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<th>Convergence of communications technologies : policy options</th>
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<td>Kosol Petchsuwan</td>
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Convergence Of Communications Technologies:
Policy Options

By

Kosol Petchsuwan
Convergence of Communications

Technologies : Policy Options

Kosol Petchsuwan

The Telecommunications Association
of Thailand

23 June 1994
Telecommunications and computer systems are both based on electronic components. Telecommunications, computers and electronics are known today as integral parts of information technology.

Common underlying technologies that have contributed to rapid progress in telecommunications and computers are electronics, digital and optical.

The development in parallel of these technologies in the recent years has resulted in convergence of telecommunications and computers into what is known today as information technology.

The progress in electronics technology has made the equipment or hardware smaller and more compact, and yet with higher efficiency, but lower cost. The equipment becomes more portable, such as, cellular mobile phones, notebook computers, and many other modern mobile equipment, which give trend of telecommunications towards mobility.

Digital technology contributes to intelligence of systems. With digital technology, software has come to play a dominant role today. Any form of information or media can be digitised processed, transmitted and displayed by software. Cost of software is now a major part of the cost of a system. In some cases, it is as high as 80% or more.

Optical technology allows large quantity of information being transmitted through fibre optic cable at low cost, and yet with superior quality. The development of optical together with digital and electronics technologies makes telecommunications networks more intelligent and able to transmit large quantity of information at high speed. They are known today in a new terminology as electronic superhighways or information superhighways.

With the recently developed technique known as compression technology, information under digitised format can now be transmitted even more efficiently. Moving pictures with large amount of information or digital signals can now be transmitted at much lower cost through the modern telecommunications networks. Cable television, coming customized television
programming known as pay per view or video-on-demand as well as interactive multimedia real-time communications services can now be provided through the telecommunication networks. This is indeed a true convergence of telecommunications and entertainment.

The application of satellite technology in telecommunications has a tremendous impact on the international information networks as well as domestic ones. The physical borders between countries cannot be barriers blocking the flow of information any longer. Direct satellite broadcasting has brought new issues about declining of national sovereignty and cultural domination from the information-rich countries.

It is generally agreed that the world today is one based on information technology. An efficient telecommunications system is an essential pre-requisite for a country on the path of continuous development. It will lead to improvements in the quality of life of the people. A country with superior communications capability definitely has a decided competitive advantage over others. This recognition has led to competition among countries in the development and implementation of telecommunications system.

However, according to the lastest statistics from ITU or the International Telecommunications Union, the high-income countries which has only 15% of the world population have 71% of the world telephones, while the low-income countries with 59% of the world population have only 4% of the world telephones. There is indeed a strong imbalance of telecommunications for the world development.

A relationship between the level of development of a country's telecommunications systems and its economic strength has been widely recognized. The ratio of the number of available telephone lines to the number of potential users clearly relates to the average per capita income. This phenomenon may be viewed as a chicken and egg problem whether economic strength creates demand for telecommunications, or vise versa.
Telecommunications generates the economy.

For countries in the Asia and Pacific, the levels of penetration of telephone services is still low. It confirms that much more have to be done in telecommunications in the region in order to fulfill the speculation that the 21st century will be the Asia-Pacific century as the world economic center.

It is a fact that countries that are already better off economically can develop telecommunications much faster than the poorer ones. This is also an interesting phenomenon that the gap of development will become wider instead of closer from the role of telecommunications. For example during the ten years between 1983 to 1992, South Korea grew from 12 to 36 lines per 100 population. Malaysia from 5 to 11, while Thailand only from 1 to 3.

However, for Thailand from 1990 to 1996, 3 million lines, the largest number of telephone lines in the history of Thailand, are being installed. It will give Thailand 10 lines per 100 population by the year 1996.

The inherent problems for developing countries, particularly, countries in the low-income and lower middle-income groups, are that there are many other basic infrastructures to be attended to within limited resources. The priority of telecommunications has been left at low ranking. They select to invest in telecommunications only in areas that are relatively well developed where the return for the investment becomes quicker. Little attention or none has been paid to the consequence that the rich areas will become richer with telecommunications, while the poor areas are left little or without telecommunications are remain poor. The disparity of income in most developing countries become wider instead of narrower, become telecommunications are installed only in the areas with high purchasing power. This widening gaps of income in many cases are the causes of social and political instability.

The limited resources claimed by these countries are from the point of
view of the governments, because there has been a tradition or a belief that the responsibility in providing telecommunications services is that of the governments. Recently, there are examples of countries where private sectors are invited to make investments in telecommunications. It is very interesting that with private-sector participation, the installation is much quicker. There are practically little problems in raising financial resources by the private sectors. One example is Thailand where the private sectors can install 3 million lines within only 3 years, whereas in the past, the state enterprise took almost 40 years to install 2 million lines.

In allowing private-sectors to operate telecommunications services, it is necessary to establish an efficient regulatory body or regulator for overseeing a fair competition. The competition among private operators will open opportunities for consumers to have better services at lower cost.

It is also important that the regulation will open to the introduction of modern services, such as, moving pictures through telecommunications networks. Telecommunications and broadcasting as well as media people have to work closer. Laws and regulations have to be reformed, so that these services are closely coordinated and complementary to each other.

At the moment, we are occupied rather fully on how to make telecommunications services available through deregulation and liberalization means. After availability of the services, the issue on the right to communicate of the people will become an important topic.

We can say that we are now facing interesting challenges from the convergences of modern technologies on how to make them available uniformly in a country. Furthermore, the systems are not anymore limited to within only a boundary of any country. They are parts of the global networks. It is sincerely hoped that with closer cooperation in the region, these convergences will bring us into good harmony, prosperity and better life together.
CONVERGENCE OF
TELECOMMUNICATIONS
AND TELEVISION
(ENTERTAINMENT)
CABLE TV

PAY - PER - VIEW

VIDEO - ON - DEMAND
DIGITISATION

COMPRESSION TECHNOLOGY

MULTIMEDIA
- Digital Technology
  - Intelligence
  - Software

- Optical Technology
  - High transmission rate
  - Lower cost of transmission

- Electronics Technology
  - Compact
  - Inexpensive
TECHNOLOGICAL CONVERGENCE

Components

Information

Technology

Computers  Telecommunications
Is the development gap narrowing?
Trends in teledensity and in share of global telephone mainlines, by income group, 1983-1992

<table>
<thead>
<tr>
<th>Telephone mainlines per 100 inhabitants</th>
<th>Share of global telephone mainlines</th>
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</thead>
<tbody>
<tr>
<td>High income</td>
<td>![Graph showing high income]</td>
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<tr>
<td>Upper middle income</td>
<td>![Graph showing upper middle income]</td>
</tr>
<tr>
<td>Global average</td>
<td>![Graph showing global average]</td>
</tr>
<tr>
<td>Lower middle income</td>
<td>![Graph showing lower middle income]</td>
</tr>
<tr>
<td>Low income</td>
<td>![Graph showing low income]</td>
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**Note:** Logarithmic scale

**Figure 1**

**Note:**
- Low income = 50 countries with 1991 GDP per capita below US$600
- Lower middle income = 46 countries with 1991 GDP per capita between US$601 and 2,000
- Upper middle income = 47 countries with 1991 GDP per capita between US$2,001 and 10,000
- High income = 29 countries with 1991 GDP per capita above US$10,000

**Source:** ITU World Telecommunication Development Report (forthcoming 1994)
Unequal shares
The distribution of population and telephone mainlines worldwide, January 1, 1993

<table>
<thead>
<tr>
<th>World population</th>
<th>Total 5,463 million</th>
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<tr>
<td>15% High income</td>
<td></td>
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<tr>
<td>12% Upper middle income</td>
<td></td>
</tr>
<tr>
<td>14% Lower middle income</td>
<td></td>
</tr>
<tr>
<td>Low income</td>
<td>59%</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Telephone mainlines</th>
<th>Total 575 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>4% Low income</td>
<td></td>
</tr>
<tr>
<td>10% Lower middle income</td>
<td></td>
</tr>
<tr>
<td>High income</td>
<td>71%</td>
</tr>
<tr>
<td>15% Upper middle income</td>
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Figure 3
Note: For definition of income groups, see note to figure 1
From 1 to 40 in thirty years
The telecommunications transition exemplified in
Thailand, Malaysia and the Republic of Korea, 1983-1992

Figure 7
Source: Mike Minges: presentation to Asia-Pacific
Telecommunication Summit, November 1993.
Figure 5

**Note:** For definition of income groups, see note to figure 1

**Source:** ITU World Telecommunication Development Report (forthcoming 1994)
Thailand: Main Lines in Service, 1990-1996

Source: Company reports, Pyramid Research estimates.