3.   The End of the Free Internet Market

3.1   Market developments

Indonesia connected to the global Internet in 1994, as a result of pioneering efforts by the academic and research community. One of the first links was a 64 Kbps line to the US, opened in May 1994 by the Indonesian Science and Technology Network (IPTEKnet). PT Indo Internet (Indonet) claims to have been the first commercial ISP, launching services in 1994. By the end of 1995, there were some 16 ISPs, 20'000 users and 640 Kbps of international Internet connectivity.[5] At the beginning of 2001, there were some 150 licensed ISPs of which about 60

Night food stall - Jakarta

were actually providing service and over 150 Mbps of international bandwidth. For the year ending 2000, there were an estimated 400'000 Internet dial-up subscribers translating to roughly two million users, or just under one per cent of the population.[6] The number of users has doubled over the last two years, following a period of stagnancy during the brunt of the financial crisis.

Despite the large number of ISPs, the market is dominated by a handful of companies. The largest paying ISP is Telkom's TelkomNet with just over 100'000 subscribers at the end of 2000. Many of these users are utilizing TelkomNet's Instan service. As no prior registration is required,

TelkomNet calculates subscribers based on usage over the last month. Ironically, Telkom had been prevented from entering the ISP market prior to 1997. At that time, the government wanted to promote new players in the market, especially Small and Medium Enterprises (SMEs). However the SMEs did not perform well so the law was changed to allow bigger companies in and to attract investment.

Indosat also provides ISP services and had over 40'000 dial-up subscribers at the end of 2000. Growth was stagnant in 2000. Indosat claims that this was partly related to delays in obtaining leased lines from Telkom. Another factor was the launch of 'free' (users still have to pay telephone dial-up charges) Internet access by LinkNet in April 2000. By the end of 2000, LinkNet had signed up 197'000 subscribers, making it the country's largest ISP. LinkNet had hoped to make money through advertising and e-commerce transaction fees since Telkom refused to share telephone usage charges. This model provided unsustainable. LinkNet was forced to terminate its
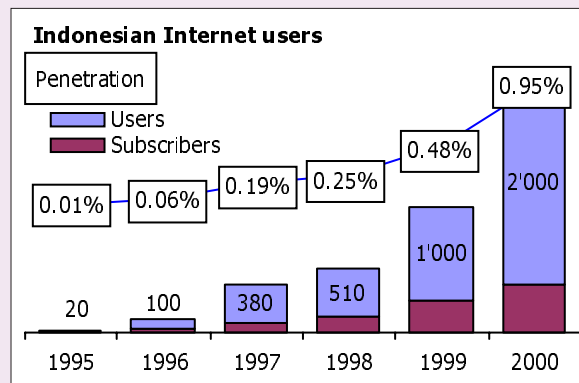
Figure 3.1: Internet market

Source: APJII, ITU.

free service in March 2001, and it now charges like other ISPs. It has lost most of its subscribers who chose not to stay on a pay plan.

Thus far there has been scarce foreign investment in the ISP sector. One exception is M-Web of South Africa that purchased 35 per cent (maximum foreign investment allowed at that time) of Cabinet in August 2000. Cabinet in turn owns Satunet, which claims to be one of the leading Indonesian portals with some half a million daily page views and 80'000 e-mail users.

3.2 Tariffs

There are two Internet dial-up options in Indonesia. One is Telkom's ISP, TelkomNet, which has a nationwide dial number and charges Rp 160 per minute (1.5 US cents). This amount includes the telephone usage charge. The other model is a regular ISP plan to which telephone usage charges apply. The prices basically work out the same. Indonesia's Internet pricing is relatively high considering the low levels of income in the country (see Figure 3.2).

3.3 Interconnection

ISPs require local, national and international connections to provide access to customers, create a national

Figure 3.2: Internet dial-up tariffs

30 hours per month, US$, May 2001

Source: ITU.

network and connect to the international network. Indonesian ISPs are allowed to have their own international connections. However, they must lease lines (primarily 2Mbps E1s) from the local telephone exchange to their modem banks to provide dial-up access. Several have complained about delays and the terms for leasing lines from Telkom. For example, according to one ISP, the connection charge for an E1 is Rp 13 million. The monthly subscription is Rp 13 million. Although Telkom receives the local telephone charge for dial-up Internet traffic, if an ISP does not deliver a certain amount of traffic per month over the E1 line, then it must pay Telkom the difference. Postel is aware of this issue but has not done anything about it.

The Indonesian ISP Association (APJII), a non-profit organization, operates a domestic traffic exchange (Indonesian Internet Exchange or IIX). Virtually all ISPs are members.[7] There are two nodes to which ISPs can connect. The IIX has a 100 Mbps backbone. There are no port or traffic charges; ISPs simply pay the cost of their connection to IIX. The IIX reduces the cost of international connections by keeping local Internet traffic within Indonesia. In addition, several of the larger ISPs maintain private peering arrangements.

3.4 Broadband

Until recently, leased lines or VSATs satisfied demand for fast Internet access. However these solutions have proven expensive and Indonesia is now turning to broadband access technologies such as ADSL and cable modem. Telkom is conducting ADSL trials and expects to launch the service soon. Telkom plans to install around 6'000 ADSL lines within the next year in the Jakarta area. Meanwhile Indosat has plans to install a wireless DSL network in Surabaya, and, through its Lintasarta subsidiary, in another 15 cities.[8] The Indonesian market for fast Internet access has been estimated at 1.2 million.[9]

Kabelvision <www.kabelvision.com>, with around 23'000 cable television
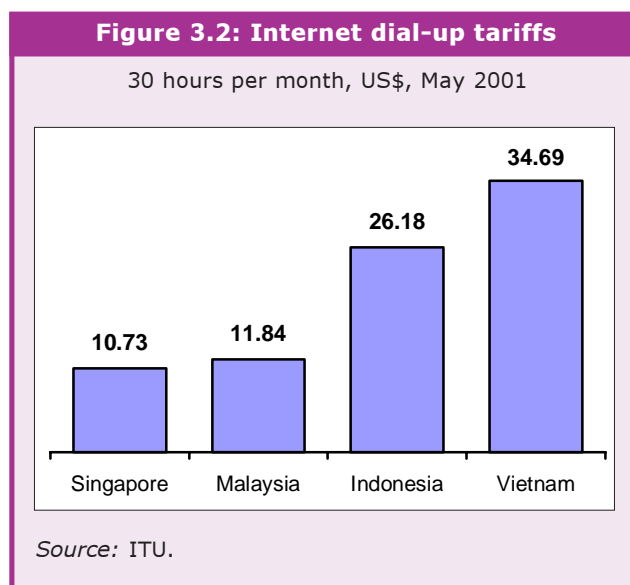
subscribers, launched its Kabelnet Internet access through cable modem service in Jakarta in September 1999. At the beginning of 2001, there were some 4'000 subscribers. Forecasts call for some 300'000 cable modem subscribers in the Jakarta area alone by 2004.[10] Thus far, Kabelvision is the only cable television company in the country, but there are plans for others. Telkom recently concluded an agreement with Alcatel for the latter to supply a Hybrid Fibre Coax (HFC) and cable modem network to be constructed in Jakarta and Surabaya.[11]

Telkom also provides broadband satellite delivery through a service dubbed Turbonet. This hybrid solution downloads data at speeds up to 1.5 Mbps via the Telkom 1 satellite to an 80-centimetre antenna. Data is uploaded via a dial-up telephone connection. Bandwidth is shared depending on the number of customers. It costs around Rp eight million per month (around US$ 700). A number of Internet cafés in remote areas are using it. One drawback is that rain has an effect on service quality.

[5]   Soegiardjo Soegijoko, Onno W. Purbo, Widiadnyana Merati, Priyono Sutikno, Intan Achmad. *Computer Networking in Indonesia: Current Status and Recommendations for its developments*. Institute of Technology Bandung. January 1996. <www.panasia.org.sg/itb/apng2.htm>.

[6]   Adam Creed. "Indonesian Net Subscriptions To Double This Year – APJII." *Newsbytes*. 2 January 2001. http://www.newsbytes.com/news/01/159955.html.

[7]   According to data on APJII's web site, there were 81 members in March 2001. However according to a network diagram dated November 2000, only 37 had connections to the IIX at November 2000. See www.apjii.or.id.

[8]   http://www.airspan.com/press/Press2001/PR13b062001.htm.

[9]   See Siemens. "PT.Telkom Indonesia installs DSL broadband subscriber access technology." *Press Release*. 7 November 2000.

[10] Craig Kuhl. "Indonesia's Sole MSO, K@ablevision, Sets Sights on Growth." *Multichannel News International*. July/August 2000.

[11] "Alcatel delivers broadband Internet to Indonesia's PT. Telkom." *Press Release*. 20 April 2001. http://www.cid.alcatel.com/doctypes/newsrelease/20010420.jhtml.

4.   Mosques and Warnets

Mosque - South Jakarta

Indonesia has made impressive strides in enhancing access to communications over the last decade. Prior to the financial and political crisis of 1997, Indonesia had one of the fastest growing fixed networks in the world. Teledensity quintupled between 1990 and 2000, from 0.59 to 3.14. The percentage of with a telephone jumped from just over one to over ten. Although fixed telephone line growth has slowed since the crisis, it is almost a miracle that there has been any expansion at all. Nonetheless, significant barriers to universal service remain with some 90 per cent of Indonesian homes without a fixed telephone.

Almost 90 per cent of Indonesia's population practices Islam, making it the country with the largest Muslim Community in the world. This is significant, since according to national statistics, Indonesians are closer to mosques than public telephones (see Figure 4.1). The challenge is to make public Internet access as predominant as mosques, and maybe even in mosques as well as other public locations.

Two initiatives are helping to promote public Internet access. The "Warung" Internet (Warnet) is a public Internet kiosk. Warnets grew out of the successful Wartel model, whereby private entrepreneurs resold telephone service through call centres.[12] By May 2001, there were around 2'500 Warnets in Indonesia. There is no need for an Internet license to operate a Warnet. Some companies are planning to franchise, giving their Warnets a common name and look.

The Indonesian Internet Kiosk Association (AWARI) is working with Warnets to do more than just provide simple Internet access. One promising area is distance education. AWARI has a Memorandum of Understanding with the Open University ("Universiti Terbuka") for distance learning. There are some 300'000 distance-learning students in Indonesia so the potential is immense. AWARI is also working with the Ministry of Education to put Internet kiosks in vocational schools. Another area is e-commerce where small businesses are using the Warnets to exchange e-mails with customers. This could be extended to provide more sophisticated electronic capabilities such as assistance with design of web pages hosted by Warnets, creation of online transaction capability, etc.

Figure 4.1: A mosque is never far away
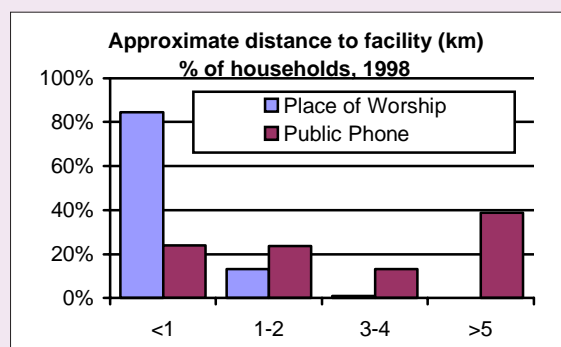
Source: ITU adapted from BPS.

Warnet - South Jakarta

W-Net has around 20'000 subscribers (including 70 corporate customers). Unlike most other ISPs, 70 per cent of W-Net's subscribers are located outside Java. Despite the fact that most users are not in Jakarta, W-Net focuses on corporate and government users rather than the consumer market.

The Post Office also has its own Internet cafés called Warpostnets. They are mainly located in big post offices in large cities and provincial capitals. Warpostnets usually have around five PCs although the central post office in Jakarta has 29. The Warpostnets charge Rp 6'000 (US$ 0.53) per hour. Those in remote areas are staffed to assist users.

One sign of popularity of Warnets and Warpostnets is that around half of Indonesian Internet users access the Internet through Internet cafés (see Figure 4.2). One main reason is the lack of the necessary infrastructure at home or at work. Another reason is that Internet cafés tend to be cheaper than a personal Internet account.

The government is keen to leverage the Internet kiosk experiment by introducing Community Teleservices

Future projects include expansion of services in rural areas. In most rural areas, dial-up access is used so that applications cannot be too sophisticated. AWARI is working to educate Warnets about broadband access. Wireless access seems promising in rural areas but the spectrum is not always available. Some Warnets are using VSAT technology and redistributing bandwidth to others over microwave links.

One complaint is that Warnets are treated just like any other customer and therefore pay the full price of telephone connection to Telkom. Warnets argue that they are providing an important community service and should get a discount such as Wartels.
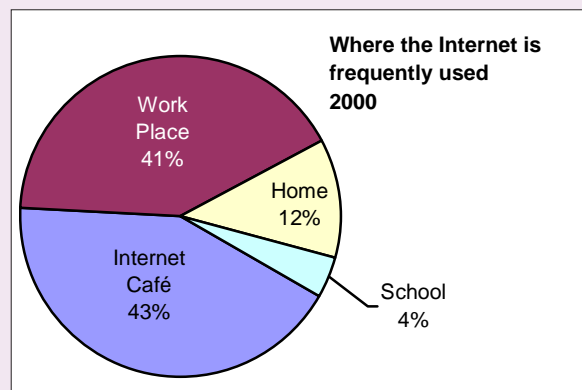
The Indonesian Post Office (PT Pos Indonesia) has its own ISP called "Wasantara-Net" (Wawasan Nusantara Network, W-Net) <www.wasantara.net.id>.[13] It is 60 per cent owned by the Post Office and 40 per cent by the Bakrie Group. W-Net began offering public Internet service in May 1996. It uses the VSAT network created to support the operational needs of post offices such as package tracking and financial transfers. Speeds range from 64 Kbps in Jakarta to 128 Kbps in the provinces. Each of Indonesia's 314 major post offices is a potential W-Net Point Of Presence (POP) although only about half (154) are currently connected. There is a plan to provide access to all main post offices but the economic crisis has delayed this.

Figure 4.2: We like Warnets

Where the Internet is frequently used 2000

Work Place 41%

Home 12%

Internet Café 43%

School 4%

Source: APJII.

Warpostnet user at Jakarta Post Office

Centres (CTC, "Balai Informasi Masyarakat" (BIM)). The CTCs are primarily intended for Indonesia's large rural population that has been left out of the digital revolution. More than just an Internet café, the CTCs would provide a range of services as well as training and assistance. In addition, the government is looking for funding to meet a target of half a million Warnets by 2004.[14] This would include retro-fitting the existing 187'000 Wartels to provide Internet service.

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[12] Pradhan, Rajesh and Smith, Peter. "Franchising telecom service shops: meeting demand from nonsubscribers in Indonesia." *Viewpoint*. March 1996.
http://www-wds.worldbank.org/servlet/WDSServlet?pcont=details&eid=000009265_3980420172858.

[13] One irony of the Post Office being involved in the Internet is that conventional letters in Indonesia are on the decline as people use e-mail instead. See "The Internet takes business away from the post office." *Jakarta Post*. 15 October 2000.

[14] "Govt targets 500'000 Internet kiosks by 2004." Jakarta Post. 4 July 2001.

5. Bring me the applications

Imagine a system with the simplicity, interactivity and cheapness of a plain old telephone getting married to the sophistication of ICT. Rather than dialing numbers, icons representing different functions are pushed. For example, instead of the number 1 on the telephone, there is a picture of a cow, representing agricultural information. When pressed, a wealth of information ranging from commodity prices to farming techniques is delivered through an interactive voice system. This is a project being developed by Telkom for illiterate rural dwellers for whom a PC is too expensive and too complicated and for which mass media devices such as radios or televisions do not provide the needed interactivity. A clever blend of the old and the new. This is precisely the type of application Indonesia needs more of.

A lack of infrastructure is not strictly the major barrier to ICT use in the country. Take the tourist island of Bali, the most wired place in Indonesia. The provincial capital Denpasar has 33 telephone lines per 100 inhabitants, ten points above the national capital, Jakarta, and ten times the national average. Hundreds of cyber-cafés dot the island. They range

Sculpture shop - Bali

from three PC dial-up mom and pop operations to larger places with dozens of computers and high speed, leased line access. Yet it is rare to see locals using them. At around US$ three an hour, Internet access is not particularly cheap. On the other hand, the one-minute it might cost to send an e-mail (Rp 500) is four times less than what it would cost to call from Bali to Jakarta (Rp 2'010).

The problem is that the majority of Indonesians just do not know what the Internet can do for them or what they can do with the Internet. Even among current users, it is often suggested that the main applications are chat, e-mail and browsing news sites. Locally relevant applications are rare. Indeed, it is amazing that for a country Indonesia's size, there is no standardized Indonesian spell checker for Microsoft Word or a sophisticated web-based English-Indonesian translator. For the Internet to establish deep roots in Indonesia, locally relevant applications in areas such as government services, education, health and business must be developed.

5.1 Government

The economic and political crisis has distracted the government's attention from ICT. There are signs that this may be changing. In April 2001, Presidential Decree No. 6 was issued ("*Guidelines for the Development and Implementation of Information and Communication Technologies in Indonesia*"). The decree is a statement of the government's general policy towards ICT. It calls

on the Indonesian Coordinating Team on ICT (TKTI) to drive ICT development. TKTI, an inter-ministerial group, was formed in 1997 and headed by the Vice President. If TKTI is to succeed, it will need additional resources including the creation of a secretariat. Its leadership status will also have to be resolved especially its relation with the new Ministry of Communication and Information, created in August 2001.

A detailed five-year action plan was also issued as part of the Presidential Decree.[15] This plan identifies projects and associated timetables in four areas: policy and legal framework, human resources, infrastructure and applications. It is unclear where the resources for carrying out the numerous projects will come from. A lack of funding has been a recurring problem in government ICT drives. For example, in 1996 the National Steering Committee for IT Competitiveness (so-called Nusantara-21) was created to drive Indonesia's ICT development. It benefited from a US$ 35 million World Bank loan to carry out its tasks. This included the creation of a national information infrastructure, development of multimedia applications and establishment of public access points. The combination of funding running out and the Asian financial crisis severely affected the programme.

There are a number of on-going projects and networks supporting government ICT use and delivery. "Siskom Dagri" (Communication Network) is the national governmental network coordinated by the Ministry of Home Affairs. It connects the central government to district governments. The network uses 2.4 metre VSATs connected to the Palapa 2E satellite. There are some 300 nodes in 26 provinces as well as the central government (Jakarta), the Ministry of Home Affairs plus the offices of the President and Vice-President. The system is used for e-mail as well as applications in areas such as personnel, finance, and inventory.

IPTEKnet <www.iptek.net.id> has evolved from a project to a full-fledged state-owned ISP that provides connections for government institutions. It has around 50 leased line and some dial-up clients. It leases lines for its backbone and has a 128 Kbps connection to IIX. As it is become more commercial, IPTEKnet is examining the possibility of two tariffs: one for corporate, and one for government clients.

Most ministries have a web site though there is not yet a central government portal. Almost all of them use the .go.id domain name. One area for improvement is civil service ICT training. Of the some three million people working for the government, training is available on only a sporadic basis. It is estimated that less than ten per cent of government workers have some awareness of ICT.

Another problem is the lack of ICT expertise at the provincial level. Few provinces or districts have their own web site. There are a number of projects underway at the local level. One is 'e-province', a system to computerize applications for local identification cards. Another project is 'Simtap' in Sulawesi and East Kalimantan to computerize common forms such as building permits, etc. There is also assistance for helping local governments set up their own web sites. Examples include www.takalar.go.id (Sulawesi) and www.kutaitimur.go.id (District of East Kutai in Kalimantan). However there are major barriers including a lack of funding and awareness. For example few local administrations can afford the cost of ICT. Furthermore, experience has shown that if high-level local officials such as mayors or governors do not have ICT awareness, then projects will not be successful.

5.2 Health

The Ministry of Health has its own web site <www.depkes.go.id> providing information such as an organization chart, health statistics and bulletins. Most ministry departments have a web page. The Ministry also has an Intranet with about 80 users.

There are around 400 government hospitals (out of 1'112) of which

around 20 have home pages. There is a pilot project to connect health sub-centers (around 21'000) to district ones (this already exists in Central and West Java). Less than ten per cent of the 1'148 regional hospitals have the necessary ICT hardware.

Telemedicine is planned in top hospitals such as one using VSAT in Denpasar (Bali) and Soetomo Hospital in Surabaya. One factor holding this back is the high cost of satellite communications.

There are some e-commerce-like applications such as online purchase orders between hospitals and pharmacies. There is also ASKAS, a computer system used to manage private health insurance claims.

The country's pressing health concerns such as communicable disease control and ensuring an adequate supply of medicine, detract attention from ICT. A big obstacle is the managers' lack of awareness about benefits of ICT.[16] In that regard, the ministry has been conducting seminars on ICT for the health industry.

5.3   Education

According to government statistics, Indonesia's school age population (i.e., those between 5-24 years old) numbered 86 million in 1999.[17] This 'Internet Generation' accounts for over 40 per cent of the population. Due to severe budget constraints, there are few government projects to wire Indonesia's 151'000 primary, 20'960 junior secondary, 7'936 general secondary and 4'073 vocational secondary schools.

Other organizations have launched initiatives to wire Indonesia's schools. The Indonesian Internet Service Providers Association (APJII) instigated its Schools 2000 project to try to connect 2'000 secondary schools to the Internet before the year 2000. APJII brought various partners together to work on this goal. This included ISPs and telecom operators (who provided discount communication access rates), banks (to provide school loans), and private sponsors such as Cisco and Oracle to provide hardware and software. APJII worked with the Ministry of National Education to develop a portal for the project. By the end of the year 2000, the project had connected 1'180 schools. Today, 1'800 schools are connected. This translates into half a million new Internet users from high schools.

Distance education is an attractive technology for Indonesia due to its large youth population, lack of educational infrastructure, shortage of highly trained teachers and spread out land mass. Over a dozen institutions provide distance education programmes. Universitas Terbuka (UT) <www.ut.ac.id>, established in 1984, has evolved into one of the largest open universities in the world with over 350'000 students. It had traditionally used radio, television and videocassettes to reach its dispersed students. Faxes are also used for students to communicate with professors. The wide availability of public telephone centres across the nation has made this feasible.[18] The Internet offers exciting new possibilities for interactivity. UT is working with Indonesian Internet Kiosk Association to use their facilities for providing Internet-delivered education applications.

The University of Indonesia estimates that by 2005, around 30 per cent of its 38'000 students will be involved in some form of distance learning. The university recently launched a project with the World Bank to provide distance learning for public and private sector officials.[19] They will be provided access to Internet-based applications. Plans call for a central distance-learning centre to be created at the university campus in Jakarta as well as sub-centres at two regional universities. The main centre will feature two classrooms containing 30 computers each and a link to the Internet via VSAT.

5.4 Electronic Business

Indonesia's demographic and geographic situation would appear to make it an ideal location for e-commerce. There is a large market spread over many islands. However, the country's level of innovation is not sufficient to have the expected impact. This is borne out by comparative studies that typically rank Indonesia at the low-end of e-commerce readiness.[20] The value of e-commerce in Indonesia has been estimated at under US$ 100 million in 2000, or less than 0.1 per cent of GDP. The value of B2C e-commerce is negligible. Barriers to e-commerce development include a lack of infrastructure, awareness, security, culture and habit and lack of online providers.[21] Another obstacle is that the computerization of a business requires a certain degree of transparency, which most Indonesian companies are unaccustomed to. Yet another issue is that with such a huge population and comparatively low wages, companies prefer to use labour rather than invest in ICT.

The lack of a national Certification Authority has led to other approaches for promoting trust in electronic commerce. Sucofindo <www.sucofindo.co.id>, a government-auditing agency, is reviewing a number of options for involvement in Internet-based trade. For example, it has worked with portals to be their certifying agency. This adds to security for the buyer since the site has been 'certified' by a reliable organization. Sucofindo is also in discussion with others about forming a national Certificate Authority.

Electronic Data Interchange (EDI) is being used by around 2'000 private companies and government agencies involved in retail industry and trade. One of the most intensive users is the Directorate General of Customs and Excise. The majority of import forms are computerized, resulting in much faster processing of documents. The Directorate General's web site <www.beacukai.go.id> also publishes custom regulations and allows companies to download trade documentation software. It recently hooked up with its Malaysian counterpart, the Royal Malaysian Customs and Excise, to exchange export data electronically.

The Ministry of Justice is responsible for Intellectual Property Rights. Indonesia has a copyright law and is also a signatory to the Berne Convention <www.law.cornell.edu/treaties/berne/overview.html>. In general, foreign copyrights receive automatic protection in Indonesia but there is a lack of resources for enforcement. The country has been cited as having the third highest software piracy rate in the world, at 89 per cent in 2000 (resulting in a loss of US$ 70 million).[22] Low incomes coupled with steep drop in the exchange rate, have driven up the cost of imported software, increasing the tendency to share applications.

The Ministry of Industry and Trade (MITI) is responsible for developing e-commerce laws covering areas such as digital signatures and computer misuse. There is a small working group to prepare a working draft that includes MITI, Indonesia University, Postel, and the Ministry of Human Rights and Justice. It is planning to submit a draft to Parliament before the end of 2001. MITI is participating in WTO e-commerce work and following developments in UNICTRAL and OECD.

Indonesia's Small and Medium Enterprises play an important role in the economy. They are estimated to account for over 90 per cent of all businesses and employees and almost 60 per cent of GDP.[23] As in many developing countries, e-commerce awareness by SMEs is low. Most lack ICT skills and equipment. A number of initiatives have been designed to improve the situation. MITI has been running awareness courses. There is also a World Bank project to sensitise SMEs about ICT. The government has also offered tax rebates for the purchase of ICT equipment and liberalized foreign investment laws.

Box 5.1: Indonesian Silicon Valleys

In Indonesia, there has been scant government support for the development of software parks. Instead, initiatives have come from the private sector. The Lyman Group, which started as a trading and timber business and has now diversified into property and telecommunications, has proposed the "West Java Digital Corridor" to, among other things, "kick-start the development of IT industry in the country." The corridor would extend from Jakarta to the university city of Bandung and would include enhancements to existing transport and communication links. Within Bandung, a "high-tech valley" is proposed that would include a "learning e-village" housing educational and research institutions. Kota BNI is to be a new "Intelligent City within a city" that would feature state-of-the-art housing and recreational facilities. Links would be created with the universities and research centers situated in Bandung. The proposal also calls for the creation of a venture capital fund as well as tax breaks and other inducements for businesses located in the cyber area. Funding for the project is expected to come from the government, multilateral agencies and the private sector.

BaliCamp <www.balicamp.com>, located in Tabanan on the tourist island of Bali, was inaugurated in October 2000. It is the brainchild of the Sigma Group which has thus far invested US$ three million in the project. Bali was chosen because it is an attractive and safe location and has good international air connections. In addition, though most of the initial programmers are Indonesian, the attractions of Bali may create a reverse brain drain by drawing foreign programmers. BaliCamp has around 100 programmers that generated around US$ two million of sales in 2000.[24] Main services include around the clock software development for international clients. Sigma has established an office in Canada to seek out customers and promote the service. It is forecasting a staff of 1'000 and sales of US$ eight million in 2001.

One issue that Indonesia must address if it is to be successful in software development is a lack of skilled IT human resources. Though precise statistics are not available, there is general agreement that there is a shortage of skilled ICT staff.[25] Proposals to remedy the situation include preferential communication access pricing for educational facilities, links between companies and academic institutes for on the job-training, development of training centers and creation of an ICT industry certification.

One strategy for ICT training is to encourage private sector involvement. In March 2001, Cisco Systems signed an agreement with the Ministry of National Education to create 20 Networking and Training Academies in technical and vocational schools across the country. This complements seven existing Academies in Indonesian universities and schools. The eight-semester, 560 hour course trains students to design, build and maintain computer networks.

The lack of business connectivity has not discouraged some SMEs from conducting business over the Internet. Many are using the popular Warnet Internet cafés to exchange e-mail with potential buyers.
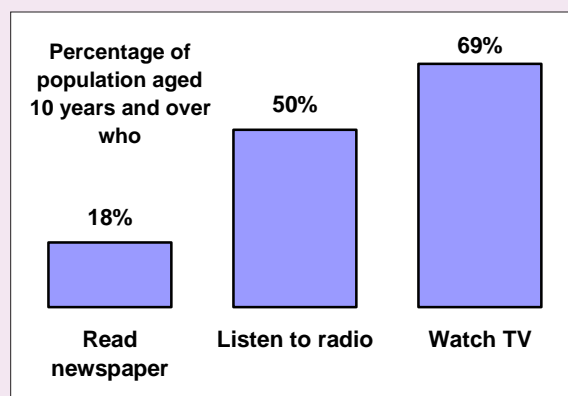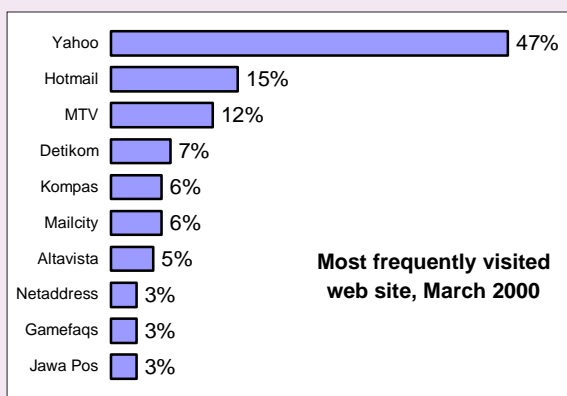
Box 5.2: News hungry

One of the country's most popular television stations is Metro TV, Indonesia's answer to CNN. Indonesia's first non-stop television news channel broadcasts in Indonesian as well as in English and Mandarin, which was previously forbidden. This is possible due to press liberalization that has taken place since the downfall of President Suharto. A pent-up hunger for information has led to an explosion of media outlets. Today the country has some 700 news publications, close to 1'000 radio stations and a dozen television stations.

The information hunger has driven Internet use with Indonesians eagerly browsing the web for news. This is readily evident in a list of the most frequently visited web sites by Indonesian Internet users (see Box Figure 5.2, left chart). The three local sites in the top ten are news portals. The top Indonesian site, Detikom <www.detik.com>, was created expressly for the web. Today there are around ten online publications in the country, helping to satisfy the nation's thirst for news. This just could not have happened a few years ago when there were strict censorship laws. Today, there is no law governing content on the Internet.

The Indonesian Internet Top ten says a lot about the who and how of the Internet in the country. The most popular sites are e-mail-based (Yahoo, Hotmail, Mailcity) or youth-oriented (MTV, Gamefaqs). This is consistent with one survey that found that almost half of Indonesia's Internet surfers are between the ages of 21-25.

Unlike other countries, none of the leading portals in Indonesia spring from the broadcast media. Instead, apart from Detikom, they are online versions of popular newspapers or magazines. The main government-owned television stations have a reputation of stodginess and one-sidedness. In an effort to revive the television industry and inject badly needed funds, a bill allowing foreign investment is being debated in Parliament. Foreign investment in broadcasting has been banned to protect "Indonesian identity" even though exactly what that meant was never adequately explained. In any case, in a country as diverse as Indonesia, there is no one identity and a flourishing of media outlets is the best reflection of the nation's variety. Despite the lacklustre image of the state-run channels, television is still one of the most popular information outlets in the country. Some 60 per cent of households have a television and television is a more popular source of information than radio or newspaper (see Box Figure 5.2.2). In addition to Metro TV, several other stations have been launched to meet this demand. This has a number of implications for Internet diffusion. Perhaps television will grow in popularity, reducing time spent on Internet access. Or television channels may get into the portal business, developing links and tie-ins between their online and broadcast content. Another possibility is reaching the large base of television watchers through Internet-delivered content over web-like television sets.

Box Figure 5.2: Indonesian Top Ten web sites and where Indonesians get their information from

Most frequently visited web site, March 2000

Site	%
Yahoo	47%
Hotmail	15%
MTV	12%
Detikom	7%
Kompas	6%
Mailcity	6%
Altavista	5%
Netaddress	3%
Gamefaqs	3%
Jawa Pos	3%

Percentage of population aged 10 years and over who

Read newspaper	Listen to radio	Watch TV
18%	50%	69%

Source: ITU adapted from Tempo Magazine (left chart) and BPS (1996) (right chart).

[15] "Five – Year Action Plan for the Development and Implementation of Information and Communication Technologies (ICT) in Indonesia." http://www.bappenas.go.id/bap_eng.html

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