AGENCY FOR INTERNATIONAL DEVELOPMENT
PPC/CDIE/DI REPORT PROCESSING FORM

ENTER INFORMATION ONLY IF NOT INCLUDED ON COVER OR TITLE PAGE OF DOCUMENT

1. Project/Subproject Number
497-0357

2. Contract/Grant Number
497-C-00-98-00045-00

3. Publication Date
August 2003

4. Document Title/Translated Title
Impending Growth of Indonesia's Market for ICTs and its Regulatory Constraints

5. Author (s)
1. Idris F. Sulaiman
2.
3.

6. Contributing Organization (s)
Nathan/Checchi Joint Venture/PEG Project

7. Pagination
27

8. Report Number
PEG 141

9. Sponsoring A.I.D. Office
ECG, USAID/Jakarta

10. Abstract (optional - 250 word limit)

There is little doubt that Indonesia has potential to accelerate and bring the benefits of information communications technology (ICT) and the knowledge-based economy to the poor. However, the extent to which Indonesia has been able to use ICT to accelerate development and bring direct economic benefit to the people will depend on the policies and regulatory environment the government and private sector promote, the public-private coordination, human resources and the infrastructure they put in place—both at the backbone, hardware and software level. This paper argues that, despite its enormous potential, diffusion of the Internet and other ICT products and services in Indonesia has not been optimised (measured by the relative potential that Indonesia possesses with respect to its neighbours) but has created a small but significant impact on the society and has developed new ways to achieve access through ICT (measured by E-Readiness) and particularly in urban areas. Realization of full ICT potential is severely impeded by a lack of commitment to ICT policy reform by the government and by the lack of compliance on the part of the telecommunications incumbent to the conditions set for reform.

11. Subject Keywords (optional)

1. Indonesia
2. Information & Communications Technology (ICT)
3. Regulatory Constraints
4. ICT Policy Reform
5.
6.

12. Supplementary Notes

13. Submitting Official
C. Stuart Callison, Chief of Party

14. Telephone Number
011-62-21-391-1971

15. Today's Date
17 Dec 2003

e-mail: stu@pegasus.or.id

…..……DO NOT write below this line……..……

16. DOCID

17. Document Disposition
DOCRD [ ] INV [ ] DUPLICATE [ ]

AID 590-7 (10/88)

"Impending Growth of Indonesia's Market for ICTs and its Regulatory Constraints"

by Idris F. Sulaiman

(Paper for Partnership for Economic Growth Project, Jakarta, August 2003)[1]

There is little doubt that Indonesia has potential to accelerate and bring the benefits of information communications technology (ICT) and the knowledge-based economy to the poor. However, the extent to which Indonesia has been able to use ICT to accelerate development and bring direct economic benefit to the people will depend on the policies and regulatory environment the government and private sector promote, the public-private coordination, human resources and the infrastructure they put in place—both at the backbone, hardware and software level.

This paper argues that, despite its enormous potential, diffusion of the Internet and other ICT products and services in Indonesia has not been optimised (measured by the relative potential that Indonesia possesses with respect to its neighbours) but has somewhat created a small but significant impact on the society and has developed new ways to achieve access through ICT (measured by E-Readiness) and particularly in urban areas.

Potential costs and benefits for Indonesia from the reduction in transaction costs of business specifically due to better communication means--including the Internet--are not easy to measure. The extent to what degree has Indonesia realized this potential can be seen from the extent of ICT diffusion through the E-Readiness ranking and the market potential of ICTs compared to its neighboring countries in the Asia Pacific Region.

The main factors hindering the realization of this potential, and what policy challenges from fully realizing the existing potential can be observed from the development of policies and demonstration of the lack commitment to implement reform policies evidenced by the re-monopolization of the telecommunications sector.

This paper argues that in Indonesia this diffusion is severely impeded by a lack of commitment to ICT policy reform by the government and by the lack of compliance on the part of the telecommunications incumbent to the conditions set for reform.

This paper is divided into five sections: first, the extent of impact of globalisation on Indonesia that can be measured by its e-readiness relative to the position of other APEC member economies. Indonesia's and investors' relative potential to attain the benefits of ICT can be examined by looking at Indonesia's cellular subscription and revenue growth relative to other economies in the Asia-Pacific region.

[1] The Partnership for Economic Growth (PEG) is a United States Agency for International Development (USAID)-funded Project with the Government of Indonesia. The views expressed in this report are those of the author and not necessarily those of USAID, the U.S. Government or the Government of Indonesia.

The second section provides a brief overview of the extent of the diffusion of ICTs in Indonesia and the third section outlines some of the key policy impediments that has impeded the growth of ICTs. This section explains how Indonesia SMEs have utilised ICTs across its regional cities and compared to their counterparts in the Philippines and Thailand. Then, it explains why the high cost of basic telephony (as a result of the re-monopolisation) prevents ICT benefits from being realised by the beneficiary groups such as SMEs.

The third section, uses the ISP industry as a case study to illustrate how the present policy "paralysis" have resulted as regulator allow the re-monopolisation of telecommunications, notwithstanding the formal declaration of open competition in August 2002. The current "dilemma" over telephone tariffs combined with its re-monopolisation of ISP business through "TelekomNet Instan" Internet service, the recent developments of Voice over Internet (VoIP) telephony illustrates PT Telkom's attempt to unfairly stifle competition, and the "independent" regulatory body issues illustrate how this incumbent and the regulators do little to prevent the re-monopolisation the ISP sectors.

Finally, the paper summarises the extent of globalization's impact through ICTs and closes with some key recommendations that could put Indonesia on an open market path so that ICTs can become instruments to empower and improve people's quality of life. ICT in Indonesia as elsewhere promises much in the development of a better, more informed and sustainable society.

I. THE EXTENT OF THE IMPACT OF GLOBALIZATION ON INDONESIA THROUGH E-READINESS AND OTHER ICT EFFECTS

As ICT is not a goal in itself but an instrument for development, at the heart of the current multi-dimensional crisis facing Indonesia, as in many other moderate Muslim-majority states, is the effort to maintain economic and political stability while at the same time attracting foreign and domestic investments to return to the terror-stricken country. The success of such effort will determine the survival of the largest Muslim majority country as a nation-state spanning an archipelago. After a series of bombings and other terror campaigns by religious extremists culminating in the Bali bombing in October 2002, the Iraq War and now SARS epidemic, the government is facing an even greater challenge in maintaining the fragile political stability as foreign and domestic investors warn of Indonesia's waning investment attraction. The government has responded with a lame "Year of Investor-Friendly" campaign but this did not have any specific references to the telecommunication or other ICT sectors. If Indonesia is to improve ICT diffusion then the main focus of activity is to attract investors in the ICT sectors, two questions must be asked what is Indonesia's e-readiness and what is its market potential.

Turning to a recent study by APECTEL (2002) on E-Commerce Readiness in 10 East Asian APEC Economies (Table 1), Indonesia fared last in the E-Readiness ranking[2]. While East Asia

[2] E-Readiness can be defined as "the aptitude of an economy to use Internet-based computers and information technologies to migrate traditional businesses into the new economy, an economy that is characterized by the ability to perform business transactions in real-time - any form, anywhere, anytime, at any price. E-Readiness reaches its optimal level when the economy is able to create new business opportunities that could not be done otherwise". The framework used in ranking covers both macro- and micro-economic factors that mirror the ability of an economy to compete in the new economy and the eight measurable sets of variables considered in the ranking are: Knowledgeable Citizen, Macro Economy, Industry Competitiveness, Ability and

as a whole (average ranking of 3.00) needs to catch up with the ranking of leading nations (US at 4.36, G7 at 3.92), there is a clear gap between rich and poor economies. In the case of Indonesia, which ranks last with a score of 2.17 we see that the country is not far behind Vietnam (2.28) and China (2.33).

Table 1. E-Readiness Ranking in East Asia

Economy	Ranking	Total Average Score
Singapore (SG)	1	4.22
Hong Kong, China (HK)	2	3.82
Chinese Taipei (or Taiwan, TW)	3	3.62
South Korea (KR)	4	3.55
Malaysia (MY)	5	3.01
Thailand (TH)	6	2.74
Philippines (PH)	7	2.72
China (CN)	8	2.33
Viet Nam (VN)	9	2.28
Indonesia (ID)	10	2.17

Source: APECTEL (2002: 26) Note: (1) Capital letters representing the economy names are used to be used in Table 2; (2) Representation at APEC is not on the basis of country membership but rather economy membership such that the "Greater China" is represented by four economies namely People Republic of China, Chinese Taipei, Hong Kong and Macau Special Autonomy Regions (SARs).

To some highlights of the disparity in the Asia Pacific region, the component variables that make up the indices of E-Readiness in the above APEC study (Table 2). The Table shows that Indonesia obtained lowest scores in Competitiveness, Investment, Digital Infrastructure and Skilled Workforce. On the Cost of Living and Prices variable, Indonesia obtained a ranking of 3.00. This is just at the average and median ranking, and on par with China and Thailand, if there is little or no improvement in the four above key variables, Indonesia will be in danger of being further left behind by the leading economies in the region.

McConnell International's second E-Readiness report (May 2001) assessed 53 countries that represent over two-thirds of the world's population and the greatest potential markets. The countries are rated on a scale of Blue, Amber and Red (see Table 3). Indonesia ranked poorly achieving the last ranking of "red status" out of three E-Readiness rankings in all five E-readiness attributes (Connectivity, E-Leadership, Information Security, Human Capital, E-Business Climate).[3] Worse still in none of the five category of attributes there is any indication of improvements being made through "public-private partnership that are achieving E-Readiness impact" (McConnell International 2001: 13).

Willingness to Invest, Access to Skilled Workforce (Supply Skills), Digital Infrastructure, Culture, Cost of Living and Pricing (APECTEL, 2002).

[3] The McConnell "Global E-Readiness Summary" has three ranking representing various conditions necessary to support e-business and e-government. The 5 categories of ranking include infrastructure and access ("connectivity"), government policies ("e-leadership"" and "information security"), ICT education ("human capital"), and "e-business climate", and have 3 to 5 criteria to be measured in each category (McConnell International 2001)

Table 2. Diversity of E-Readiness in East Asia - Indices of the Eight Pillars of the New Economy

	Knowledge-able Citizen	Macro Economy	Competi-tiveness	Ability to Invest	Access to Skilled Work-force	Digital Infrastructure	Cost of Living and Prices	Culture
Average	3.17	2.80	3.00	3.25	3.00	2.85	3.00	3.25
Median	3.50	2.54	2.50	3.00	2.92	2.60	3.00	3.25
Highest	4.50 (KR)	4.67 (SG, HK, CN)	4.29 (SG)	4.50 (SG, CN, TW)	4.00 (TW)	4.2 (TW)	3.67 (KR, HK, TW, SG)	4.50 (SG)
Lowest	2.33 (CH)	1.75 (CN)	1.57 (ID)	2.17 (ID)	2.17 (VN, ID)	1.50 (ID)	2.67 (VN)	2.00 (CN)
Standard Deviation	0.758	1.080	1.003	0.791	0.720	1.053	0.393	0.773
Indonesia's score & ranking	2.50 (7^{th})	1.83 (8^{th})	1.57 (10^{th})	2.17 (10^{th})	2.17 (joint 9^{h})	1.50 (10^{th})	3.00 (3^{rd})	3.00 (6^{th})

Source: APECTEL (2002: 2)Note: The economies are represented by their Internet symbols are explained in Table 2; the Knowledgeable Citizen variable is make up of Adult Literacy Rate, Secondary Enrollment, Tertiary Enrollment, 8^{th} Grade Achievement in Science, MGMT Education Locally Available in first-class Business Schools, Flexibility of People to Adapt New Challenges; and Culture variable is National Culture is Open to Foreign Influence, English Language, Percentage of Urban Population and Percent of Population 65 Years or older.

Table 3: Global E-Readiness Summary, May 2001, Selected 18 Countries with large-populations in the South Asia and East Asia regions.

Country	Connectivity	E-Leadership	Information Security	Human Capital	E-Business Climate
Argentina	Amber-C	Amber	Amber	Amber	Red
Bangladesh	Red	Red	Red	Red	Red
Chile	Amber-C	Blue-C	Amber-C	Amber-C	Amber-C
China	Red	Amber	Red	Amber-C	Amber
Egypt	Red-C	Amber-C	Red	Red-C	Red
India	Red-C	Amber-C	Amber	Amber	Amber
Indonesia	Red	Red	Red	Red	Red
Malaysia	Red-C	Amber-C	Amber	Amber	Amber-C
Mexico	Amber	Amber-C	Amber	Amber	Amber
Nigeria	Red	Red	Red	Red	Red
Pakistan	Red	Amber-C	Red	Red	Red
Philippines	Red-C	Amber-C	Red	Amber-C	Red
Russia	Red	Red	Red	Amber	Red
South Africa	Red	Amber	Amber	Red-C	Red
Sri Lanka	Red	Red	Red	Amber-C	Red
Taiwan	Amber	Blue	Amber	Blue	Amber
Thailand	Red	Amber-C	Red	Red	Red

Legend

Blue -	indicates that the majority of conditions are suitable to the conduct of e-business and e-government
Amber -	indicates improvement needed in the conditions necessary to support e-business and e-government

Red -	indicates substantial improvement needed in the conditions necessary to support e-business and e-government
C	Changing circular arrows - indicate presence of public-private partnerships that are achieving E-Readiness impact

Source: McConnell International (2001)

The E-Readiness assessment of 60 countries by the London-based Economist Intelligence Unit (EIU 2003) is based on the extent to which a country's business environment is conducive to Internet-based commercial opportunities. Six categories with a total of 29 indicators are used to derive an overall score on a scale from 1 to 10 (best) suggest that the extent of monopoly power of telecommunications incumbent(s) is one of the most important determinant factors of the level of E-Readiness and penetration of e-commerce in a country. The low E-Readiness of some Asian countries such as Vietnam, China and Indonesia (as shown in Table 4) is a direct result of the strength of monopoly power of their telecommunications operators. In addition, the lack of initiative from their governments in power coupled with poverty and lack of purchasing power constraints suffered by the population of such countries constitute barriers to utilize the e-commerce potential arising from the Internet. Indonesia ranked 53rd in this survey.

Table 4: Ranking of Global E-Readiness in selected ASEAN and other countries

Rank	Country
Top	Sweden
10	Hong Kong, Canada
12	SINGAPORE
16	South Korea
33	MALAYSIA
42	THAILAND
46	India
47	PHILIPPINES
50	China
53	INDONESIA
54	Vietnam

Source: Economist Intelligence Unit (2003)

One of the conclusions of the EIU survey was that the Asian countries that gained high E-Readiness rankings were typically observed to have adequate IT infrastructure, high per capita income, a significantly de-regulated telecommunications sector, increasingly lower transaction costs, aggressive pro-active approach to e-commerce by their governments, good education system and an openness towards trade and new ideas. In addition to creating an enabling environment, the countries that ranked highly such as South Korea, Singapore and Hong Kong have also introduced many "on-line" government services using the Internet through e-Government programs. For example, Hong Kong and Singapore have now introduced transaction and payment capabilities for their websites so that citizens can pay for government services using some credit card or other payment mechanisms to pay their tax and other payments, obtain immigration permits through the Internet and others. The "e-Citizen" service by the Singaporean government is so comprehensive that it has been termed from "cradle to the

grave" e-services. Such government also facilitates e-commerce transactions by passing laws governing e-signature and e-transactions. In short, such governments run programs, which strategically utilize the Internet as a key enabling tool to significantly increase their competitiveness in the regional and global markets.

Some of the difficulties in diffusing ICTs can be attributed to the recent economic crisis and its aftermath. Indonesia's economic downturn during 1997-98 plunged its real per capita income by 14.3% in terms of constant 1993 prices to $570 (calculated using data from Table 11.1.10 in "Statistik Indonesia" 2000). The political upheavals since the previous Suharto Government fell in May 1998 had a profound impact on Indonesia's political stability with three consecutive government administrations resulting in many changes in economic policy and industry regulations.

There is little doubt that these events can be linked with the little improvement in Indonesia's E-readiness ranking which to some extent measures ICT impact on society. However, as suggested by the EIU, it can be argued that Indonesia's poor relative rankings could be a direct result of the strength of monopoly power of its telecommunications operators. The telecommunications sector represents the "upstream" part of the ICT industries value chain continuum. As a result, cost structures in this segment of ICT directly affects the speed and spread the diffusion of the Net which in Indonesia, principally runs on the telecommunications "backbone" network of the main incumbent, PT Telkom.

The economic crisis aside, it can be argued that the efforts to deregulate this sector have been slowed down particularly in the last year or two. As a result, a re-monopolization of the sector has occurred notwithstanding the commencement of duopoly since August 2002. The paper will outline a case study of telephone tariffs and the failure to establish an independent telecom regulatory body below to illustrate the phenomena of re-monopolization trend.

However, before detailing these developments, the paper will provide some evidence of the existing diffusion and the tremendous potential benefits for Indonesia's telecommunications below.

II. ICT-INTERNET DIFFUSION AND THEIR CATEGORIES

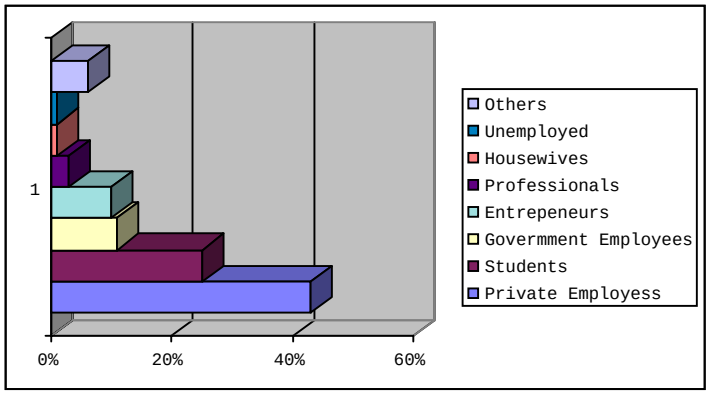
Industry data shows that the existing rates of Internet diffusion illustrates the impact of globalization through ICTs which decreases the costs of communication. This section provides some recent survey data on the characteristics of Internet use in the general urban population and more specifically amongst small and medium enterprises (SMEs).

(1) Indonesian General Urban Internet Profile

According to a survey by the Indonesian Internet Industry (I2BC, 2000) of 1500 respondents (of which 65% were men and 35% women) in 10 large urban cities, most access to Internet are made by 26-35 year olds (38%), followed by 14-25 year old (32%) and 36-55 year old (30%). Regarding their education, the majority of users have a Bachelor Degree (39.6%) followed by High School goers (34.5%), undergraduate (20.1%), Master Degree (5.2%) and Doctoral Degree (0.5%). On their occupation, the largest users are private companies' employees (43.0%),

followed by students (25%), and civil servants (11%). The remaining are entrepreneurs (10%), professionals (3%), housewives (1%) and miscellaneous (6%) (See Figure 1). In reply to a separate question, it was shown that 67% of introductions to the use of Internet was through an introduction through personal relationships, either at work or friendships, 10% were induced by the mass media or only 4% were introduced through schools or other educational institutions.

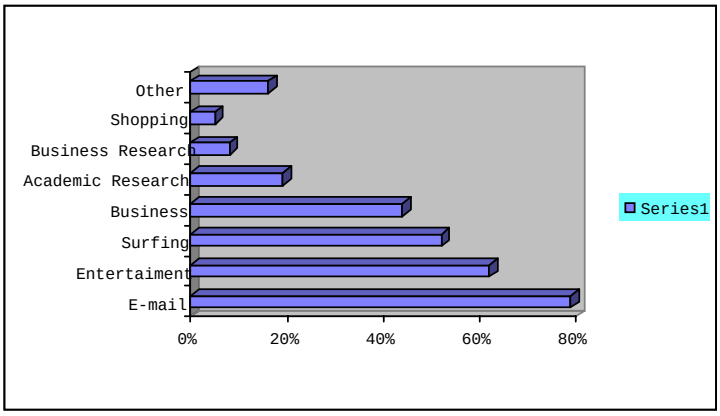
Figure 1: Internet Users Respondents Occupation (n=1,500)



Source: I2BC (2000:20)

In terms of categories of usage of the Internet, e-mail ranks as one of the largest usage (79%), followed by entertainment (62%), surfing (52%). Of the purpose in using the Internet, E-mail ranks highest followed by Entertainment (62%) and Surfing (52%). Users who use the Net for business (44%) is followed by those using it for academic research (19%), then business research (8%), shopping (5%) and others (6% - See Figure 2).

Figure 2: Motivation for using the Internet (n=1,500)



Source: I2BC (2000:20)

According to the sample, as most Netters in Indonesia are accessing their surfing using Internet Kiosks (Warnets - 42%) and Office (41%). This is trend is somewhat different to the experience in developed countries such as the United States, European Union, Japan, Korea and Singapore

where they commonly surf at home using personal computers (PCs). In Indonesia, only 12% are using the Internet at home. However, this is not surprising given the citizens' low purchasing power, low PC, low telephone line penetration in the country as well as the lack of infrastructure (see section below). Low access rate from educational institutions such as University Campuses (3%) and Schools (1%) suggest that much needs to be done in this sector. Additional information on the purpose of use of the Internet of the 1500 people surveyed suggest that most users (50%) primarily use the Net for personal and business reasons (e-mail, chat and browsing news sites), but there is a great number of people (38%) who use it for purely personal reasons. Only 9% use it for pure business reasons and the remaining 2% did not answer the question.

The above pattern of use suggest that Internet access in Indonesia reflect the buying power of Indonesians generally and those who do do access the Net. When approximate number of users is still less than 2% (2 million Internet users in 2000 when the population was 210 million and now in 2003, there are approximately 4.5 million users with a population of 220 million - more on this later), most of those who access the Net have higher incomes or do so through their workplace.

A lack of infrastructure is not the strictly the main barrier to ICT use in the country. Notwithstanding the inability of PT Telkom (major incumbent) problems is expanding the telephone lines, dedicated lines, leased lines and the like in most part of the archipelago, where there is good infrastructure there is problem of affordability and a lack of applications and content on the Net that is locally relevant is rare. For example, the tourist island of Bali is probably the most wired place in Indonesia with its capital Denpasar's teledensity at 33 telephone lines per 100 inhabitants, ten points above the national capital, Jakarta, and about ten times the national average. The number of Internet cafes or kiosks is into the hundreds and almost every hotel has a business center. Some of these have with three PC dial-up setup and others have dozens of computers with high speed leased lines. But it is rare to see local people in these cafes, kiosks and centers. Why? At around 1-2 US dollars per hour for Internet access is mostly beyond reach for most. But the one-minute it might cost them to send an email (Rp. 500) is four times less than what it would cost them to call from Bali to Jakarta (Rp. 2000).

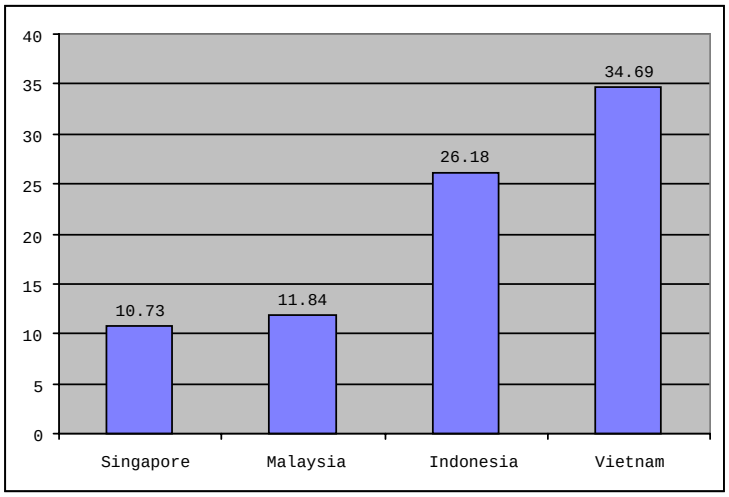
As many experts in the field can testify, most Indonesian are not aware what the Internet can do for them or what they can do with the Internet (I2BC, 2001: 126). While local content is growing (see I2BC, 2001:179-187, covering from Arts, Industry and News Media) but it is rather small and narrowly focused for a country of Indonesia's size. It is only in May 2003 that the US giant Microsoft released its standardized language interface package including a spell-checker for Microsoft Windows XP/Office 2003 (Bisnis Indonesia, 1/5/2003:T2).

I2BC survey further characterized Indonesia as a market that has entered an emerging market stage and by using the Forrester segmentation model they provide a segmentation of the Internet market according to frequency of use: light, medium and heavy user categories. First, with the light users: i) "Media Junky" Teenagers (15-20 years olds) from high income families (10% of the total); ii) "Gadget-Grabbers or Young (20-30 years olds) Socialites" (24.7% of the total) who use the Internet for social communications. Second, the medium users: i) Traditional upper middle class (aged 26-35 year olds) are displaying mild enthusiasm towards technological gadgets (9.3% of the total); ii) 'Digital Hopefuls Technofamily" members (36% of the total) from

the same age group but displaying more enthusiasm towards new techno-gadgets to support their work and social life; Finally, the Heavy Users with strong career orientation: i) "Heavy-Business Movers and Shakers" (5.7% of the total) are in their prime working life age (ranging between 36-55 years old); and ii) "Techno-strivers Young Exec Types" (13.7% of the total) who project the most enthusiastic early adopter behavior towards any new gadget or technology that comes along. They are mostly young (over 30 and below 55 years old) and are members of professional or executive organizations and eager to be seen as progressive.

While the Internet use discussed above mainly depicts urban use, there is another side of Internet growth that has been primarily grass-roots driven. One distinctive aspect to the Indonesian ICT scene is that the majority of Internet users (over 75%) employ office computer or Internet rental stations or kiosks (known as "Warnet") to gain access in order to minimize costs (I2BC 2001: 161). There are around 2,500 of these Warnets around the country, operated by private entrepreneurs. They have assisted the growth of access or those that cannot afford individual access. Another survey conducted in early May 2001 suggest that over half of Indonesia's Internet users access the Internet from a Warnet (ITU: 2002: 13). By regional standards and by comparing its low levels of income, Indonesia's Internet pricing is relatively high compared to its neighbors (See Figure 3).

Figure 3: Internet dial-up tariffs (30 hours per month, US$)



Source: International Telecommunications Union (2002: 11).

The existence of Internet kiosks or Warnet in Indonesia is significantly important to the SME exporters. Anecdotal evidence and two surveys of SME use of ICTs suggest that the smaller turnover SME exporters, SME traders, and the non-direct exporter SME, are among the users of Warnet to communicate with their buyers or business partners. The section below will describe the current usage pattern and which potential benefits of the Internet and e-commerce by SMEs in Indonesia and which ones not, and why. The paper will also identify barriers to greater use of Internet and e-commerce by SMEs.

(2) Small Business Internet Use, Benefits and Challenges

In a survey of 227 companies (50:50 small - 5-25 employees and medium - 26-3000 employees) conducted by the Asia Foundation and CastleAsia Group (2002), 153 companies (or 67%) turns out to have used the Internet, most (41%) started within 1-2 years prior the survey and are maintaining strong growth with 20% joined in the last year.[4] Internet access is slow with 93% of user using dial-up connections but other connections (Cable - 2%, Leased line - 1%, Satellite - 1%, Wireless - 1% and others - 2%) because they are not available or are too expensive. Of all companies surveyed 86% use Internet to access E-mail (90% with buyers and 48% with suppliers).

The sample of companies that were surveyed consisted mainly from manufacturing sector (51%), distribution and trade (20%). Hotel and tourism (11%), Telecom/IT (6%), Business Service (6%) and others (6) accounted for small portions. The ratio of small to medium-sized companies was 45:55.

For SMEs in Export Manufacturing ("The Main Internet Users"), the Net is regarded as highly important with their regular meetings at trade shows and they use email to communicate to effectively cut costs of communications. Domestic manufacturing firms ("Prospective Users") appear to regard the Net as less important perhaps because many suppliers and buyers are not online and therefore companies still prefer facsimile communications. All users use the Internet for communications due to overseas buyers (100%), some for research (25%), promotion (23%), following trend set by competitors (16%), as a business requirement (13%). Only a minority appears are using the Internet to satisfy customers (9%), following the requirements of a donor program (6%) and wanting to engage in e-commerce (3%) and other reasons (5%).[5]

The first group of companies that utilizes the Net a great deal has been Tourism related firms who receive emails from repeat clients or inquiries to their listings on websites or e-commerce portals. While on the whole SME usage of the Internet is encouraging particularly for export-oriented SMEs, the high risk of on-line payment transaction fees, regulatory and market factors make the use of ICTs by domestic oriented SMEs still low and there are far few successful models than the former category.

Buyers often play a very important role. In industries ranging from agricultural products to furniture and handicrafts, overseas buyers drive the development process by placing demands on their suppliers to overcome internal constraints and join effectively in the global on-line supply chain. The main reasons for this is that it is in the interest of these (mainly) foreign buyers to purchase as close as possible to the production source to get cheaper prices as well as exercise more control over product design, quality and delivery performance. In order to obtain better output at lower costs, buyers and their agents often invest substantial resource to educate and support SMEs in Indonesia.

---

[4] The Asia Fundation study is based on a survey in 12 cities on Java, Sumatra, Sulawesi, Kalimantan and West Nusa Tenggara (Bali and Lombok) conducted between August and November 2001.

[5] The donor program is called Technical Assistance Training Program (TATP) of the Information Infrastructure Development Program from the World Bank assists SMEs to make better use of the Internet by assigning them with local ISPs.

The island Bali again stands out as an example where buyers are drivers of change as producers of garments, handicrafts and jewelry have been particularly skillful at incorporating new design features assigned by buyers. Consequently, Bali has become a key buying location for both small and large-scale international buying retail companies notwithstanding the security risks after the bombing incident of October 12, 2002.

On on-line B2B sourcing, it appears that there is still a limited e-mail use but this is growing and due to the problems cited above, the preference for settling payment and contracts is still through facsimile. There are two location that stands out as more intensive users of e-commerce: Bali with its large number of foreign expatriate entrepreneurs in tourism and large retail buying; and Jogjakarta with its important role of large trading companies (one outstanding success is "Out of Asia" based in the latter city). The majority (61%) of traditional companies surveyed are non-users and are mostly (60%) are small sized companies that do not even have computers or phones (34%) and hence most still can not see the benefit of using the Internet as most of their managers have limited education and experience. They also tend to have internal product management, design, finance and service difficulties.

SMEs in Bali in many ways are a probably the most effective users of the Internet as their buyers drive the performance of SMEs in the travel industry. On-line travel Internet companies (such as Indo.com and BaliParadise.com) played a strong supporting role, particularly for small-scale hotel that previously lacked international marketing capabilities. They provide a service by taking on-line order for a small commission and book thousands of room nights every month, mostly for small-scale hotels with room rates of less than Rp. 100,000 a night. The benefits are visible with occupancy rates increased from 20% to 90% in some cases and may small scale hotels now are in collaboration arrangement with on-line booking companies. After the recent Bali bombing incident, Indo.com was able to obtain funding from USAID to conduct promotion of the concept of on-line selling for 400 SMEs in its portal Rajacraft.com.

The Internet sometimes spawned new industries. In Bali, an on-line property company started by an expatriate to rent villas on the island led to many local counterparts setting up their own service creating a new industry. Likewise, an on-line wedding organizer also founded by an expatriate, resulted in the setting up of no less than five local competitors.

Barriers to Internet Usage

Turning to the barriers to improved usage of the Internet, the CastleAsia study suggest that there are generally two categories of barriers:

First, internal to the SMEs:

- **Management-related skills**: The users of Internet tend to by backed by solid internal management while those who claim to be prospective users are constrained by more fundamental issues such as production management, financing and accounting, product development and marketing.

- **English and Internet Etiquette**: These weaknesses of many Internet users result in poor response time to email which is essential to the smooth running of business. Internet service

providers and buyers often suggest that poor English as evidenced in emails and on websites combined with the slow response time on the whole adversely affect potential clients. While better local Indonesian content on websites might provide better dissemination of commercial opportunities, however, there is still the need to communicate with buyers abroad in English.

- **Computers and Costs of Access**: There is a clear dichotomy between type of Internet users who are frequent users and non-users. The first group considers computer skills easy to acquire and that, even though relatively expensive, the cost of computer equipment and Internet usage was reasonable particularly when compared to the benefits they received. Nevertheless, non-users appear to regard computer costs, difficulty in acquiring skills and cost of access as barriers to future usage. Since there is low teledensity and a large number of SMEs are of the Traditional type then these cost concerns should be linked to the need to improve the poor state of Indonesian telecommunication infrastructure.

Second, external to SMEs:

- **International Perception of Security and Safety in Indonesia**: This is an overwhelming concern to SMEs. Most of the 227 SMEs interviewed say that various security breaches in Indonesia during 2000-2001 have a direct impact on their sales. While there were no indications if the Internet could serve as a tool to somehow bypass security concerns, particularly since many SMEs rely on direct visits from buyers at the early stage of the transaction process. Recent efforts by Indo.com, Rajacraft.com and others since January 2003 to regenerate tourist visits and re-ordering of goods is too early to indicate results. Nevertheless, the aftermath of the recent Iraq war and SARS virus scare could have a negative impact on SME sales in Indonesia.

- **Educational Issues and Poor IT support issues**: There is little doubt that those SMEs that the more traditional non-users (who had no interest in the Internet) often lack entrepreneurial drive to expand their businesses, don't create products suitable to changing market demands and don't market their products on and off-line as do the more successful SMEs. The lack of such skills in the traditional-style SMEs suggest the need for improving the public school curriculum and teaching methods of privately run business training programs especially outside Java and Bali.

- **Lack of Telephone Lines, Poor Access, Limited and Poor Service**: As reported in the CastleAsia survey in 2002, in each of the 12 cities there has been a standstill on the installation of new telephone lines. In large towns such as Denpasar, Jogjakarta and Surabaya as well as in isolated areas such as outskirts of towns, there are difficulties in obtaining new lines. The main barrier to increasing the number of new phone lines is the continued effective monopoly of PT Telkom and the failure to resolve the on-going disputes with Telkom's foreign investment partners (KSO's). These partners have installed most of the recent telephones lines. Further discussions below on the development of telecommunications and IT infrastructure below will reveal that the lack of improvement in the regulatory environment and a recent effective "re-monopolization" by PT Telkom is directly related to the poor management by the regulators.

- **Poor Quality of ISPs**: According to the surveyed SMEs, ISPs offered poor service because of the inadequate quality of telephone lines and the long distance network, limited bandwidth and access numbers and poor support capabilities of ISPs. Greater competition in fixed and leased line provision (dominated by PT Telkom and PT Aplikasinusa Lintasarta - a subsidiary of PT Indosat, the second incumbent) could lower ISP costs and improved services.

- **Telkom/Indosat Monopoly: a Potential Threat**

  The technical implementation of the Telecommunication Law No. 39/1999 began since August 2002 when both incumbents PT Telkom and PT Indosat were allowed to compete in both the domestic and international communications markets.

  As will be detailed below, PT Telkom did not only commenced with an enormous advantage as it controlled almost all the telephone lines in the country but it also is the largest player in the ISP market. Therefore, it is critical that the Government as regulators ensures that both incumbents do not dominate the ISP market at the expense of retail customers and SMEs by applying the Anti-Competition Law (1999) to state-owned companies such as PT Telkom or that it regulates competition through an independent telecommunications regulatory body. The Government should also open up the market for international access so that charges on international bandwidth are reduced to the benefit of retail customers and SMEs.

Impact of Regional Autonomy towards Business Climate and Internet Use

Prior to discussing Indonesian telecommunication infrastructure, there is another source of external barrier to greater and effective use by SMEs and retail customers who come from the impact of Regional Autonomy Bill (UU no. 22 and 25, Jan. 2000).

Another study "Survey on Uses of ICT by Indonesia SME Exporters" (PEG 2001) which surveyed 417 SMEs in eight cities also looked at the impact of regional autonomy.

First, some background of the sample where 85.5% of respondents have used computer to support their business activities while the rest (14.5%) are non-users. Of the total, only 60% of SME exporters used the Internet for business administration, 20% stated that the computers are used for management purposes only and 4.1% for correspondence only. Furthermore, only 31.2% of respondents used local area network (LAN) while the remaining 57.3% used stand-alone computers. Only 22.5% of SME exporters indicated that they use special phone lines to access the Internet and 28.8 % used the phone line to access the Net and fax machine, while the remaining 22.8% used the phone line for all purpose of communications (telephone, fax and Internet).

Of the total of 417 SMEs, most are in the industry/manufacture industry (51.8%), followed by trading business (38.3%), agriculture industry (9.1%) and miscellaneous (0.7%). And of the 412 respondents, 75.2% classify themselves as direct exports while the remaining SMEs (24.8%) are supplying exporting companies (indirect exporters).

Geographic location of SMEs, particularly when they are outside Java and Bali such as Medan, Bandar Lampung and Makassar play a significant role. Most of non-Java SMEs have a lower computer and Internet usage compared to the other 5 cities in Java. The determining factor is again the availability of infrastructure and facilities such as: availability and quality of phone line in the area; number of computer and phone line owned by the SME exporter; and, the availability of ISP in the area.

One area in which the PEG study provided interesting results in the area of effective SME use of government information on the Internet is that to date of the survey in September 2001, most government web pages are not shown to be effective tools for disseminating information on government program or new regulation set by the government. Only small portion (7.3%) of SME exporters ever visited the websites of the export promotion agency (BPEN) and Ministry of Trade and Industry (Depperindag) and obtain their information by direct visit to the government office or through their business partner. Most SME exporters were mostly interested in market search through the website rather than visiting government websites.

On the impact of the implementation of the Regional Autonomy Bill at that time, most SMEs (65%) indicated that the new regional regulations (Perda) had no direct impact to their business activities but significant numbers indicate that these regulations is mildly affecting their business activities (33%) and some others (16%) indicated that they strongly adversely affect their business activities such the business climate has become no longer conducive.

Of those that are adversely affected by the Perda, both SME trading company and the bigger turnover SMEs claim that the business is getting worse since the implementation of regional autonomy as their cost of business have significantly increased due to the Perda issued by the regional government. SME exporters in Lampung, Medan and Makassar also expressed their dismay regarding new problems arising from uncertainties whether to implement the new regional regulations or the old central regulations.

Four impediments to a conducive business climate for SME exporters are specifically relevant in the regions outside Java according to the PEG survey:

(i) For foreign SME exporters in Jogjakarta and Makassar, the condition of regional telecommunication infrastructure and facilities.
(ii) For joint venture and trading SME exporters in Medan and Bandar Lampung, the lack of competency of regional government officials in assuming their increased responsibilities.
(iii) For indirect exporters in Bandar Lampung and Medan, the attitude of these officials is not supportive to business.
(iv) For SME exporters in Makassar and Medan, the central government were reluctant to transfer the authority to the local government

As a result of high local taxes, levies and high cost to obtain local business permit, production costs rise and SME exporters are less able to spend their disposal income on computers and the Internet. In addition, foreign SME exporters are also faced with international non-tariff barriers due to high quality standards set by developed importing countries. Nevertheless, on the upside, in some regional governments have established "One-Stop" Service offices. While only 31% of Exporting SMEs indicated that such offices have assisted them in obtaining business permit and

42% of these SMEs were neither aware or regard them as inadequate, the mere existence of some can be seen as breakthrough in providing better services to the SME business community. In some exceptional cases such as in East Kutai regency, there are indications that the local government is taking a pro-active approach in using the Internet and ICTs media as a direct information center. It is reported recently that in this mineral rich regency, it takes a mere 36 minutes to obtain an investment licensing approval from its "One-Stop" Service office (Investor, 5 April 2003).

To sum up both the Asia Foundation and PEG studies indicate that SME use of computers and the Internet have enable them to get most closer to the market and SME Internet usage is promising particularly amongst export-oriented SMEs in Java and Bali.
Despite well-known benefits, Indonesian SMEs face significant barriers to greater and more effective ICT usage resulting from other factors internal and external to the firm. They range from a lack of management related skills, lack of English and Internet Etiquette, security perceptions about Indonesia, educational issues, poor IT and managerial support services, poor quality of ISPs lack of local content, the weak investment climate, poor telecommunications infrastructure and an overall lack of Internet skills and understanding the potential benefits of ICTs.

The ability to pay and the associated high relative cost of computers, telecommunications and access to Internet services is the main barrier for the ICT access for SME exporter. The high cost of access relates directly to the effective Telkom/Indosat monopoly despite the implementation of opening of competition in both the domestic and international communications market for the two incumbents.

PT Telkom has a particularly advantageous position in the ISP market as it gaining an ever greater market share (more than half as at January 2003, see below) as it is able to offer combined ISP billing with its telephone service . With its "TelkomNet Instan" service, it is the first company to offer combined Internet/telephone pulse rate without a monthly subscription fee at a rate which is cheaper than the other ISPs for low volume users who access the Internet for less than 15 hours a month. These services have placed an enormous competitive pressure on other Indonesian ISPs, prior the added burden to the loss of their VoIP revenue. Therefore, to further understand the extent and nature of the Internet use in Indonesia it is necessary to take a closer look at the ISPs and their activities.

III. ISP INDUSTRY, INTERNET DIFFUSION AND THEIR IMPEDIMENTS

In Indonesia, ISPs play a pivotal role in the diffusion of the Internet and in raising the public awareness of the potential of ICTs particularly in the regional cities and town. As at January 2003, according to the ISP Association (APJII) the estimated number of Internet users reached 4.5 million (or 2.1% of the total population assuming a population of 215 million) and registered ISP subscribers of 583,861 (less than 1% of total population, BI 24/1/2003). Of the total number of subscribers, 544,272 (93%) are domestic subscribers while the remaining 39,583 (or 7%) are from the corporate sector.

The estimated number of Internet ISP subscribers stands at 583,861 at the end of 2002 according to the ISP Association (BI 24/1/03). Of the total number of subscribers, 544,272 (93%) are domestic and other subscribers while the remaining 39,583 (or 7%) are from the corporate sector. While the growth of total fixed telephone lines owned by both categories have reached 7.807 lines (see Table 5), the growth will come mainly from use of the new fixed wireless CDMA technology (which are enabled with SMS service) rather than from PSTN telephones. Nevertheless, it is rather curious that the data from PT Telkom shows that the projected growth will decline after 2003.

Table 5 Total Fixed-lines owned (in millions of lines), 2002-2005

Type of Lines	2002	2003*	2004*	2005*
Existing Fixed line telephones (PSTN)	7.514	7.514	7.514	7.514
CDMA	0.293	1.063	1.610	1.886
% growth		263%	51%	17%
PSTN		0.368	0.669	1.063
% growth			82%	59%
Total	7.807	8.945	9.793	10.463
% growth		15%	9%	7%

Note: CDMA - Code Division Multiplier Access for the new fixed wireless phones; PSTN - Public Switched Telephone Network; Source: Data from PT Telkom.

The growth of CDMA fixed-wireless subscribers will be greater than fixed wire-line PSTN connections primarily due to the planned large-scale introduction of CDMA technology in 2003. The sole incumbent CDMA operator, PT Komselindo (also a PT Telkom subsidiary) only had a relatively small subscriber base in 2003.

Table 6 Estimated subscribers and users of Internet, 1998-2003

Year	Subscribers (% increase)	Users (% increase)
1998	134,000	512,000
1999	256,000	1,000,000
	91%	95%
2000	400,000	1,900,000
	56%	90%
2001	581,000	4,200,000
	45%	121%
2002	662,007	4,500,000
	13%	7%
2003*	800,000	7,550,000
	22%	68%

Note: *As estimated by Indonesian ISP Association (APJII), February 2003 see Table 10 below.

The growth of Internet subscribers in 2002 appear to be slower than previous year partly due to the difficult economic conditions and less active promotional campaigns by the ISPs than in previous years. Since May 1999, the Indonesia ISP Association (APJII) have been actively coordinating Internet awareness campaign in schools with the School 2000 Program which is basically aimed at introducing the use of the Internet to schools with the assistance from the Department of National Education. According to APJII at that time, only 113 schools have their own websites and that by year 2000, the Program reach the target of having more than 2000 schools will have their own homepage with their own domain names. As APJII managed to secure discounts from its ISP members for subscriptions from over 2000 schools but was less successful in getting them to establish websites. In 2002, there are 647 "sch.id" registered domain names for schools (see Table 7).

The growth of Internet's content in a particular country is not easy to measure. Often websites that do not register using the country domain name or follow naming conventions. There is also a wide variation in the volume of content and quality of different websites. For example, there are many universities who do not use "ac.id" names, or government agencies that do not use "go.id" names and that some websites do have a large number of web pages with useful information and others are merely one or two pages. Notwithstanding the measurement difficulties, the growth of different types of ICT content and hence their impact on different segment of society can be approximated by examining the growth of the registration of different domain names types.

In 2002, there was a 26% increase in the number of ".id" domain names to reach 15,588 names according to the statistics collected by the Indonesia Network Information Center (IDNIC). However, there is a decline in growth compared to the growth achieved in year 2001 (39%). The number of registrations recorded in 2002 was also lower than that in year 2000 which peaked at 4,229 names (see Table 7 below). Nevertheless, the growth in 2002 is relatively highest with the registration of ".or.id" (for organizations), then "ac.id" (companies) tie with "web.id" (general websites) and ".go.id" (for government agencies) recorded new domain names.

The explosive growth (213%) in the number of government registration from 74 in 2001 to 232 in 2002 reflected the greater income available to regional government (regency and provincial websites which can be accessed from www.indonesia.go.id) since the passing of the Regional Autonomy Bill in January 2001. The Government through the Ministry of Communications and Information also conducted a nationwide public awareness campaign to promote "E-Government" in the outer island regions. Notwithstanding of some improvements in the general economic situation in Indonesia since 2001, the number of newly registered websites appears to have been in decline since the year 2000.

Table 7: Statistics for Various Types of Domain Names Registration in Indonesia

Domain	2001	2002 (% increase)	Number of newly registered websites	".id" names (Year on Year in/de-crease)
Co.id	7,508	9,183 (22%)	1995	87
Or.id	2,035	2,796 (37%)	1996	240 (275%)
Web.id	1,520	1,945 (28%)	1997	718 (299%)
Sch.id	599	647 (8%)	1998	1,480 (206%)
Ac.id	383	489 (28%)	1999	2,150 (145%)
Go.id	74	232 (213%)	2000	4,229 (197%)
Net.id	169	184 (9%)	2001	3,488 (-82%)
War.net.id	78	102 (31%)	2002	3,196 (-91%)
Mil.id	6	8 (33%)		
			Total number of Websites	15,588
.id	12,392	15,588 (26%)		

Source: IDNIC, Business Indonesia 7/1/2003.

The composition of the distribution of estimated number of Internet users has reached an estimated 4.5 million and ISP paying subscribers exactly at 583,861 at the end of 2002 reveals a different trend between the corporate subscribers and those that subscribe the Internet from their residents and others.[6] The corporate growth rate has been much higher than the latter showing a significantly higher growth from 2000 until 2002 (see Table 8). There is some reason for the optimism of the even higher increase for year 2003 due to the fact that there are improvements in quality of access. The measured Internet traffic, as indicated by Multi Router Traffic Graph (MRTG) reports, is growing rapidly. In the first quarter of 2003, some peak traffic has reached the capacity of 260 Mbps, which is higher than the average in 2002 (see Table 10). This is evidently due to the fact that more companies who previously use dial-up facilities are signing up for leased line with 128 Kbps or higher and, in 2003, according to APJII sources, there is every indication that the demand for Internet services from the corporate sector is increasing.

Table 8 Residential and Corporation Subscribers, 2000-2003

Subscribers	2000	2001	2002	2003*
Corporate	18,000	29,050	39,934	100,000
(% growth)		61%	37%	150%
Residential and others	382,000	551,950	622,073	700,000
(% growth)		44%	13%	13%
Total	400,000	581,000	662,007	800,000

Note: * Estimates by ISP Association (see below), February 2003

[6] There is generally a distinction made between subscribers who actually pays for their Internet access accounts through ISPs and Internet users who access the Internet using either private, institutional, company or public access.

The growth of users who are accessing from various points such as homes, Internet kiosks, universities and office connections can be estimated by multiplying the assumed average number of users for each category with the number of subscribers in that category (see Table 9). As a result of the multiplication, the distribution of users from each category from a total of 800,000 can be estimated to obtain the approximate total number of 7,550,000 users for 2003. Hence, the estimated number of Internet users for year 2003 appears to be significantly higher than the previous two years of 4.5 million in 2002 and 4.2 million in 2001 (see Table 6).

Table 9 Estimation of Residential, Internet Kiosks (Warnet), Schools, Large, Medium & Small Enterprises and Other Users, 2000-2003

	Subscriber estimates for 2003	Assumptions of no. of users for each PC	Users Estimates For 2003
Residential	700,000	4	2,800,000
Warnet	400,000	100	4,000,000
School	600,000	100	6,000,000
Large Firms	10,000	100	1,000,000
Medium Co	25,000	50	1,250,000
Small Co	50,000	20	1,000,000
Gov't Agencies, NGOs	5,000	100	500,000
	800,000		7,550,000

Source: ISP Association (APJII), Jan. 2003

According to the Top-Level Domain administrator's data, there was a slowing down of additional new Internet domain names in 2001 following the global IT recession which resulted in the decline in the number of dotcom businesses in 2000 and 2001. Turning to the number of Internet Protocol (IP) address numbers that have been allocated, there appear to be a significant rise particularly in the recent years. This trend can be attributed to the more intensive use of the Internet by corporate sector.

Table 10 Registered ID-Top Level Domain, 1998-2002

	New Domain	Total Domains	Accumulative IP Numbers (in block)	Average MRTG (in MBps)
1998	1.480	2.526	-	
1999	2.153	4.679	256	2.05
2000	4.239	8.918	1,072	3.07
2001	3.945	12.413	1,553	40.96
2002	3.534	15.947	2.455	245.760

Source: www.idnic.net.id provided by ISP Association (APJII), Jan. 2003

Another evidence to suggest increased activity of the corporate sector comes from the high growth in the Internet traffic as recorded in the Multi Router Traffic Graph (MRTG) reports

which is provided by the Administrator of the Indonesia Internet Exchange (IIX). The recent increase in Internet traffic, which was exceptionally high, can be attributed to the increased used of leased lines (around 5500 additional lines) by the corporate sector. Their widening use of Internet required more bandwidth capacity due to more intense use of file exchange protocols and other high capacity use.

Various Internet users often noted that ISPs offered inadequate service because of the poor quality of telephone lines and the long distance network, limited bandwidth and access numbers and substandard support capabilities. On the other hand, ISPs maintain that high operational costs combined with low revenues have made it difficult for them to maintain sustainable profits.

Since 1999 to date, there is always a gap between number of licenses provided and the actual number of operational ISPs. Increasingly more licensed ISP operators are not operational in 2003. There are various reasons that led to the decline in the number of operating ISPs. The financial difficulties resulting from the high operational costs combined with low revenues. However, most of their difficulties comes from the fact that they have been facing increasing competition from the telecommunications incumbent PT Telkom particularly since 2001 relating to VoIP, TelkomNet Instan and other issues.

Table 11 Licensed ICT service providers, 1999-2002

	1999	2000	2001	2002
ISP	50	139	172	180
NAP	-	5	16	18
Multimedia	8	18	24	24

Table 12 Operational ISP members with IIX connections, 1999-2002

	1999	2000	2001	2002
ISP	41	78	115	135
NAP	35	63	82	90
Multimedia	12	24	49	70

Note: * denote Wireless LAN operators, Internet license for education and research (Ipteknet, Min. Research & Technology & TelkomNet); Source: ISP Association, 2003 and Directorate General of Post & Telecommunications, Ministry of Communications and Transport, 2003. Note: Network Access Point (NAP) and multimedia operators are included.

Today we live in the age of technological convergence of IT and telecommunications, which promise to provide traditionally separate services such as voice and data over a single network. Besides email and World Wide Web, Internet Protocol (IP) allows for the creation of virtual private networks and networks of IP based telephony (Voice over IP, VoIP) on top of this infrastructure.[7] An IP-based backbone network offers an inexpensive medium for all forms of communications, but such convergence goes well beyond cost savings. It turns the mere transport of bits into a commodity, allowing for the development of new and exciting value-added services such as desktop video-conferencing, unified massaging and other applications to be imagined.

[7] VoIP calls on average could be 40-80% cheaper than conventional inter-city or international calls.

IV. CASE STUDY: RE-MONOPOLIZATION OF ICT BY THE INCUMBENT PT TELKOM

In this section several issues will used to illustrate briefly that, due to unimpressive regulators, there has been a re-monopolization rather an effective opening up the market for a range of ICT services.

VoIP - Initial competition and then clamped down

Recent developments with the use Voice over Internet (VoIP) telephony facilities telecommunications industry is transforming competition in the telecommunications industry.

The innovation of the Internet technology relating to VoIP which can offer cheaper telephone calls than the inter-state as well as international call services changed the dynamics of competition in the telecommunications industry. While the sound quality may not be a superior (because of delays) compared to the conventional switching base lines, VoIP business has attracted a large number ISPs. As a result of greater popularity of the low cost of VoIP calls, according to APJII's data, there were 100 ISPs who were engaged in VoIP business in 2000. By 2001, the number of such ISPs grew to 120.

However, there was a sharp decline in the number ISPs involving in VoIP as a result of the degree from the Ministry of Communications (KM 21) in 2001. This Decree tries to regulate the number of VoIP operators; many ISP who had such their VoIP facility equipment confiscated and directors were arrested in 2002. At the same time 5 VoIP operators were given their one-step dialling licenses and only 12 operators obtained their two-step dialling licenses.[8] Since 2002 PT Telkom has also offer its VoIP service after obtaining a loan of Rp. 1.06 trillion for the development of VoIP, cellular and multimedia businesses (BI 4/2/03).

Recent reports suggest that the Government through the Directorate General of Post and Telecommunications (DGPT) will no longer issue additional VoIP licenses denying rumors that a new license might be offered to PT Excelcomindo, a cellular telephone operator with 1.8 million subscribers (BI 28/3/03). At the same time, PT Telkom is reported to obtain Rp. 50.6 billion - an increase of 1,716% in their VoIP revenue in the first quarter of 2003 compared to the same period last year (BI 1/5/2003). This well illustrates that PT Telkom's attempt in unfairly stifling competition has paid handsome returns.

"TelkomNet Instan" Service Vs. other Internet Access

One of the main challenges facing Indonesia's ISPs is the over-dominance of the telecommunications incumbent PT Telkom which now controls its own ISP service TelkomInstan and AstiNet which captures 56.34% of the market. This is the only service available to customers directly from any telephone lines without any formal subscription

[8] The one-step dialing is when one uses a particular network using a set of three numbers and then the full number of the call destination. For example, PT Telkom has been awarded the number "017" for its customers to use when calling using its one-step VoIP facilities with a 40% discount from its standard international calls service "007". At the same time, PT Telkom has also secured the number "01717" for two-step dialing where customers can obtain up to 85% discounts for calling after they input a PIN number after accessing using this facility.

requirement. The market for the remaining 43% of subscribers is shared by dozens of ISPs. A recent report suggests that the TelkomNet Instan service is contributing Rp. 92 billion for the first quarter of 2003 - a rise of 51% compared to the previous year.

Many observers suggest that the ISP service of PT Telkom should be separated from PT Telkom's main voice telephony operations so that ISPs can face a fairer competition.[9] (Investor, 26/2/2003).

Telephone tariffs and the seven issues including the Independent Regulatory Body

There are clear indications that Indonesia's teledensity and Internet subscribers' penetration is falling behind many of its neighboring countries (Table 15). The teledensity per 100 inhabitants is at 3.25% a long way behind Malaysia at 20.1%, Thailand at 8.8% and even Vietnam at 5.3%. It is estimated also that there are around 30 million people in Indonesia who obtain telephone access through Phone Kiosks (Wartels) or around 14 percent of the total population. According to PT Telkom sources, there are 44,000 or 75% of remotely located villages in Indonesia that have yet to obtain a single fixed telephone line (Investor, 26/2/03: 8).

The poor state of Indonesian telecommunications infrastructure and the need to improve line access and quality while lowering the price of bandwidth. Such a situation will only occur if the government opens the market and creates a market operating structure that is conducive to fair competition. Until this is realized, there will be little new line capacity without significant foreign investment.

Table 13: Comparison of Telephone Tariff, ASEAN

Country	Local Tariff (US$/3 minute)	Long distance Tariff/SLJJ 180-300 Km (USD/1 minute)	Monthly Subscription	Tele-density*	Internet subscrip-tion percent-age*
Brunei	Free of Charge	0.200	25.00		-
Indonesia existing	**0.022**	**0.181**	**3.10**	**3.25**	**1.9%**
Indonesia proposed	**0.029**	**0.174**	**4.08**		
Malaysia	0.032	0.274	7.90	20.1%	17%
Philippines	0.156	0.061	5.10	4.02%	2.5%
Singapore	0.023	0.448	7.00	77%	50.8%
Thailand[1]	0.069	0.300	2.30	8.8 %	2.0%
Viet Nam	0.125	0.088	-	5.3%	2.1%
Hong Kong	Free of Charge	Free of Charge	1.51	73%	49%

[9] In Indonesia, currently two Internet dial-up options are available. One is PT Telkom's ISP, TelkomNET which offers Telkominstan service that has a nationwide dial number and charges Rp 160 per minute (about 1.3 US cents). The amount includes the telephone usage charge is relatively higher than what regular ISP charges. The other model is a regular ISP plan to which telephone usage charges apply.

Source: PT Telkom, as quoted in Investor (February 26- March 10, 2002) * Steinour (2003).
Note:
1. Local tariff in Thailand is counted by the number of calls
2. Hong Kong applies monthly charges of US$ 13.95 and with an area of 1074 sq km, no long distance charges applies.
3. Monthly charges levied by PT Telkom are on average around US$ 3.1 with a total coverage area of 1.9 million sq km such that long distance calls can cover over 2000 Km.

In the mid-1990's, the government and the two incumbent operators, PT Telkom and PT Indosat realised that they are not capable of providing the funds needed and invited the participation of foreign investors who, in turn, invested in joint operating schemes or KSOs. Unfortunately, these partnerships all but one remaining for the Kalimantan and East Indonesia (PT SingTel Bukaka), have collapsed with the economic crisis and currency depreciation which began in August 1997. As a result of insufficient funds due to low Rupiah revenue payment and high US dollar costs, the foreign partners have been unable to sustain profitability. On-going disputes with PT Telkom regarding the value of their respective investment in Telkom's buy-back scheme resulted in the exodus of all KSO partners with the one exception of PT SingTel Bukaka.

Local or foreign investment in fixed landlines will not take place until telephone rates are increased. As can be seen from Table 13, Indonesia's telephone rats are among the lowest of all the Asian developing countries. This is largely due to the Rupiah depreciation with saw the currency plummet from a rate of Rp 2,500 to the dollar in August 1997 to the level of over Rp 10,000 in 2001 and now around Rp. 8,800. Meanwhile, telephone rates have only increase 87% in Rupiah terms. Therefore, at the current levels, telephone charges would not support any new investment in additional line capacity.

It is worth noting that, from both the results of Asia Foundation and PEG Project survey of SMEs, many of SMEs interviewed considered that the amounts they paid for telephone and ISP charges combined to be reasonable. Hence, it appears that there is sufficient buying power, at least among export-oriented SMEs, to pay more to assist the development of new line capacity.

In November 2001, the Government and the Parliament (DPR) agreed on a plan to raise telephone tariff that was predicated on seven prerequisites to be carried out during the period 2002-2004. Under the agreement, PT Telkom was given a target of 1.2 new fixed lines to be built during this period and an overall 45.49% price increase in the three year period was scheduled.

Table 14: Seven Prerequisites for Telephone Tariff Increase set by Parliament, 2001

Prerequisite	**Executing Agency**	**Realization**
Tariff rebalancing concept implementation	Telkom	Done
Public Awareness	Telkom	Not yet
Independent Regulatory Body (IRB)	Government	Not yet
Alternative telecommunications facilities	Telkom	In Process
Improvement in service quality	Telkom	In Process
Improvement in management efficiency	Telkom	In Process
Universal service obligation	Government	Not yet

Source: PT Telkom, as quoted in Investor (February 26- March 10, 2002)

At the time of writing (May 2003), the 15% telephone tariff that was to be implemented in 1 January 2003 was yet to be realized due to popular opposition. The unfortunate timing of this increase which was proposed as part of the "triple" tariff increases (together with rises in electricity and water provision charges) ensured its delay. The aborted tariff rise was to follow the previous tariff increases of 15% each in 2001 and 2001. And, only one of the seven prerequisites namely the application of telephone tariff rebalancing was implemented while the rest of the measures which according to PT Telkom and the Government sources are still to be implemented. However, neither party has provided a clear timetable of when these measures are to be implemented.

Table 15: Development of Fixed Lines (SST) in 5 Years, 1997-2001

Fixed lines	1997	1998	1999	2000	2001
- Installed lines	6,523,724	7,197,099	7,429,262	7,668,077	8,055,306
- Subscriber lines	4,815,742	5,354,993	5,810,951	6,317,298	6,836,274
- Public Phones inc. Kiosks (Wartel)	166,724	216,651	269,242	345,307	382,664
- Total lines utilized	4,982,466	5,571,644	6,080,193	6,662,605	7,218,938
- Density (paid subscribers per 100 citizens)	2.47	2.73	2.93	3.07	3.25

Source: PT Telkom, as quoted in Investor (February 26- March 10, 2002)

Given the above situation illustrate clearly that the DGPT as the regulator and PT Telkom as the state-owned enterprise have been rather slow to implement the agreed structural changes to improve the business climate. The above part performance of PT Telkom in improving the tele-density (see Table 15 above) in Indonesia during 1999-2001 (at a rate of less than 1% per annum) might not bode well for future expansion of telephone lines.

In addition, the overview of the VoIP market and Internet access provided above also suggest that the regulators are not doing their utmost to improve the situation. Despite of Indonesia's commitment to IMF Letter of Intent (signed in September 2000), an a number of international agreements under AFTA, APEC and WTO, the realization to establish an truly independent regulatory body seems still some time to come. Critics maintain that there are now other serious disputes not only retarding VoIP and Internet Access but also regarding the blocking of access for PT Indosat's international lines by PT Telkom (BI 13/3/05), cellular telephone tariff setting and other issues.[10] As a result, notwithstanding the opening of local and international line network, some commentators maintain that a "re-monopolization" process is taking place since the collapse of KSO joint ventures rather an effective opening up the market for a range of ICT services since the implementation of the 1999 Telecommunication Law No.36 (Sinar Harapan 3/5/03:p.3; Bisnis Indonesia 14/1/03:p.T2, 1/4/03:p.T2). Without fair competition ensured by an independent regulatory body, one newspaper has decried the current situation as "without restraint, the current competition in the telecommunications industry can become a sort of business "cannibalism" (Kompas 17/4/03).

[10] For example, According to the Phone Kiosk (Wartel) Association of Indonesia (APWI), it has now 265,000 members in Indonesia. The association is opposing the planned increased in the number of Wartel licenses issued by PT Telkom (BI-28/1/03).

V. CONCLUSION

Diffusion of the Internet and other ICT products and services in Indonesia has shown some of the promise in reducing "costs of transportation and communication, and in breaking down of artificial barriers to the flows of goods, services, capital, knowledge"...” (Stiglitz. p. 8)

Various sections of the society, particularly small-medium enterprises and people from middle and upper income groups particularly in urban areas have benefited from ICT products and services, the benefit has yet to be further distributed to wider segments of society especially the remote and rural communities. This can be measured by the relatively poor raking that Indonesia obtains in E-Readiness indices with respect to its neighbours. While globalisation has somewhat created a small but significant impact through ICTs on the society and on commerce, it has yet to be developed further to achieve better access.

The survey of issues above demonstrate that the main factors hindering the realization of this potential are related to Indonesia's regulatory system. Policy challenges arising from pre- and post the economic crisis are difficult to tackle but there is a demonstrated lack commitment by the government to implement reform policies which has been previously agreed to with the Parliament resulting in the "re-monopolization" of the telecommunications sector particularly in the last two year.

Therefore, ICT diffusion in Indonesia is severely impeded by unimpressive regulators and by the lack of compliance on the part of the telecommunications incumbent to the conditions set for reform by the above agreement.

Potential costs and benefits for Indonesia from the reduction in transaction costs of business specifically due to better telecommunication means--including the Internet--cannot be readily measured. But if Indonesia is to realize this potential then the government clearly need to take further steps to open the market and create the institutional framework such as the independent telecommunications regulatory body (and others illustrated above) to allow fairer competition. The government must take concrete steps to encourage investment in the telecommunications and other segments of the ICT industry through the following measures:

- Assure the full implementation of the 1999 telecommunication law in a spirit of open and fair competition. This can only be achieved when a truly independent regulatory body is formed and the "modern licensing" system is implemented to provide private independent operators in a fair and transparent manner.
- Assure new investment through the increase of phone rates to above the level of operating costs, the fair resolution of conflicts between operators, and privatization.
- Assure the application of the Indonesia Anti-Monopoly law to state-owned telecommunications companies to allow maximum choice and better services for retain customers and SMEs. In addition, the Anti-Monopoly Commission that administers this law must be ale to ensure a productive operating environment for ISPs, multimedia and other SME support companies in the ICT-related industries. While there are some important internal barriers to improved ICT use by particular segments of the society such as SMEs'

BIBLIOGRAPHY

Asia-Pacific Economic Cooperation Telecommunications and Information Working Group (APECTEL), "E-Commerce Readiness in East Asian APEC Economies: A Precursor to Determine HRD Requirements and Capacity Building", National Electronics and Computer Technology Center, National Science and Technology Development Agency, Bangkok Thailand, December 2002.

Booz, Allen and Hamilton (consultants to the World Bank's Information Infrastructure Development Project) "Technical Assistance to Facilitate the Deployment of Government Online in Indonesia), Final Report Revised, Republic of Indonesia, Ministry of Culture and Tourism, March 22, 2002.

Bisnis Indonesia (BI, one of the leading business daily publications in the Indonesian language), various editions.

Economist Intelligence Unit (EIU), "E-Readiness Rankings 2001" http://www.ebusinessforum.com/

Indonesia Cyber Industry and Market Analysis Team (ICIMAT), "The Indonesia Cyber Industry and Market", PT Elex Media Komputindo, Jakarta (ICIMAT is a project of the Association of Indonesian ISPs and the Indonesian Internet Business Community, Inc.), 2001.

International Telecommunications Union, "Kretek Internet: Indonesia Case Study", Geneva, January, 2002 (http://www.itu.int/ITU-D/ict/cs/).

Jakarta Post (JP, one of the leading daily publications in the English language), various editions.

McConnell International, "Ready? Net.Go! Partnerships Leading the Global Economy" (www.mcconnellinternational.com in collaboration with www.witsa.org) May, 2001.

D. Owen and I.F. Sulaiman, S. Baldia and S. Mintz
'Republic of Indonesia: Information Communications Technology Assessment', USAID-NEA Bureau, Washington, D.C., Indonesia Mission, Jakarta, February 2001.
(http://www.pegasus.or.id/Reports/)

The Asia Foundation (prepared by CastleAsia), "SMEs and E-Commerce" Study, unpublished report January 2002.

Partnership for Economic Growth Project Report (prepared by Yadi S. A. Suriadinata, et. al.) "Survey on Uses of Information and Communications Technology by

Indonesian SME Exporters and Regional Autonomy in Indonesia", unpublished report, September 2001 (http://www.pegasus.or.id/Reports/)

Steinour (2003) "Monitoring Internet Access", a paper presented at the APECTEL 27 Kuala Lumpur, Malaysia, March 24-28.

~~~~~~

For comments, please contact:
Idris F Sulaiman
Ministry of Communications and Information and
Partnership for Economic Growth (USAID-GOI) Project, Jakarta, Indonesia
Phone:+62 (0)21 520 1047, Cell/Mobile: +62 (0)811 111 312, Fax: +62 (0)21 521 0311
Email: idris@pegasus.or.id Website: **http://www.pegasus.or.id**
~~~~~~