paper is devoted to the study of the

properties of the function $f(x)$ defined by the equation

$$f(x) = \int_0^x \frac{1}{1+t^2} dt$$

It is well known that the function $f(x)$ is increasing and concave down.

The second part of the paper is devoted to the study of the function $f(x)$ defined by the equation

It is well known that the function $f(x)$ is increasing and concave down.

The third part of the paper is devoted to the study of the function $f(x)$ defined by the equation

It is well known that the function $f(x)$ is increasing and concave down.

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Table A
The Five Year Action Plan

No	Issue	Action Plan	Time Schedule	Implementing Agency
1	Policy & Legal Framework			
	1. Policy			
	1. Telecommunication	- Improve telecommunications regulatory framework in Indonesia including licensing, tariff, interconnection, standardization, & frequency spectrum management	2001- 2002 ^{*)}	Min. of Communications, TKTI
		- Accelerate the enactment of telecommunication-related ministerial decrees	2001 ^{*)}	Min. of Communications
		- Define universal access policy and targets	2001- 2002 ^{*)}	Min. of Communications, TKTI, telecommunication operators
		- Remove barriers to competition in the telecommunications market & facilitate faster integration service safeguards and roll out of telecommunication and internet technologies, including high capacity, broadband services and peer group radio networks	2001- 2003 ^{*)}	Min. of Communications
		- Accelerate the resolution of KSO problem	2001- 2002 ^{*)}	Min. of Communications, PT. Telkom, KSOs
		- Empower independent regulatory body	2001	Min. of Communications
	2. Information technology	- Develop awareness and educational campaign on ICT for GoI officials and legislators	2001- 2005	TKTI, all ministries, Parliament
		- Prepare regulation for intra government communication and disclosure	2001- 2003	Min. of Administrative Reforms, TKTI
		- Prepare regulations for prescribing public information access and on-line services / procedures to improve service levels, transparency and good governance in government and public institutions	2002	TKTI
		- Prepare regulation accommodating ICT local industry access to the government procurement	2001- 2003	Min. of Industry and Trade
		- Eliminate any restrictions on ICT investment and reduce burdensome bureaucratic procedures imposed on domestic and foreign investors	2001- 2002	Min. of Finance
		- Remove luxury sale tax, as well as other taxes and charges, imposed on an expanded range of ICT products and services	2001 ^{*)}	Min. of Industry and Trade, Min. of Finance, Min. of Home Affairs, local government, ICT-related association
		- Remove regulatory and institutional barriers to applying innovative technologies such as wireless, high speed data transfer, and VoIP from standard phones to provide an additional low cost service	2001	Min. of Communications
		- Build partnerships and alliances among private sector participants to build government online platform based on competitive bids	2001- 2002	Min. of Industry and Trade, Agency for the Assessment and Application of Technology (BPPT), private sector
	2. Legal Framework			
	1. Information Technology	- Finalize Cyber Law and modernize criminal law to cover computer & cyber crime; & the enforceability of electronically made representations & commitments	2001- 2002	Min. of Justice, Min. of Communications
		- Strengthen the institutional capacity of TKTI to accomplish its mandate	2001- 2003 ^{*)}	TKTI
	2. Institutional Development	- Strengthen the frequency spectrum management system in Indonesia including effective frequency management for new multimedia wireless, broadcasting and broadband services and systems; as well as peer group and specified non-commercial/public benefit networks, such as inter and intra government	2001- 2002	Min. of Communications, BPPT
		- Develop an independent regulatory body	2001- 2003	Min. of Communications, TKTI
		- Develop regional IT centers of excellence, e. g., Bali	2001- 2005 ^{*)}	Min. of Research &

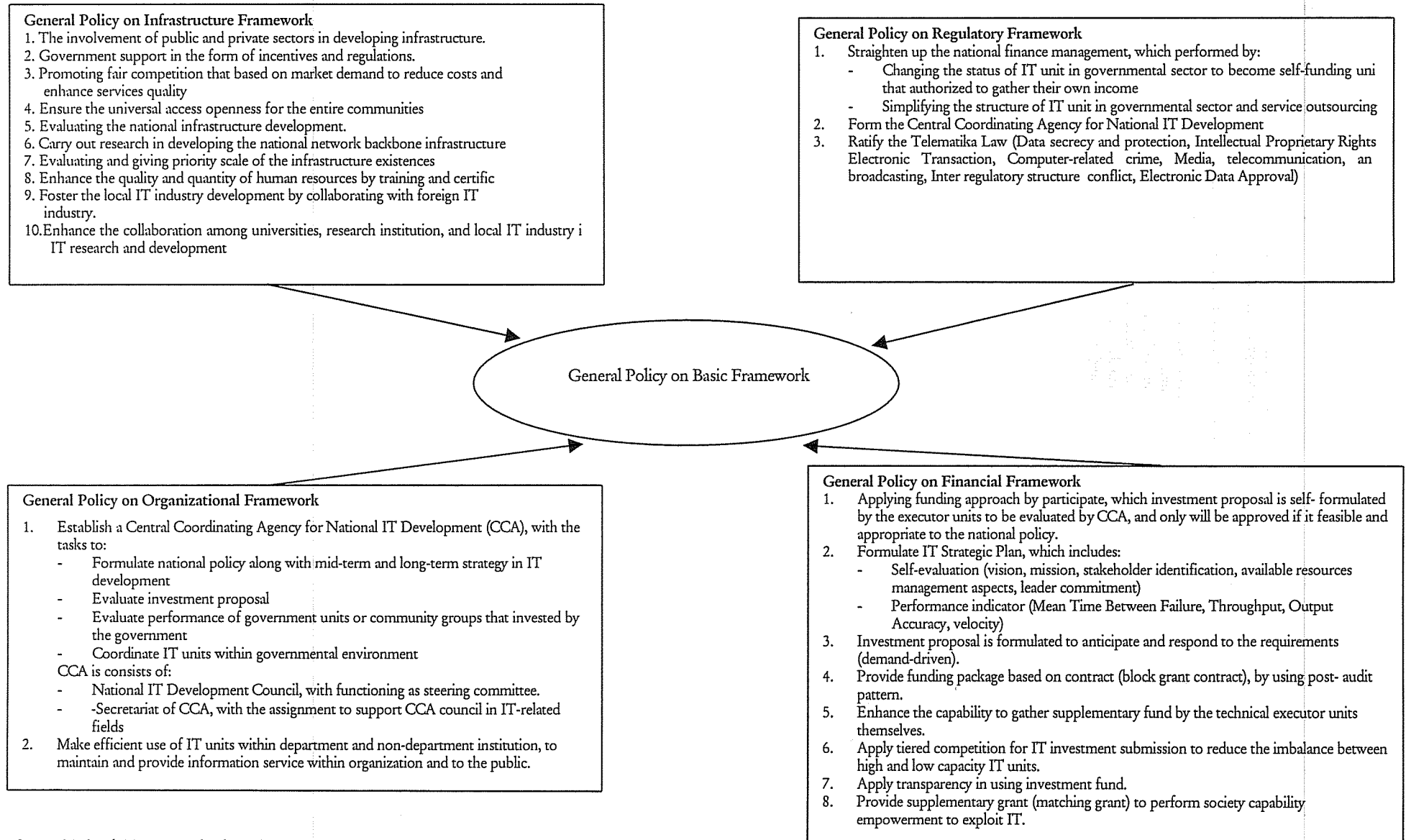
		Camp, Bandung High Tech Valley, APEC center for Entrepreneurship		Technology, Min. of Industry & Trade, Min. of National Education, BPPT, local government, universities, private sector
2	Human Capacity Building	<ul style="list-style-type: none"> - Establish policy to stimulate R&D in ICT in the private sector and in partnership with universities and public institutions - Develop collaboration between ICT industry and ICT educational institutions through training and R&D collaboration; and form a network for skill and capacity development - Develop ICT networks for public and private universities as well as research and education networks in Indonesia - Prepare master plan for ICT human resource development in Indonesia - Develop and implement ICT curricula - Use ICTs as an essential part of the curricula and learning tools in schools/ universities and training centers - Establish distance education programs including participation in Global Development Learning and other networks - Conduct ICT skills training for government employees - Facilitate the use of internet for more efficient teaching and learning (e. g School 2000) - Establish an efficient support and facilitation scheme for the procuring/ financing/ conducting of ICT skills training and capacity 	2001- 2003 2001- 2005 2001- 2005 2001- 2003 2002- 2004 2001- 2005 2001- 2005 2001- 2005 2002- 2005*) 2002- 2005	Min. of Industry and Trade, Min. of Research and Technology, Min. of National Education, universities, private sector Min. of National Education, Min. of Research and Technology, Min. of Industry and Trade, universities, national institutes of sciences, private sector Min. of National Education, Min. of Research and Technology, universities, internet and telecommunication operators, private sector Min. of Research and Technology, Min. of National Education, TKTI Min. of National Education, schools, universities, private sector Min. of National Education, Min. of Research and Technology, Min. of Health and Social Welfare, universities, private sector TKTI, all ministries, local government Min. of National Education, schools, universities, private sector Local government, private sector
3	Infrastructure	<ul style="list-style-type: none"> - Facilitate internet access to public services, such as schools, universities, and hospitals - Progressively develop national backbone infrastructure and develop local access networks in underserved areas - Implement universal access program and extend access beyond the market through a range of innovative public access initiatives, including new technologies and telecenters 	2001- 2003 2001- 2005 2001- 2003	Telecommunication & internet operators, schools, universities, hospitals, private sector Min. of Communications, telecommunication network providers, private sector Min. of Communications, local government, telecommunication and internet operators, telematics society Min. of Administrative Reforms TKTI, all ministries
4	Application for the Government	<ul style="list-style-type: none"> - Restructure government interaction system to achieve good governance - Revitalize government portals to provide ease of use- transparency and minimum consistency, fast downloads, rapid access to information, procedures and specific contacts - Complete implementation of government online strategy prepared under IIDP - Prepare government online action plan for each government agency - Ensure easy access to essential public data in Indonesia - Promote and develop electronic access to provide basic information, interaction, and services for citizens and government's client community 	2001- 2005 2001 2001- 2003*) 2001- 2002 2002- 2003 2001- 2005	TKTI All government agencies, TKTI TKTI, local government Min. of Communications, related ministries (based on information/

		<ul style="list-style-type: none"> - Develop applications that promote civil society and community participation in democratic and public activities - Develop on- line submission of financial reports by public agencies - Develop on- line submission of financial and transaction reports by tax entities - Develop public services online (such as workforce, land use, conflict resolution, agriculture, export/ import, telemedicine and health data center, & immigration information systems) to improve public services 	<p>2003- 2005</p> <p>2001- 2005</p> <p>2001- 2005</p> <p>2001- 2003</p>	<p>services that are provided) Min. of Home Affairs, local government</p> <p>Min. of Finance, local government</p> <p>Min. of Finance</p> <p>Min. of Home Affairs, Min. of Workforce & Transmigration Min. of National Education, Min. of Finance, National Land Affairs Agency, Politics & Security Coordination Office, Indonesian Police, National Army, Min. of Agriculture, Min. of Forestry & Plantation, Min. of Industry & Trade, Min. of Health & Social Welfare, Central Agency for Statistics, Min. of Justice, local government</p>
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Source: Indonesian Telematics Coordinating Team (TKTI), May 2001

*) = on-going program

Figure A.
General Policy on Frameworks of NITF



Source: National IT Framework, Flow Chart Diagram, ITCT, February 2001