



Determining the Impact of Information and Communication Technology (ICT) on Decent Work in Indonesia

Final report

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Foreword

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1 – Introduction

Background

The information era has swept the world with powerful force affecting the society. Supported in its entirety by the communication technology, information spread vastly become faster and cheaper. The media through which information is disseminated also gets varied in types, further revolutionizing the information era. In the past, there is a significant time lag separating the point when an event took place and the time when the news may be publicly available. The advancement of radio and television allows for the real time coverage of an event. In its time, the existence of radio broadcasting audio-based news was considered revolutionary in information dissemination. The birth of television upgrades the information era to the level where visualization is part of the necessities. Still, the impact of those past inventions is nowhere to match the recent phenomenon: the internet. The couple decade of advancement in internet connection, supported by widespreading telephone lines (both fixed and wireless), have opened up further the new information era and redefined the necessity in information. Various kinds of information exist out there and the limit to the amount of information one can get is determined more by the person rather than by the publicly available sources.

The development and use of information and communication technology (hereafter, ICT) differ in many dimensions: between countries (developed vs. developing) and within countries (high vs. low socio-economic status, etc). Such differences are mainly due to differences in the quality of human resources –especially in skills, knowledge and education. ICT application depends on several factors. Firstly, it depends on the existence of ICT infrastructure. For example, internet technology would first require good telephone infrastructure, before later one may start considering wireless

internet connection. Secondly, the ICT application also depends on the people's skill and knowledge. The application is not a matter of being imported and used. Instead, it requires a specific level of knowledge and skills before one would be able to operate the equipment properly.

The proliferation of technology, especially that of the ICT, has significantly changed the social order and interpersonal relationship. Yet, the flexibility and advance of this technology has proved its role as the supportive measures in human's life activities in the quest to promote productivity.

Use of ICT

What are the primary uses of ICT? Duncombe and Heeks (1999) categorize the use of ICT into three main parts: (1) business communication; (2) data processing; and (3) production control. Each one of this will be elaborated below.

Several studies have already suggested that ICT can be used extensively for the business communication, and more precisely for accessing information. Different apparatus such as telephone, facsimile or internet can suit the business needs. As a means for business communication, ICT performs several tasks. First, ICT is use to access information that serves as input for business decision making. It is also suggested that internet-based information services may play a greater role in the future. These services may make available the business support service through local intermediaries as well as from official sources. Accessing information is not only for business input, but also for markets and customers as well as for the business environment. Other area where ICT also plays important role is in conducting transactions. WTO (1998) identifies four areas on how e-commerce may make it easier for developing countries to conduct transactions: (i) making it easier for local producer groups and SMEs to access world markets; (ii) attracting more developed countries to third world agricultural and tropical products; (iii) allowing SMEs in the developing countries to link more effectively to the world supply chains; and (iv) encouraging small-scale service-sector provides in the developing world to link more with global markets.

The second use of ICT according to Ducombe and Heeks (1999) is for the data processing. Areas in this data processing include business accounts, inventory, payroll, invoicing, etc. ICT hardwares are often the solution of an ever-increasing number of tasks in a firm. In the case of softwares, it is often the case that the pre-packed business softwares do not satisfy the individual business needs.

The third use of ICT is for production control. Production control is needed for all scale of production, but is even more important as the firm grows

bigger. The tasks involved in the production control, especially when for larger firms, are quite extensive. That is where the ICT apparatus comes into play.

Objective

The general objective of this study is to investigate the ICT spread in Indonesia and to assess its proliferation for improving decent work. It is hoped that the results here could be used as basis for policy making to improve worker's lives and to identify strategy to promote and support decent employment.

Methodology

To achieve the above goal, this study will go as follows. The first phase starts with literature review on publications regarding the ICT and labor market. This stage will provide the basis for further study, more especially when the study conducts series of interviews with private firms. The first stage also computes several labor market indicators that pertain to the concept of decent work.

At the second stage, the study will conduct series of indepth interviews with private firms regarding their use of ICT. To gain broader views on the subject the study will visit two of each small, medium and large firms, for a total of six. The indepth interview is meant to provide the practical points on the use of ICT in the world of work. The guidelines for the indepth interview can be seen in Appendix 2.

Report organization

This report is structured as follows. Immediately following this introduction is an elaboration of the information and communication technology (ICT) profile in Indonesia. This section will discuss the current status of ICT status such as the laws, telephone, and internet connection in the country. After that, the chapter 3 will elaborate the results from field surveys. As mentioned before, the survey is meant to gather practical stories about the use of ICT in the working environment. Several pointers conclude the study. The field

survey guidelines can be seen in the appendix. Also elaborated in the appendix is some background information regarding the notion of decent work and some indicators it pertains to.



2 – Information and Communication Technology Profile in Indonesia

Introduction

Information and communication technology (ICT) plays an important role in today's society. The structural transformation in the economy, society and culture tend to work faster in this era of information. Different mediums facilitate the spread of information. While the printing machine was considered a revolutionary event in the past, its invention is nowhere to match impacts of the emergence of internet in the last couple of decades. In response to this phenomenon, many countries are on their way preparing their people with an ICT development framework policy to be able to address the issue of digital divide.

The *digital divide* is the differences in people's inability or ability to access information through the internet and other information technologies and services due to geography, race, socioeconomic status, gender and physical ability (Norris 2001:4). The term is used to describe the discrepancy between people who have access and resources to use new information and communication tools, such as the internet, and people who do not. The term also describes the discrepancy between those who have the skills, knowledge and abilities to use the technologies and those who do not. The digital divide can exist between those living in rural areas and those living in urban areas, between the educated and uneducated, between economic classes, and on a global scale between more and less industrially developed nations.

Now, more than ever, unequal adoption of technology excludes many people or communities from reaping the fruits of the economy. A community with a well-educated, technology-literate population is more likely to attract and sustain new businesses, and these new businesses in turn attract more well-

educated, technology-literate people into the area, vice versa. Simply put, if communities are to remain competitive in attracting, retaining and developing businesses in today's economy, they must develop modern telecommunication facilities and cultivate a well-trained workforce to stay viable.

The digital divide is more pronounced in access to personal computers and internet use (owing to higher costs) than in access to telephones. Note that the latter is indispensable for access to the internet. Though the ICT technology users seems to be in small numbers in some countries, yet the basic problems that shape the gap is quite complex. The economics vulnerability, cultural and political system in each country are believed to be the emerged problems of digital divide. There are similar issues in some Asia Pacific countries dealing with digital divide phenomenon, especially in the strategy and policy priority in ICT development.

This section aims at elaborating the ICT profile in Indonesia. Three particular areas are of specific interest. First is the laws or decrees regulating, in particular, the communication sector; second is the condition of telephone lines in the country; and lastly is internet and cellular subscribers.

Telecommunication Law/Decree

Indonesia is one of the countries that put great concerns on the digital divide phenomenon. Gradually, the ICT development policy has been applied through the provision of the Telecommunication Law 3/1989, and the Telecommunication Law 36/1999. The Telecommunication Law 3/1989 provides the foundational statute for Indonesia's telecommunication framework. On the other hand, the Telecommunication Law 36/1999 remains the dominant policy instrument shaping up the sector. On the other hand, the Presidential Instruction no. 6/2001 outlines the important role of the state-owned company PT Telkom in proliferation and development of the ICT in Indonesia.

Other important decree in the telecommunication sector is the Minister of Trade, Post and Telecommunication decree no. 61/1995. Recently in 2001 the government has also established a five-year plan for the development and implementation of information and communication technologies (ICT) in Indonesia. The document was officially referred to as The Government of Indonesia's Action Plan to overcome the Digital Divide, Information and Communication Technologies under Presidential Instruction no. 6/2001.

The 1989 Telecommunication Law made a clear distinction between basic services and non-basic services. Basic services involve the delivery of information between sender and receiver without processing or modification. It includes local and domestic long distance, telephone, mobile cellular, fixed wireless, leased lines, packet switched data, telex and telegraph, VSAT, and telecast. On the other hand, the non-basic service includes electronic mail, store and forward facsimile, abbreviated dial, multi-call address, electronic data interchange, paging, and video conferencing

Based on Telecommunication Law, private companies can offer only basic telecommunication. In 1999, a new Telecommunication Law 36/1999 was enacted, replacing the 1989 Law. The new law regulates the foundational *basic services* and *non-basic services* with a *network provider* and *service provider*. Network providers are firms that provide infrastructure. Service providers are firms that provide value-added services over this infrastructure. According to the Asia-Pacific ITU report¹ in December 2000, this legislation will shorten PT Indosat's exclusivity for providing international services up to August 2003. Under this agreement PT Indosat along with others (i.e. new entrants), will be allowed to offer domestic services beginning in August 2003 and PT Telkom with others will be able to enter the international long distance market. It is still not clear up to now as to how PT Telkom and Indosat will be restructured². The development of the regulatory framework, particularly the implementation of The Telecommunication Act [UU No. 36/1999] is urgently needed.

The frequency spectrum management and wireless local area network (LAN) is covered under the Presidential Decree PP. No.52/2000. The determination of a new tariffs and interconnection prices (covered under the regulation PP No.53/2000) not just for public switch telephone network (PSTN) managed by PT Telkom but also cellular and airtime services. PP No.52/2000 suggests that the Government intends to impose restrictive regulations (and require licensing) on intranet, Internet, *voice over internet protocol* (VOIP), data communications, video conferencing, video entertainment and other multimedia resale.

Telephone Lines

¹ Asia-Pacific Telecommunication Indicators 2000. ITU, Geneva 3 Dec.2000. p.14-15

² Indonesia Is Advancing Telcom Restructuring. *The Asian Wall Street Journal* Wednesday, June 7, 2000.

According International Telecommunication Union [ITU] Statistical data Dec. 2000, the ITU published *Asia-Pacific Telecommunication Indicators 2002*, which reflect s updated data 1999 statistics of the telecommunication infrastructure in Indonesia.

Indonesia's growth in main telephone lines between the 1995–1999 period was rapid. However, in spite of doubling up the lines, in terms of the compound annual growth rate Indonesia is still below the average of the lower income countries in the region. The same phenomenon is also apparent in terms of the teledensity.

It is also highlighted in the report that Indonesia's telephone system is 100 percent digital. The highest percentage of its main lines dedicated to public access (4.43 percent) against an average of 2.61 percent for lower-income countries. Teledensity data reflects a signification gulf between main lines available to those living in urban areas 25.6 percent and the rural area 2.27 percent.

Table 1.1 Main Telephone Lines

	Main telephone lines			Teledensity		
	1995 (000)	1999 (000)	CAGR (%) 1995-1999	1995	1999	CAGR (%) 1995-1999
Indonesia	3,290.9	6,080.2	16.6	1.69	2.91	14.5
Lower-income	74,19.9	170,435.7	23.1	2.45	5.33	21.4
Upper-income	32,864.5	38,742.7	4.2	42.53	47.87	3.0
Developed	71,724.8	82,283.9	3.5	42.53	47.87	3.0
Asia-Pacific	178,909.2	291,442.3	13.0	5.49	8.51	11.5
Notes:	<ul style="list-style-type: none"> Lower -income countries: Bangladesh, Cambodia, China, Fiji, India, Indonesia, Kiribati, Lao PDR, Malaysia, Maldives, Nepal, Pakistan, 					

Papua New Guinea, Phillipines, Samoa, Solomon Island, Sri Lanka, Thailand, Tonga, Vanuatu and Viet Nam

- Upper -income countries: Brunei Darussalam, French Polynesia, Guam, Hong Kong SAR, Korea (Republic), Macao, New Caledonia, Singapore, and Taiwan-China
- Developed countries: Australia, Japan, and New Zealand
- CAGR = compound annual growth rate

Source: Technical Report by the GOI; Indonesia-ICT Assessment

Internet and cellular subscribers

Indonesia has about 160,000 internet subscription accounts, and estimated about 5.0 internet users per account, which bring number of internet users close to 512.000 in November 2000³. Internet subscriber penetration is about 0.08 percent of the 210 million total population, comprising 2.5 percent of the 6.6 million telephone lines. This is relatively low compared to Indonesia's regional peers⁴. Current low subscriber base in Indonesia is due to a combination of following factors:

- High entry registration cost and set-up
- Low PC penetration rate in homes
- Low penetration of fixed telephone lines
- High ongoing usage costs
- Low disposable income levels

However, there is a tendency of high growth in the future. For one thing, the growth is spurred by increasing per capita income in the country. Over time new computers are getting cheaper than before. The existence of new computers also provides a market for used computers that offer cheaper prices to consumers from lower income groups. The penetration of telephone lines is also increasing. The advertisement of wireless telephone network by Telkom Flexi promises that it can be used even for internet connection. It is not surprising if the ING Barings expects that the internet market will grow by more than 60 percent per annum from 2001 onward, to reach 850.000 subscribers and 4.3 million internet users by 2004.

According to the IndosatNet, the average usage per subscriber is around 15 hours per month. A study by the Association of Internet Services Providers of Indonesia (APJII) on the activity profile of users revealed that almost 70 percent of internet users log on to the Net, between 10pm - 2am. One thing to

³ING BARINGS; Convergence in Indonesia, December 2000. p. 5

⁴Idem, p.5

conclude from this limited data is the fact that a significant part of internet connections does not rely on connections from one's office.

Generally, internet users do not have their own personal computer. For the average Indonesian, a computer with a \$500 price tag (which will provide one with an generic, unbranded, computer set) is still considered a luxurious good. Of course, a marked difference is evident in terms of urban-rural areas. In more developed areas like Jakarta, computer is not as luxurious as that in the more remote area. Still, not every household is equipped with the machine. Most of internet users in Jakarta primarily take advantage of the widespreading internet shops to go online. Most of these Internet users are the young people⁵. Tempo Magazine Survey on internet users in February 2001 revealed that the three largest internet market are Jakarta, Bandung and Surabaya⁶. The most frequently used international portal is 'Yahoo.com' while that for the domestic is 'Detik.com'

The use of internet among females is still fairly limited. Tonetti's findings revealed that the online female population in Asia in 2000 accounted for 22 percent of internet users. This is to contrast with higher percentage of women entrepreneurs in the society. It is estimated that women entrepreneurs comprise 35 percent of Small and Medium Enterprises in the region, more than 1/3 of 95 percent of all enterprises in Asia Pacific. However, out of 15,000 members of IWAPI – Indonesia (Indonesian Association of Business Women) only 12 percent have e-mail accounts⁷.

Table 1.2 Women internet use in Asia-Pacific and USA

Country	Women internet user (000)	Women internet user (%)	Internet user as % of population	Female prof. & technical	Female literacy rate	GDL rank (1-174)
USA	83,479	51.1	60.0	53.1	99.0	3
Phillipines	76.5	5.0	0.6	65.1	94.3	65
China	6,840	30.4	0.7	45.1	74.5	79
India	115	23.0	0.2	20.5	39.4	112
Thailand	N/a	N/a	1.3	54.5	92.8	58
Indonesia	N/a	N/a	0.2	40.8	79.5	88

⁵ Idem,

⁶ Indonesia- ICT... loc cit p.52.

⁷ Expert Group Meeting on ICT Policy from a Gender Perspective, Bangkok, Dec.18-19, 2001.

Pakistan	N/a	N/a	0.1	21.0	25.4	116
Viet Nam	N/a	N/a	0.1	27.6	89.0	91

Source: Hafkin & Taggart (2001)

About the internet services, ING BARINGS writes:

- The ISP [Internet Services Providers] market in Indonesia is highly fragmented with about 42 ISPs in operation. The top three are IndosatNet (16 percent), LinkNet (11 percent) and Cyberindo Aditama (10 percent), controlling 37 percent of the market.
- Given the cost advantage available to operators through IPLC [International Private Leased Circuits], expected that Indosat, Satelindo and Telkom (starting August 2003) – to dominate this market
- Liberalization of the Indonesia market should create greater composition and growth in the corporate data market, as new International Gateway Facility (IGF) licenses will be issued. The entry of Telkom in August 2003 would help to reduce the cost of international bandwidth to make it comparable with other regional operators. Telkom has signed a Memorandum of Understanding with Singapore Telecom (Sing Tei) to use the C2C undersea cable.

From the Internet SWOT analysis shown that Astra Graphia, is one of the largest IT companies in Indonesia, where received 'Best Revenue Contributor and Best Selected Revenue Contributor' award from Microsoft. Astra Graphia also the largest player in the photocopier market with a 75 percent market share (based on output). Extensive distribution and after-sales service network through 20 branches and 50-service depots support this.

Astra Graphia is subsidiary of Astra International focusing on document services, IT and telecommunication. Document services, primarily sales of Xerox's products, are still the largest contributor of revenues, accounting for 60 percent in 9M00. The IT division, which provides system integration solutions to corporations, contributes another 37 percent of revenue. The Telecommunications division, providing communications solutions as well as infrastructure for telecom operators, accounts for the balance (3 percent) of revenue. Astra Graphia is also involved in SAP operation⁸.

Up to now, Indonesia has seven licensed mobile service providers; Telekomsel, Satelindo, Exelcomindo, Komselindo, Telesera, Metrocel and Mobilcel. Telekomsel, Satelindo, and Exelcomindo provide digital GSM services. Komselindo, Telesera, and Metrocel provide analog AMPS service

⁸ING BARINGS, idem p.43

and Mobisell provides NMT 450. The digital mobile operators have constraints on spectrum that limit available network capacity and as a result, suffer from congestion problems, especially in Jakarta. The messaging, or short messaging service [SMS], a basic form of data transfer via mobile phones, experiences the same problem⁹. However, these issues are resolved, Indonesia is gradually embraced cellular as way of life.

According to the result of 'Indonesia - ICT assessment; technical report 2001' the Individual organizations view and use the Internet, figure;

Yayasan PAKTA This foundation focuses on institutional development and capacity building of Indonesian NGOs and specializes in the application ICT to carry out this mission. Details information on their website (<http://www.pakta.or.id>). The foundation also maintains the Indonesian NGOs Electronic Network (<http://www.lsm.or.id>) that currently assists approximately 120 smaller NGOs with web space, technical support and IT training. PAKTA also helped develop databases for the Indonesia Planned Parenthood Foundation. PAKTA, interestingly serves as the NGO representative to Telematics Coordinating Team, but has not been consulted much in this inter-ministerial forum to promote ICT in Indonesia.

LP3ES, the Institute for Economic and Social Research, Education and Information, is a thirty-year old organization, engaged in education and training, institution building, human rights, community development, research, publications and public information advocacy. LP3ES developed website (<http://www.LP3ES.or.id>). The institute uses the site to post information on smaller NGOs in a searchable database.

PACT. This US voluntary organization received a grant from OTI to establish JaringNet, as a pilot activity to support the information needs of NGOs and citizens as they seek to move their society toward democracy. The Internet was viewed as a means to distribute "best practices" based on face-to-face, discussions through the JaringNet website and electronic mailing lists (<http://www.jaringnet.org>.) thus, the website is not update.

YLBHI is the Indonesian Legal Aid Society (<http://www.ylbhi.org> or <http://www.ylbhi.or.id>). With 14 branches throughout Indonesia, which is maintained in Jakarta. The Society is presently developing a human rights database that will be made public over the web in about three months time. One of YLBHI's biggest constraints is the poor Internet access for several of their branches.

⁹Ing, loc. it.

IFES, The International Foundation for Election Systems has been very forward looking in terms of incorporating ICT into their programs. For the 1999 national election, IFES developed a website (<http://www.kpu.go.id>) for the national election and posted election results as they came in. Now, IFES assists the DPR and MPR through its support for the C-SPAN-like cable television broadcasting of live parliamentary sessions. Also, maintain a website (<http://www.swara.net>) that keeps track of parliamentary legislation and hearings for the past year. IFES would also like to get more engaged in civic education, perhaps through the elections commission web site (that has been dormant since the last election), in preparation for the next round of national elections, presently scheduled for 2004.

CETRO, The Centre for Electoral Reform is coordinator of coalition of 12 NGOs, all supporting direct presidential elections for 2004 (if not sooner). Cetro uses an email list to communicate but only half of the coalition members (all Jakarta-based) have an email address. They have a web page but it is not available to public yet.

NDI, The National Democratic Institute works in 40 countries, assists with political party strengthening, and has a worldwide online resource center, "Access Democracy". They have been in Indonesia since 1998 and work on civilian-military relations, constitution and elections, reform and decentralization. Their online resource will be available to partners, in Jakarta and regions.

PSHK, The Center for Indonesian Law and policy Studies; publishes "hukum online", a free legal database at <http://www.hukumonline.com>. One example is an online ombudsman at <http://www.omnudsman.go.id>. where citizens can file complaints and are given a code to monitor action taken. Their parliamentary watch website is particularly popular.

WALHI, The Indonesian Forum for Environment (<http://www.walhi.or.id>) is itself a network organization with 450 members and uses the Internet extensively to communicate support its members. The WALHI network is reorganized into 24 provincial network organizations with links down to Kabupaten and villages.

ISAI The Institute for the Studies on Free Flow of Information is very much engaged in ICT work. The Institute sponsors courses for Journalists that include some Internet training. ISAI has its own website (<http://www.isai.or.id>). Uses satellite technologies and distribute their 68H radio program via the web to 150 local stations. Now, ISAI is experimenting with packet radio, which is believed to have a lot of potential in Indonesia.



3 – Impact of ICT: Results of Field Case Studies

Background

To obtain first hand experience of ICT impact on decent work in Indonesia, this study carries out a field survey. The survey should be seen more like case studies on the above theme.

The case studies visit six firms comprising two each of small, medium and large industries. The latter classification is based on the number of workers in the firm. Small industry has less than 20 workers; medium industry has 20-100 workers; and large industry has more than 100 workers. The chosen firms are as follows:

- Small industry: laundry service, motorcycle workshop, and copying/xeroxing shop.
- Medium industry: printing company, and book distributor.
- Large industry: building contractor, mechanical/electrical company, and logistic company.

The report and analysis of this field survey will be elaborated below in three parts. The first part elaborates the use of ICT in works. The second part will analyze the rationale of ICT in works. Finally the third part will discuss the impact of ICT on decent works. Some interesting parts of (translated) interview will also be shown to give reality nuances of the analysis.

ICT Level, User and Rationale

The level of information and communication technology used in a company depends significantly on variables such as the scale and type of activity. The actual ICT tools used in a company would depend on the user. It is a general belief that small firms will use fewer ICT with lesser intensity. This is the premise that will be checked in this section.

The small industry typically uses a fairly limited ICT. Most of them uses telephone in their activity, both fixed line and cellular. While the cellular phone is initially meant only for personal use, but in practice it is also used for business in the small industry. The following is excerpts from conversation with the small industries.

“... my work is small, and is relatively sufficient with telephone. We don't need fax because there is no data communication that we need. And then internet, what for? We have nothing to do with information from outsiders. Cellular phone I only need it occassionally so that my supplier –toner or paper- can directly call me up to my cellular ...” [copying/xeroxing service]

“... when I have to use cell phone, when computer or fax, it must be as needed. This laundry business I think needs no fax, too far a connection. That is also the case for the workshop; whenever the customer comes, I'll fix his motorcycle. This workshop is even lower [in communication needs, added] than the laundry business. Laundry still has communication with customer. But in the workshop, the communication is only with manager...” [laundry and motorcycle workshop]

There is still limited acknowledgement in the small business on how communication relates with customer satisfaction. Initially communication technology such as the telephone line is used only for personal purposes of owners. However, along the time it is also used for business purposes. This is especially true for cellular. In the visited laundry business, the cellular phone is also used by the delivery services and the operation or duty manager.

The choice to use fixed or cellular phone is determined by factors such as installation and operating costs, and waiting time to get connection. The latter is relatively long for fixed telephone lines. In addition to filling in different forms with PT Telkom, the installation of fixed telephone lines would also need to wait for inspection of the existence of cable network around the proposed place. This is to contrast with the cellular phone. The activation cell phone almost takes no time at all, and it can be done everywhere. Recent popularity of the cellular phone unimaginable a decade ago, where cellular phone is not so much a luxurious goods anymore, at least in urban areas. And, this trend will soon penetrate the urban areas. One phenomenon responsible for that claim is the existence of used cellular

phone markets. This helps suburban, or even rural, areas to have access to the wireless technology. The operating cost of cellular is also considered cheap. The short message (SMS) technology has been very popular among cellular phone users for its cheap rate (Rp 350 per message) and simplicity.

Some small industries also use different information and communication technology. In the field survey, the copying/xeroxing service also uses computer and internet connection. However, this firm claims that their uses are not that frequent; it depends on intensity of activities. Especially for computer, the firm does not own it. Rather, it usually rents or borrows from friends. Users of computer and internet connection in this small industry is limited to owners and now workers. An excerpt from the xeroxing service is interesting:

"... Look, I use computer only occasionally when business is at peak. I have a unit, but it is not part of office equipment. It serves as back up, when really needed, when lots of books have to be set at the same time..." [copying/xeroxing service]

The medium industry uses ICT more intensively, associated with more equipments and tools compared to the small industry. In addition to the phone connections, both fixed line and cellular, the medium industry also uses other types of ICT such as fax machine, computer and internet, printer and copying machine. Telephone and fax machine, two most intensively used equipments, are use not only in relation to clients or customers but are also used in dealing with suppliers, distributors, agents, etc. A respondent in the printing company suggests that telephone is primarily used for communication and promotion. Information can be accessed more efficiently using telephone. This is an equipment that really pivotal in company's performance.

The medium industry uses computer and internet more intensively than the small industry. The primary use of the internet is for internal communication among branches, divisions or section. Not surprisingly, the use of internet is still for the administration duties. Nevertheless,

"... [We] can send report and other things... But the most dominant for now is the between-branches reports... Well, the most dominant thing is still the fax and telephone..." [Book distributor]

Owners of the medium industry are not the only users of ICT. In fact, we can differentiate the use of ICT different divisions or sections. For example, administrative workers are the main users of the computer, internet and fax machines. On the other hand, operational workers uses primarily telephones, both fixed line and cellular.

“... for staff, especially those in the front desk, computers are used to print letters, invoices, and other reports. But still, they can also use the telephon ...” [Printing company]

The large industry has an even more intensive use of ICT. That fact is of no surprise since this kind of industry is equipped with more apparatus. The types of equipment are not too much different from those used by the medium industry; for example the telephone, fax, computer and internet. As is the case in the medium industry, the use of telephone and fax machines dominates the ICT utilization. However the use of computer and internet is also a lot, with more variability in utilization. Internet and e-mail are not only limited to internal communication. In the large industry, internet and e-mail are also used for gathering information about different things, browsing to and networking with foreign counterparts.

“... if you want more profits, we need to go international. We apply for sole-distributorship. What do you have to do? Not much, just sitting in front of your computer for 2-3 hours to find those stuff...” [Building contractor]

The main difference between ICT in the large and medium firms is the amount of equipments. In the medium firms, one will see computer or internet (or more generally the ICT) sharing. Differently in large firm, a worker may have access to personal computer. At the very least, the ICT sharing in the large firms is of smaller degree than that in the medium firms. Of course we can also witness some type of ICT sharing for certain types of equipments, for example the printer.

Impact of ICT on Decent Work

There is no single understanding on the term *decent* among the surveyed firms. The immediate association of the decent work is made to the remuneration. Higher wages and salaries are considered more decent. On the other hand, the relationship between decent work and the use of information and communication technology is not yet appreciated. From the firm's standpoint, the use of ICT is not yet motivated by needs to facilitate decent works. As shown in the previous part, the use of ICT in a firm is more functional in nature. It is related to the function of the ICT as elements that can make productions more efficient and effective.

Therefore, the survey approaches the problem at hand from two different routes. First, the survey uses the term *comfortable work* to find out aspirations regarding important elements in the workplace. Secondly, the survey examines the impact of ICT on work, where the analysis is framed within the elements of decent work discussed in the previous chapter.

What comprises comfortable work

Comfortable work is associated to several aspects. First is the atmosphere in the workplace where a worker can easily communicate his or her problems at home to fellow workers or supervisors. In the smaller firms, where personal relationships among workers and owners are relatively close, this open interaction is deemed important as it may directly relate to the productivity. To some point, temporary lower productivity may be understandable if it is caused by domestic problems.

Secondly, comfortable work is also associated to comparable wages and salaries especially to competitors. This is the element that is directly related to one's comfortability working in a company. While this is generally true for all kinds of companies but it is even more so for larger firms. The reason relates directly to the formality of work. More formal works are associated with more established standards that can be compared among firms.

The third element is the job security. Workers would like to see more formal agreements with owners or supervisors. In the small industry that is less formal in nature, workers express concerns about the possibility of being laid off anytime at the owner's discretion. In addition to that, there is no regulation about the severance pay in the small firms. That, in their view, adds to the insecurity of works.

Finally, comfortability is also associated to a well-established working system. In small firms such as the laundry business, consumers occasionally file complaints or claims. In practice, consumers make the complaints to workers. If there is no clear system in the firm regarding how to handle the complaints and claims, workers (especially those in front desk) may feel that the complaints and claims are personally directed to them. This is a different element in the work comfortability that, again, pertains more to the smaller firms.

In the monopsonistic labor market where the number labor supply outweighs demand, workers have low bargaining position. Government regulations will be effective only for those in formal sectors and are not applicable for the informal workers. Even worse, the latter typically comprise workers of lower quality and lower education. The above elements of comfortable work reflect this low bargaining position especially in the small industry. Low bargaining position at the worker's side is then matched by low profitability at the owner's position. As mentioned by the owner of the copying/xeroxing service:

“...Deep in my heart I want the workers to receive more. Well, compared to other copying service, my worker’s salary is quite competitive. Not more, but at least not below. The UMR [the minimum wage], I don’t know. For small firms it [the minimum wage] is quite hard ... I know it is not ideal ... but I know how to appreciate people ...More importantly, it [paying less than the minimum wage] can be compensated with our good communication style. The most important thing to me is that the job is done responsibly ...” [copying/xeroxing service]

Impact of ICT on (decent) work

The field survey reveals several positive and negative impacts of ICT on the elements of decent work. We will first outline the positive impacts felt by the industries surveyed.

The first positive impact is the greater degree of productivity. This impact comes at different manifestation. The respondent in the copying/xeroxing service relates productivity with a greater control by owner. A similar idea is also forwarded by the laundry business as follows:

“... the advantage of the cellular phone is that it is mobile. If I want to control the shop, no matter where I am I can do that with the cellular. In addition, it facilitates communication among workers and also to customers...” [laundry service]

What is revealed from the survey is a notion that not-in-the-office is considered as productivity-enhancing. In retrospect, whether it will enhance the productivity will depend on the use of the spare time. Obviously, the spare time used for productive activity will enhance the overall productivity.

The possibility of staying away from office may also result in irregular office hours. This may not pertain specifically to the laundry or copying/xeroxing service, but may relate to other form of occupation. For an example, sending out reports can be done after office hours. For some, the latter becomes an alternative working time.

A different form of greater productivity is the market access or market penetration. It is argued by the book distributor that the ICT helps in expanding and penetrating the market. In this business, the important elements in consumer satisfaction are speed and accuracy. It is important for the book distributor to be able to deliver the information, the product in a speedy and accurate fashion. The market-expansion effect of the ICT may also create new jobs in the firm.

The use of ICT is also linked to access to information related to works such as prices of inputs or competitor's output. The respondent from the building contractor illustrates about his quest for a radar for one of his projects. He explains:

"... In reality, it is impossible for me to find information about the radar without the ICT. Even if I can, I don't think I can do that within a week ... Do I need to go to [the Republic of] Ceko?"

The use of ICT as a means to look for market information will be an ever greater phenomenon in the future. A supplier does not have to physically visit its prospective buyers to negotiate, and the same idea applies to a buyer. Telephone is basic apparatus that helps this process, facsimile offers a better media to exchange written data, and later the internet provides an environment where exchanges are both audio and video. Marketing through the internet has also been a choice for several companies. While the field survey finds no firms that markets through the internet, but it is of no surprise if any of them will start one in the future.

The second positive impact of ICT that is revealed from the field survey is its use in communication and socialization among workers, between workers and owners, and communication between workers and other parties outside the office. The use of ICT for internal communication has been elaborated in the previous section. Readers are referenced to the discussion there. Here, we will concentrate more on the use of company's ICT for non-work-related activities.

There is a general notion that the use of ICT for non-work-related activities are acceptable as long as it is still within the corridor. The definition of the latter is not immediately clear. However, excerpts from the copying/xeroxing service (for the small industry) and from the building contractor (for the large industry) are of specific interest:

"... oh, everybody uses it, no problem, that is allowed... For an example, if the worker has to stay here after office hours because of high workload, and he calls up telling his home about coming back late, that is normal. I still considered it as related to work ... I don't see this as negative thing. My female workers receiving calls from her boyfriends is rare, also my male workers receiving phones from his girlfriend is rare. Mostly [non-work-related phones] are from home. From friends, there are several. But it is normal that they have friends. So far is normal..."[copying/xeroxing service]

“...[so how workers communicate one with another?] *Phone can be used, e mails are also okay since everybody has e-mail address...It is flexible here as long as not messing up with the whole network...*” [contractor]

There are also some negative effects of ICT use in the company, stemming from several possibilities. First is the underutilization of the apparatus; second is the misuse of the technology; and third is incomparable cost and benefit of the ICT.

An underutilization of ICT apparatus will bring inefficiency to the production. Computer, for example, is commonly associated with such underutilization. When firms buy a set of computer, they usually settle with the state of the art in the market. It is very common to see, however, that the computer is used merely for word processing or simple tabulation. While the use of the computer does increase the productivity but the computer itself is not optimally used. The other example is the software. In turn, it decreases the efficiency of the firm.

One important finding from the field is that firms, especially those in small scale, have some difficulty to separate business from household expenses. The copying/xeroxing service says that he uses the telephone both for office as well as personal uses. He claims that separating the two, for example relying on the telecommunication shop for his personal communication, can be more expensive. The building contractor also warns about the excessive use of the cellular phone. At certain point, it can be counterproductive to the whole production activity. This problem is of less severe in the larger firms.

Finally, the cost of technology may be more than the benefit it creates. If the technology upgrade is not followed by the intention to learn then it can be high cost rather than cost reducing. The respondent from the book distributor asserts that technology bears negative effects if it is misused, for example to access pornography sites, etc. Such a misuse of ICT may be a negative effect of technology.

4 – Conclusion

Information and communication technology (ICT) has a pivotal role in the society today. ICT has speed up the structural transformation in different areas in the economic, social and cultural life. One area where the ICT has also a significant impact is in the labor and work environment. The development of ICT has contributed a great deal to many aspects of the concept of decent work. The latter is a condition in the workplace that promotes freedom, equity, security and human dignity.

Despite ICT potential in promoting the decent work, many still have not felt its benefit due to the so-called *digital divide*. The latter refers to the phenomenon where people are lacking the capability to access information through the internet or other information technology apparatus that are caused by differences in geography, race, socio-economic status, gender and physical ability. The actual applicability and use of ICTs are determined primarily by access to resources, skills, knowledge, and capability to use them. These factors cause differences between those living in the rural and urban areas, between the more-educated and less-educated, between economic classes, and in a more global world between the more and less developed countries.

The digital divide is also a phenomenon in Indonesia, hence is the increasing public awareness to the ICT development. Different laws have been enacted to facilitate the development, e.g. the Law no. 3/1989 and Law no. 36/1999. In addition to that in 2001 the government released the five-year plan for the development and the implementation of telecommunication technology in Indonesia.

The digital divide is also responsible for the low use of ICT in the working environment. The field cases of this study show that the use of ICT is still

relatively low. While some firms know the potentials of employing ICT in their works, but not all of them are able to afford one. Some firms, especially the small ones, use ICT in limited activities. Larger firms acknowledge that use of ICT may result in more efficient, more productive, easier, more effective services to customers. However, the use of ICT in the work is more directed for company's purposes and is very limited to worker's own purposes.

The level of ICT used in a firm depends to a large extent to the need of the firm. It depends on the scale, types of activities, capability and ability to use and maintain the ICT apparatus. The ICT in a firm is not used in the context of providing a decent work environment for the workers. It is rather used for its functionality to help the firm operation.

There are several points that can be concluded from the field survey. There is a gap in the use of ICT between administrative and operational workers. Those in the former tasks tend to use the ICT more intensively than those in the latter. While that phenomenon is true in the larger firms, a different fact is observable in the smaller firms. In the latter, there is a blurred boundary between the office and personal use of ICT apparatus. Telephone, for an example, is used both for official as well personal use of the owners. ICT is also used by some firms to collect information on marketing and consumer's services.

ICT will play an important role in the future. At this moment, it has been acknowledged that its use depends greatly on the worker's operating capability that in turns depends on the level of human capital in the work. There are two dimensions that is closely related to this human capital development: training in the short-run and education in the long-run. Efforts towards these development should be continued in the future.

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Appendix 1 – Indicators on Decent Work

Introduction

In 1998, the International Labour Conference adopted solemnities ILO Declaration on Fundamental Principles and Rights at Work. The Declaration underlines that all member countries have an obligation to respect the fundamental principles involved, whether or not they have ratified the relevant convention¹⁰. The ILO Director General, Juan Somavia declared that, in fulfilling its mission to improve the lot all in the world of work, the ILO's main goal¹¹

“... is to promote opportunities for women and men to obtain decent and productive work, in conditions of freedom, equity, security and human dignity” (ILO, 1999)

Description of decent work by Director General, six dimensions of decent work were identified:

- D1 Opportunities for work: all who want to work should be able to find work
- D2 Freedom of choice of employment work should be freely chosen, acceptable (e.g.: no forced labour)
- D3 Productive work: in term of providing acceptable livelihoods for those who work and their families, competitiveness for enterprises and the country as well as sustainable development

¹⁰ 'Fundamental principles and rights at work' by ILO. p.12

¹¹ Young, Sylvester 'Statistical Recruitments for Measuring Decent Work' p.1

- D4 Equity in work: fair and equitable treatment at work (no discrimination at or in access to work and family life)
- D5 Security at work: safeguarding health, pensions and livelihoods and provisions for contingencies when health, work and livelihoods are endangered
- D6 Dignity at work: with due respect, right to voice concerns and participate in decision making at work as well as to organize to protect interest collectively.

The first two dimensions of decent work relate to the availability of work and the acceptable of work. The remaining four dimensions refer to the decency of work performed.

To develop statistical indicator of decent work, the approach taken is to look through the eyes of individuals. The following general aspects of work have been single out (which individuals from all over the world would consider important elements of decent work). To measure each of these aspects of decent work, statistical indicators need to be identified, with an emphasis on the actual situation faced by workers and potential workers and especially the poorest and least well off:

- Employment opportunities
- Unacceptable work
- Adequate earnings and productive work
- Decent hours
- Stability and security of work
- Fair treatment in employment and at work
- Safe work environment
- Social protection
- Combining work and family life
- Social dialogue and participation

The above features of decent work also depict quite well the six dimensions of decent work noted above in the concise and simple sentence defining decent work. Employments opportunities help portray *opportunities for work*, whereas unacceptable types of work help picture *freedom of choice of work*. Adequate earning and productive work help reflect productive work. Fair treatment at work, balancing work and family life, and social dialogue help mirror *equity* and *dignity at work*. Safe work environment, social protection, and stability and security of work help portray *security at work*.

Statistical data (indicators)

Findings on literature studies bring up detail about the scarce availability of decent work in Indonesia. Indeed, decent work measurements were not well acknowledged. Based on *Sakernas* (National Manpower Survey) 1997, 1999, and 2001 we attempt to develop measurement of decent work as mention by Sylvester Young¹².

The measurements of decent work from *Sakernas* data have provide us several information, such as Income, Work Place Facilities, Medical Benefit, Work Safety Facilities, Transportation Facilities and The Situation as a whole in the current situation compared to a year ago. While these measurements are still inadequate, however, it provides primary illustration and brief insight on decent work in Indonesia.

Employment opportunities

Rising economic activity in 1999 provided employment opportunities in almost sectors. However, the increase in the employment opportunities could not match the high growth of the labor force. This high growth resulted from the entrance of many people in working age population into the labor market, including school drop outs and housewives, due to the pressures of the economic crisis. The imbalance resulted in a rising unemployment rate from 5.5 percent in 1998 to 6.3 percent in 1999 (Table 2.1), with open unemployment rising to 6.0 million people in 1999, from 5.1 million in the previous year. And the large gap between the supply and demand for labor held down wages in 1999. Labor supply increased by 2.3 percent in 1999, swelling the labor force to 94.8 million people. With 141.1 million people in the working age population, the labor force participation rate was 67.2 percent in 1999, up from 66.9 percent in 1998. This increase was partly due to new entrants of working age population, such as housewives and school dropouts, due to pressures of the crisis.

Table A1.1 Manpower Indicators

	1997	1998	1999	2000	2001
Working age population	135.1	138.5	141.1	141.2	144.0

¹² Young Sylvester. 19-. *Statistical Requirements for Measuring Decent Works*. Publisher:

Labor force	89.6	92.7	94.8	95.7	96.1
Working labor force	85.4	87.7	88.9	89.8	90.8
Unemployed labor force	4.3	5.1	6.0	5.8	5.3
Unemployment rate (%)	4.7	5.5	6.3	6.1	5.5
Labor force participation (%)	66	66.9	67.2	67.8	66.7

Source: Ministry of Manpower

Yet, following year of 2000 and 2001 has exposed the declining of unemployment rate that is possibly caused from growing employment in labor market. Otherwise, there have been forcing situation that make people accept any available works offered and entering informal sectors (with no exit and entry barrier) through job creation without income-preference expectation considered. In other word, accepting and doing the job offered even with low wages or paid near to the ground.

Unacceptable work

Based on *Sakernas*, second alternative concept has applied through aggregation of people with status of working but still looking for work, which assume able to choose kind of work preferred subjectively. Also, aggregation of people who have more than one kind of work those assume able to choose which work turn into the main work and the additional work. Hence, that worker could alternate among two kind of work or working status or between part-time and full-time working or both of the work are part-time working along with ability to manage or alter working hours and leisure time.

Table 2.2 shows the tendency of percentage of unacceptable work increased from 1997 to 1998 then decreased in next following years. This could be occurred due to economic crisis draw closer in the year 1997-1998. At that time, the economy turning rundown that caused income to falling or exchanging job due to lay-off from previous sector. The coping mechanism against those situations is accidentally working numerous jobs that need no higher skill just to maintain household expenditure at some level.

Table A1.2 Unacceptable work (million persons, except where noted)

INDICATOR	1997	1998	1999	2000	2001
Working	85.4	87.7	88.8	89.8	90.8

Working & looking for Work	3.6	4.5	4.7	4.0	3.6
Working & have another additional work	8.1	9.4	9.1	7.3	8.1
Unacceptable work (%)	13.6 %	15.9%	15.6%	12.6%	13.0%

Source: National Labor Force Survey

Adequate earnings and productive work

According to Anker (2002), to acquire the second alternative concept, number of median income per hours is needed to set the threshold of whether proportion of people received income below median (not decent) in high level or low level and what is the tendency.

Table A1.3 Percentage of worker with gross hourly earnings below 50% of the Median

	1997	1998	1999	2000	2001
Male	81.49	83.09	83.06	81.99	74.04
Female	86.20	87.05	85.90	86.16	77.19
Both Sexes	83.28	84.62	84.14	83.59	75.21

Source: National Labor Force Survey

Similar with the previous indicators that shown the increasing then decreasing trend and occur in 1998 where the economic crisis begin. These trends take place both for male workers and female workers. Although income below median tends to drop off, however, the rate was still high enough that is 74 percent for male and 77 percent for female in the year 2001. Therefore, only a small fraction of Indonesian workers who received income on appropriate working.

Based on respondent's subjective information about improvement of income, working facilities, fringe benefits e.g. health insurance, transport fee and safety in Indonesia working survey some of results can be identify. In table 2.4 shown the percentage of worker who answer the question about consideration among present and previous condition and involving judgment whether today condition is better or just the same compared to a year ago.

Table A1.4 Percentage of Characteristic of Current Situation compared to the previous year

	1997	1998	1999	2000	2001
Income	9.0	37.3	27.2	22.1	17.2
Work Place Facilities	9.6	22.0	17.9	16.7	11.7
Medical Benefits	15.4	22.0	21.2	21.4	16.5
Work Safety Facilities	14.4	30.3	19.4	19.2	14.8
Transportation Facilities	12.0	28.5	18.3	18.9	15.7
The Situation as a whole	9.6	25.5	25.2	22.3	16.5

Source: Sakernas 1997-2001

The better or just the same situation of worker's income growth indeed decline in percentage which is only few workers obtain better condition in the year 2001 about 17 percent of workers. The decline of workers who obtain "decent" working facilities also occur and the small percentage of them shown about 11 percent on these year. Facilities and other fringe benefit such as health, transportation and safety at working place obviously has the same pattern with other facilities which is increased in 1998 and decreasing. In addition, the percentage of worker who get "better" or "increase" situation is only small of them. Overall, only 16 percent workers who obtain certain "better" facilities and fringe benefit in year 2001. It means working condition in many business entities need to be improvement both formal and informal.

Decent hours

According to Indonesia Labour Act (*UU Ketenagakerjaan Tahun 2000 Chapter 7 article 100* on protection, wage matters and welfare), working hours is set to 40 hours a week, eight hours a day (break time excluded). For trade, janitor, receptionist, and additional work sectors is set to 44 hours per week.

Table A1.5 Percentage of worker working less than 40 hours per week

Gender	1997	1998	1999	2000	2001
Male	42.4	46.4	45.9	46.3	46.0
Female	64.8	67.5	65.9	65.2	63.8
Both Sexes	50.9	54.5	53.5	53.5	52.6

Source: National Labor Force Survey

There is a progress in decent hours aspects. However, whether those progress significant or not, a chance for discussion seems in call for. Between years 1997 to 2001, there has been an increase of working hours to 40 hours with consideration of vast percentage fluctuation that are 3.6 percent for male workers and 1.7 percent for both workers (male and female). The decreasing percentage of 1 percent occurs for female workers probably because female workers fluctuation that increased working hours during economic crisis to maintain household expenditure. However, only half proportion of total workers who engage 40 hours working and below is really prevail more concern.

Appendix 2 – Guidelines for indepth interview

DETERMINING THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ON DECENT WORK

A. Business identity

1. Name of firm and address
2. Year of being established
3. Legal status (CV, PT, UD, dsb)
4. No of labor (male, female)
5. Sectors:

B. Characteristics of ICT being used in the firm

1. Types of ICT used or owned (types of ownership, existence, amount and capacity)
 - a. Telephone
 - b. Fax
 - c. Computer + printer
 - d. Internet
 - e. Other ICT stuff
2. Use of existing ICT:
 - a. What are they used for (function)
 - b. Who use them and why?
 - c. How often?
 - d. Since when are they used?
 - e. What is the system and mechanism of ICT use?
3. Opinion, comments and perceptions about the need of ICT
 - a. What kind of ICT is the most needed? Why?
 - b. What is the advantage of that particular ICT?
 - c. What is the least advantages of ICT being used? Why?

d. Other comments, please describe.

C. Decent work condition, in general

1. The existence and condition of decent work
 - a. The existence of features supporting the decent work (e.g., work & break hours, existence of work contract, life and work insurance, pension, work health)
 - b. Besides wages and salaries, is there any other compensation that the firm provides to workers (over time, days off, health benefit for worker's family, etc.)
 - c. The existence of labor union or any other organization, and other mechanism to express opinion or aspirations
 - d. Are there any differences in the remuneration system between male and female, or between different functions in the firm?
 - e. What is the recruitment system?
 - f. What is the possibility for worker to choose or decline assigned tasks?
2. Opinion, comments and perceptions about the decent work that has already existed in the firm.
 - a. What is the general condition of the working environment in the firm?
 - b. What features of decent work that still need to be upgraded or fulfilled in the firm?
 - c. Other, please elaborate

D. ICT impact on decent work

1. What is the impact of ICT on decent work? Please elaborate
 - a. Working or employment creation (e.g., increasing the number of consumers or demand, increasing the productivity, better quality of services, etc.)
 - b. After the use of ICT, does the company requires greater degree of skills at the side of workers or prospective workers (e.g., ability to use computer or speak in English)?
 - c. Is there any relocation of workplace: from in the office to out of office?
 - d. Does ICT speed up and contribute to the efficiency and efficacy of work?
2. Opinion, comments and perceptions about the link between ICT and decent work.
 - a. What types of ICT that support decent work the most? Why?

- b. What types of ICT that support decent work the least? Why?
- c. Other, please describe