Philippine Institute for Development Studies
*Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas*

# The Philippine Information and Communication Technology Sector: Evolving Structure and Emerging Policy Issues

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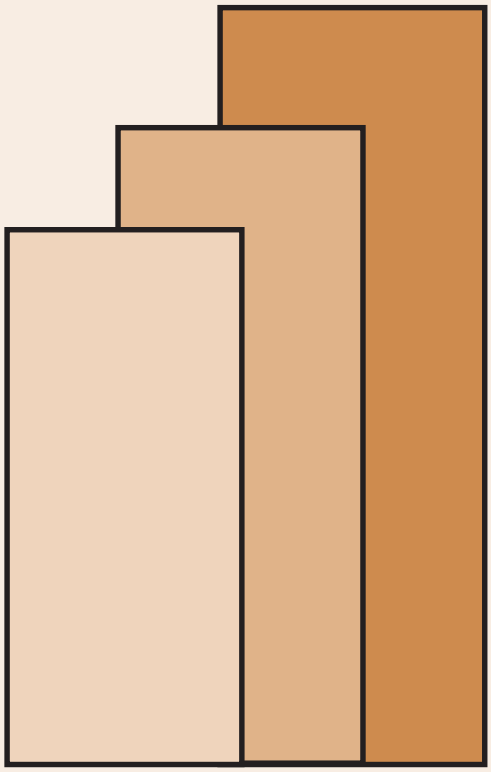



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# The Philippine Information and Communication Technology Sector: Evolving Structure and Emerging Policy Issues[1]

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## Abstract

Narrowing the *digital divide* is an important goal of any ICT policy. It must promote on one hand a high degree of accessibility to the "infostructure" by promoting competition, interconnection and convergence in the ICT sector. On the other hand, policies must also seek to increase the capabilities of the users to absorb or increase their usage of ICT.

In response to the competitive forces and market preferences, telecommunication companies, in order to reduce costs and increase margins, have adopted the twin strategies of achieving scale and scope. The pressure to forward integrate, coupled with the availability of the technology, actually resulted in the convergence of IT and content in the Internet. If unchecked by the regulator, these integration strategies of telecommunication companies will bring back the ICT into the hands of a few or into a monopoly structure.

The current regulatory environment does not allow firms to pursue their convergence strategies because of the limitations imposed by Philippine laws. Also, there is no general framework or policy guidelines that would help both the regulator and the industry players in addressing future issues on spectrum usage, management and ownership.

There is also the need to address the issue of user's ability to absorb the technology. Current ICT diffusion in critical sectors like education is very low. Demand-side constraints to ICT absorption will have to be addressed.

[1] The Author would like to acknowledge the comments on the paper provided by Mr. Jose Raul Saniel, Supervising Communication Development Officer, Commission of ICT.

# SECTION 1

# BACKGROUND

## Introduction

Information and communication technology (ICT) was coined to capture a new set of services that emerged from the convergence of computer hardware, software, and telecommunications giving birth to what is popularly known as the Internet. In spite of its discovery and commercialization in 1995, Internet technology can still be considered at its infancy stage because of the discovery of new and ever-expanding applications.

ICT is also commonly used as a collective term to describe the new generation of information technology spawned by the Internet (Flor, 2001). However, because of its ever-expanding applications, ICT's current definition remains broad and finds difficulty in capturing its true essence. At present, the Organization for Economic Cooperation and Development (OECD) defines ICT as a combination of manufacturing and service industries that electronically capture, transmit and display data and information (OECD, 2002). This definition distinguishes between the manufacturing and service aspects of ICT, which is as follows:

- ICT manufacturers
  - Office, accounting and computing machinery
  - Insulated wire cable
  - Electronic valves and tubes and other electronic products
  - Television, radio transmitters and apparatus for line telephony and line telegraphy
  - Television and ratio receivers, sound or video recording or reproducing apparatus and associated goods
  - Instruments and appliances for measuring, checking, testing, navigating and other purposes except industrial process equipment
  - Industrial process equipment
- ICT Services
  - Wholesale of machinery, equipment and supplies

- Telecommunications
- Renting of office machinery and equipment
- Computer-related activities

The Philippines basically adopts the same definition with a slight modification. In the Philippines, wholesale services are classified as an entirely separate sub-industry under ICT (SICT, 2002). Overall, however, it retains the rest of the OECD classification.

The definition and coverage of ICT is constantly under periodic review by the Committee for Information, Computer and Communications Policy of the OECD in light of the emerging new applications and experiences of countries in using such a definition. The current definition of ICT is so broad that it even includes to a large extent the electronics industry. At the rate in which its industry coverage and scope expands, ICT is best classified not as an industry but as a sector composed of clustered industries.

In the Philippines, ICT refers more to its service-component rather than the manufacturing aspect. ICT in the Philippine broadly includes the following:

- Telecommunication industry which includes fixed lines and wireless services which covers fixed and mobile, and satellite applications;
- Internet service providers;
- E-commerce models;
- Hardware and software application for communications technology;
- Business process outsourcing including both independent and shared services: medical & legal transcription, finance and accounting, data encoding, animation, design, market research, etc;
- Contact center operations also covering both independent and shared services, and;
- Multi-media applications

All these industries' services are different and distinct but closely complement each other in the Internet. To better understand the complementariness of each of these industries within ICT, such industries can be classified according to the roles that each industry plays:

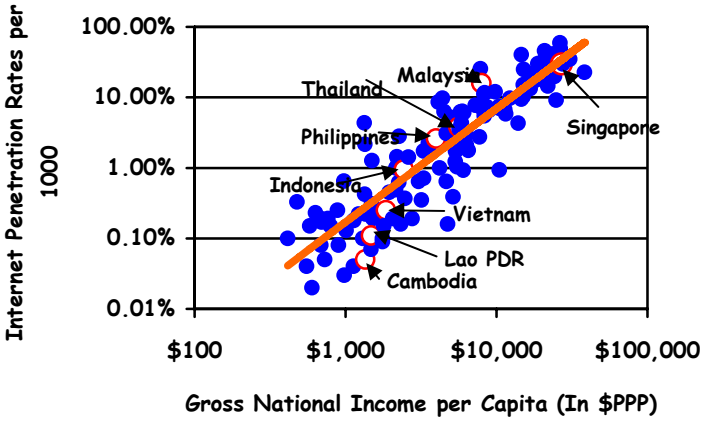
- Providers of connectivity specifically telecommunications encompassing fixed lines, fixed mobile, wireless mobile, and satellite technologies;
- Information and Communication Technology enablers that facilitates the electronic transmission of data. These include the Internet Service Providers (ISPs), hardware and software services, user interfacers, among others;
- Providers of Content like business process outsourcing, contact centers and media, and e-commerce.

**Main Issue of the Study**

The ICT sector is considered as a sunrise industry - one of the fast emerging growth sectors of the Philippine economy. Its emergence as the new generator of foreign exchange, investments and jobs for the Philippine economy attests to its competitive position in the New Economy.

The global phenomenon that now brings economies and nations to the Knowledge Age –also popular referred to as the Internet Age, Information Age or the E-conomy – lends ICT its important role in improving the plight of nations. Information has evolved into a commodity (Flor, 1986) such that a country or a nation's level of access to and the availability of this "commodity" can spell its future prosperity or doom. Recent studies have shown that developed economies that enjoy high levels of ICT adoption are better off than countries that have low adoption rates (Gray 2001) (See Figure 1.1).

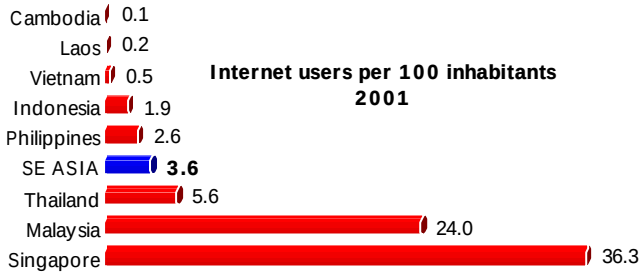
Figure 1.1. Relationship between Internet Penetration Rate per 1000 and Gross National Income




Source: ITU (2000) and the World Bank

Hence in an information-driven economy, societies can either be classified as information-rich or information poor. Closing this "digital divide" – a term that refers to the gap that separates the "haves" and "have-nots" - can greatly help in the alleviation of poverty, now considered as "the most pressing problem confronting society in general and the international development assistance community, in particular (Flor, 2001)". This divide is apparent in the Philippines as exhibited by the country's low Internet penetration rate, which stands below the median for Southeast Asia (see Figure 1.2).

Figure 1.2. Internet Penetration Rate in Southeast Asia




Source: ITU, 2001

Such a divide is also manifested in the manner companies have invested in the regions. Mr. Jose Raul Tanel of the Commission of Information and Communication Technology said that as the NTC data reveal, only 54% of the country's cities/municipalities have access to basic telephone service. He observed that private sector investments were not evenly distributed and were concentrated mainly in urban areas. NTC data shows that the country's telephone dispersal is mainly focused in Metro Manila having an installed telephone density of 29.07. That is three times larger than the second highest region, Southern Tagalog (Region IV). On the other hand, the Autonomous Region of Muslim Mindanao (ARMM) and Cagayan Valley (Region 2) have the lowest installed telephone penetration rate.

Any policy tool and recommendations dwelling on the promotion of competition through deregulation, interconnection and convergence in ICT must ultimately be evaluated in light of their ability to narrow this *divide*.

Competition in the ICT industry will induce efficiency among competing firms. For consumers, this means consuming the good at prices that are not only generally competitive but also reflective of the real opportunity cost of the resource. For producers, available services and more access to ICT infrastructure imply the removal of any entry barriers, the homogenization or standardization of the service, and the availability of full-information. The presence of any threat to competition, inaccessibility to connectivity and convergence must be addressed. This recourse to competition to promote welfare has some basis because of the recent experience the country just had with its telecommunications industry.

The birth of ICT in the Philippines is preceded in 1992 by a successful implementation of the liberalization, deregulation and interconnection policies in the telecommunications industry. The scope of the services as well as competition in the telecommunications industry particularly in mobile wireless and fixed line services has increased. The heightened competition has induced the firms to invest heavily in capital expenditures in order to survive and meet their service commitments to government (Feldbaum 2000). As a result of these massive capital expenditures, the telecom industry ripened to absorb new technologies particularly in the area of connectivity and network-enabled content like media, data, information, business processes and contact centers. These businesses have given birth to the service-industries that now comprise the ICT sector.

The drastic changes within these industries and their relationship to each other have lent itself to industry structures that continue to evolve until now. However, company behavior, which can include vertical and horizontal integration strategies under a converging environment, is a major driver behind the changes in industry structures.[2]

The constant state of change that industry structures in the ICT undergo has welfare and policy implications. Under a dynamic industry landscape, existing policies intended to achieve certain welfare enhancing goals or market contestability objectives may not be effective anymore. In fact, if regulators do not watch out, the structure can revert back to market dominance. It is even worse when the existing policy framework has itself run counter to these goals and objectives. In such cases, new policy frameworks are needed to police and

[2] Horizontal integration happens when the merger or acquisition is made on companies catering to the same market. Vertical integration happens when the merger or acquisition is along the upstream or downstream sectors of the industry.

regulate possible abuses in these new industry structures and behaviors. Because of firm behavior and strategies, deregulation and liberalization by itself do not guarantee effective competition (World Bank Institute, 2000). According to the World Bank Institute, it is only by creating a policy environment that encourages and sustains competition that a country can maximize the benefits from liberalization and deregulation. However, the promotion of competition alone is not sufficient to narrow the divide as this covers mainly the supply side of market.

Closing the *divide* also involves looking at the users of ICT. The ability of users to access the ICT is also another area policy must consider. To access ICT, users must have the following: affordability and the skills (Gray and Minges, ITU 2002). According to Gray and Minges, user skills are necessary for any nation to achieve high levels of ICT absorption. These skills can be elaborated by pertaining to three important L's of the Internet Age: learning, language, and literacy. Infrastructure access can be address by analyzing the "supply-side" of the divide. The "demand-side" of the divide – affordability and skills – must also be addressed.

English is the predominant language of the Internet and thus a nation's proficiency of such language determines its disposition to absorb ICT. ICT Learning, on the other hand, can refer to proficiency in mathematics and the sciences – important foundations of ICT. A nation with high levels of science and mathematical literacy are better disposed to absorb ICT. And lastly, ICT learning refers to the familiarity or ability of the nation to use the technology itself.

Thus, looking also into the capabilities of the users to adopt and absorb ICT is important. The ready accessibility of ICT is not a guarantee that people will easily use or adopt the technology. Finding ways to improve the nation's capability to adopt and absorb ICT via literacy, language and learning, is another area of concern for ICT-related policy-making to address.

In summary, this whole issue of closing the *divide* involves dealing with both *supply*- and *demand- side* issues.

**Objectives of the Study**

The objectives of this study are as follows:

a) Provide an overview of the ICT sector and its economic contribution to the Philippine economy;
b) Analyze the current and evolving industry structure of the ICT sector in relation to competition issues and the existing policy framework;
c) Analyze the users in terms of their ability to adopt and absorb ICT services; and,
d) Identify the policy issues that arise and recommend policies in addressing these issues,

**Methodology**

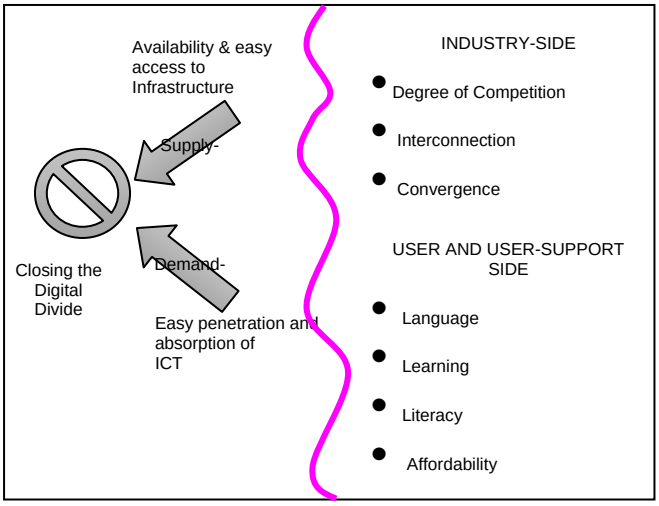
How to narrow the digital divide must be the primary goal of any ICT policy. Sustainability of the growth of the ICT would actually depend on the promotion of the use and adoption of ICT. Closing the gap between the information-rich and information-poor involves a two-pronged approach: on the supply side, it means paving the way for more competition, easy access to the available infrastructure and convergence[3], and on the demand-side, through improved literacy, English language proficiency and ICT learning.

The study on one hand will evaluate the state of competition, interconnection and convergence in the ICT sector. A high degree of competition, interconnection and convergence ensures that ICT remains available and accessible to the market.

On the other hand, the study will also look into the capabilities of the country to use and support the use of ICT. High degrees of competence as well as affordability can lead to high levels of ICT penetration and utilization. Figure 1.3 below summarizes using a diagram the methodological framework of the study.

[3] Convergence refers to the close interface of the Internet and the content in the delivery of a new set of IT-enabled services.

Figure 1.3. The Methodological Framework of the Study




This study dwells on issues pertaining to the state of availability and accessibility of ICT and the affordability and ability to absorb and support it. While equally critical, any issues pertaining to the content providers like BPOs, contact centers and the like are not discussed. Issues involving content providers are only considered in as far as their degree of accessibility to infrastructure are concerned.

**Significance of the Study**

The ICT sector is indispensable for any country that aims to benefit in the New Economy. A vibrant and growing ICT can generate the jobs, foreign capital and foreign exchange the Philippine economy badly needs. In the information age, the ICT will be a critical link in alleviating poverty. Any effort to alleviate poverty must necessarily consider the interventions that ICT can do.

While the economy continues to benefit from the successful liberalization of the telecommunications sector over 12 years ago, new key issues have emerged. ICT-specific issues such as interconnection and convergence and the impact of vertical and horizontal integration strategies on competition have emerged. These issues have cast serious doubts on the sustainability of fostering a competitive environment for ICT. There is a need to appreciate the evolving industry structure in order to sustain the regulatory reforms needed to promote competition.

Numerous studies have provided overviews and independently analyzed issues in each of these industries comprising ICT. This study has managed to gather a few of them: Overview of the Philippine IT market and its various industry components (Optel 2002, ITU 2002, IDC), studies on the deregulation of the Philippine telecom industry (Feldbaum 2000, Lamberte, 1987), interconnection issues (Padojinog and Nuguid 2000, and Nuguid 2003) issues, competition in the cellular mobile phones industry (Lim 2002), E-commerce (U & De Vera 2002), e-tailing models (Castaneda 2003, Padojinog & Castaneda 2003), IT-enabled services (Padojinog 2002, Paulino 2002), and Internet and Internet consumer protection (ITU 2002; Padojinog 2003), issues in telecommunications (Serafica 2003)

However, a study is needed for ICT this time considered as an intricate but interrelated chain of industries. Some studies have been made by institutions like the The Philippine APEC Study Center Network (Serafica, 2000) and the World Bank (Aldaba, 2000) already pointing out the emerging issues within ICT. But no studies have dealt directly on these issues in terms of deeper analysis and understanding. No studies have been made so far to analyze the mutual interdependence between industries, their vertical integration and convergence strategies and its implications on competition. The lack of appreciation of these issues is perhaps the reason why no significant ICT-related policies and laws have been passed by far except for some proposed government laws and office memorandums (DOTC). Besides, these proposed laws on ICT, in order to become more effective in achieving its goals, need studies to be more enlightened of the issues and the concerns affecting the ICT.

## SECTION 2

## THE ICT SECTOR AND ITS IMPACT ON THE PHILIPPINE ECONOMY

### Providers of Connectivity

The most notable impact of ICT on the Philippine economy comes from the telecommunication sector. The successful deregulation and liberalization of the industry in the early 90s spawned more competition in the industry. There are now more services and more companies offering these services (Table 2.1). Under the Public Telecommunications Act or RA 7925, there are six general classifications of telecommunications services that allow private sector involvement: (1) local exchange carrier, (2) inter-exchange carrier, (3) international gateway facility, (4) value added services, (5) mobile radio operations, and (6.) radio paging system.

Table 2.1. Telecommunications Industry Range of Services and Number of Players

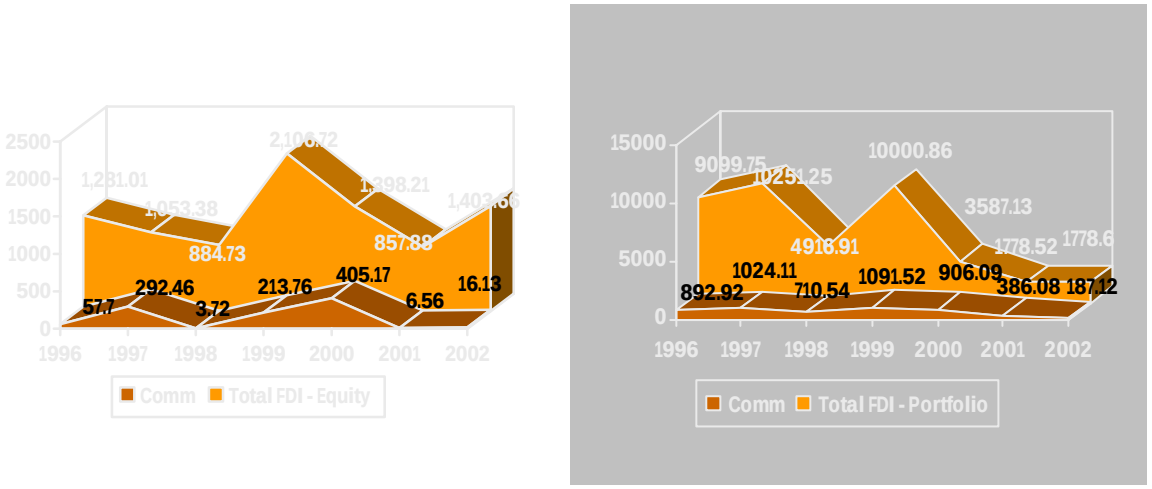
| Telecom Service | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Exchange Carrier Service | 45 | 49 | 60 | 67 | 74 | 76 | 76 | 76 | 77 | 74 | 74 |
| Inter-Exchange Carrier Service | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. | 12 | 12 | 14 | 14 |
| International Gateway Facility | 3 | 5 | 9 | 9 | 9 | 11 | 11 | 11 | 11 | 11 | 11 |
| Radio Mobile | | | | | | | | | | | |
| 1. Cellular Mobile Telephone System | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 7 | 7 |
| 2. Public Trunk Repeater Service | 7 | 8 | 8 | 10 | 10 | 10 | 10 | 10 | 10 | 11 | 11 |
| Radio Paging Service | 6 | 6 | 10 | 11 | 14 | 15 | 15 | 15 | 15 | 11 | 11 |
| Value-added Service | | | | | | | | | | | |
| 1. With Networks | | | | | | | | | | | |
| a. Coastal | 13 | 13 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| b. Broadband | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. | 10 | 18 | 19 | 19 |
| 2. Without Networks | n.a. | n.a. | n.a. | 1 | 27 | 47 | 70 | 106 | 156 | 186 | 156 |
| Satellite Operators | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. | 18 | 18 | 19 | 19 |

*Source: NTC*
*n.d. – No data available*
*n.a. – Not applicable*

The growing competition in the industry has induced massive capital investments from the companies. Foreign investors have financed a sizable chunk of these investments. From the period 1996 to 2002, telecommunications industry has managed to attract 11% of the total foreign equity direct investments and 13% of foreign portfolio investments recorded by the

BSP over this period (See Figure 2.1). In the period 2000-2003 alone, information technology services on the other hand attracted a total of US$13.89-Million of foreign direct investments (FDI) or 12% of the total FDIs for the period. This sector was virtually nil five years ago.

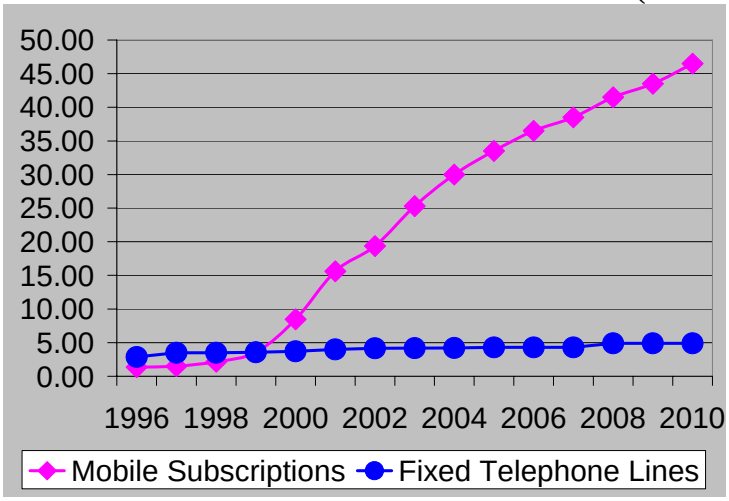
Figure 2.1. Share of Foreign Equity Investments and Portfolio Investments in the Telecommunications Industry to Total Foreign Equity Direct and Portfolio Investments




Source: BSP
Note: Comm stands for Communication and FDI for Foreign Direct Investments. Units are in Million US$

The investments that deregulation and liberalization have brought about increased the availability of telecommunication services and the other value added services to users. The phone-users density jumped especially from mobile users, who are projected to grow from 30 per 100 in 2004 to over 45 in 2010 (see Figure 2.2). The Filipinos have virtually ignored the ample supply of fixed line phones by migrating to the wireless mobile platform. This left fixed line operators with only about 48% of their almost 7-million lines being subscribed.

Figure 2.2. Fixed and Mobile Wireless Penetration Rates in Percent (1996 to 2010)




Source: Pyramid Research, NTC

Other downstream users like ISPs, companies, IT- and network enabled services are expected to benefit from having these facilities available for connectivity.

**Information and Communication Technology Enablers**

The rapid improvements in the availability of telecommunications services and developments in technology have paved the way for the development of other Internet-based allied industries of ICT, which in turn provided other value-added services (VAS). These enablers facilitate the transport of content data along the channels of connectivity. These companies include the primary Internet-based data carriers and the support hardware-software providers. These so-called primary "data carriers" are necessary for content services like BPOs to utilize. These data carriers include the cable Internet, satellite-based internet, broadband, the ISPs, Internet backbones, E-commerce and Internet Data Centers (IDCs). The support providers – software and hardware services – include suppliers of computers and its peripherals, computer software, and consultancy.

Cable Internet. The success of cable Internet in the US has led to some of the country's largest cable TV providers to offer such a service in the economy. However, while the venture was a hit in the US, cable Internet performance in the country is lackluster. This is largely caused by the inability of small cable companies to expand into an Internet service provider. The inability to expand stems from two factors:

a) Cable Internet requires additional capital requirements, which small operators find too costly; and,
b) Small operators are constrained by the existing Cable TV Law that limits the cable-Internet providers as value-added telecommunication services similar to ISPs that are allowed to build their own networks.

Cable Internet providers in the country include Destiny Cable, ZPDee.Net (a sister company of Sky Cable) and Home Cable. Sky Internet – the Internet service arm of Skycable – has only 3% or about 15,000 subscribers in 2001.

Satellite Internet. The market for Internet Over Satellite (IOS) has increased through the years, driven by the increasing demand for satellite facilities linking local ISPs to Internet hubs based mainly in the US. In the country, Panamsat's geosynchronous satellite or PAS-8 provides the primary IO service. However, the launching of Agila II in 1997 has increased the use of satellite-based communication services, including IOS, in the country. (Optel, 2002). About 20 of the country's ISPs are utilizing IOS facilities to connect to the Internet, all of which are for linking with US-based ISP backbones and hubs. The main users of IOS facilities in the country have been ISPs. However, of those ISPs, only PLDT has taken initiatives to expand satellite-based Internet access. PLDT, particularly PLDT-owned ISP companies Infocom and Now@Home, use Agila II IOS facilities.

Table 2.2. below shows the progression of IOS services in the Philippines.

Table 2.2. Major Market Segments for IOS Services

| 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|
| ISP Links to Backbone | ISP Links to Backbone | ISP Links to Backbone | ISP Links to Backbone |
| Hybrid Access | Hybrid Access | Hybrid Access | Hybrid Access |
| | Caching and Usenet Feeds | Caching and Usenet Feeds | Caching and Usenet Feeds |
| | | 2-way Access Service | 2-way Access Service |
| | | | Voice Over IP (Trunking/VSAT) |

*Source: Satcom Insiders, 2001 – taken from OPTEL, 2002*

Broadband Internet. Broadband Internet access has been available in the Philippines since the early 1990s. However, it was only in the late 1990s when service providers saw its profit potential. Nonetheless, growth was not been as fast and subscriber base remains small,

largely due to high subscription and lease fees. The fees could be lowered, however, if the subscriber base is expanded. There are many broadband technologies available. The most common is the Digital Subscriber Line or DSL. This technology, however, is still slower than the satellite-based Internet and other high-speed cable such as T1, T3 or fiber optics, but it is much faster than the common dial-up access. There are several telecommunication companies that offer this service but PLDT is acknowledged to have over 90% of the subscribers.

Table 2.3. Broadband Services in the Philippines 2001

| Broadband System | Service Provider |
|---|---|
| Fixed Wireless | • Bell Telecom<br>• Broadband Philippines<br>• Meridian Telekoms<br>• Nowires.Net (pre-operating)<br>• Polaris Telecommunications (pre-operating) |
| Fixed Wireline | • Eastern Telecoms<br>• Globenet<br>• PLDT<br>• Digitel<br>• PT&T<br>• BayanTel |

*Source: Philippine Internet Directory and Various Industry Sources – taken from OPTEL, 2002*

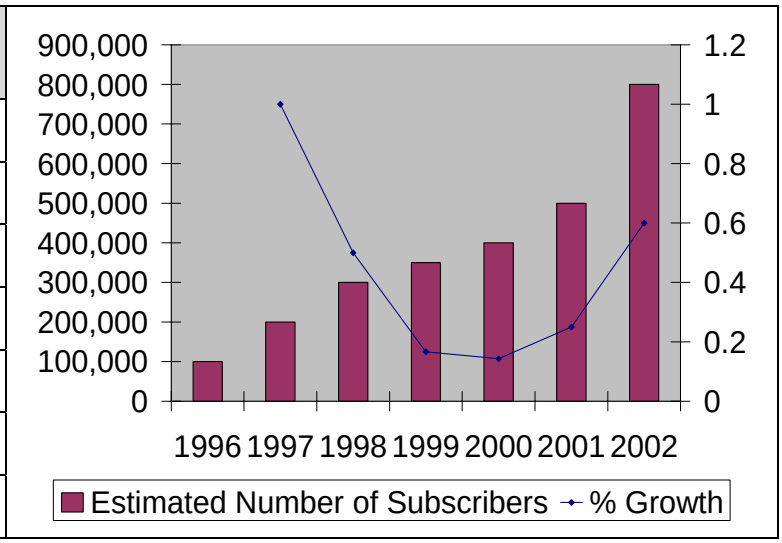
Internet Service Providers (ISPs). Internet Service Providers or ISPs are considered by the NTC as a part of the value-added sector of the telecommunications industry. They also play an important role in the Internet access delivery supply chain. In addition, this segment is perhaps the fastest growing in the industry after its liberalization in 1994. (OPTEL, 2002) There were only 4 ISPs in 1995. The year after, NTC registered 24 ISPs with an estimated 100,000 subscribers. By 2002, NTC-registered ISPs number to 53, with about 800,000 subscribers. Recently, because of the difficult operating environment of the ISPs, no more than 20 ISPs are believed to be active.

Official statistics on the size of the Internet subscribers are not available. The NTC has estimates provided to it by the ISPs that were willing to share information (Table 2.4). From the limited information available, by the end of 2001, PLDT-subsidiary Infocom controlled a 13% of the market. The said company entered the ISP market in 1995. Mozcom and Pacific Internet tie with the second largest market share of 5% each (see Figure 2.3).

However, the most significant sub-segment of the ISP market is the pre-paid internet access. In 2001, it was estimated that more than 60% of all Internet subscribers had pre-paid Internet access. However, this was still a conservative estimate – as the irregularity of subscription renewals for pre-paid Internet subscribers made it difficult to account for their actual number. This market niche proved to be profitable for ISPs as it allowed them to reach market segments that could not afford post-paid Internet access.

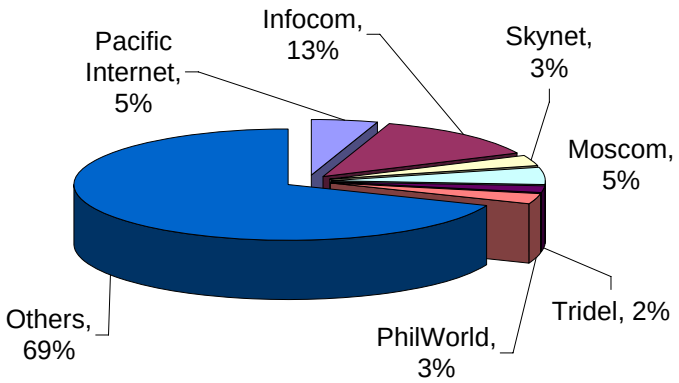
Table 2.4. ISP Subscription

| Year | No. of NTC-Registered ISPs | Estimated No. of Subscribers |
|---|---|---|
| 1996 | 24 | 100,000 |
| 1997 | 17 | 200,000 |
| 1998 | 23 | 300,000 |
| 1999 | 31 | 350,000 |
| 2000 | 34 | 400,000 |
| 2001 | 64 | 500,000 |
| 2002 | 53 | 800,000* |




*Source: NTC*
** Based on paying accounts, the number of dial-up subscribers is estimated at 675,000 and the number of broadband subscribers is estimated at 125,000*

Figure 2.3. Market Share of ISPs (End of 2001 - Estimate)




*Source: OPTEL*

Internet Backbones. An Internet backbone is "a group of communications networks managed by several commercial companies that provide the major high-speed links across the country. ISPs are either connected directly to these backbones or to a larger regional ISP that is connected to one." These backbones, in turn, are interconnected at Network Access Points or NAPs. Naps are also known as Internet Exchanges or IXs. They are junction points where major ISPs interconnect with one another. Connection with any of these NAPs entails an internet connection. (OPTEL, 2002)

In the Philippines, there are 4 Internet backbones: (1.) PHNet, (2.) the Philippine Internet Exchange (PHIX), (3.) the Manila Internet Exchange (MIX), and (4.) I-Gate, a PLDT subsidiary. PLDT's I-Gate has the only interconnection with Asian Internet Exchanges, while the rest are connected to US-based backbones. (OPTEL, 2002). PHNet, which is managed by the Philippine Network Foundation, is a free exchange and therefore open to all registered ISPs. However, since PHNet does not have a backbone, ISPs that interconnect with it must have their own gateways and provide their own links (at least 128kbit/s) to the exchange. Like I-Gate, PHIX is also operated by PLDT and has about eight ISPs using their exchange. MIX is operated by Eastern Telecoms (ETPI) and has 13 ISPs hooked on to it. Since PHNet does not have its own backbone and telecom franchise, PHNet is interconnected with MIX.

Internet Data Centers. An Internet Data Center (IDC) is a data center with "a centralized facility providing network, server, and storage resources for one or more applications being utilized by one or more 'users'" (Coughlan, 2004). IDCs provide hosting services to companies that want an online presence but do not have the capability to do so. There are about 10 companies providing this service (Table 2.5).

Table 2.5 IDC Initiatives (2001)

| No. | Company | IDC Status | Location |
|---|---|---|---|
| 1 | PLDT | Infocom and Vitro IDCs operation in 2001 | Metro Manila |
| 2 | Ayala Port Makati Inc. | Operation in August 2001 | Metro Manila |
| 3 | CyberCity Data enter (Subic) | Operation since 2001 | Subic Economic Zone |
| 4 | Iphil Communications Network, Inc. | Operation in August 2000 | Metro Manila |
| 5 | Philweb | Under development | Metro Manila |
| 6 | Reach Networks, Inc. | Operation by end 2001 | Metro Manila |
| 7 | Broadband Philippines | Under development | Metro Manila |
| 8 | Moscom | Operational in July 2001 | Metro Manila |

| | | | |
|---|---|---|---|
| 9 | Impact Information System | Operation in 2000 | Metro Manila |
| 10 | DataOne Asia | Operational in 2001 | Eastwood Cyberpark |

*Source: OPTEL and Various Industry Sources – taken from OPTEL, 2002*

E-Commerce. The increasing popularity of the Internet and its continuous innovation has led to the phenomenon called e-commerce, or business transactions, usually a transaction, carried out over cyberspace. The emergence of e-commerce, on the other hand, has led to the creation of many e-commerce models. These models are normally defined by the transaction relationship between 2 key agents: the consumer and the business venture. Currently, there are four major types of e-commerce models: (1.) business-to-consumer or B2C, (2.) consumer-to-consumer or C2C, (3.) consumer-to-business or C2B and (4.) business-to-business or B2B. The most common business models applied in the Philippines would be B2C and B2B (Table 2.6).

Table 2.6. Sample of E-Commerce Models in the Philippines

| | **Business** | **Consumer** |
|---|---|---|
| **Business** | B2B<br>• Electronic Data Interchange links<br>• IBM Philippines' "supply webs" | **B2C**<br>• Bidshot.com<br>• eBili.com<br>• PinoyAuctions.com<br>• Divisoria.com<br>• SureSeats.com<br>• MyAyala.com |
| **Consumer** | **C2B**<br>• BayanTrade | **C2C**<br>*The difficulty in indentifying distinctly clear revenue streams in C2C business models have kept Philippine investors away from this segment. (OPTEL, 2002)* |

In the Philippines, much potential is seen in the B2C and B2B segments. It 2002, online B2C transactions were estimated to reach US$390 million. On the other hand, B2B transactions were likely to be US$36.8 million in the same year. (OPTEL, 2002)

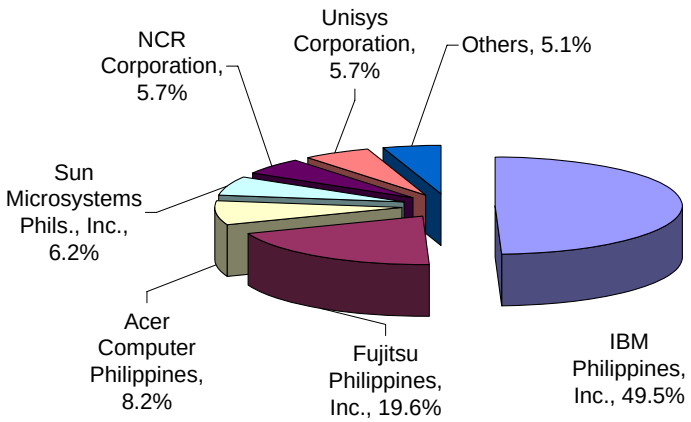
Retail e-commerce is also known as e-tailing. Most e-tailers can be characterized by as either high touch or low tough. High-touch e-tailers sell their products to consumers out of their own inventory, typically like Amazon.com. On the other hand, low-touch e-tailers serve only as a venue for buyers and sellers to initiate and fulfill transactions. Examples of this type of e-tailers would be eBay.com or its Philippine counterpart, Bidshot.com. (Castañeda, 2003)
E-tailers can also be further classified by two dominant business models:

a) Bricks and Mortars. This type of e-tailers is normally established retailers with a traditional physical presence, such as a store or branch. At the same time, they also have an online presence, which they use both as marketing and a transactions venue. An example would be SM Supermarket Online.

b) E-Commerce Businesses. These are also known as Pure Plays, e-tailers that do not have a physical presence. An example would be Divisoria.com

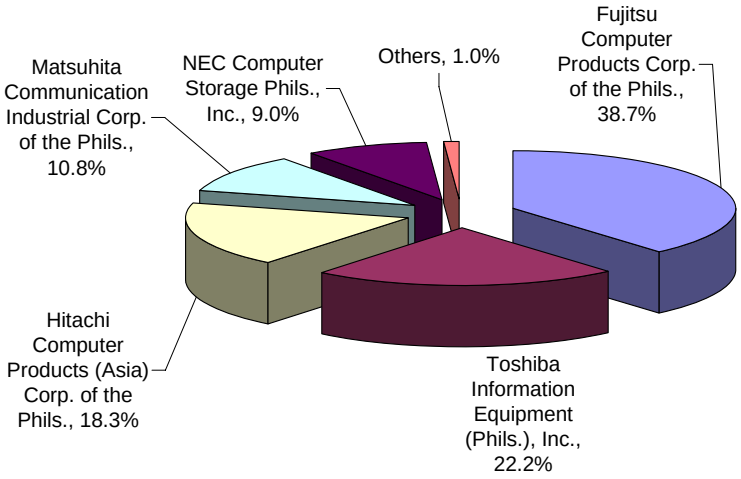
Computers and Peripherals. The absence of major computer manufacturing companies such as Apple and Compaq in the Philippines has allowed other players to expand in the local market (Figure 2.4). Meanwhile, the market segment for computer peripherals and brand name companies dominate data storage devices (Figure 2.5). Most of the locally manufactured computer peripherals are imported, while data storage devices such as hard disk drives and CD-ROM drives are exported. Among the computer platform manufacturers, IBM Philippines controls close to half of the market, followed by Fujitsu Philippines with a 19.6% share. For data storage devices, Fujitsu dominates 38.7% of the market, followed by Toshiba Information Equipment, Inc. with 22.2%. (OPTEL, 2002)

Figure 2.4. Market Share of Computer Platform Companies in the Philippines




*Source: ComputerWorld Philippines, 1999 – taken from OPTEL, 2002*

Figure 2.5. Market Share of Philippine-Based Manufacturers of Data Storage Devices

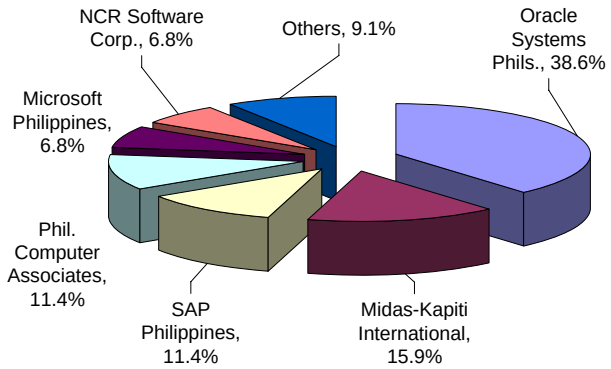



*Source: ComputerWorld Philippines, 1999 – taken from OPTEL, 2002*

Computer Software. The packaged computer software market in the Philippines earned US$44 million in gross revenues in 1999. The segment is dominated by US-based companies such as Oracle (38.6%) and Microsoft (6.8%) – all belong to the top players in the world market (Figure 2.6).

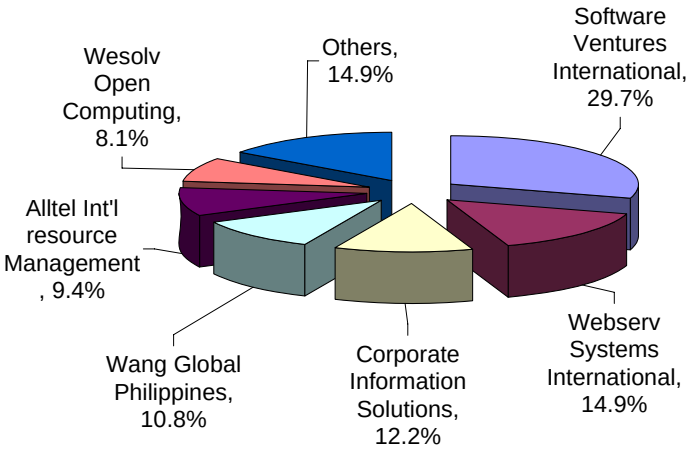
On the other hand, the customized software segment earned US$74 million in 1999. The dominant player is the Philippine-based SVI (Software Ventures International), controlling 29.7% of the market, or revenues equal to US$22 million (Figure 2.7).

Figure 2.6. Market Share of Packaged Software Companies in the Philippines




*Source: ComputerWorld Philippines, 1999 – taken from OPTEL, 2002*

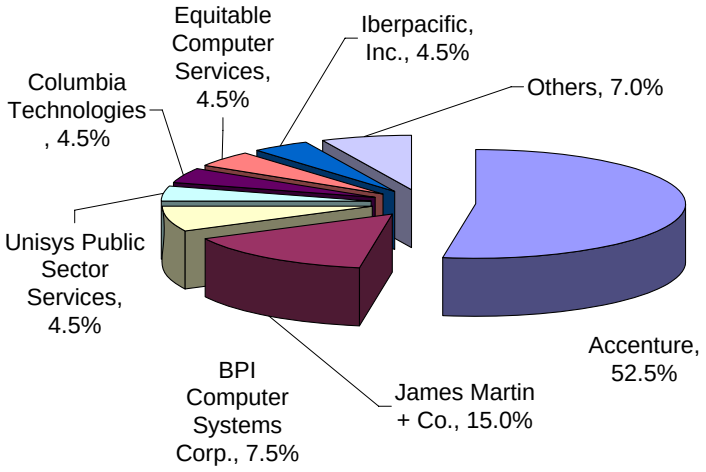
Figure 2.7 Market Share of Customized Software Companies in the **Philippines**




*Source: ComputerWorld Philippines, 1999 – taken from OPTEL, 2002*

Computer Consultancy. In 1999, the IT consultancy market earned US$66.7 million worth of revenues. Accenture currently dominates this segment in the Philippines, with a 52.5% share (Figure 2.8).

Figure 2.8. Market Share of IT Consultancy Companies in the Philippines




*Source: ComputerWorld Philippines, 1999 – taken from OPTEL, 2002*

**Content Providers**

The availability of these "info-structures (e.g. connectivity and ICT enablers)" in the country has paved the way for Philippines to emerge as a major contender in the global BPO market. The study does not dwell in detail on BPOs but discusses it in broad terms, below:

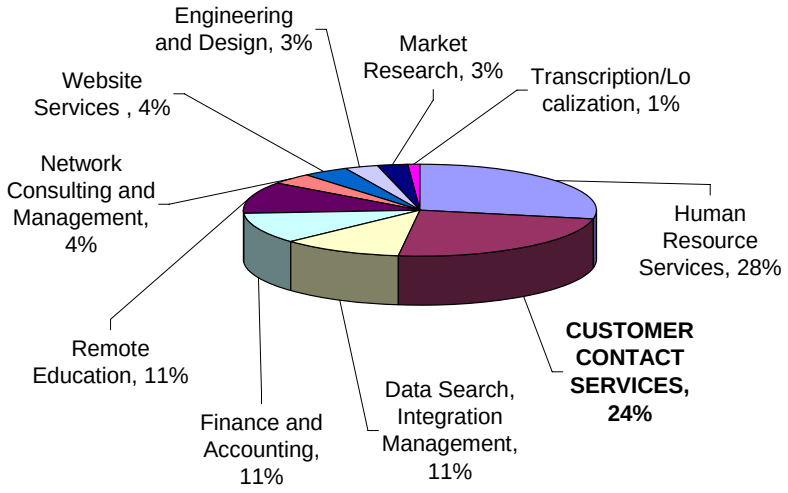
The emergence of globalization and the continuing need of many companies to lower operations costs has led to the growth of the Network-Enabled Services (NES) or IT-Enabled Services (ITES). These activities are based on the principle of Business Process Outsourcing (BPO), which is the practice of contracting part of a firm's operations to organizations outside of the company that specialize in such operations. BPO aims to achieve better performance and greater efficiency.

NES activities include, but are not limited to, customer contact centers (also known as call centers), medical transcription, animation, and distance education. In the Philippines, the NES industry is considered as one of the top potential growth drivers. In addition, the US-based McKinsey and Co. predicts that the demand for outsourcing services will reach US$180 billion by 2010.

According to the Department of Trade and Industry (DTI), the following are the outsourced operations the country is currently involved in:

1. Customer Contact Centers
2. Content Development
    a. Animation
    b. Transcription, Conversion and Localization
    c. Data Search, Integration and Analysis
    d. Distance Education
    e. Engineering and Design Services
3. Backroom Operations
    a. Finance and Accounting Services
    b. Human Resource Services
4. Core IT Services
    a. Website Services
    b. Software/Applications Development
    c. Systems Design

Figure 2.9. Global BPO Market by 2010




*Source: McKinsey and Co., http://www.dti.gov.ph*

The most popular NES in the country is the customer contact center, which generated an estimated US$180 million in 2003. Moreover, the DTI estimates that the sector is expected to earn US$864 in revenues by the end of 2004, while the whole BPO sector is expected to grow by 68% and earn US$1.6 billion in revenues by the end of the year.

The country is emerging as an alternative destination to India. Its attraction lies in the quality of the labor force – highly skilled, very proficient in English and maintains a high affinity with the Western culture, particularly with the United States. In addition, the country's infrastructure is reliable, efficient and cost competitive. (San Agustin, 2004)

**Economic Impact**

Current methods of measuring the economic impact of ICT are limited solely to the employment, investments and exports generated by the sector. At present, Bangko Sentral ng Pilipinas (BSP) and National Statistics Office (NSO) statistics lump exports of ICT under the heading "telecommunication services not elsewhere classified". It is equally difficult to appreciate the investments in ICT as these are likewise recorded by the (BSP) as investments under telecommunications and IT Services. Relying on the national income accounts does not

help either because the gross value added for telecommunications is quantified together with storage and transportation.

The most accurate data on ICT are those recorded by the Philippine Export Processing Zone (PEZA) – the government office tasked to provide incentives to the ICT sector and other sectors that enjoy special fiscal and non-fiscal incentives from government.

Since the start in 1992, PEZA has managed to attract some 60 ICT companies to locate and operate in the Philippines (Table 2.7). Call or contact centers and software applications are the major areas in ICT that have attracted the most investors.

Table 2.7 PEZA Registered Companies in ICT Services (As of 2002)

| Area | Allowed ICT Services Area | No. |
|---|---|---|
| ***1*** | Software Applications and Development, E Commerce Education, Media and Entertainment | **23** |
| ***2*** | Munti-media Graphics, Anikation, Printing and Other Services | **3** |
| ***3*** | Engineering, Architectural & other Design Services | **4** |
| ***4*** | Call Centers | **13** |
| ***5*** | IT Research & Development | **2** |
| ***6*** | Data Encoding, Transcribing and Related Services | **4** |
| ***7*** | Other IT Services | **11** |
| | **Total** | **60** |

Source: PEZA 2003

Investments. Recent records have shown that PEZA has attracted close to P25-Billion of investments in 2003. This has already surpassed the total investments of almost P23-billion of investments generated the previous year (Table 2.8).

Table 2.8. Total Approved Foreign Direct Investments (In Million Pesos)

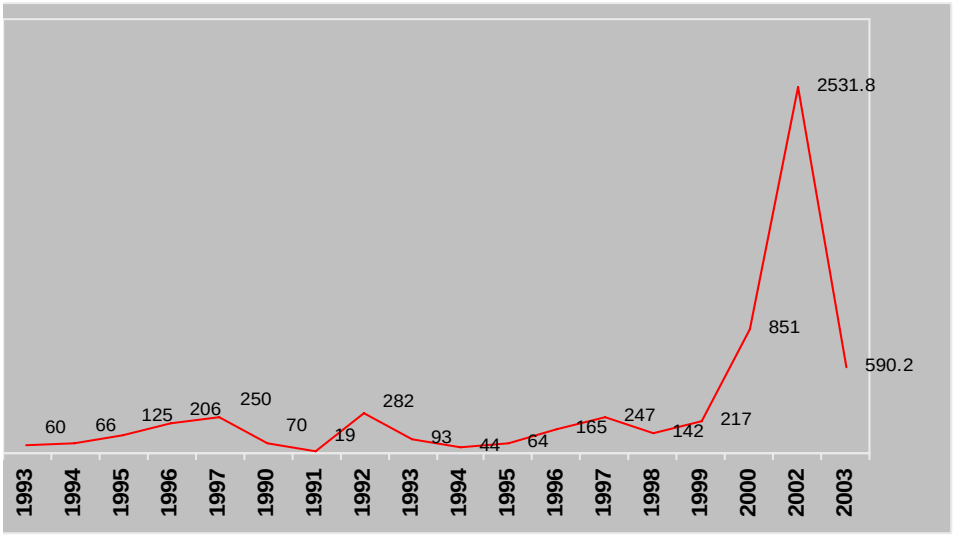
| | 2002 | | | 2003 | | |
|---|---|---|---|---|---|---|
| | Total FDI | FDI in ICT | % Share | Total FDI | FDI in ICT | % Share |
| BOI | 8,815 | 2,532 | 29% | 8,349 | 590 | 7% |
| PEZA | 22,796 | 6,969 | 31% | 24,923 | 11,850 | 48% |
| SBMA | 747 | 238 | 32% | 365 | 26 | 7% |
| CDC | 13,691 | 11,185 | 82% | 374 | 5 | 1% |
| Total | 46,049 | 20,924 | 45% | 34,010 | 12,471 | 37% |

Source: DTI

The role of ICT as an important generator of investments is getting bigger. According to the recent statistics from Department of Trade and Industry (DTI), more than a third of the investments are accounted for by ICT. In 2002 and 2003, ICT accounted for 45% and 37% of the approved investments of DTI, respectively.

A historical review of the data from the Board of Investments (BOI) clearly shows the climb of combined investments in ICT from a measly US$60-million in 1993 to over US$2.5-billion in 2002 (Figure 2.10).

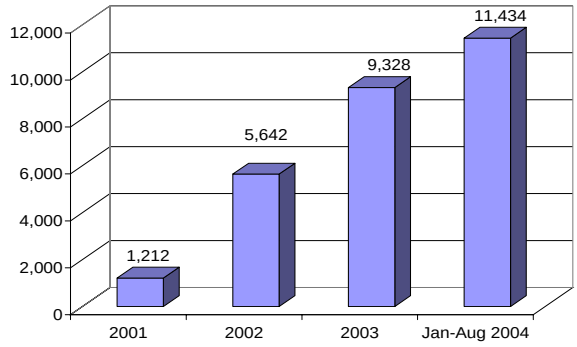
Figure 2.10. Board of Investments-Approved ICT Investments (In Million US$ Dollars)




Source: BOI, BSP

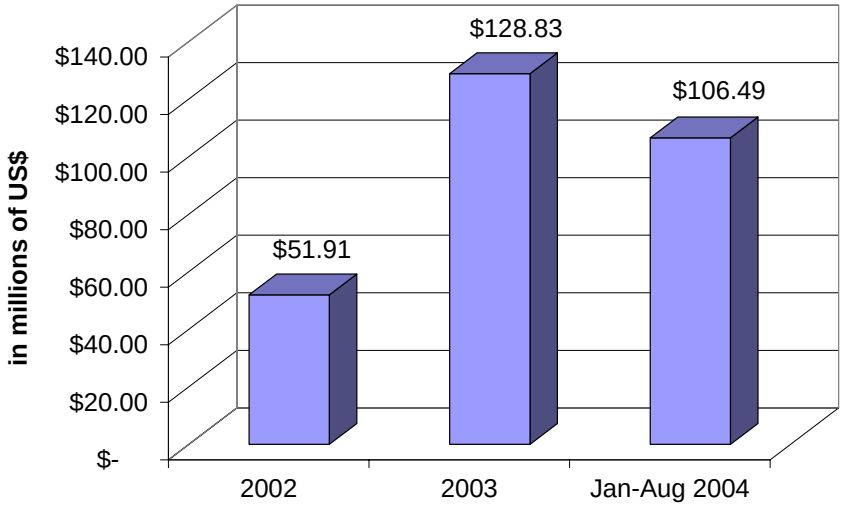
Employment. The investments in ICT that went into the export processing zones alone have generated over 11,000 jobs during the first three quarters of 2004 (Figure 2.11). It is estimated that the figure would even be higher if ICT locators outside the designated ICT zones are also included. According to the latest estimates of DTI, the contact centers alone have employed in 2004 over 60,000 agents. An additional 20,000 more were expected to be employed in the end of 2005 by contact centers. These employment figures yet exclude those employed by the telecommunications industry and other BPOs and IT-enabled industries. For example, the telecommunications industry in 2003 already employed close to 30,000.

Figure 2.11. ICT Employment in Export Processing Zones




Foreign Exchange. The exports of ICT locators in the export processing zones are on an uptrend. Export earnings of ICT in these special zones have risen rapidly. For example, in 2002, export levels were only about US$52-million but jumped more than two folds in 2003 when it almost climbed close to US$130-million. Likewise, these estimates are underestimated because it accounts for exports of locators only inside PEZA. It also excludes the additional dollar earnings of telecommunication companies and ICT companies outside the PEZA zones.

Figure 2.12 ICT Exports of Locators in Export Processing Zones



**Areas for Further Liberalization**

Liberalization in ICT is viewed in terms of the following: the access to foreign capital, the link with the global networks and the trade of services. As the previous sections have discussed, the first two are basically in place. Foreign capital has found their way into ICT. A large chunk of the investments in ICT particularly in telecommunications come mostly from foreign capital in the form of debt and equity. For example, close to 60% or P149B of PLDT's 2004 capital base of P265.5-B was financed by foreign debt floatation and 40% equity or P20-B of its equity base close to P48-B represent foreign equity. Another example is Digital Telecom's 2004 asset base of P52-B was 10% financed by foreign loans. There are already a number of foreign and IT service companies in the Philippines involved in customized and packaged software, IT consultancy services, computer platforms and data storages.

The link that the present ICT info-structure enjoys with global networks via submarine cables and through wireless modes like satellite and spectrums gives the sector relative ease in the flow of information, communication and transactions.

Perhaps if there are any issues on liberalization that has to be considered, it will center on the limits imposed on foreign ownership of domestically oriented companies specifically utilities and on the providers of content like media and its implications on convergence.[4] A provision in the E-Commerce Act was supposed to circumvent foreign equity limits especially on mass media but a single company has yet to use such a provision.[5]

[4] A 60-40 local-foreign proportion is imposed by the Philippine Constitution with regard to foreign ownership of public utilities and mass media. Article XII Section 11 of the Constitution mandates that the operation of a public utility shall be at least 60% Filipino-owned. Article XVI, Section 11, paragraph one states that the ownership of mass media is limited to citizens of the Philippines or to corporations, cooperatives or associations wholly owned and managed by Filipino citizens

[5] Section 28 of the E-Commerce Act seemed to have redefined certain terms and made them conform to the needs of the local IT industry. For instance, the last paragraph of said section states: "The physical infrastructure of cable and wireless systems for cable TV and broadcast excluding programming and content and the management thereof shall be considered as within the activity of telecommunications for the purpose of electronic commerce and to maximize the convergence of ICT in the installation of the GII (government information infrastructure)." With this, it now appears that the physical infrastructure of mass media can be considered as "within the activity of telecommunications (public utility)." This in effect, provided the possibility of telecom companies for "infrastructure convergence", which is actually a vague concept. Strictly speaking, true convergence must also include ownership of content as well which largely includes mass media. In fact, PLDT tried to purchase GMA Channel 7 indirectly through the purchase of GMA's pension fund, which in turn would own the channel.

Perhaps, another issue related to liberalization has to dwell on the purchase arrangements of licensed software and hardware. Many companies purchasing or importing their hardware and software requirements are constrained to buy only from authorized distributors in the country in order to avail of the needed technical support. Acquiring the same software in another country or even through the Internet, even though it is less expensive, will lead to forfeiture of such technical support and other warranties.

**Summary of Impact**

The impact of ICT on the Philippines is both qualitative and quantitative. The qualitative dimensions come in the form of more available services and choices, easy accessibility and ready availability of ICT services to users. No doubt, the state of connectivity and Internet-related services has made the Philippines interconnected with the emerging knowledge economy.

The quantitative aspect of ICT's impact is clearly demonstrated by the jobs, the investments and foreign exchange earnings and funds generated by the sector for the Philippine economy.

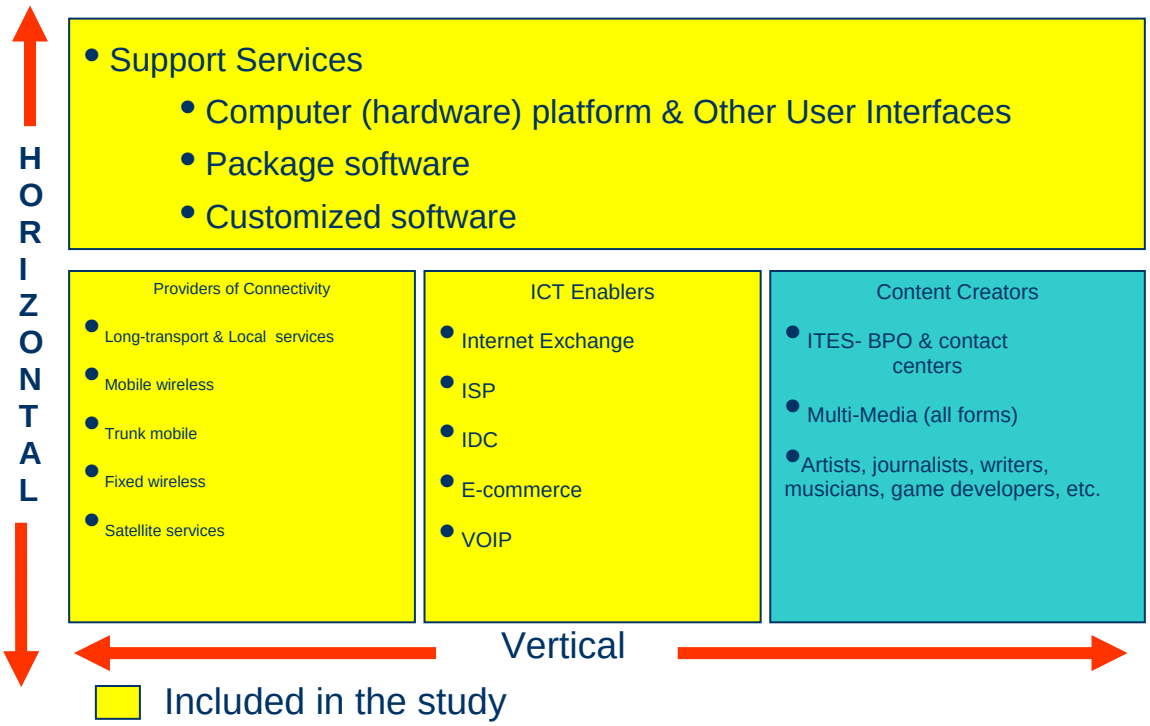
The role of ICT in improving the quality of life in the Philippines is becoming more and more prominent. The continuing development as well as competitiveness of ICT will play a pivotal role in determining the future participation and role of the Philippines in the Information Age. On one hand, making sure that the sector stays on its path towards competitiveness will largely depend on how competitive forces in the Philippines emerge in the future. On the other, the technical competence and knowledge, as well as the user accessibility to ICT will ensure that the nation fully participates in the prosperity and development brought about by being part of the Information Age.

## SECTION 3

## EVOLVING STRUCTURE AND BEHAVIOR

To understand the shifts in industry structure particularly along the ICT value chain[6], it is important to know the drivers of these structural changes. The figure below shows broadly the value chain of ICT.

Figure 3.1. Broad ICT Value-Chain




### The ICT Value Chain

The ICT sector is broadly composed of the providers of connectivity (e.g., telecommunications), content creators or providers (e.g., BPOs, contact centers), and the ICT enablers (hardware and software, Internet-based data carriers). All three have to be intricately

[6] An industry value chain refers to the separate activities that link industries to each other as either suppliers (upstream activities) or distributors and sellers (downstream activities). Activities can either be vertical, which are involved in the transformation of inputs and interface with customers, and horizontal, which are involved in providing the hard and soft infrastructure in which the primary activities depend on. These are intricately linked to each other in two ways: (a) through the Internet using hardware and software capabilities to incorporate and deliver content into and through connectivity structures; and (b) through convergence of different types of contents in the Internet.

linked with each other in ICT (Figure 3.1). Telecommunications is a vital component in providing connectivity.

Connectivity. Telecommunication infrastructure is indispensable in ICT. The telecommunications industry provides connectivity or the backbone in which content and data are transported. Connectivity is established either through wire-line or wireless means. Wires transmit the content through fixed "info-structures" like underground or underwater cables and optic wires. Telecommunications can establish all forms of access points for a community and supports the deployment of powerful broadband networks. Another possible provider of connectivity but less popular in the Philippines are cable-TV companies that use their cable connections as access points to provide Internet services to their subscribers.

Meanwhile, wireless connectivity can be established from a fixed point like an antenna or a disc (.e.g, fixed wireless), from a cellular site (mobile wireless) or through satellite (e.g., international satellites or VSATs).

Practically the two other components – namely content and ICT enablers – totally depend on telecommunications to deliver their ICT services. Thus, accessibility to this telecommunication infrastructure is of vital importance to ICT as a whole. It is a vital part in the Internet backbone – a communication network that provides the major high-speed links across the country and the globe. Entry barriers can undermine the easy access of non-telecommunication company providers of ICT services.

ICT Enablers. The Internet is an enabling-technology that electronically captures, transmit and display data and information. However, the Internet needs also both the providers of software and hardware and other user interfacers.

The application of the Internet continues to evolve and expand. One of the radical and recent applications of the Internet is IP-telephony – an important area in which this study would dwell on later. IP Telephony has the ability to by-pass some traditional infrastructure facilities like public switches and local exchanges provided by telecommunication companies. As Figure 3.2 can clearly illustrate, IP-telephony or popularly known as voice over internet protocol (VOIP) can, with its web-servers and gateway computers, by-pass the public switches and local exchanges using the Internet. Thus, calls and even video streams,

especially in voice/web integration protocols, can be transmitted between parties without having to go through the public switches.

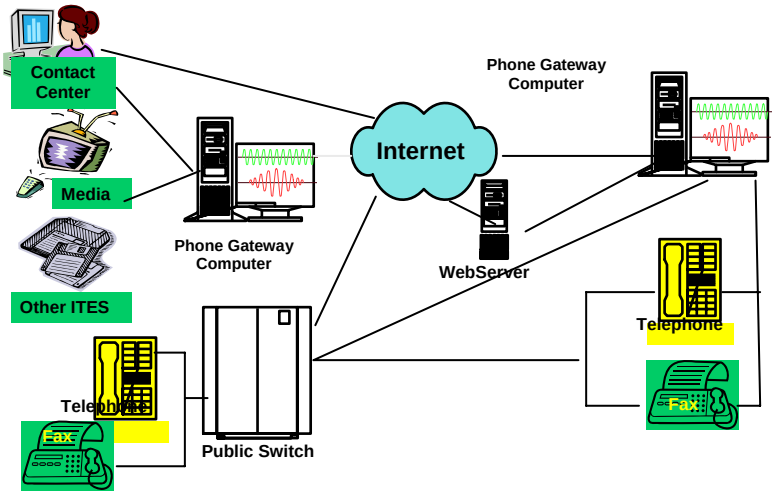



Figure 3.2 Voice/Web Integration

IP Telephony or VOIP as a term can be misleading because VOIP does not only imply the transmission of voice over the Internet. It also has capabilities to transmit electronically data via fax and even video via the PC and other internet-ready hardware. IP Telephony has led to cuts in the cost of calls especially for those that have been routed over the public Internet. Telecommunication companies have started migrating from having separate voice and data networks to converged web-based networks. Now, calls to websites and those made especially in contact centers use VOIP technologies. In fact, voice-web integration is found to be ideal for contact centers because of its integrated messaging capabilities to deliver for video, fax, e-mail and voice.

An ISP is a fundamental component of the distribution channel in the delivery of content and other value-added services making them a vital part of ICT. It is in the Internet that convergence occurs. This convergence has also fueled a lot of policy implications on government regulators and also on competition issues between companies. ISPs have to be interconnected at an Internet Exchange (IX) – an access point where all major ISPs are globally interconnected with each other. It is only by having this access to the IX can a party really be considered as “connected”.

Some of the value-added services that ISPs can provide besides the traditional e-mails, chats and the like are the following:

- Internet Data Centers. IDCs provide outsourced hosting services to companies planning to have their own web presence but do not have the resources nor the expertise to put up one;
- E-commerce or E-tailing services are specific term for "business models" used by various companies to create value, generate revenues and compete using the Internet as a medium. The services can include mobile and on-line services, mobile commerce, and the like.

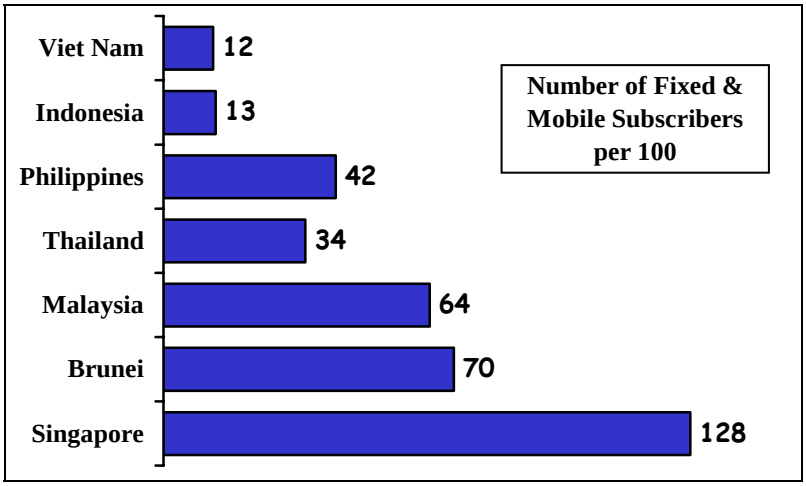
Content Providers. This refers to services or solutions that are transmitted through the Internet. This is primarily composed of IT-enabled activities like business process outsourcing (BPO) – a strategy of contracting out a service, a function or a part of the company's operations to an organization or company or country to achieve better performance and lower down costs. BPOs in the Philippines include among others the contact centers, medical and legal transcription, backroom accounting and finance, design, publishing, animation, etc. However, as discussed earlier, analyzing content providers are outside the scope of this study.

**Structural Change in the Telecommunications Sector**

Government policy played a significant role in the structural changes that happened in the telecommunications sector. The passage of Republic Act 7925 in 1995 otherwise known as the Public Telecommunications Policy Act provided the administrative and the regulatory framework for the development not only of the telecommunications industry, but also of other value-added services. Numerous studies have heralded the benefits of this law as exhibited by the entry of more players industry and provision of additional services. Even prior to the promulgation of RA 7925, the executive department and the DOTC offices under it have passed laws that caused the structural shifts in the sector.[7]

[7] Among the relevant policies prior to RA7925 that have initiated major structural changes are the following: the DOTC issued DOTC 92-260 which created an open and competitive environment in the cellular phone market, DOTC 93-273 and 94-277 led to the development of the domestic satellite services, and Executive Order 59 and 109 of 1993 compelled interconnection between company telecom networks and imposed the universal telephone service policy, respectively on companies that would provide IGF and cellular mobile services. After

Figure 3.3. Number of Fixed and Wireless Mobile Subscribers in Southeast Asia




Source: Asia-Pacific Tele-community PT, NTC (2003)

As of a result of the deregulation and the liberalization of telecommunications industry, the penetration rates for fixed line and wireless mobile services have increased in the Philippines. Fixed line teledensity jumped five fold from 1.17% in 1992 to 8.7% in 2002. In the same period, wireless mobile subscribers increased more than 536 times from 56,000 subscribers in 1992 to over 30 million in 2004 or 35% of the population. The expected improvements of teledensity in the Philippines in 2003 have surpassed that of Thailand but have yet to approximate that of Malaysia (Figure 3.3).

**Drivers of Deeper Structural Change**

Structural changes went beyond just an increase in the number of telecommunication players (see Table 2.1) and their available services. Market-driven and competitive forces are shaping the scope and degree of integration within the industry. Companies respond to these forces given the financial and technological resources available to them by strategies that aim to enhance their competitiveness. Unfortunately, if these strategic responses are left unchecked, it can diminish competition in the market or give rise to market dominance.

These forces or drivers of structural change and their impact are the following:

1. Growing popularity of short message services (SMS)

---

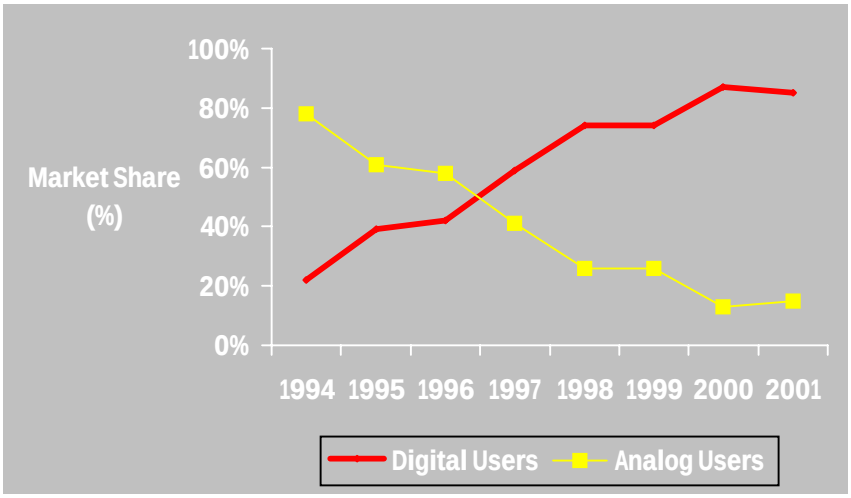
RA 7925, other laws followed like EO 467 of 1998, which allowed domestic carriers direct access to international fixed and mobile satellite-based technologies.

The Filipinos' love affair with SMS technology has earned for the Philippines the distinction of the "texting capital" of the world (The Straight Times, 2002) with over 250 million to as high as 300 million text messages sent daily. The high adoption rate of cellular mobile telephone system (CMTS) among Filipinos is the combined results of massive capital investments in technology and advertising intensity of telecommunications company (Lim, 2002). As the study of Lim has shown, maintaining a huge market share to attain scale economies is necessary to sustain the profit margins.

The intense competition in the wireless mobile industry has triggered shifts to new technologies. Cellular phone operators have heavily promoted SMS with low rates that can be matched only by countries with large economies of scale like China. The market preference for SMS, which has become a substitute for voice communications, has triggered the adoption of GSM digital-based technologies and the death of the analog system – a dead-end technology (Figure 3.4).

This migration to digital systems is significant because this now brings companies to launch general packet ratio service (GPRS)-based wireless access protocol (WAP) and multi-media services (MMS). Intense competition has forced the industry to be creative in wireless programming such that the 2G SMS-driven applications has evolved to be a viable option to 2.5G or even the Enhanced Data Rates for GSM Revolution (EDGE). This makes wireless mobile communications an important platform in which a large subscriber base of over 30-million Filipinos in 2004 alone can access the Internet and other ICT services. GPRS for one allows for IP-based communication, making it capable for mobile Internet applications.

Figure 3.4 Market Share of Digital and Analog Users in CMTS




Source: Various Company Reports

The impacts of the growing popularity of SMS are as follows: (a) triggered migration of telecom usage from landlines to cellular based communications; (b) widening of the addressable market because of the prepaid cards that reduce the average rate per user, which in turn increased the pressure on telecom companies to achieve scale economies; (c) lack of incentive to migrate to more powerful 2.5G and 3G applications because of the successful adoption of 2G applications for GPRS-based WAP and MMS.

It is expected however that in the near future, telecommunications companies will be forced to adopt the 3G platform because of the need to be ahead of the competition. The 3G platform can deliver more and sophisticated content than the 2G platform. For instance, 3G handsets will be capable of providing "voice-messaging" and video stream services unlike its 2G predecessor, which is limited to SMS and MMS capabilities.

2. Excess capacity in fixed lines

RA 7925 mandated the service areas scheme (SAS) in which newly licensed international gateway facilities (IGF) providers were required to install 300,000 land lines and CMTS providers, 400,000 lines in designated areas in the Philippines. This "missionary" move is similar to the concept of the universal service fund (USF) of the Federal Communications Commission wherein telecommunication companies are "to

promote the availability of quality services at just, reasonable and affordable rates; increase access to advanced telecommunications services throughout the nation; advance the availability of such services to all consumers including those in low income, rural, insular, and high cost areas at rates that are reasonably comparable to those charged in urban areas."

As a result of the boom in CMTS, the demand for fixed lines has remained sluggish. The cellular mobile market has grown at a spectacular rate over the years from a very low base in 1991 of 33,800 subscribers to approximately 33 million subscribers as of end of 2004 representing to a mobile density of 36 per 100 people. The country is now experiencing a decline in fixed line tele-densities. In 1999 fixed line teledensity stands at 9.12 for every 100 people, in 2000 it declined to 9.05 and in 2004 to 7.83. Of this, only 4.16 were subscribed for 2004. The country's telecommunications carriers because of the increasing popularity of cellular phones cut back their infrastructure investments in fixed line services.

3. Varied broadband choices but low market adoption

Broadband technologies have begun in the Philippines since the early 1990s in the form of digital subscriber line (DSL) and fixed wireless systems. There are about 10 operators providing the service but all have been experiencing difficulty in expanding their customer base. Broadband subscription level is still low in the country but trends point to a steady increase. For example, PLDT has 50,000 in 2004 from 25,000 in 2003 and 9,000 in 2002; while Globe's broadband subscribers increased by 539% from 2,231 in 2004 to 14,258 in the first half of 2005. This low subscription level can be attributed to a number of factors:

a) The wide array of broadband technologies available left the market confused which systems would best meet their requirements (ITU, 2002).
**b)** Broadband pricing is twice as high as Hong Kong (Pyramid Research, 2004) making it beyond the reach of the average Filipino households. It is more intended for the corporate and high-end residential accounts.
**c)** The industry appears to be unwilling to push for a single broadband standard because the much-heralded DSL, though slow in terms of speed by international

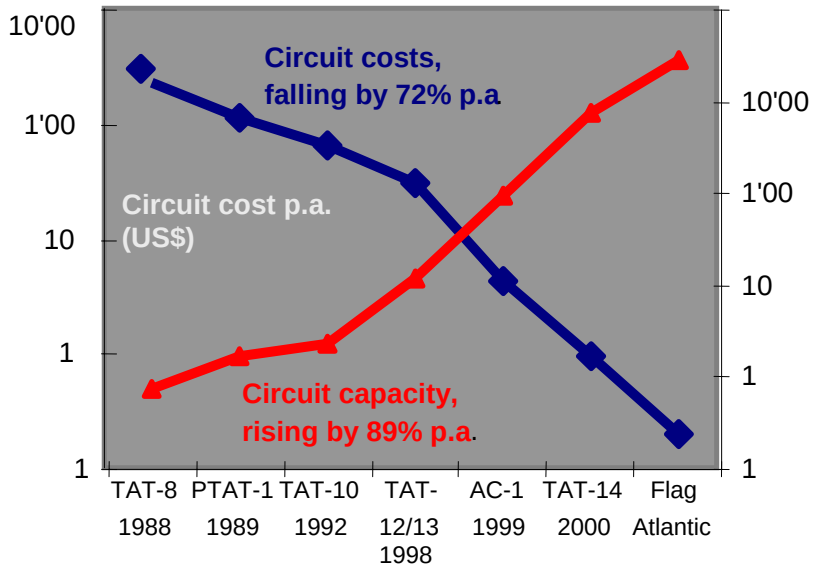
standards, makes use of the existing copper wires infrastructure. Mr. Saniel of CICT pointed out the possible reasons for this: (i) the bandwidth bottleneck that limits access to the "last mile"; (ii) large capital exposure in copper loops such that replacing it with a broadband optic fiber network would be very expensive. The long economic life of these cables is a financial burden to the company that lasts for many years. Even though this may be replaced by fiber optics, the copper depreciation charges would continue until it is fully amortized, unless a massive write-off is done. (iii) a number of technological developments have emerged like Digital Subscriber Loop (DSL) which in fact maximizes the utilization of the existing local (copper) loop.

3. Overcapacity of bandwidth and cost-cutting technology

The rapid increase in bandwidth capacity has led to the reduction in the cost of bandwidth (Figure 3.5). Thus, margins from international calls have slid because of pressures from US companies to reduce settlement rates, the growing popularity of IP telephony and the alternate routing of calls. In fact, domestic carriers have reduced their settlement rates to stem the rise in illegal accounting rate bypass traffic. This reduction may have increased the volume of call-minutes by over 100% for PLDT in 2000, but revenues from international long distance calls (ILDC) as a percent of total revenues have significantly declined from 51% in 1996 to just 21% by 2000.

The immediate impacts of these factors are cuts in margins from international calls, increased the attractiveness of VOIP and further encouraged the routing of calls.

Figure 3.5. Global Circuit Capacity




***Source: Kelly of ITU, adapted from FCC: IT Telephony: Substitute or Supplement***

4. The popularity of Pre-paid and Internet Café services

Over 97% of CMTS subscribers are pre-paid users and a majority of internet users also either use dial-up pre-paid internet cards or access the web through internet cafes[8]. The margins from pre-paid services are attractive that telecommunication companies would not shift away from this strategy. For CMTS, the use of pre-paid cards deepens the addressable market to the lower income classes. For landlines, this encourages additional subscribers to tap into the excess landline capacity of the carriers. And for broadband services, pre-paid dial-up cards are more attractive leaving little incentive for the telecommunications carriers to pursue more aggressive price cuts and marketing strategy. This also further cuts into the ARPUs and increases the churn rate of CMTS.

5. The Large OFW market and Reactions of Foreign Carriers

The over 7 million Filipino overseas workers create a unique market for the domestic telecommunications carriers because of the overly lopsided traffic volumes between

[8] Internet cafes can also be considered as an important access channel for the users. For instance, Netopia, an Internet Café owned by Digital Paradise (a Subsidiary of ePLDT) reported that it serves over 2 million people a month. Users normally come to play on-line games, chat, apply for jobs, do research, etc. Netopia has 6,000 workstations and over 100 outlets nationwide.

in-bound and out-bound calls. For instance, of the average 2.2.-billion minutes of calls handled by PLDT, close to 2 billion were incoming calls. This unique feature of international traffic is largely residential rather than business. Mr. Saniel of CICT commented that the incoming calls are mostly paid by customers overseas rather than by customers in the Philippines. The large number of Philippine expatriate communities and overseas foreign workers living and working abroad explains why most of the international traffic is residential rather than business. For the sheer cost of it, making ILD calls to relatives abroad is something that Filipinos are not too eager about but would rather wait for their relatives abroad to call. This may provide a high degree of market power to the domestic carriers vis-a-vis their foreign counterparts.

Mr. Saniel however commented rather the opposite: "The exercise of market power by domestic carriers over foreign carriers seemed to have ended as detrimental to domestic carriers. One such case happened on February 7, 2003 when AT&T and MCI WorldCom filed a petition against some Philippine telecommunications companies with the FCC, seeking a stop-payment on settlements to some Philippine carriers for the reason that Philippine carriers were "whipsawing" AT&T and MCI into agreeing to an increase in termination rate to the Philippines.[9] **"**The US FCC issued an Order stopping US-based carriers from paying settlement payments to some Philippine carriers.As a result of FCC's order, it prohibited US-based carriers from compensating the affected Philippine carriers for switched services, whether rendered before or after the date of the Order."

He also specified that Philippine carriers though benefiting from the imbalanced traffic, International Simple Resale (ISR) operations have significantly impinged on the revenues of Philippine carriers. ISR is the routing of inbound international calls through private leased lines or IP data lines, and then terminated to a called party through a local cellular or fixed line number. As the ISR operators terminate an inbound IDD call as a local call, they are able to offer at much lower rates to foreign carriers than current termination rates. Thus, Philippine carriers are not able to fully realize the full inbound revenues from foreign carriers.

[9] **Whipsawing"** happens when a foreign monopoly supplier uses its market power to negotiate a more favorable agreement from one buyer and obtain the same conditions from another.

**Firm Behavior and Strategy**

There are various responses available in the strategy arsenal of companies. These strategies are strategic responses the companies take to deal with the environment and their competitors – whether existing or potential.

1. Pursuit of scale and scope economies through vertical and horizontal integration strategies

   In response to the competitive forces and the market preferences, telecommunication companies, in order to reduce costs and increase margins, have adopted the twin strategies of achieving scale and scope.[10]

   Integration strategies of telecommunication companies to achieve scale and scope economies are natural strategies especially because of the close synergy between long-haul and Internet exchange backbones, and the applications and content that use them. According to Mr. Saniel, "one consequence of convergence is that it is becoming unsustainable to maintain separate networks and business strategies for voice and data networks or for fixed and wireless networks. In the future, these will be the same networks which would carry digital bit streams between and among users and suppliers."

   Forward vertical integration or getting more control of the downstream industry linkages that are part of the primary support activities provided by telecommunication companies is relatively easy as these would merely comprise putting up, acquiring or merging with downstream industries. These downstream industries would include ISPs, Internet Exchanges, the IDCs, broadband wire and wireless Internet, and even content like contact centers and BPOs.

   For example, PLDT is now virtually present throughout the value chain of the ICT through its exposures in different but complementary markets:

[10] Economies of scale occur when in the long run unit costs would fall as the company's output increases. Economies of scope on the other hand occur when unit cost would fall as the company produces two or more services using shared resources or a similar platform.

- Long haul transport services by controlling one of the two major backbones that can provide local and long-distance services:
- Mobile services through its presence in cellular mobile (Smart-Piltel which now controls over 50% of the mobile market), satellite services (Agila II), fixed wireless (Netopia)
- More downstream industries like ISPs (Infocom), IDCs, and the Internet backbones (PHIX and I-Gate);
- Content providers like wireless programming (Wolfpac Communications), contact centers (Vocativ, Parlace, ContactWorld), and other data storage and communication services (E-PLDT).

The next battleground of the industry is the 3G mobile market. The need to remain competitive and to provide more services to a demanding consumer market will eventually force companies to horizontally migrate to the 3G platform. More investments on equipment, handsets and content creation will be required.

Forward integration strategies by telecommunication companies in the Philippines are a norm rather than an exception. Like PLDT, active companies in the telecommunication industry, which is actually at the most upstream portion of the ICT value chain, have no other option to generate more value but to go downstream. Table 3.1 shows how conglomerate companies have marked their presence in different markets of ICT.

Table 3.1 Presence of Telecommunication Companies in the Value Chain of ICT

| | PLDT | Globe | Benpres | Digitel | Belltel | PT&T |
|---|---|---|---|---|---|---|
| Connectivity | | | | | | |
| Fixed Line | x | x | x | x | | x |
| Wireless(Fixed&Mobile) | x | x | x | x | x | |
| Cable | x | | x | | x | |
| Satellite | x | x | x | | x | |
| ICT Enablers | | | | | | |
| Internet | x | x | x | x | x | x |
| Broadband | x | x | x | x | x | x |
| Internet Exchange | x | x | x | | x | |
| Harware & Software | x | | | | x | |
| Content | | | | | | |
| Contact Center | x | | x | | | |
| Video/VOIP | x | x | x | x | x | |
| Data Storage | x | | x | | x | |
| E-commerce | x | x | | | | |
| Wireles Progamming | x | | | | | |

2. More pressure to increase content through convergence strategies

   As competition becomes more intense, the pressure of telecommunication and other companies in the ICT sector to go further downstream to extract more value also increases. This pressure, coupled with the availability of the technology, actually resulted in the convergence of IT and content in the Internet. Virtually anything that can be digitized can be stored, retrieved and transmitted electronically via the Internet. Besides data, other digitized information like voice, video, print and still-images can be electronically transmitted real time through the Internet. Thus, many ICT companies including vertically-integrated telecommunication companies are "converging" making the Internet another form of media to transmit, transact and interact with data and information on real-time. For instance, to have presence in the net and to reach a wide market base as possible, broadsheet print media like the Philippine Daily Inquirer, the Manila Bulletin and Philippine Star have websites where they can be accessed. Another example is the desire of independent ISPs to offer VOIP or get interconnected to DSL or more powerful broadband Internet services.

3. Emerging market power

   The vertical integration strategies along the primary activities of the ICT value chain particularly by telecommunication companies have begun to increase the concentration ratios of the industries within the sector. The strategic behavior of controlling the "access channels" while expanding the value chain has increased the market power of companies mainly that of the telecommunications industry (Table 3.2). Except for the support activities and fixed wireless segments, the mainstream value chain activities are already showing high levels of market concentration. Activities that have high market concentration ratios include the long-haul and the backbones (.58), the mobile wireless services(.51), the internet exchanges (.75), fixed wireless (close to 1.0), and the ISPs (.50).

Table 3.2 Mainstream Value Chain Activities Showing High Levels of Market Concentration

| **Support ICT Services** | **HARDWARE AND SOFTWARE** | | | | | |
|---|---|---|---|---|---|---|
| *Services* | **Computer Platform** | **Data Storage** | **Packaged Software** | **Customized Software** | **Computer Consultancy** | **Telecom Equip't Supplies** |
| *No. of Players* | > 7[1] | > 7 | > 7 | > 10 | > 10 | > 7 |
| *Major Players* | IBM<br>Fujitsu<br>ACER<br>SAP | NEC<br>Toshiba<br>Fujitsu<br>Hitachi | Oracle<br>Microsoft<br>SAP | SVI<br>CIS<br>Webserve | Accenture<br>James Martin<br>BPI Systems | Siemens<br>Ericsson<br>Nortel<br>NEC |
| *Herfindahl Index* | 0.30 | 0.25 | 0.22 | 0.17 | 0.32 | NA |

| **Primary ICT Services** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Nature of Services* | **LONG-HAUL TRANSPORT** | **LOCAL SERVICES** | **LONG-DISTANCE SERVICES** | **MOBILE – WIRELESS** | **TRUNK – MOBILE** | **FIXED – WIRELESS** | **SATELLITE SERVICES** | **ISP'S** | **INTERNET BACKBONE** | **IDC** | **E-COMMERCE** | **VOIP** |
| *No. of Players* | Consortium<br>PLDT | LECS – 74<br>Private–12<br>Public-62<br>PAPTELCO | IGF – 11 | 7 | 10[2] | 6[3] | 19<br>MPSC – Agila II<br>VSATs - 19 | 53[4] | 4[5] | 10[6] | > 15 | > 2 |
| *Major Players* | PLDT<br>TelecPhil*<br>* Seven (7) companies led by Bayantel | PLDT<br>Globe<br>Digitel | PLDT<br>Globe<br>ETPI<br>Belltel<br>Digitel<br>Bayantel | PLDT-Smart-Piltel, Globe-Islacom, Digitel | Nextel<br>Worldwide | Meridian*<br>Nowires*<br>Netopia*<br>Globe<br>* PLDT affiliates | PLDT<br>Globe<br>Philcom<br>CAPWIRE | Pacific Infocom*<br>Mozcom<br>Skynet<br>Philworld<br>* PLDT affiliates | PhNET-Manila Internet Exchange<br>I-Gate*<br>PhiX*<br>* PLDT affiliates | PLDT<br>Ayala Port<br>DataOne<br>Impact<br>Info System | BayanTrade | PLDT<br>Globe |
| *Herfindahl Indices* | 0.58[7] | 0.23[8] | | 0.51[9] | 0.33[2] | Close to 1.0 | NA | 0.50[4] | 0.75[5] | NA | NA | NA |

[1]ComputerWorld (1999) as collated by OPTEL (2002)
[2]Based on 2002 NTC data
[3]Estimate as of 2002
[4]Based on 2002 NTC data but market share sourced from OPTEL (2002)
[5]OPTEL (2002). Data on ISPs interconnected come from ITU (2002) and OPTEL (2002)
[6]OPTEL (2002)
[7]PLDT controls about 70% and Telecphil the balance
[8]Based on 2002 market share of fixed line subscribers
[9]Based on 2002 NTC data

There are clear indications that the industry structure built along vertical integration strategies is threatening to bring back the ICT into the hands of a few or into a monopoly structure.

Competition along the support activities of the value chain comprised mainly by hardware and software activities remains intense. Most of the companies that compete in this segment are multinational companies that also intensely compete in the global markets.

## Implications of Increasing Market Dominance

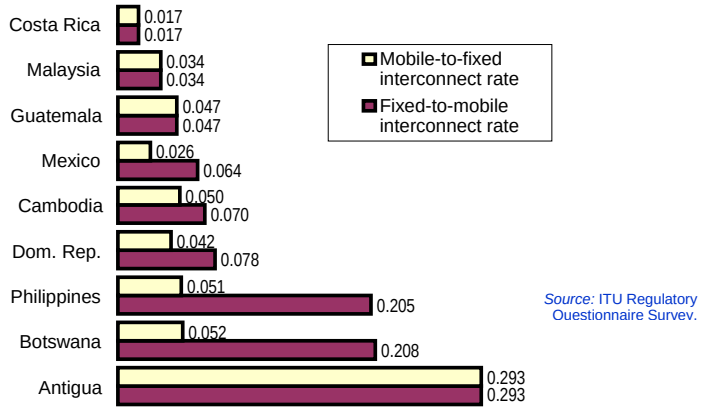
1. Possible Price Discrimination

The growing importance of wireless mobile communication provides disproportionate market power to the providers of these services. Fixed line operators will either loose a

large chunk of incoming ILD traffic to CMTS that already have begun operating their own international gateways or will have to pay more in order to reach a large proportion of the population. Also, international carriers will have to contend with the growing market power of the CMTS providers. This market power is already evident in the large disparity between the rates of fixed-to-mobile services and rates of mobile-to-fixed services.

In the Philippines, call charges from fixed-to-mobile is four times more expensive that mobile-to-fixed. Such large disparities are not seen in countries like Malaysia, Costa Rica or Guatemala (Figure 3.6)

Figure 3.6 Mobile to Fixed and Fixed to Mobile Interconnection Rates (US$ per Minute)




Source: ITU

2. Indications of strategic entry deterrence and predatory-pricing strategies

Highly integrated telecommunication and ICT companies with market dominance can easily employ entry deterrence strategies against new entrants or their existing rivals. Entry barriers can be put up using economies of scope and scale against new entrants who will be forced to enter the market either on a large scale or will be compelled to launch a broad range of product lines in order to keep its costs lower as the larger firms already existing in the market.

Also, the first-mover advantage, Mr. Saniel pointed out, is also employed. "New entrants are at a disadvantage considering that they still have to construct their own network infrastructure and identify target markets while the well-entrenched market players have already created market niches and are only working on further broadening their already

large subscriber bases. The huge capital requirements involved in constructing the network, the process of building up subscriber base, and in meeting the Congressional Franchise Requirement[11] are very costly. Apart from the above-enumerated factors, an investor intending to provide cellular mobile service is faced with the need to secure frequencies, which at the moment is either scarce and/or unavailable, especially for GSM.

New entrants will need therefore to have the financial resources and to be highly innovative in terms of products/services offerings, technology, and organizational efficiency to be able to effectively compete with incumbent operators."

Lastly, the control of the critical backbones by vertically integrated telecommunication companies is almost tantamount to the control of the distribution channels needed by any content or application provider. Such is the problem currently faced by the independent ISPs that lodged a complaint against PLDT. Represented by their association, the Philippine Internet Services Organization (PISO), the ISPs complained to the NTC against the "anti-competitive" practices of the dominant telecommunication companies (www.piso.org.ph).

PISO has observed that the "internet strategy" of the telecommunication companies has made the latter (the telecommunication companies) their direct competitors. According to the organization, the telecommunication companies resorted to predatory pricing setting "prices to the general public that no independent ISP can possibly compete with. To top it off, telco based services (e.g. DSL and ISDN) remains only available to the telco's affiliated ISPs."

Economies of scale and scope of the telecommunication companies can allow incumbents to erect entry deterrence strategies. According to PISO, the telecommunication companies have set the prices of E1/R2 – a signaling standard that allows a single cable to have thirty (30) channels – 20-45% higher than what telcos offer to their own affiliated companies. This strategy has allowed these telecommunication-affiliates, according to PISO, to introduce "new services at way below market prices. Connectivity services were not made available to the

[11] RA 7925 requires a congressional franchise to all entities wishing to operate a telecommunications network in the country. Securing a congressional franchise is tedious, costly and normally takes years before it can be granted.

independent ISPs but, according to PISO, are made "available to their own sister-companies."[12]

The other litany of complaints PISO filed against PLDT is the following:

- Delay in acting on the request of PISO members for access to its DSL infrastructure, which the delay is tantamount to denial of access;
- Delay in acting on the request of PISO members for access to its VIBE Service or Domestic Dial-Up Internet Service, in which the delay is tantamount to denial of access.

**Emerging Competition Policy Issues**

1. Unchecked Industry Behavior and Spectrum Management

   While it is justifiable to pursue scale and scope economies, unchecked anti-market behavior by incumbent telecommunication players can make the market less competitive in the long run.

   No inquiries have ever been made on the growing vertical and even horizontal integration strategies of telecommunication companies. Neither are there any inquiries on the extent firms can pursue such strategies. The strategic decision to integrate is obviously intended to achieve certain degrees of efficiency for the company but the implications on competition and social welfare are not taken into account by the regulator. Meanwhile, the absence of clear guidelines on such strategies is paving the way for market dominance and monopolies to emerge. Another potential flashpoint is the emerging use of spectrums for connectivity. The absence of a regulatory framework on spectrum standards, ownership and management in an industry that is beginning to use spectrums more and more can undermine the development of and competition in the industry. Mr. Saniel made the following comments:

[12] A case in point is the DSL services. "Priced at Php 2,500 for the entry level DSL service, and only available as a service through a Telco's own brand or its affiliated ISP, this service is a clear symptom of monopolistic tendencies. What independent ISPs would like to know is how a telco can afford to resell their DSL services complete with bandwidth, support and so on for only Php 2,500 a month when in fact they are re-selling raw (i.e. the ISPs has to provide the bandwidth plus other costs) E1R2 to ISPs at an average of Php 2,700 per channel! (www.piso.org)."

"Though competition has been introduced into market, there is an absence of robust pro-competition policy objectives and commitments of the Government. Despite the comprehensive policy coverage of RA 7925, there is no specific policy objective to establish, promote or encourage competition in the communications sector per se. The Philippines has no legacy trade practices framework as a basis for the introduction of competition. Such a framework establishes fair trading principles and provisions to govern the relationships between competitors as well as between competitors and consumers. Typically, this would involve prohibitions on certain activities such as collusion, unfair or misleading advertising, price fixing, discriminatory supply and pricing behavior. The effect of the absence of trade practice framework in the country is that new entrants have little, if not, no protection from abuses of market power or other anti-competitive behavior."

2. Regulator Capabilities to deal with Emerging ICT Trends

The NTC must act objectively in deciding issues affecting the industry. But this to some extent can create problems in the future if the regulator does not have the competence and even the familiarity with the evolving technical aspects of the technologies, the industry structures and behaviors. Mr. Saniel observed that the NTC, which was established in 1979 (EO 546) as one of the oldest regulatory bodies in the Asia, has gained competencies and familiarity with technological trends, industry structure, and behaviors. He elaborated, however, "that NTC's powers and capabilities need to be strengthened. As a regulatory body, it needs to have effective enforcement powers. The NTC also needs to enhance its technical and commercial expertise, sufficient budgetary resources, among others."

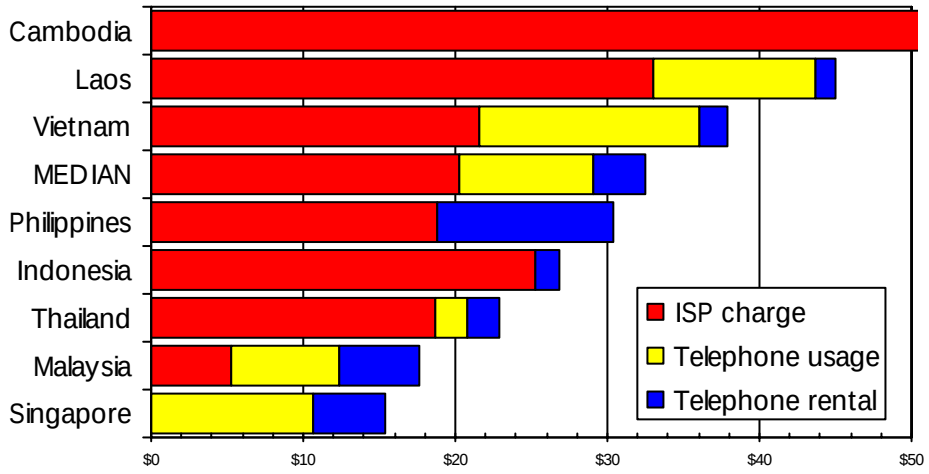
The objective of NTC's competition policy must be to promote social welfare by ensuring that industries operate efficiently in allowing consumers to decide and communicate their tastes and preferences and allowing producers to respond to these in a complete and price-efficient manner. However, a deregulated and liberalized market's greatest obstacle to promoting this goal is market dominance and lack of understanding of ICT issues.

3. Bundled Services

The vertical and horizontal integration strategies of the telecommunications industry led to the bundling of services that allow for cross-subsidies and to scale and scope economies that can serve as entry barriers. This practice of cross subsidies is actually prohibited by RA 7925 (see section 11.a and 11.b**).** However, there is no way the regulator can prove that such cross-subsidies exist unless the services are unbundled. The NTC has actually issued rules on co-location but still has not successfully forced the large carriers to un-bundle their networks.

But what is clear is that this lack of unbundling translated to higher Internet user charges (Figure 3.7). According to the ITU, the Philippines is the only country in southeast Asia that provide local calls for free such that dial-up Internet subscribers would only pay for the ISP charge. So despite of the low ISP charges, the overall cost of Internet access remains high when the monthly subscription telephone charges, one of the highest in the region, are inputted (ITU, 2002). Call metering was proposed in order to rebalance the tariffs and remove this implied subsidy. However, the effort has met stiff opposition and was abandoned altogether.

Figure 3.7 Dial-Up Internet Prices in Southeast Asia (30-hours of use per month in US$, October 2001)




Source: ITU Adapted from ISP and PTO data

Mr. Saniel pointed out his comments on this issue. “A number of countries have opted for bundling of services and offering of flat rates such as the US, the UK and other countries in Europe. The old saying “the customer is king” has never been true today. Customers

expect or demand from operators to offer full range of services for their full range of communications needs, including international links, high-speed Internet access, and full multimedia capacity. This is one of the reasons why operators abandoned their old business models towards bundling of services and rates. There are advantages in offering flat rates. These are (i) consumers like them; (ii) consumers tend to stay online for as long as they want; (iii) it boosts penetration; (iv) less costlier as heavier users migrate to broadband. v) it promotes e-commerce; and finally (vi) it promotes content creation."

4. Barriers to convergence

The traditional boundaries that separated users and suppliers are vanishing. With more powerful computers and advanced software technologies, the Internet transmission of TV, video, images, data and cable services among others have forced the convergence of content and the Internet. The current regulatory environment does not allow firms to pursue their convergence strategies in response to market demand because of the limitations imposed by certain laws. Convergence is constrained by specific provisions in the Philippine Constitution, RA 7925 and EO 346. These constraints relate to foreign ownership and management of communications entities and media cross-ownership. These laws, as pointed out by Mr. Saniel include the following:

- Section 11 of Article XVI (General Provisions) of the Constitution prohibits foreign participation in the ownership and management of mass media. This prohibition denies the broadcasting and cable television sectors access to foreign capital and management expertise. It effectively constraints convergence of telecommunications and broadcasting as existing entities feature foreign equity participation. Thus, this constraints effective and efficient use of network infrastructure and the delivery of emerging applications such as interactive television.

- RA 7925, Section 4 (j) of RA 7925 stipulates that "No single franchise shall authorize an entity to engage in both telecommunications and broadcasting, either through the airwaves or by cable;" The law therefore prohibits an entity to engage in both telecommunications and broadcasting either through the airwaves or by cable. Though one entity is not prohibited from obtaining separate franchises for each

telecommunications and broadcasting, this remains a practical constraint on convergence.

- EO 436 establishes that the operation of cable television systems is separate and distinct from telecommunications and broadcast services.

Despite these limitations, it did not prevent Philippine telecoms operators to pursue convergence strategies. Some entities sought to overcome these limitations by adopting complicated organization and ownership structures.[13] Nevertheless, these places such companies in untenable footing when it comes to protection under the law and the exercise of commercial activities.

5. Scope of Value-added Services and Access

The NTC has classified ISPs as VAS providers as defined by RA7925 and therefore a deregulated activity that does not require a legislative franchise. All VAS providers depend on the telecommunication companies for connectivity.

However, it is worth noting that trying to make a distinction between basic services and value added services in a converging environment could undermine any regulatory body especially with the rise of VOIP. Making the distinction between the two services and separating private and public networks is "difficult to sustain" (Feldbaum 2000). According to Feldbaum, "as value is constantly added to the telecommunications network, value added services rapidly become standard features expected in the provision of basic telephony. The value added characteristics of ISPs are becoming less distinct as the Internet becomes viewed as a standard offering." Mr. Saniel adds that "in the near future, the likely situation is that IP-based traffic is indistinguishable from PSTN. It should be noted, however, that when RA 7925 was enacted in 1995 VOIP was unknown. Nobody expected that technological developments will give rise to VOIP."

After long deliberations, the NTC issued Memorandum Circular No. 05-08-2005. The circular has recognized that new technologies-such as VOIP – are blurring the traditional

[13] For instance, PLDT's acquisition of Home Cable through legal structure that would be unlikely to be used if the Constitutional and legislative prohibitions on foreign and cross-media were not in place.

boundaries between computers, telecommunications, and broadcasting; and continue to disrupt structure, economics, and nature of competition. The same circular highlighted that VOIP's widespread use and deployment is hampered by the absence of formal rules or guidelines that will clarify the legal and regulatory rules for VOIP, and govern the provision and use of VOIP by the public. Section 1 of the circular classified VOIP as a Value Added Service (VAS)[14] and therefore a deregulated service.

6. Free-rider Problem in Interconnection

"Interconnecting" independent ISPs and other players to offer voice services with the massive and costly networks of the telecommunications involves issue of equity or "the free rider problem." For instance, Nuguid, in her study of interconnection agreements between a dominant and a small telephone firm showed that "interconnection allows entrants to position itself at a cost advantage as against the leading network. This is so because entrants are given the opportunity to reap benefits from the economies of scale and scope that have already been established by the incumbents. The incumbent however is at a cost disadvantage and would perform better if it operates its own retail services rather than servicing interconnection to competitors (Nuguid 2000)." Thus any deliberate effort of ISPs to likewise interconnect with the incumbents would have to consider equity issues as well. However, Mr. Saniel noted that in mature markets (Philippine telecoms industry may be considered a mature market), interconnection is viewed as a way of generating business (commercial strategy) and it has really significantly contributed to the revenue cash flows of Philippine telecoms carriers.

[14] Value-added services (VAS) refer to enhanced services beyond those ordinarily provided for by local exchange and inter-exchange operators, and overseas carriers through circuit switched networks. Enhanced services refer to those services that improve upon the quality and/or functionality of services ordinarily offered by local exchange and inter-exchange operators and overseas carriers. Voice Over Internet Protocol (VOIP) service is the provision of voice communication using Internet Protocol (IP) technology, instead of traditional circuit switched technology.

## SECTION 4

## ICT ABSORPTION AND PENETRATION

Increasing the usage and penetration of ICT is the other side the digital divide issue. Focusing on the ability of users to absorb the technology and support its use is equally critical. The ability of users to absorb ICT is hinged on the following: (a) affordability and accessibility; and skills, which include (b) English proficiency, ICT literacy and learning.

Addressing ICT absorption and penetration barriers are distinct yet complementary efforts to enhance competition, interconnection and convergence in ICT. This section first looks into the state of absorption and penetration and then on affordability and accessibility, and later on the degree of ICT literacy, language proficiency and learning.

### Present State of ICT Penetration and Absorption

The intensity of ICT usage can be best gauged by measuring the degree of ICT penetration in individuals, households, businesses and institutions.

Table 4.1 Estimated Individual Users of ICT

| | Number | Penetration Rates per 100 Persons | Source |
|---|---|---|---|
| Internet Users | 4.2-million<br>800,000<br>1.54-million | 5.25<br>1.01<br>2.00 | APT (2002)<br>NTC (2002)<br>ITU(2000) |
| Mobile & Fixed Line Subscribers | 18.6-million | 23.34 | NTC (2002) |
| Broadband Users | 10,000 | Nil | ITU (2001) |

Population and Household Penetration Rates. Official figures on Internet usage are not available. Estimates would very depending on the source of the estimates (Table 4.1). The difficulty actually begins with determining the official number of operating ISPs. Official NTC data in 2002 indicated that there are about 53 registered ISPs, the PISO count indicated only about 48 active ISPs. Many are presumed to have shut down and not all ISPs furnish information about the size of their subscriber bases. As a result, reliable estimates of Internet subscribers are not available.

Despite the differing estimates, it is unanimous that the Internet penetration rate among individuals in the Philippines is low. The mobile wireless phone is the more popular platform of communication and access to ICT. If this can be considered as an indicator of ICT usage, then a large portion of the population has access to ICT. However, the present technological capabilities of the mobile wireless Internet in the Philippines remain limited. Mobile phone Internet cannot compare with the volume and speed of data that a PC attached to an Internet can provide.

**ICT Penetration Rates in Business**

A 2002 Survey of the Information and Communication Technology was undertaken by the National Statistics Office to fill the dearth of information on the size and quality of ICT workers in the Philippines. A total of 3,579 establishments from various industries with employment size of 20 or more per establishment were surveyed. The highlights of this survey can provide insights on the degree of ICT penetration in the Philippine businesses and industries.

Table 4.2 Number of Respondents and ICT Users By Major Industry Group: 2001

| Industry | No. of Respondents | % of Users |
|---|---|---|
| **Total Respondents** | **3,579** | **88.1** |
| **ICT Industries** | **1,699** | **93.5** |
| Producer (Manufacturing) | 421 | 88.6 |
| Distribution (Wholesale and Retail Trade) | 116 | 96.9 |
| Services | | |
| Telecommunications | 129 | 100.0 |
| Computer & Related Services | 84 | 100.0 |
| Education | 923 | 93.7 |
| Motion Picture, Radio & TV | 26 | 100.0 |
| **Non-ICT Industries** | **1,880** | **83.1** |
| Agriculture, Fishery & Forestry | 177 | 58.2 |
| Mining & Quarrying | 15 | 60.0 |
| Manufacturing | 755 | 86.3 |
| Electricity, Gas & Water | 59 | 96.2 |
| Construction | 77 | 94.8 |
| Wholesale and Retail Trade | 224 | 79.9 |
| Hotels & Restaurants | 60 | 80.3 |
| Transport, Storage & Comm. | 132 | 81.1 |
| Financial Intermediation | 87 | 96.5 |
| R. Estate, Renting & Bus. Activities | 138 | 87.7 |
| Education | 48 | 89.6 |
| Health & Social Work | 50 | 92.0 |
| Other Community, Soc. & P. Svcs. | 57 | 75.4 |

Source: NSO 2002 Survey of Information and Communication Technology

The **percentage of ICT users** is measured by NSO as the proportion of the total number of establishments using any or all types of ICT resources to the total number of responding establishments. Overall ICT user penetration among businesses based on the survey is over 88% (Table 4.2). However, the diffusion of ICT in businesses varies from industry to industry. The highlights as quoted from the study are as follows:

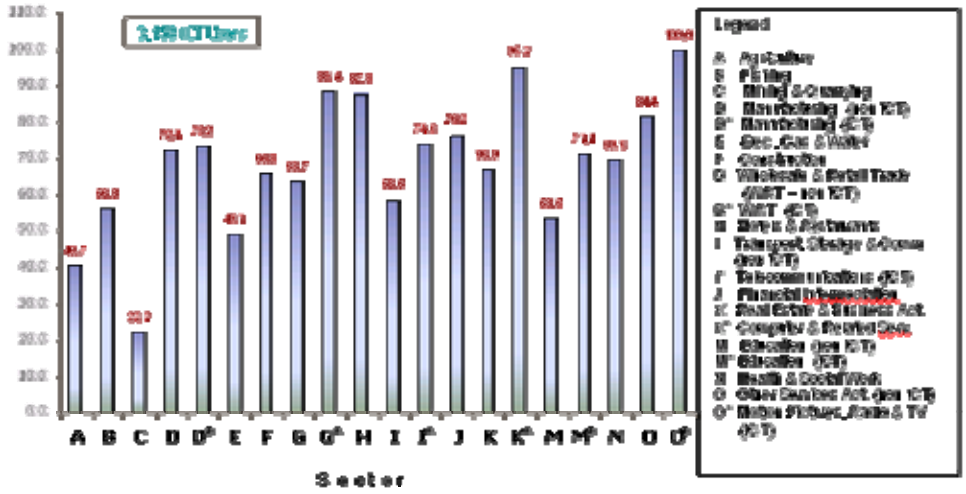
- "In 2001, the proportion of ICT users was highest in sectors with ICT industries, ranging from nearly 90 percent to as high as 100 percent. These were ICT sectors of telecommunications, computer and related services, and motion picture, radio and TV with 100 percent usage; ICT wholesale and retail trade, 96.6 percent; ICT education, 93.7 percent; and ICT manufacturing, 88.6 percent.
- The proportion of ICT users in non-ICT industries in these same sectors was also high, from nearly 80 percent to about 90 percent.
- There were also non-ICT sectors that exhibited high usage of ICT resources: financial intermediation, 96.6 percent; construction, 94.8 percent; electricity, gas and water, 93.2 percent; and health and social work, 92 percent.
- The proportion of ICT users was lowest in the primary sectors: agriculture, fishing, and mining and quarrying" (SICT 2002).

The same survey also included the rate of Internet access of ICT users, which "is measured as the proportion of number of internet users to the total number of PC users. Internet users are those establishments that have access to Internet while PC users are those establishments that reported to be using PCs. PCs are the main equipment used to access the internet (SICT 2002)." The Internet access rate of users is 88%, which is almost similar to the rate of ICT usage in each company. As quoted, the highlights of the survey are as flows:

- "ICT industries, except those in manufacturing, had relatively higher internet access rates compared to non-ICT industries of the same sector.
- Internet access rate was highest in the ICT sector of motion picture, radio and TV at 100 percent. This was followed by computer and related services at 95 percent. Internet access rate of wholesale and retail trade was 88 percent, while those of ICT manufacturing, telecommunications and ICT education were slightly higher than 70 percent.
- Only three (3) non-ICT sectors had high internet access rates, as follows: hotels and restaurants, nearly 88 percent; other personal, community and social services, 81 percent;

and financial intermediation, 76 percent. The rest of the non-ICT sectors had internet access rates ranging from 22 percent to 72.4 percent (SICT 2002)."

Figure 4.1 Internet Access Rate per Sector (2002)




Source: NSO 2002 Survey of Information and Communication Technology

The survey indicated that a significant portion of large-scale establishments have high levels of ICT diffusion. This is perhaps an alternative venue wherein the population, especially the labor force, can gain access to ICT. However, large-scale establishments are not good representatives of the total establishments in the country. Small and medium scale establishments represent over 90% of total establishments in the country and may exhibit a different landscape in terms of ICT usage or diffusion than that of large-scale establishments.

**ICT Penetration Rates in Institutions**

High Internet usage or ICT diffusion on the level of large industries or establishment like schools and government does not necessarily translate to high levels of ICT utilization among smaller establishments or ICT utilization rates among the people within these institutions. For instance, the SICT survey may have indicated a 90% ICT usage rate by non-ICT educational establishments, but other surveys has shown that this does not necessarily mean a high level of ICT literacy and availability to students and teachers.

A survey of 36,368 schools (78% of the total respondents) conducted by SEAMEO-INNOTECH on both public and private primary and secondary schools concluded that only

18% of schools have teachers who are computer literate. The survey showed that only 7% of primary and secondary schools offer ICT-related instruction. A 2001-2002 survey conducted by the Foundation for IT Education and Development, a non-government organization of 100 schools randomly chosen from among 661 public secondary schools that received computer assistance packages from Department of Education, Culture and Sports (DECS) between 1996-1998. This study aimed to determine levels of ICT utilization and to identify the factors that affect utilization. The survey revealed that the student-computer ratios are low, ranging from 12:1 to 1,098:1 and only 15% of the teachers claim to have used the computers. The study also revealed that the power and the capabilities of the PC machines were underutilized. Based on the latest ITU estimates, only 31% of public schools have access to PCs and only 2% have Internet access (ITU 2002).

The government on its own has started providing information and services online. The official government portal is at htt://www.gov.ph. According to the latest inventory by ITU of the government owned and controlled websites, of the 415 government agencies, 232 agencies have Internet Connection and 115 have their own websites. It has also successfully relegated to the private sector the task of digitalizing civil registries like birth, marriage and death certificates. This is the result of efforts of the present administration actively working on a E-services framework focused on pushing for reforms on IT policies and promote IT initiatives. Such framework has become a permanent fixture in the development plans and programs of the country. This framework is the guiding light of the Information Technology and Electronic Commerce Council (ITECC), which was formed by virtue of Executive Order (EO) 264 dated July 13, 2000. Another EO paved the way to the creation of the Commission on ICT (CICT) in 2003. Unlike ITECC, the Commission is tasked to implement both ICT projects along with crafting policy. The CICT is a precursor to the future Department of ICT of which the Bill is now in Congress awaiting formal legislation.

IT21 or the (National IT Program) NITP contains the strategy for promoting and developing the IT industry. EO 469 dated February 23, 1998 put into action the IT21 Agenda, whose implementation is divided into three strategic stages:

- Consolidation period and providing an impetus for further development (1998 to 2000);
- Building up momentum period based on what has been accomplished in the previous phase (2001 to 2005);

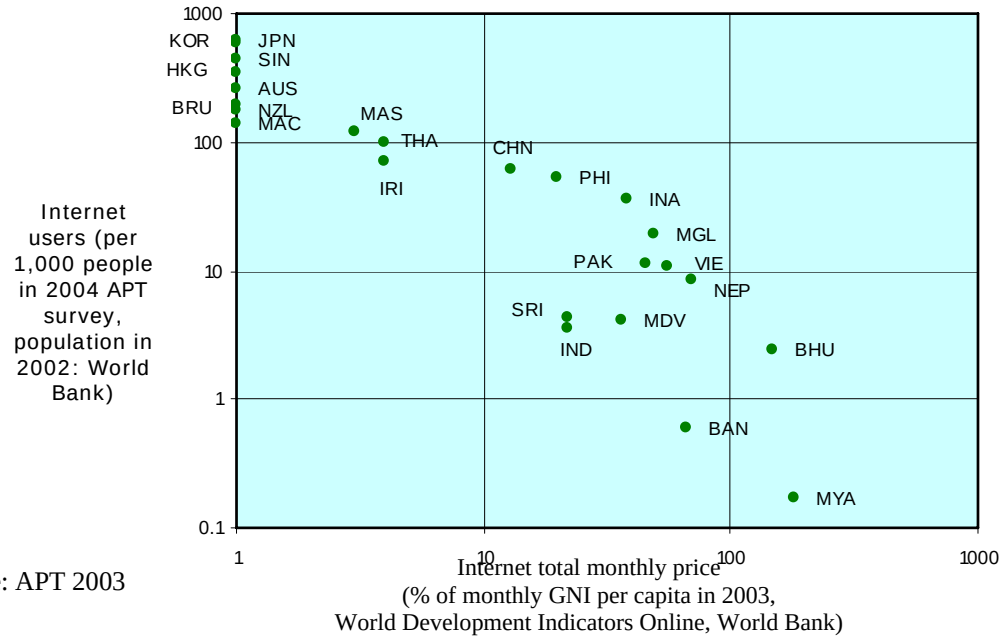
- Transformation period of the Philippines into a Knowledge Center of Asia.

The Philippines is currently on the first stage (consolidation). Though briefly delayed because of the abrupt government change in 1999, it was placed back on track by the Macapagal administration. It is composed of the following strategic programs:

- Creation of a policy environment favorable to increase investments in IT through the adoption of specific policies;
- Enhance universal access to the Philippine information infrastructure;
- Develop the human capital base primarily composed of IT literate professionals;
- Install a government organization highly responsive to the requirements of the local business and to support IT and other technology-based industries;
- Enhance the role and influence of ITECC to institute the IT agenda; and,
- Disseminate the IT21 action agenda to the private and public sectors.

**Affordability and Accessibility**

Figure 4.2. Relationship Between Internet Penetration and Internet Monthly Price




Source: APT 2003

The findings do indicate that availability and affordability are major considerations before users can “hook up” to the Internet. As studies have shown, if the cost of the Internet service to the overall purchasing power of the nation is low, the higher the penetration rates will be.

This means that the household's cost of connecting to the Internet must not take a substantial dent on its incomes.

In the Philippines, it is difficult to distinguish between individuals and households especially in the usage of the PC and the Internet. Because of the prohibitive costs, a household, which is composed of about 5.01 individuals according to the 2000 census, may actually share on one PC. Thus, the number of PCs especially with Internet access may appear small, but the rest of the households have access to it. Thus, individual penetration rates may appear less but the household penetration rates will be definitely higher.

Only 3.3 million fixed lines are subscribed due in part to high upfront costs and the growing popularity of mobile communications. Telephone distribution remains uneven and highly skewed to metropolitan areas. Access to a fixed line, which is important for dial-up users – are concentrated in highly urbanized regions like the NCR, Region IV and VII (Table 4.3).

Table 4.3 Regional Distribution of Telephone Lines

| Region | Population | Installed Capacity | Subscribed Lines | Teledensity | |
|---|---|---|---|---|---|
| | | | | Telelines | Subscribed |
| CAR | 1,461,529 | 94,144 | 35,503 | 6.44 | 2.43 |
| NCR | 10,758,840 | 2,847,516 | 1,698,365 | 26.47 | 15.79 |
| I | 4,276,974 | 182,076 | 108,760 | 4.26 | 2.54 |
| II | 2,922,220 | 39,602 | 30,667 | 1.36 | 1.05 |
| III | 7,982,573 | 406,583 | 236,490 | 5.09 | 2.96 |
| IV | 11,904,461 | 1,118,707 | 513,907 | 9.40 | 4.32 |
| V | 4,919,499 | 135,422 | 66,701 | 2.75 | 1.36 |
| VI | 6,548,108 | 443,763 | 112,023 | 6.78 | 1.71 |
| VII | 5,750,685 | 457,709 | 173,355 | 7.96 | 3.01 |
| VIII | 3,899,553 | 165,035 | 43,352 | 4.23 | 1.11 |
| IX | 3,300,211 | 166,000 | 29,740 | 5.03 | 0.90 |
| X | 2,984,121 | 199,566 | 51,529 | 6.69 | 1.73 |
| XI | 5,523,366 | 431,541 | 133,497 | 7.81 | 2.42 |
| XII | 2,784,797 | 84,744 | 32,876 | 3.04 | 1.18 |
| XIII | 2,171,985 | 100,648 | 36,153 | 4.63 | 1.66 |
| ARMM | 2,287,349 | 41,179 | 8,015 | 1.80 | 0.35 |
| **TOTAL** | **79,476,271** | **6,914,235** | **3,310,933** | **8.70** | **4.17** |

*Source: NTC*

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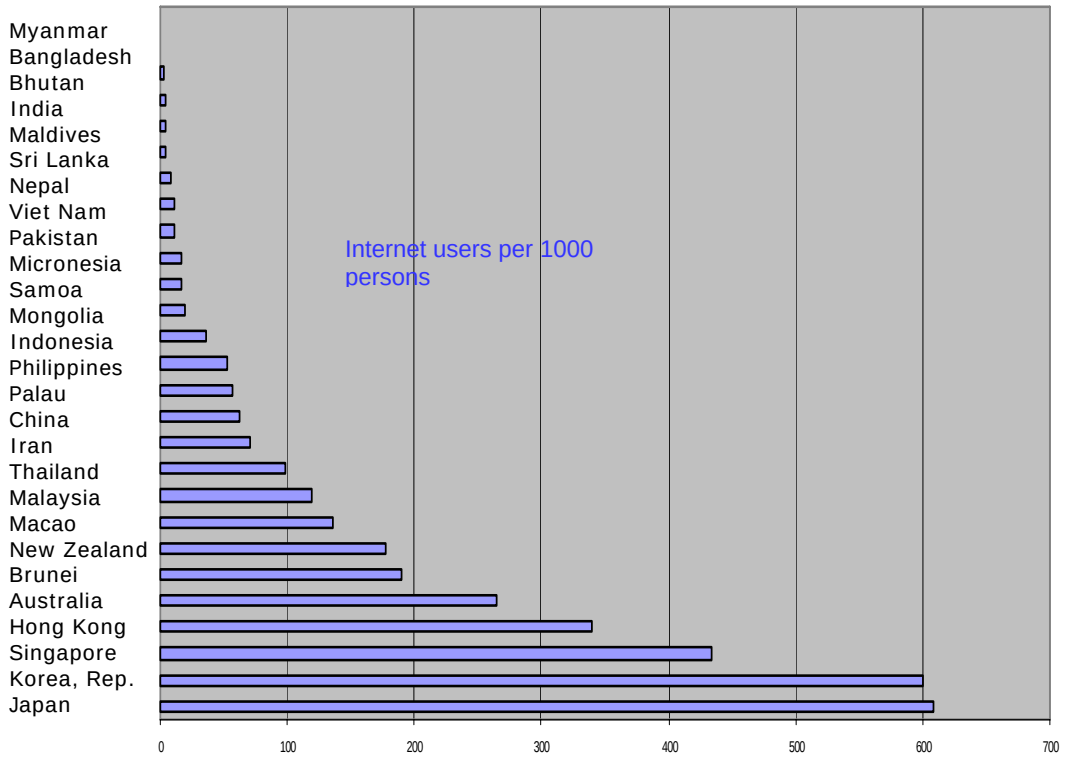
This skewed concentration of landline has implications to accessibility and even affordability. According to a study in 2001 by the "SEAMEO-INNOTECH on the *Profile on Information and Communication Technology Capabilities of Elementary and Secondary Schools in the Philippines, 2000-2001*", only 13% of primary and secondary schools have landlines. Moreover, since

most of the ISPs are found in the urban centers, those schools and other parties that have to connect to the Internet via dial-up services will have to incur long distance costs. Taking the option of satellite or VSATs to interconnect is out of the question. The cost is simply too prohibitive because of the cost of installation and the service itself (ITU 2002).

Compared to other countries, broadband penetration is also negligible in the Philippines (Figure 4.3). Broadband is too expensive and the providers practice price discrimination. According to the recent analysis of the Philippine fixed communications market, Pyramid Research observed that broadband pricing in the Philippines "is nearly twice as high as in Hong Kong (Pyramid Research 2004)." As such, the addressable market has been confined to the corporate and high-end residential households.

Figure 4.3. Internet and Broadband Penetration Rates in Selected Countries




Source: APT 2003

In spite of the low penetration rates, broadband providers offer broadband services at exorbitant levels. As observed by the ITU, "… prices are around US$50 per month for residential subscribers and US$200 for business users (ITU 2002)."

The absence of a critical mass because of prohibitive pricing, the limited broadband business applications required by SMEs and cash flow potentials from pre-paid dial-up Internet accounts are the major reasons why broadband services have not reached critical mass.

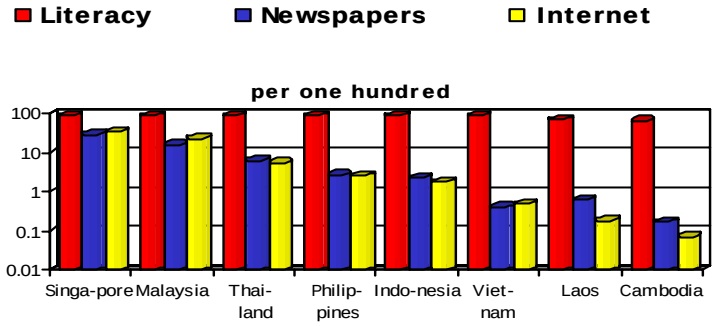
Another sets of reason also cited are: (a) the reluctance of telecommunication carriers "to price ADSL below leased line and ISDN services for which they already have many customers (ITU 2002)"; (b) the absence of a regulatory requirement that forces "fixed line operators to unbundled their local loop lines to allow other operators or ISPs to provide ADSL services"; and (c) the charging of flat monthly telephone rate that translates to no additional costs for dial-up users, "mitigating the cost savings of migrating to broadband (ITU 2002)."

**ICT Literacy**

Dealing with the digital divide is not purely on just affordability and accessibility. Accessibility and affordability do not guarantee high ICT penetration and utilization rates. Literacy specifically on ICT skills and knowledge is also an important factor. A high national level of "simple or functional literacy", which is the ability to read and write, is not enough for the population to increase Internet usage or penetration. In fact, an ITU presentation indicated that the number of newspaper circulation is a good indicator of Internet penetration rates in different countries than literacy (ITU, 2002) (Figure 4.4). Perhaps, it is because the readers of newspapers have the necessary skills and knowledge that go beyond those with just functional or simple literacy.

Figure 4.4 Comparison between Simple Literacy, Newspaper Readers and Internet Penetration Rates

Note: Logarithmic scale




Source: ITU adapted from national statistical agencies

Education is the key in improving Internet usage and ICT utilization among functionally literate people. Numerous studies on the Philippine educational system have been conducted. Some of these studies are the following:

- Congressional Commission on Education in 1991-1992;
- A study on the Profile on Information and Communication Technology Capabilities of Elementary and Secondary Schools in the Philippines, 2000-2001 by SEAMEO-INNOTECH;
- Philippine Education Sector Study conducted jointly by the World Bank and the Asian Development Bank in 1998;
- Presidential Commission of Educational Reform in 2001;
- A Survey of Secondary Schools: General Information/School Profile, Profile of Science and Mathematics Teachers, and Information Technology Capabilities by the Department of Science and Technology in 2001;
- Preliminary findings on a survey of ICT Utilization in Philippine Public High School by Victoria Tinio in 2002.

All these studies are unanimous in pointing out the dismal state of the Philippine educational system.

**ICT Learning**

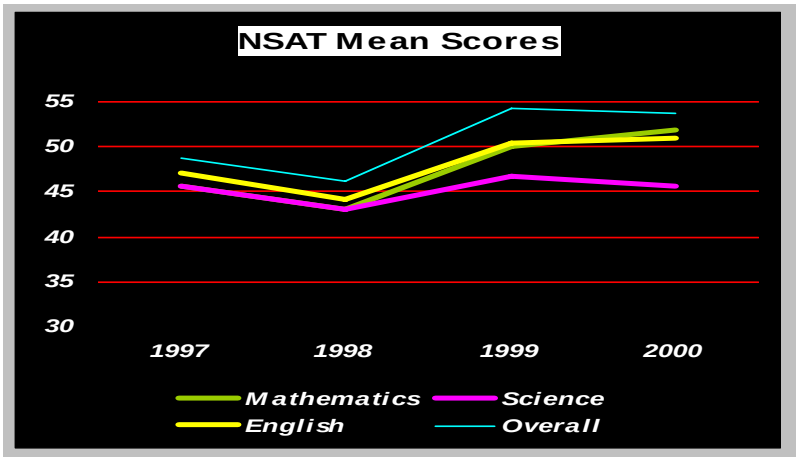
In a paper of Victoria Tinio, Director for e-Learning of the Foundation for Information Technology Education and Development (FIT-ED), a non-profit organization based in Metro Manila, she summarized these recurring themes of woe of Philippine basic education that include the following (Tinio, 2003):

1) the inadequacy of the national budgetary allocation for education;
2) the inefficient management of the educational system;
3) poor infrastructure—lack of school buildings, laboratory facilities, libraries, etc.;
4) the lack of qualified teachers—this coupled with the lack of classrooms results in class sizes of up to 110, with 60 being the norm;
5) deteriorating student performance, most significantly in Science, Math and English; and,

6) the need for quality assurance in teacher education institutions and for improved in-service training.

This crisis of Philippine education is reflected in poor showings in national admission tests. For instance, the NMAT scores administered to incoming college students showed very poor scores in the area of math, the sciences and English – all are important basic foundations required in building a pool of ICT literate population.

Figure 4.5 NSAT Mean Scores in the Philippines : 1997-2000




Source: CHED, DECS

This is not good news for a population preparing for the Information Age. The nation must also possess the necessary skills and knowledge in both basic and advanced ICT knowledge and skills in order to maximize the benefits of integrating with the Knowledge economy. But such knowledge and competencies must also meet the standards required by the job whether in the ICT or non-ICT related industries.

**English Language**

A joint survey conducted in 2004 by the Makati Business Club, the American Chamber of Commerce and TOEIC showed how current professionals and universities score in English communication. The TOEIC standards are indicated below:

Table 4.4. Interpretation of TOEIC Scores

| | |
|---|---|
| > 960 | Advanced General Professional |
| 905 – 960 | General Professional Proficiency |
| 785 – 900 | Advanced Working Proficiency |
| 605 – 780 | Basic Working Proficiency |
| 405 – 600 | Intermediate |
| 255 – 400 | Elementary |
| 10 – 250 | Novice |

Source: TOEIC

The score range and the average scores of each job category are shown in the table below. Based on the average scores, the highest average level for the country is 948 or classified under general professional proficiency, while the lowest average score is 778 or basic working proficiency. The highest average score are found among international contact center agents while the lowest average score is among technical and operations people. The lowest score range is likewise registered by the technical and operations personnel at 275 and the highest minimum score range is also by the human resource personnel at 805.

Table 4.5 Average TOEIC Scores by Job Category (2004)

| CATEGORY | SCORE RANGE | AVERAGE SCORE |
|---|---|---|
| General Office | 465-965 | 838 |
| Technical and Operations | 275-975 | 778 |
| Int'l Contact Center Agents | 780-985 | 948 |
| Sales and Marketing | 770-975 | 894 |
| Human Resources | 805-975 | 916 |
| Managerial | 700-985 | 899 |
| | | |

Source: American Chamber of Commerce, Makati Business Club and TOEIC Survey

The observations have several implications on ICT. First, the low English communication scores among the general office and technical and operations personnel – who normally constitute a large chunk of the urban-based labor force – reflects that a sizable portion of the existing labor pool may not be equipped to meet global standards for communication skills. Second, this problem can affect even the providers of technical user-supports for ICT. The score can indicate the country's limited pool of technical personnel who are equipped with the English communication skills necessary to provide technical user-support. And third, the results can reflect the poor preparation the existing labor pool had from their education. This

last observation is further supported by the same survey conducted on graduating students of selected universities (see Table 4.6).

Table 4.6. Average TOEIC Score of Graduating College Students of Selected Universities

| CATEGORY | SCORE | AVERAGE |
|---|---|---|
| University A | 300-895 | 605 |
| University B | 560-905 | 746 |
| University C | 265-710 | 482 |
| University D | 235-815 | 546 |
| University E | 505-845 | 699 |
| University F | 405-870 | 665 |
| AMCHAM Scholars | 670-985 | 868 |

Source: American Chamber of Commerce, Makati Business Club and TOEIC Survey

The highest average score registered by the universities being surveyed showed the highest to be 746 – or rated as having the basic working proficiency – and the lowest at 482 – or rated as just intermediate. While the range can hit as high as general professional and even at advanced general professional – the lowest mark is 235 or rated as novice. For a nation that uses English as a medium of teaching, the generally poor results registered by graduating university students can indicate a general malaise affecting the educational sector. These graduating students may be equipped with the technical or working skills but do not have the English skills necessary to meet standards required by ICT. The same pool of graduates may be seriously impaired to qualify for jobs in ICT services that provide close user-support and communication skills to English-speaking countries.

This brings into fore the importance of certification. Certification is a tool that measures and evaluates the level of knowledge and competencies of the ICT practitioner. Certifications establish the professional standards needed in the practice of ICT. It determines the real level of knowledge and skills of practitioners in various levels of ICT. While certification centers accredited by the Technical Education and Skills Development Authority (TESDA) abound, accreditation is not yet an institutionalized practice or a job requirement tool in the country.

According to recent TESDA statistics, the ICT sector is one of the sectors that demonstrate the lowest certificate rates among the other priority sectors. From 2002 to 2003, the successful certification rate in ICT was 18%, which was way below the 53% and 47%

certification rates registered by the other TESDA-designated priority sectors. While the practice of certification is not yet widespread, the fact that the certification results show poor ratings is another reflection of the level of skills and proficiency of the present pool of Filipino ICT users.

Table 4.7 Number of Persons Assessed and Certified by Priority Sector

| Priority Sector | Persons Assessed | | Persons Certified | | Certification Rate | |
|---|---|---|---|---|---|---|
| | Sept. 2002 | Sept. 2003 | Sept. 2002 | Sept. 2003 | Sept. 2002 | Sept. 2003 |
| Agri-Fishery | 957 | 2,033 | 511 | 964 | 53% | 47% |
| ICT | 29,719 | 29,778 | 5,217 | 5,398 | 18% | 18% |
| Tourism | 6,268 | 8,396 | 2,793 | 4,051 | 45% | 48% |
| Health | 3,310 | 6,372 | 647 | 3,386 | 20% | 53% |
| Maritime | 58,221 | 20,032 | 53,171 | 18,634 | 91% | 93% |
| Others | 54,882 | 68,164 | 19,763 | 28,598 | 36% | 42% |
| OPAs | 31,828 | 20,807 | 16,947 | 12,129 | 53% | 58% |
| **Total** | **185,185** | **155,582** | **99,049** | **73,160** | **53%** | **47%** |

Source: TESDA

**Emerging Policy Issues on User Absorption and Penetration**

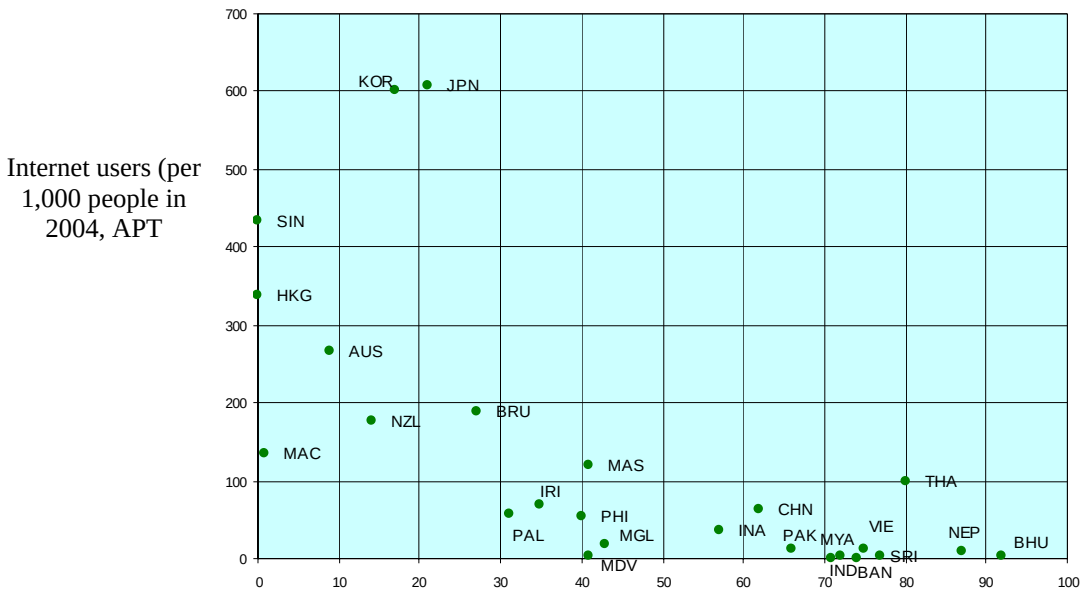
1. Gaping Misalignment of the Current Universal Service Scheme

   The goal of the universal service is noble – to promote the availability and affordability of as well as to improve access to quality and modern telecommunication services. It was designed to accelerate the provision of telecommunication services while preventing "cream-skimming" or focusing on more lucrative centers where market demand is strong. Most carriers have met their obligations but the scheme of installing fixed lines in what is referred to as "missionary areas" has failed to increase the level of accessibility. Many carriers were caught with excess line capacities. The low market absorption can be attributed to two major factors: (a) the high front-end cost of subscribing to fixed lines; and (b) the growing popularity of mobile communications.

   Dubbed as an asymmetry in regulation, a study has observed the potential diseconomies caused by assigning services areas to one carrier and the entry barriers this scheme has built within the industry (Serafica 2000). The lack of scale and scope, the absence of market contestability, and the low market absorption has translated to high upfront and

monthly subscription costs. This led to a vicious cycle of low market absorption and high service costs. Since only the population in urban centers can afford the service, this forced ISPs to concentrate only in these areas. In the end, this has proven to be detrimental to a market that is oriented towards dial-up Internet users. Not only will they have to contend with high subscription costs, but in order to use the Internet they have to pay long distance rates. The sector that suffers most under this disposition is the rural sector – where the poverty incidence is at its worst. Developing countries that have a sizable portion of their population in the rural sector tend to exhibit low Internet penetration rates (Figure 4.6). By not making available ICT to the rural sector inevitably condemns the people living in them to deeper poverty.

Figure 4.6 The Relationship between the Size of the Rural Population to Internet Penetration Rates (2002)




Source: APT 2003

Meanwhile, there are already available wireless broadband technologies that can be used for voice and Internet services. Without the use of satellites, these technologies are easily installed and distributed at much lower costs using repeater networks. The fact that carriers have no incentive mechanisms to provide the service to missionary areas is important for future policy considerations.

2. Importance of Education in Closing the Divide

Education is a critical complementing strategy in narrowing the digital divide. Efforts by various government agencies particularly the DECS, are underway to implement an ICT strategy in education (Tinio 2003). Such effort must go beyond than just the provision of infrastructure and technical support. It must also include a comprehensive skills and knowledge training on ICT for the teachers as well as the students in all levels of education. Moreover, IT must be integrated in the curriculum of education.

3. IT Certification

There is a need to professionalize the ICT professionals and users. The lack of institutionalization of certifications and accreditations of skills and knowledge would also cast a doubt on the level of proficiency and skill competencies of the ICT users and providers. Meanwhile, the proliferation of certification bodies in the Philippines has created a lot of confusion. An overarching framework for the certification program and certification bodies is inconspicuously absent. Potential applicants of IT certifications do not know the "certification path" to take neither the "future" job potentials that these certifications would bring.

## SECTION V

## POLICY FRAMEWORK TO CLOSE THE DIVIDE

### General ICT Policy Framework

The Department of ICT. The government has already acknowledged the necessity of separating the regulatory functions of "Communications" of the present Department of Transportation and Communications because of the demands of the growing phenomenon of information technology. A bill was filed last July 2001 "Creating the Department of Information and Communications Technology (DICT)." However, it remains pending in the Committee on Government Reorganization of Congress since July 2004.

The DICT Bill[15]. This bill seeks to establish a Department of Information and Communications Technology (DICT) that would ensure the "focused execution" of a program to develop the sector and facilitate the entry of more ICT projects. Under the proposed bill, the Telecommunications Office (TELOF), DOTC divisions dealing with communications and the National Computer Center (NCC) will be merged. The National Telecommunications Commission (NTC), the regulatory body, will be an attached agency to the proposed DICT thus, retaining its independence. DICT will administer all laws in the field of ICT and prescribe regulations for the operation and maintenance of ICT facilities in areas not adequately served by the private sector. It will likewise direct government research and development programs in ICT, draw up measures to promote the sector, including universal access in telecommunications and wider use of the Internet. It will also set and execute integrated and comprehensive ICT systems at the national, regional and provincial levels.

Nature of the Regulation. There are two approaches to regulation. It can either take a prudential approach or a prescriptive approach. As such "prudential" regulation provides standards that may be followed by the industry or company however allowing both regulator and industry to exercise their judgments regarding how to meet these standards depending on the situation or circumstances.

In contrast, a "prescriptive" approach involves very detailed controls to which the regulator, the user and the providers of ICT based their decisions. This includes detailed statutory provisions and regulations and close monitoring of compliance. This approach ensures a stable regulatory environment with the aim of pressuring stakeholders' high levels of conformity to set-practices and standards.

Many Philippine laws suffer from being overly prescriptive. While the objective of detailing the standards and code of conduct in a national law may limit constant policy shifts, prescriptive laws prove to be inflexible in dealing with the changes in the operating environment especially in an environment such that of ICT. This is practically true for

[15] The Commission on Information and Communications Technology provided this recent information. In 12 January 2004, President Gloria Macapagal-Arroyo signed Executive Order 269 (EO 269), which created the "Commission on Information and Communications Technology (CICT)." The creation of CICT is a transitory measure for the establishment of a national body, that is, the Department of Information and Communications Technology (DICT). The CICT is the primary policy, planning, and coordinating agency of government in ICT and ICT-related matters.

RA7925. For instance, the definition of value-added services or the service area schemes which are overly prescriptive have to some extent been rendered ineffective in the environment of convergence and industry integrations.

To avoid a similar mistake and to take into account the evolving nature of ICT, any national laws creating policies and bodies governing the ICT must take a prudential approach. General standards and principles can be set in a prudential approach. Perhaps an example would be on general policy declarations like avoiding anti-market behavior or interference or ensuring security and privacy. The implementing rules will then do the details like avoiding cross subsidies, ownership of certain downstream activities, standards on equipment or frequencies.

To limit the policy drifts or shifts emanating from the lack of specifics and detailed prescriptions in this type of regulation, the implementing rules and regulations of the law or laws can set the prescriptive requirements. Here, the standards and the principles of the "prudential" law can be articulated in their details. If structured this way, the overarching ICT law will not be subjected to the periodic reviews simply to accommodate the changing phenomenon of ICT. This avoids having to go through the legislative mill with the entire seemingly endless myriad of committees and consultations. Provided that ample consultations have been made, it will only be the IRR that has to be revised to accommodate the nuances of ICT and its applications

**Equity Issue of ISPs offering VOIP**

Also, in a liberalized and deregulated market, ISPs are allowed to put up their own networks or provide VOIP services provided that they must contribute to meeting universal service access goals. The "free-rider problem" that will result from the ISPs being interconnected with the networks and infrastructures of the large carriers can be resolved by this contribution to universal service.

**Improving Universal Service**

The universal service scheme for the Philippine can be patterned after the 1996 ACT of the US, which states that all providers of telecommunication and ICT services "should contribute to the universal service in some equitable and nondiscriminatory manner" and wherein in the

state can institute “mechanisms to preserve and advance universal service” and that “all classrooms, health care providers and libraries should, generally, have access to advanced telecommunications” and ICT services.

The Universal service scheme of the US is a good model that the Philippines can look at. The US, for instance, in providing computers in schools and connecting them to the Internet has already been realized. According to available information, US public schools in 2000 have roughly 1 computer for every 4 students and almost all schools are connected to the Internet. There could be other universal service models that the Philippines can look at.

It is a fact that there will be a large segment of the population, especially in the rural areas, that may not be able to afford to avail of ICT. Such universal schemes can provide ICT access to the less-privilege sectors of society through institutional mechanisms like public universities and libraries, town centers, etc.

For a universal service scheme to be successful the government must first determine a coherent and measurable plan to provide access and increase Internet usage and penetration in “unserved “and underserved areas and institutions particularly in education establishments and rural areas. From here, the government can then set clear “contributions” and timetables from the ICT sectors.

**Education and Skills Training.**

Availability and access alone cannot address fully the problem of low ICT penetration and usage. A large part of the population is not computer literate. Tinio on her paper on IT and education made a comprehensive analysis of the importance of diffusing ICT in the educational policy and system (Tinio 2003). She has discussed the ICT Plan for Basic Education drafted by DECS. At present, this Plan serves as the guiding document for programs and projects being initiated by DepEd.

She said that “the Plan focuses on the following key areas: a) infrastructure development; b) technical support; c) teacher training on the design, production and use of ICT-based instructional materials; d) research and development; e) technology integration in the curriculum; f) use of innovative technologies in education and training; and g) fund

generation, particularly through non-traditional financing schemes. Operational targets by 2009 include the following: a) provision of appropriate educational technologies to all public secondary schools; b) provision of a computer laboratory with basic multimedia equipment to 75% of public secondary schools; c) provision of electronic library systems to all public science-oriented secondary schools; d) training of 75% of public secondary school teachers in basic computing and Internet skills as well as in computer-aided instruction (CAI); and e) integration of ICT in all learning areas, when appropriate."

She further pointed out that "the DECS need to have an institutionalized ICT Plan for Education for national circulation and implementation at all levels of DepEd. It must provide the policies and plans and other initiatives that must be implemented and achieved over a period of time. Tinio has proposed implementing guidelines for the schools "as to what is expected of them both in relation to the curriculum and in the management of their ICT resources (Tinio 2003)."

The government must expand ICT courses beyond the classrooms and must reach a broader segment of the population. In the short-term, the government may have to put up subsidized basic training courses of the use of ICT not only to teach but also to broaden the awareness of the importance of ICT. In the long-term, the government must consider instituting and promoting IT certifications for ICT-using professionals working in various ICT and non-ICT establishments.

**Guidelines for Horizontal and Verticals Mergers and Acquisitions**

Guidelines must be put in place by the NTC before any merger and acquisition in the ICT is approved. The ICT has enough powers under RA7925 to exercise these prerogatives. These guideless must ensure that these strategies do not lead to market dominance or to enhance market power. The main objective of these guidelines is to provide the safeguards that would promote contestability and facilitate regulation of anti-market behavior. RA 7925 has explicitly spelled out provisions on anti-competitive behavior but the current IRR does not have any clear-cut policy guidelines for M&A.

**Policy Framework for Spectrum Regulation**

There is presently an absence of standards, ownership and management policy guidelines for spectrum management despite the emerging trend towards spectrum usage. With spectrum usage and coverage expected to drastically increase in the near future, new issues like spectrum ownership, interference and security will arise. A regulatory framework for spectrum standards, usage and management is direly needed, soon.

**System of Measurement for ICT**

The present practice of making ICT as part of telecommunications or communications related statistics can lead to inaccurate measurements, granting that ICT transactions are actually captured in the first place. Reliable data and information on ICT is lacking and because of the present practice, can make what is scarcely available, even incomplete or misleading.

The NSO and the NTC (and perhaps the future DICT) can coordinate to generate the kind of data and information required to accurately measure the ICT sector's economic contribution and performance

**Conclusions and Recommendations of the Study**

Any policy tool and recommendations dwelling on the promotion of competition through deregulation, liberalization, interconnection and convergence in ICT must ultimately be evaluated in light of their ability to narrow the *digital divide*. But closing the *divide* also involves looking at the users of ICT. The ability of users to access the ICT is also another area policy must consider.

Policies must promote on one hand a high degree of accessibility to the "infostructure" by promoting competition, interconnection and convergence in the ICT sector. Unchecked behavior of firms in ICT can diminish market contestability and thus competition.

On the other hand, policies must also seek to increase the capabilities of the users to absorb or increase their usage of ICT. Promoting skills on language, literacy and learning as well as improving access and affordability can lead to high levels of ICT penetration and utilization.

The study was quite exhaustive in its analysis of the supply side constraints but has not delved deeper into the demand side issues much less determine strategies on how to address these. Future studies may also explore other programs on how to improve the user knowledge and accessibility to ICT.