

PROMOTING INFORMATION AND COMMUNICATION TECHNOLOGY IN INDONESIA *)

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Abstraksi

Makalah ini dibuat untuk menjelaskan bagaimana konsep Indonesia membangun dan mengembangkan masyarakat pengetahuan kepada negara-negara di Asia pada forum APO (*Asia Productivity Organization*), melalui pemasyarakatan teknologi informasi dan komunikasi. Dipaparkan bagaimana profil dan masalah yang dihadapi dalam aplikasi dan pemanfaatan teknologi informasi dan komunikasi di Indonesia.

Dalam makalah ini pula dipaparkan bagaimana fakta pemanfaatan teknologi informasi dan komunikasi di perguruan tinggi. Disadari bahwa teknologi informasi dan komunikasi merupakan akses penting dalam membentuk masyarakat berpengetahuan (*knowledge society*) atau memberdayakan manajemen pengetahuan (*knowledge management*) dalam sebuah organisasi. Namun demikian, aplikasi dan pemanfaatan teknologi informasi dan komunikasi pada sebuah organisasi perlu digerakkan dan didukung oleh kapabilitas perangkat sumberdaya manusia dan perangkat kelembagaannya.

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Purpose Of This Document

The purpose of this document is to provide a summary of key issues in promoting information and communication technology in Indonesia, regarding efforts and problems, it was illustrated with some facts in higher education institutions. It is widely realized that ICT is a key to form a knowledge society or to empower knowledge management in the organization. This summary is intended to establish common ground for this forum that the success of ICT utilization at any organization should be driven and well supported by the development of capabilities in humanware and orgaware.

This document is organized in the following areas of prime focus :

- A framework of developing knowledge society in Indonesia
- Some problems faced in utilization of ICT in Indonesia
- A case in acquiring information
- Developing of teaching and learning by utilizing ICT in higher education
- Relationship of ICT with Knowledge Management

A Framework of Developing Knowledge Society in Indonesia

Through the Presidential Instruction No. 6, 2001, government stipulates the development and utilization of knowledge for the society. It is stated that Indonesian knowledge society has to be developed, in order to assist the reconstructing democratic value in the politics, economic, science, and national unity. The objectives of a knowledge society establishment is to empower people, to improve business performances (in term of productivity, efficiency, and innovative ability), and to facilitate the distribution system to gain some competitiveness in the global life.

In the same way, the well established knowledge society hence will push the great demand of transparency and efficiency in the public services, which leads to the way of a good governance.

A framework of developing a knowledge society, which is called A National Information Technology Framework (NITF) has been designed by National IT Coordinating Agency. The framework consists four pillars, i.e.

- ☛ e-democracy
- ☛ community-based IT
- ☛ e-government for a good governance
- ☛ IT for education
- ☛ e-business for small medium enterprises

Some Problems Faced in Utilization of ICT in Indonesia

The following table describes statistics of ICT in Indonesia compared with Philippines and Thailand. The data was provided by Asia Pacific Telecommunication Indicators (2001), as it was reported by Asia Foundation (2002).

Table 1 . The Comparison of ICT Statistics in Philippines, Thailand, and Indonesia

Item	Philippines	Thailand	Indonesia
Population (1998)	72.2 million	59.6 million	206.5 million
Fixed lines	3 million	5.9 million	7.9 million
Cellular lines	6 million	4.5 million	6.57 million
ISPs (2001)	191	20	53
Hosts (2001)	30,851	71,995	45,660
Internet Users (2001)	2,000,000	3,536,001	4,000,000
Estimated PCs (2001)	1,700,000	1,700,000	2,300,000

The ratio of ISPs, hosts, internet users, and amount of PCs to each inhabitants showed that Indonesia on par, but in danger of being left behind.

It was reported by Ismail (2001) that most ISPs are located in Jakarta area. In other parts of Indonesia, only Wasantara net (Wasantara.net.id) is available. It has the best coverage. This is possible, since it is owned by PT Pos (postal office), by leveraging on its postal outlets, which are available in many parts of Indonesia.

It was also estimated that the number of Indonesian internet users by the year 2004 is targeted 5 million. At the end of year 2001, this number only 2 percent. Most of them are in Jakarta city and Java Island. Along with the development of ICT infrastructure, the government seems to pursue the inclining of number and coverage. Unfortunately, the economic crisis is sweeping Indonesia, then it can be forecasted that the project will be very expensive.

Idris (2001) said that it is expensive too for an ordinary Indonesian people to buy a personal computer or to connect the internet. With the price of PC approximately is Rp 9,000,000, it is equal to 9-month salary of middle level government officer. Fortunately, they still have a chance to access to the internet. At the present time, many of them decide to go to the telecenters or kiosks which operate around the schools, universities, mosques, churches, post offices, and business malls. With the rate of Rp 9,000, they can search on the web world for one hour.

A Case in Acquiring Information

It is always argued that the scarcity of computer, modem facilities, or other equipment of ICT at any office become a barrier for workers in using ICT. This argument was debated by Semiawan (2001). He has conducted a survey in his institution (POLBAN), to study the way of staff at POLBAN obtaining and providing information. The result of his survey is presented in the table below:

Table 2 : Resources used in obtaining information (%)

Resource used	Very often to often	Sometimes	Rarely to very rarely	Never	N/A
a. Personal interactions	65.2	13.0	17.4	4.3	0
b. Telephone	52.2	13.0	30.4	4.3	0
c. Letters	34.8	21.7	30.4	13.0	0
d. Fax	21.7	17.4	17.4	26.1	17.4
e. e-mail	13.0	8.7	17.4	17.4	43.5
f. Online data communication	8.7	4.3	13.0	17.4	56.5

Table 3: Resources used in providing information (%)

Resource used	Very often to often	Sometimes	Rarely to very rarely	Never	N/A
a. Notice board	73.9	8.7	13.0	4.3	0
b. Report, memo, paper work	69.6	17.4	13.0	0	0
c. Personal interactions	34.8	39.1	21.7	4.3	0
d. Telephone	30.4	26.1	26.1	13.0	4.3
e. Fax	13.0	8.7	34.8	21.7	21.7
f. e-mail	13.0	4.3	8.7	17.4	56.5
g. Online data communication	0	8.7	13.0	21.7	56.5

As shown in Table 2, the resource used in obtaining information were mostly through personal interactions (65, 2 %) and used the telephone (52.2 %). Letters (34.8 %) and fax machines (21.7 %) were the next preferable resources to be used. Meanwhile in Table 3, the responses revealed that POLBAN's staff used around 70 % to 74 % notice board and memos (paper-works) to provide information to its community. The telephone and personal interaction were also preferable resources as their percentages usage in the next rank, around 30 % to 35 %.

The responses also revealed that both in obtaining and providing information, the utilization of the e-mail and other online data communication technologies are similar. The responses were around 8 % to 13 % for frequency of use. It generally appeared that information flow within POLBAN relied more on the use of letters, notice board, telephone, and fax as well as personal interactions rather than on the utilization of e-mail and online data communications.

Developing of Teaching and Learning by Utilizing ICT in Higher Education:

Indonesia has been facing economic crisis in the last five years and keep struggling to overcome the crisis ever since. Education community realizes that the crisis must be challenged by the production of strong professional workforces. Improvement of higher education graduates with technological and professional skills is needed for economic recovery and global competitiveness. Skill graduates are imperative to support national economic growth.

Higher education (HE) in Indonesia is offered both by the government (60 institutions) and the private sector (1,500 institutions). The number of students in HE, at present is about 2.5 million, which is 1 % of the total population, or 10 % of the 19-24 year age group. One third of these students are in the public HE, the rest of them are in the private HE. Most of the students (75 %) are enrolled in social sciences programs, 15 % in engineering, and the rest (10 %) in natural sciences and others.

Most HE institutions in Indonesia, have developed their information system (IS) since 1990s. It was earlier started mainly by the big five state universities in Indonesia (ITB, IPB, UGM, UI, ITS), then followed by another state universities and those private universities. A number of universities in Indonesia have developed their web sites, to pursue the better services for their students. At the present time, a few of HE in Indonesia are developing web based learning and digital library network.

The important element in developing the teaching and learning by utilizing ICT in HE is the readiness of lecturers. It was reported by Silong, Ibrahim, and Abu Samah (2001), the willingness of the lecturers in adopting the computer mediated instruction is very important. Even at UCLA, when the first time instructional enhancement initiative launched, which mandated web sites for all arts and sciences courses, has floundered in the face of faculty recalcitrance and resistance. **Resistance to change** can be expected, when something new is being introduced. Many of the traditional administrative and instructional structures are strong and deeply rooted. Changing the mindset of the lectures and administrators are not easy, as they have been trained within the old paradigm.

The use of ICT by administrative workers at the university is generally restricted to word processing, and the use of specific educational software packages. While lecturers make more use of a range of generic software such as spreadsheets and statistical computing as well as specific educational packages, but word processing still dominates their use of ICT. Any other forms of ICT such as WWW, e-mail, computer conferencing, video conferencing, fax, digital scanner, and digital camera are used relatively little.

What, then, are the reasons given by workers and lecturers at the university for not using a broader range of ICT? What are the problems and challenges which need to be overcome if ICT is to be used most effectively by workers and those lecturers ?

Overall, however, these comments from both workers and lecturers tend to reinforce the message that **lack of access and lack of skills and knowledge** are the major inhibitors of ICT use by them. **The main problems** mentioned in the above were:

- lack of time
- do not know the instruction (language barrier)
- insufficient/inaccessible computers
- insufficient training/lack of skills/lack of knowledge
- lack of (appropriate) software

- lack of money

Conversely, workers consider that the factors most like to encourage use are access to resources, training and familiarity with ICT, and more support. The most frequent responses in the survey were:

- more computers, more up to date computers, more accessible computers
- more training, more available courses, more skills
- time to practice/become familiar with
- technical/specialist support in management

Lecturers also consider that access to resources, training, and familiarity with resources are important. However, unlike workers, they make little mention of technical/specialist support which they already have available to them through their computing departments, technicians, and librarians. The most common responses from lecturers were:

- more computers, more up to date computers, more accessible computers
- banks of software
- internet available
- more training, more available courses, more skills

Indeed, the key is the willingness to learn and struggle to find an access. Lecturers and administrators need training not merely in computer literacy, but also in the application of various kinds of educational software in lecturing, learning, and in improving quality of service to the students. However, learning to use computers and internet is a relatively simple task, but mastering ICT use as an effective tool to improve the quality of managing, working, lecturing, and learning is certainly not.

Relationship of ICT and Knowledge Management

For all organizations, including higher education institutions, information should be considered as an essential resource, as well as a human capital. Information would be a critical success factor for the institutions, to achieve their mission and goals and finally to actualize their vision at the future. With the better use of ICT, many information would be collected. Hence, with the art of human ware, it would become a valuable knowledge. Eventually, with the art of orgaware, well knowledge managed will direct members and their organization come to the better action and effective decision making.

Human ware is the capability of people to retain information and knowledge. While, **orgaware** is the capability of organization to use and develop the knowledge for better action and making an innovation. Two things should be balanced.

It should be noticed here that availability of ICT, literacy on computer skills, or even the presence of database, will not directly form a knowledge. Just like **Malhotra (1999)** asked : **does KM = IT ?** He explained that “most of our knowledge management technology concentrates on efficiency and creating a consensus-oriented view. The data therein is rational, static, and without context”. The system at any organization should be set to make knowledge discovered, gained, tested, shared, applied, and renewed.

To be more practical, how it should be done to make it effectively as an input for decision making ? Here some activities those conducted at my university:

- ☞ Encourage people to learn
- ☞ Create a climate to share
- ☞ Praise the curiosity
- ☞ Remove barriers
- ☞ Reward new genuine idea
- ☞ Invest for creating an innovation
- ☞ Learn from performed resources and others

A key factor is as an engine for **human ware** development is **searching mentality**. While for **orgaware** development is **adaptive corporate culture**.

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