

### 1.3.1 Structure of Regulative Authorities

#### (1) Re-organization from Department General to Ministry

##### **Recommendation**

Vietnamese government should consider to establish new Ministry that is able to handle policies relating with Information Technology by coherent manners.

New ministry would be better handle six former different major industry in IT field.

These are;    Telecommunications Equipment,  
                  Telecommunications Network Services,  
                  Computer Hardware,  
                  Computer Operating Software,  
                  Audiovisual Distribution Network, and  
                  Audiovisual Content.

New Ministry does not regulate Contents in Vietnam. Vietnamese government would be better to prepare "Establishment law for new Ministry".

##### **Background**

Nowadays, number of Authorities that treat IT policies are three or four. For example, telecommunications, broadcasting -- except spectrum related things -- and computer -- except network connected machine -- are regulated by different authorities, i.e. Department General of Post and Telecommunication, Ministry of Information and Ministry of Industry.

We have to consider the consequence of a diverse set of trends across the range of broadly defined communications fields, known as "convergence". These trends involve the breakdown of familiar distinctions between what have traditionally been considered separate services, markets, or technologies. These are often regulated by separate institutions, under separate legislation, like telecommunication and broadcasting. However, the practical effect of technological and market convergence makes traditionally defined industry segments less distinguishable. Elements traditionally thought to be in one industry now are found as well in other industry, for example, computing over telecommunications network, and voice communication using computer hardware and software. It is apparent that the impact of convergence upon regulation will be greater than the impact of regulation upon convergence.

Traditional telecommunications sector regulation has been organized largely according to technological and institutional distinctions, which become increasingly irrelevant as the different industry segments coverage. Regulation or direct state

control of telephone-based services is typically isolated from regulation of other networks like cable TV, and even far from regulation of a-point-to-multi-point communication like broadcasting.

In this environment, governments should develop a framework for considering communications convergence in a coherent way. It is important to establish an overall sector policy and regulatory structure on a national level. It is rational to merge IT related authorities for coherent policy making and regulation. Market based markets and convergence of technology do not imply the elimination of regulation, but transformation of the regulatory role to one that supports and encourages market solutions, and incentives only where those solutions can not adequately prevail. The combining goal of promoting the market and encouraging convergence suggest that such regulatory responsibilities may be substantial for some time to come.

Regulation for content of broadcasting in particular, as well as other forms of media, is an important component of public policy for a variety of reasons. These reasons range from political control to protecting the public from allegedly undesirable and harmful types of communication, to actively promoting socially and culturally beneficial content. There are many new means by which information can be transmitted and received in telecom converging era. It is preferable that authority for regulating content should be separate from authority dealing with signal transmission. In Vietnamese situation, it would be better that Ministry of Information or Ministry of Internal Affairs continues to regulate content. However, new IT ministry should decide line between personal communication and mass communication for sharing regulative works with content regulate ministry. The content regulate ministry would handle content of mass communication area with clear standards for regulations, e.g. TV (terrestrial and cable), radio, newspaper, magazine, web site in Vietnamese computer server so on. Broadcasting and telephone or video and information services may be subject to content regulation at the source, that means program producer or owner. New IT ministry would have cloth relationship for treating Internet service providers and proliferation of digital data transmission and storage with content regulate ministry.

Chapter 3 of this volume shows some examples of re-organization in East Asian countries.

(2) **In Line with Small Government**

**Recommendation**

When the government considers to organize new IT ministry, the ministry should be

small to handle minimum task for the authority. Main task for the new ministry should be setting the rules of the game. This setting will prepare core of "fair and clear" principles.

### **Background**

In general, Government only involved --in ensuring the supply of public goods, setting the rules of the game, helping institutions develop, and providing social protection -- it needs to become more effective. Most important role of the government is setting the rules of the game in the infrastructure sector.

The World Bank highly recommends market based infrastructure development. In that line of policy setting, the government should establish a goal of minimum regulation. It is important to recognize that regulation itself involves costs and potential loss of efficiency.

Governments as a whole are not vastly overstuffed or underpaid in most developing countries. The problem lies rather in the distribution of labor and in poor incentives. Civil servants tend to be concentrated in the wrong parts of government to meet its rapidly changing functions, they frequently have the wrong skills for their jobs, and they face insufficient rewards for good performance. From this aspect, the new IT ministry distribute their human resources effectively. We treat this human resource issue in Chapter 3 of this volume.

### **(3) Separation of Regulative Authority from Policy Decision Body**

#### **Recommendation**

The government should establish policy decision body and regulative authority separately. There is a need for mediation by disinterested party to judge problems that brings conflict of interests between implementation of industrial policy and regulation. At least, regulative authority division separates from policy decision division for the preparation of organizational change.

#### **Background**

Independence and strength of the regulative authority would be crucial to regulate conversing and globalizing telecommunications sector. Independence implies the authority to make regulative decisions according to the long term interests of the society, free from pressures from commercial or political interests. Policy making process should be highly affected from commercial or political interests. Independence of the regulative authority brings fair judgment that is free from industrial policies.

Strength means sufficient resources, both human and financial for regulative authority, as well as meaningful legal authority to enforce regulatory decisions. Regulative authority has to be able to know when not to regulate the industry. Both regulative authority and policy decision body should be subject to independent review of their role and actions. These two institutions would be able to observe each other.

The new IT ministry recommended above should have the responsibility of defining in detail the policies and objectives for the IT sector in accordance with the basic framework of national objectives. The ministry determines the telecommunications industry model that the country will move toward, and the priorities for infrastructure development and opening of telecom market for competition. But, it would be better that details of timing, implementation and oversight should be deferred to the Regulative authority, like Office of Telecommunication in United Kingdom.

The regulative authority bears the day-to-day responsibility for implementing government communications policies. This is a deliberative body that collects information from the industry, approves applications for licenses and concessions, establishes tariff and service regulation, and defines and monitors technical standards. The regulative authority is mainly consisted from three divisions, Technical, Economic and Policy Divisions.

This separation of regulative authority from policy decision body tends to be common in telecommunications sector. United States and some European developed countries, United Kingdom, France, have established independent regulative authority. In South-East Asia, Philippines and Malaysia have established Communications Commission, and Thailand plans to organize that kind regulative authority.

It should be difficult to establish regulative authority and policy decision body immediately in Vietnam. At least, it should be separated regulative division from policy setting division in new IT ministry for the preparation of organizational change.

### **1.3.2 Regulatory Issues for Market Entry (Licensing and Interconnection)**

#### **(1) Number of Licenses**

##### **Recommendation**

The regulatory authority should set fair and clear criteria for decision of the license issuing and make the number of licenses clear. That information is crucial for

decisions of market entry.

Controlled competition is desirable in low penetration rate stage, under 15 - 20 lines per 100 persons. Duo-poly competition would be appropriate as penetration rate is below 10 lines per 100 persons. For example ideally, there are two or three long distance service licenses (including international gateway), two fixed line local service licenses and two mobile local service licenses in each area. There would be a possibility to issue additional licenses for high penetration city areas, like Ha Noi and Ho Chi Minh City.

### **Background**

There are three basic regulations for public utility business. These are regulation for (a) entry and withdrawal in the market (b) tariffs and charges, and (c) service providing obligations. The role of the regulator should be to promote competitive development by actively encouraging and supporting new, competing carriers offering a wide scope of services.

These regulations have their grounds in scale economy and ensuring national securities. (a) is concerning limitation of the competition in public utility business. The government should limit entry and withdrawal in public utility sector for assurance of public welfare.

In the telecommunications sector, technological innovations have questioned the validity of logic of the scale economy. Relating to this aspects, the World Bank prefer to mobilize private capital for network development rather than multinational or bilateral official aid. Especially, telecommunications sector in Asian developing economies will not be able to receive project assistance from multilateral lending institutions because the telecom sector has good performance in profits that was demonstrated by the World Bank.

Despite the fact that profitability of telecom sector is recognized in aid industry, this does not means telecom sector is now free from entry/withdrawal regulation. Developing countries should limit the number of basic telecommunications carriers to avoid irrational distribution of national resources in the low telephone penetration rate stage. Controlled competition is desirable in that stage, under 15 - 20 lines per 100 persons. Duo-poly competition would be appropriate as penetration rate is below 10 lines per 100 persons.

The most irrational failure is duplication of telecommunications investment. Almost 10 years ago, Overseas Economic Co-operation Fund, Japan, recommended that it is not good to open up telecommunications market to competition under 10 per hundred capita tele-density. Environment for telecommunications business is

changing very rapidly. In recent environment, it is difficult to keep monopoly in telecommunications market. However, the number of basic carriers should still be limited.

Take UK for example, they opened their telecommunications market for controlled competition, Duo-poly for BT and Mercury, in 1982 (penetration rate was 34.76 per 100 persons). UK moved to full competition policy in 1991 (penetration rate was 44.61). It was almost 10 years for transition. In Japan, competition in long distance and international service started in 1985 (penetration rate was 37.07 per 100 persons). There were 3 new public operators into the domestic long distance market, but, most weak operator had difficulties to turn their account black.

Take Malaysia for example. Malaysian government had opened up their market for free entry in 1989 (penetration rate was about 8). Malaysian population is 20 million, and there are 7 basic service licenses, 5 international gateway licenses and 8 mobile telephone licenses. In 1996, the government would like to limit numbers of telecommunications carrier to 3 full service providers. The government could not achieve their aim, because of disagreement from domestic and foreign private investors in telecommunications sector. After the financial crisis, merge and acquisition occurred in the telecommunications market. If all licensees build up their network separately, it should be an irrational use of national resources.

Decree 109/1997/ND-CP, hereafter Decree 109/97, and Circular 4/1998/TT-TCBD, hereafter Circular 4/98, state basic procedures for setting up entering telecom market in Vietnam. Article 5-2 of Circular states "Based itself on the national telecommunication development policies, strategies and planning, the DGPT, shall decide on the numbers of licenses of various kinds for each specific period", but it would not set criteria for decision of the government. The regulator should set fair and clear criteria for decision of the license issuing and make the number of licenses clear for category 1 and 2 operators. For example, there are two or three long distance service licenses enough for this transitional stage (including international gateway). There also two fixed line local service licenses and two mobile local service licenses in general. There would be a possibility to issue additional licenses for high penetration city areas, like Ha Noi and Ho Chi Minh City. No limitation for number of the licenses should be realized in the time when penetration rate reach over 20 per 100 persons.

(2) **Agreement for Interconnection**

**Recommendation**

In order to realize clear and fair interconnection, making a check list for

competition and interconnection is useful. Check list should include following items;

- Equal access for subscribers,
- Access to the incumbent's numbering information,
- Reasonable interconnection charge,
- Location of point of interconnection (including Co-location),
- Non discriminative access to unbundled network components,
- Unbundling among trunk route, local exchange and local loop,
- Access to information concerning the incumbent's network,
- Protection of new operator's information,
- Determination of adequate technical standards and interfaces, and
- Non-discrimination on quality of service and price for interconnection.

It would be better that interconnection issue be addressed through the decisions of the regulatory body to keep flexibility for technological development, but those decisions should be fair and clear (see next recommendation).

### **Background**

A new entrant will often be a competitor to the incumbent, which will regard the new entrant as a threat to its business. The incumbent has little incentive to allow efficient access to its facilities by the new entrant. It is for this reason that the regulator has to step in, if it desires effective competition. The new entrant requiring access to the incumbent's system must conduct a variety of transactions with the incumbent on technical, operational and commercial matters. In order to ensure that these transactions are as smooth and efficient as possible, regulator should clearly define the protocol and charges for the transactions before competition starts.

Experiences have shown that incumbent operator tends to discourage competition and raise numerous practical obstacles to interconnection. The regulator will be involved in mediating and resolving these problems as they arise, and should have the resources and expertise for such activity.

Decision No.547/1998/QĐ-TCBD, hereafter Decision 547/98, set general principle of interconnection in Vietnam. From Decision 547/98, interconnection issues will be possibly solved by negotiations with minimal regulatory intervention. The fundamental feature in the relationship between incumbent and entrant normally is imbalance of market power involving one dominant supplier and several small entrants. The effect of this imbalance is the reason that many of the important issues of interconnection should not be left entirely to negotiations between the

players.

The regulator needs to keep a careful balance: if it unduly shields the entrant by regulating artificially favorable terms for interconnection, this will reduce the entrants' incentive to invest in its own network or attract uneconomic entrants. The new entrant may become dependent on the regulator to an unnecessary and undesirable degree. This in turn may have the effect of not producing effective competition in the long run.

The regulator needs access to different types of resources and expertise, depending on the particular interconnection issues. For example, defining entry conditions may require legal expertise, establishing interconnection tariffs and evaluating costs will require economists and accountants; and establishing technical and operational conditions of interconnection will require engineering expertise.

We would like to list up some general check point for competition and interconnection;

- (a) Equal access by subscribers, e.g. numbering allocation, the arrangements for number portability and access to the incumbent's numbering information,
- (b) Reasonable interconnection charge,
- (c) Location of point of interconnection (including Co-location) -- ability to choose suitable locations within the incumbent's network for point of interconnection,
- (d) Non discriminative access to unbundled network components,
- (e) Unbundling among trunk route, local exchange and local loop to ensure that new entrant does not need to buy more services than it actually wants for interconnection purpose,
- (f) Access to information concerning the incumbent's network, e.g. types and location of switching equipment,
- (g) Protection of entrants' information -- clear rules respecting the protection of the entrant's customer confidential information given to the incumbent to allow the interconnection of such customers,
- (h) Determination of adequate technical standards and interfaces, and
- (i) Non-discrimination on quality of service and price for interconnection.

(3) **Transparent Procedure for Interconnection**

**Recommendation**

Regulative authority should establish transparent procedure for interconnection among telecommunication service providers and promulgate the procedure to the public.



### **Background**

Where it has been decided as a matter of national policy that regulatory intervention is needed in relation to interconnection, there are some general considerations regarding the regulator's powers and procedures that will bear directly on how effective that intervention is.

Article 4 of Decision 547/98 state "In cases where the negotiating parties fail to reach agreements, DGPT shall consider and decide". And Article 31 set detail of procedure to consulting, "Pending a decision, the management agency shall consult with the parties for its decision aimed at reaching an agreement or extending negotiation time limit". As regulative authority intervene in the negotiation, the authority should open details of both side's opposition in negotiating process and authority's grounds for decision. DGPT's regulative activities should be kept transparent and be disclosed. This would make it impossible to settle interconnection agreement only among insiders of the negotiation.

If these procedures would open to the public, new entrants of telecommunications market could arrange their new business plans with rational basis. That would facilitate development of the telecommunications market.

#### **(4) Reselling**

##### **Recommendation**

There is a need for specific regulation for interconnection between public network operator and reselling operator or private network.

The regulator also decide how to allow interconnection between public and reselled network.

##### **Background**

The regulator should decide whether to adopt clearly different regulation among reselling operator, VAN network operator and internet service provider in this technological converging period.

A regulatory approach to the pricing of interconnection services for the reselling operator and the private network is based on a discount from the price that the incumbent charges ordinary end users for the identical service. The discount on which a regulator insists must at least be the discount that the incumbent allows to large-volume end user, though it could be lower, or the regulator may determine the discount rate by benchmarking.

Setting allowable interconnect charges by discounting has the obvious advantage that it relieves the regulator of the heavy burden (or, as some regulators and experts

believe, the impossible task) of measuring the incumbent's true costs. In addition, it may be an appropriate way of charging for service to a network operator, in particular the operator of a VAN or a purely private (i.e. intra-corporate or "closed user group") network, which does not compete with the incumbent's telephone service and which the regulator may accordingly regard as a customer rather than competitor of the incumbent. The discount approach can be regarded as a form of entry assistance for new entrants, if that was the objective of the country concerned. On the other hand, the regulator should consider terms of interconnection between local public lines and resell long-distance lines or international simple resell lines. Simple resell can provide alternative trunks for the customer connecting with local public network. That has possibility to depress profit of public network operator. Between the US and Japan, international simple resell became issue for negotiation of opening up Japanese telecommunications market. Before 1998, Japanese government prohibited interconnection between public network and resell lines at both end of network. Because, it realizes cream skinning in long distance telecommunications market. After penetration rate growing up, that interconnection should not be a cream skinning, because of no need for heavy subsidization from long distance to local network. The regulator should consider timing of allowing simple resell interconnection.

### **1.3.3 Regulatory Issues for Universal Access**

#### **(1) Definition of Universal Access**

##### **Recommendation**

The policy authority should establish definition of universal access based on the information gathered and the relation between income and tariffs. The definition includes what features and services are included in Vietnamese universal access policy. Then, the authority should set an objective of universal access indicators. The indicator includes three criteria, population, distance and time. In other expression, "a telephone for every permanent settlement of X population", "a telephone within X kilometers" and "A telephone within X minutes".

##### **Background**

Telecommunications development around policies of universal service could be problematic. This is because contemporary universal service is not a single concept but composite concept that includes geographical nationwide coverage, non-discriminatory access and widespread affordability, as we show in section 2.

The three contending criteria of contemporary universal service -- availability, accessibility and affordability -- has proven a difficult task for most governments. It is more realistic to consider these criteria as different task among developed countries, industrializing countries and developing countries. In 1996, while most high income countries had achieved or realizing at least one telephone line for each household, fewer than about 15 per cent of households have telephone in Vietnam. Given the magnitude of the gap, Vietnam should articulate more practical transitional goals. This relates with the next recommendation. The government would be better to give nationwide coverage policy priority as setting objectives. There is also development gap in one country. While, urban areas, especially Ha Noi and Ho Chi Minh, are reaching high telephone density, there are many no-telephone communities in remote rural area. Objective of universal access indicators derive at least five categories; urban, city, suburban, rural and remote rural for practical objective setting. Objective of universal access indicators also based upon involving factors such as coverage of telephone network, mode of transport, the population density, and the spread of locations.

(2) Expansion of Universal Access in Vietnam

This part of recommendation includes two phases of way achieving universal access. The reason for separating into 2 phases comes from needs of different objective setting at stage by stage of telecommunications infrastructure development.

ITU report shows these 5 stages of infrastructure development:

- (a) As the network is established, the emphasis typically has been on finding technological solutions to provide long-distance service linking all major urban centers, business telephone penetration 0-30%, household telephone penetration 0-10%;
- (b) As the network grows, emphasis shifts to ensuring services available in all geographic areas on the same basis, business telephone penetration 20-70%, household telephone penetration 5-30%;
- (c) At this stage, universal service goals become driven by the expected benefits to the economy from mass participation encouraged by low installation and rental charges, business telephone penetration 70-100%, household telephone penetration 20-85%;
- (d) As the network reaches completion, with a high level of household telephone

penetration, universal service becomes focused upon social goals, ensuring telephone service is available to all and meets special needs, business telephone penetration 100%, household telephone penetration 70-100%;

- (c) The final stage is reached when all needs for basic communications are satisfied and access to advanced information service are available to the public, business telephone penetration 100%, household telephone penetration 100%.

Vietnam might aim to reach at the second stage of telecommunications infrastructure development, right now. In this stage of the development, the policy authority should realize nationwide coverage of the telecommunications network first. From view point of meaning of universal service, the policy authority should take step to achieve non-discriminatory access and widespread affordability. However, these objectives should become main issue at next stage of the development.

(a) **Geographical Extension  
Recommendation**

The policy authority should realize nation wide coverage of telecommunications service with the notion of universal access by variety of policy tools. The notion of universal access is ranged from individual service to a broader coverage of the population and from a telephone in every house hold to community access.

**Background**

A lack of individual telephone service can be partially alleviated by widespread penetration of public telephones. Policies revolve around increasing public telephone penetration and expanding the number of localities with telephone service. Rural Public Telephone Project may improve accessibility for telephone in the rural area.

Universal access approach can take a variety of forms. "Communication access points" can be established for remote dwellers. This is a policy to provide a telephone to every village or, for marginalized urban residents. A "telecommunication outlet" in places where they are likely to come together, such as community centers. One way developing countries have opened private lines to public access has been through franchising Public Call Offices to private entrepreneurs.

Access is then based on the objective of universal access indicators. Sharing access concept may also enhance access for those without individual telephones. For example, household without individual telephone service may have access to neighbor's telephone. This is particularly prevalent among low income and other disadvantaged users.

Technology also allows for an evolution of access options. In Brazil, voice-mail boxes are made available so that individuals without a telephone are able to receive as well as to make calls. This system will work as a "virtual telephone". In this system, the telephone company assigns users a telephone number and an answering machine which records all messages to the number. Users can retrieve when they access to a telephone.

In Chile, any enterprise that wishes to payphone business is able to install and operate payphones. One incentive for companies establishing payphone operators in Chile is that they also obtain a license to provide a local network in the geographical area concerned.

(b) Economically Disadvantaged or Physically Disabled

**Recommendation**

The policy authority should extend universal access to economically disadvantaged or physically disabled peoples for realizing social equality. It should be an important step to "universal service".

**Background**

The person who could not access telecommunications services can be a serious limitation. This situation called unphoned in here, like ITU reports. The unphoned person may include those who choose not to have a telephone as well as those who can not afford it. It may include those who can not use a conventional telephone, such as those with visual or hearing impairments. Because the unphoned group is so diverse, the tariff strategy to reach this group also needs to be diverse. Strategies to encourage diffusing telephone among this group should comprise a wide range of options. We would like to show some effective policies to pulling demands from unphoned group. These are Tariff reductions and Subsidized payphone calls.

It is difficult to serve telecommunication to disadvantaged or physically disabled groups without development of infrastructure, geographical expansion in other words. So geographical network expansion may have priority regarding other elements of universality. Universal access would be

stimulated by incentives for operators that diffuse telecommunications services to those groups. There is welfare policy that has some stages climbing with telephone penetration rate increasing. For example, when penetration rate is 2-5 per 100 persons, the household that earns 1/3 of average income is able to have tariff reduction. As penetration rate will increase to 10 per 100 persons, the household that earns 1/2 of average income is able to have tariff reduction so on.

Tariff reductions aimed at disadvantaged users, such as low income, elderly, handicapped. The US has programs for reducing connection charges and monthly bills for low income users. Programs in France are reducing tariffs for special and social groups, such as aged over 65 living alone or their partner and war veterans. These reduction include 50% reduction on subscription fee, 40 units free of charge per month, and free access to Minitel System. In Germany, elderly, disabled and low income groups receive reduction of subscription fee and 30 units free of charge per month. Portugal uses special tariff reductions for retirees and pensioners with a monthly salary less than the national minimum, that include a 60% reduction of subscription fees and at least 25 units free of charge per month.

Subsidized payphone calls aimed at low income users. Public telephones will be heavily used by those who can not afford individual telephone service. It is appropriate to provide lower call charges for these users. However, it is difficult to determine who is low income when using payphone. So, low call charge schemes are directed towards community public telephones. In Argentina, semi-public telephones are provided free of connection and subscription charges in places such as schools and community centers in low income areas. Call charges from those phones are 70% cheaper compared to normal private telephones.

(3) **Universal Access Obligation for New Entrants**

**Recommendation**

The regulator would be better to consider that the new entrant in profitable sector owe some extent of Universal Service/Access Obligation as well as incumbent operator.

**Background**

The introduction of competition puts pressure on the traditional cross-subsidy methods for expanding affordability of telephone service. In other words, under

competitive market structure operators prefer to enter profitable market only. Less profitable markets such as rural area remained underdeveloped in terms of infrastructure building as well as enabling affordable prices. Operator's cream skimming act severely undermines full development of infrastructure. Incomplete development of infrastructure actually disable effects of telecommunications infrastructure spread in a whole economy. Therefore it is vital for the regulatory authority to ensure universal service not just in the sense of equality or welfare but also in the sense of economic effect of telecom infrastructure. In order to achieve full development of infrastructure the regulative authority needs to impose universal service/access obligation on operators entering profitable markets as well as provision of incentive to enter less profitable market.

Universal access obligation is divided to two measures; one is for incumbent and the other is for new entrants. Incumbent operator should owe universal service/access obligation, because the operator might have succeeded assets of former monopolistic operation. The obligation for the new entrants are needed in order to prevent "cream skimming" by entering into only profitable market. For that purpose, the regulator require new entrants owe some extent of universal service obligation. For example, the category 2 licensee of Circular 4/98 that would like to enter metropolitan area, Ha Noi, Ho Chi Minh City, Hai Phong, and Da Nang with wireless local loop infrastructure owes universal service obligation in the area. Some new mobile service licensee also should owe universal service obligation for the compensation of their profitable entry.

#### (4) Funding Universal Access

##### **Recommendation**

Universal service/access fund is one of the most effective way for funding. However, the whole system of universal access could not be covered only by universal service/access fund. The policy decision body should combine universal access fund with other means for funding universal access.

##### **Background**

An incumbent operator with a universal service obligation is normally assumed to incur a deficit by virtue of its obligation to serve, in uneconomic areas, or through pricing of basic service below cost. In many jurisdictions, entrants are required to pay a "contribution" to the incumbent to compensate it for these "social costs." The chief ingredients of "social costs" are costs arising from the incumbent's usual obligations to act as provider of last resort and/or of universal service, to provide

local-loop service and/or local-call service at prices below costs.

There are mainly three different type of funding; Cross subsidization, Access charges and Universal Service/access Fund.

Cross subsidization is the most prevalent form of universal service funding. An advantage of cross subsidies is that they require limited regulatory expertise and intervention in a monopoly environment. The regulator establishes guidelines for residential telephone tariffs and leaves it up to operator to establish its own internal subsidies to cover any losses that might accrue.

Cross subsidization is becoming out of date funding in competitive market. This type of funding is not sustainable since new market entrants target to enter profitable segments of market.

Access charge system is basically a variation on the cross subsidy system. The access charge is an amount that carriers pay to local exchange operators for initiating or terminating calls, usually traffic sensitive base. The purpose is to allow the local exchange operator to recover their cost for penetrating rural areas and operating local network.

Concerning access charge there is question what extent should interconnecting operators be required to contribute toward bearing part of the incumbent's social costs. If new entrants are required, even in their earliest infancy, to make such contributions, this may limit competitive entry. If, on the other hand, they are relieved in the long run from any duty to contribute, this would obviously and perhaps unjustifiably tilt the playing-field in their favor. All other things being equal, no one proposes that such an artificial competitive advantage be permanently conferred on the entrant.

Conceptually, interconnection charges and sharing the costs of any universal obligation are separate issues. The costs of universal service could be taken out of interconnection calculations and dealt with separately. Once universal service costs have been calculated, they could then be recovered by the incumbent and new entrants through an appropriate premium added to all interconnection charges.

Universal service/access fund system is an account that is generally funded by operator contributions and is used to finance in unprofitable business area. There are two variations, the first, one operator is designed as the nation wide universal operator that can receive fund from universal service fund for ensuring universal service/access. In the second variation, universal access funds are used to finance network development in unphoned areas. The universal access fund administrator asks for bids for providing service in specific localities and select lowest bid as the winner who paid from universal access fund for providing the network.



Take Peru for example of universal access fund, there is Telecommunication Investment Fund system, financed 1% levy on the annual revenues of all telecommunications operators. Since the system does not have sufficient resources to finance development in all rural unphoned areas, it has focused on selecting areas that would benefit the most. It then estimates the amount of subsidy required in relation the initial investment.

It would be better to consider universal access fund system in Vietnam. Because, DGPT takes a policy that allows multi-entrants into local telecommunications market. These entrants could have a chance to expand their network with universal access fund system. Access charge should be combined with the fund for continuing service provision for under-costed profit area and economically disadvantaged or physically disabled groups.

(5) Endowment of Match Up Project

**Recommendation**

Realizing universal access to remote rural area, the policy authority could consider to match up telecommunication development project with other authorities' project, e.g. education, health care etc. in this technological converging age.

**Background**

The telecom sector will not be able to receive project assistance from multilateral lending institutions. It also becomes increasingly difficult for telecom sector to receive bilateral ODA from developed countries. The reasons that multilateral lending institutions and developed countries regard that telecom sector becomes profitable compared to other infrastructure sectors as we see in section 1.3 of this chapter.

However, there are needs for telecommunications infrastructure and information technologies, especially software, for human basic needs areas. For example, the 1995 United Nations Social Summit identified universal access to basic education and lifelong educational opportunities as basic preconditions for economic and human development. Electronic educational applications, named remote-schools or tele-education, can overcome shortages of educational resources by lessons and describing educational materials through telecommunication network.

To funding universal access, the policy decision body would be better to match infrastructure development project and educational or health care project. For example, a remote and rural unphoned community could have telecommunications infrastructure with fund that consist of 60% of telecommunications development

budget, 30% of human resource development budget and 10% of health care budget.

#### **1.3.4 Regulatory Issues for Tariffs**

##### **(1) Collection of Business Information and Establishment of Accounting Rule**

###### **Recommendation**

The regulatory authority should collect necessary information for the regulatory decision making. Especially, effective tariff setting requires comprehensive business information about the category I and category II basic telecommunications service providers. Common accounting system for those operators prepares the basis for collecting information.

###### **Background**

The collection of necessary information becomes an inherent part of the regulatory decision making process. Detailed information is the indispensable basis for the knowledge to regulate complexity of the telecommunications systems and rapidly developing technology. The regulatory authority needs information on which to base a range of decisions affecting many different parties concerning telecommunications industry; to create incentives for the incumbent operator and new entrants; to ensure that the development of competition is not hindered, that customers receive sufficient information to exercise meaningful choice.

This recommendation is related to 1.3.6 (1). The regulatory authority will be usually confronted with the task of regulating an incumbent monopolistic carrier when the authority will be involved with establishment of competitive market. The authority will be confronted by one of greatest tasks, there are huge information imbalance between the authority and the regulated incumbent carrier. The authority will find that the incumbent actually possesses far more information on all matters relating to its business. This is likely to be so despite the paucity of information, particularly management accounting information, that is generally available to monopoly utility operators, compared with the amount of such information that competitive carriers would expect to have available to their own management. An effective regulatory regime needs to incorporate procedures that leave most of the onus of proof in key regulatory cases resting on the regulated company.

Cost base tariff setting should be the principal in competitive telecommunications

market as Recommendations following this state. For the purpose to calculate preferable tariff, the regulatory authority should have exact cost information to provide telecommunications services. Effective cost base tariff setting is crucially depends on the provision to the regulatory authority of information on which to base decisions concerning the structure, scope and coverage of price control. The regulatory authority needs comprehensive information about the regulated carriers' business. The information includes: existing and projected turnover of its main lines of business; investment plans for the specific period; program of efficiency improvements; planned levels of labor productivity improvement over the specific period; and the impacts that these changes are expected to have on its costs.

To collecting information mentioned above, it is useful to apply common accounting system to category I and category II basic telecommunications service providers in Circular 4/98. Operators can easily provide business information to the authority with common accounting system and they have to have obligations to report their business periodically.

(2) **Tariff Rebalancing**

**Recommendation**

The regulatory authority should plan tariff rebalancing that decrease dependency to international revenue and increase revenue from domestic traffic.

**Background**

The structural deficiencies are not simply a case of being solvable by infusions of money. In any event, the public funds budgeted by relevant international institutions (e.g., the World Bank, the ITU) are not available, and not sufficient, to materially reduce the adverse impacts of a major decline in settlement revenues. So developing countries have to look to other means for increasing sales of telecommunications services.

Tariff rebalancing is a reliable mean to increase sales. The focus of public policy about pricing should be not only on "wholesale" (i.e., accounting and settlement rates) but on collection, or "retail" rates -- what consumers pay for communications services. What the new situation requires is a rational pricing policy applicable to access lines and to domestic traffic as well as international traffic. Developing such a policy for any country requires three preconditions:

- (a) Clear objectives, and logical adaptation of pricing policies and practices to those objectives.

(b) Assembly of adequate information on costs, and analysis of how to allocate them, with explicit identification of any cross-subsidies intentionally built into the pricing system. Transparency is needed to accomplish this.

(c) Recognition of changing technology and market realities.

Restructuring of prices should reduce dependence on one or a few sources of revenue, such as international settlements. From general trends of cost-based accounting rate setting, it should be difficult to set high collection charge for international traffic also. Operators seek a more robust and diverse "mix" of revenues. It will take into account demand and market conditions as well as costs. For example, charge for some unit (300 or 450 minutes) of local calls has included into monthly subscription charge in Vietnam. That part of the local call charge replace to call unit sensitive charge, that change would increase domestic sales of telecommunication services. Because, traffic of local calls are not so sensitive to price hike.

### (3) Incentive Regulation for Tariff

#### **Recommendation**

The regulatory authority should consider to develop rate regulation from "rate of return" structure to "price cap" structure for promoting efficiency of telecommunications service operators. The regulative authority should consider major loop holes of price cap regulation when the regulation will be implemented.

#### **Background**

One important task of regulation has been ensure that the prices charged to consumers reasonable. This has led to a search for standards by which the reasonableness of price can be judged. A particular focus of regulation has been on establishing maximum prices for monopoly services. A system of rate regulation has evolved in which the reasonableness of rate is primarily by the reasonableness of the overall profit level for the aggregate of services within the regulatory jurisdiction.

In the monopolistic market, rate of return regulation had reasonableness to set prices for telecommunications service. The concern in rate of return regulation is to guard against excessive monopoly profits. The aim of the regulation is to limit the operator's rate of profit to a reasonable level. Rate of return regulation is basically a cost-plus approach throughout the history of regulation in the US and

Canada. Experience in both countries indicates that incentives to contain costs are diminished and incentives for inefficient behavior proliferate under the cost-plus approach. Since cost reduction will generally require price reductions rather than be reflected in increased profitability, rate of return regulations weakens incentives to pursue risky but profitable technological innovation and other forms of achieving improvements in economic performance.

Rapid developments in telecommunication technology and competition have aggregated difficulties of rate of return regulation. For example, unless significant price rebalance is permitted, the incumbent is vulnerable to cream-skimming new entrants. Another problem under competition is the inability to accurately allocate rate base and experiences among service. There are incentives for sifting costs away from competitive service and on to monopoly services.

Price cap regulation is an alternative system to avoid faults of rate return regulation and to give operators incentives for efficient management. The original rationale of price cap regulation envisaged the scheme as a simple system which essentially provides a system which ensures that customers share in the gains from cost reduction by the operator. Price cap regulation limits increases in the average price of telecommunications service to no more than the increase in an inflation index minus a specified amount referred to as the "X" factor. For example, if the inflation index increases by 7 per cent, and the "X" factor is set at 3 per cent, an operator's controlled prices would be allowed to increase by no more than 4 per cent in that year on average. Here is a simple calculating formula;

$$P_t = P_{t-1} + P_{t-1}(I - X)$$

- $P_t$ : Maximum increase rate of averaged prices at the year t  
 $P_{t-1}$ : Price rate at the year t-1  
I: Inflation index  
X: Productivity factor adjustment

Price cap regulation will;

- (a) result in simplified, more transparent, less instructive and costly regulation;
- (b) ensure sustained real price decreases;
- (c) permit price flexibility including price rebalancing;
- (d) provide sustained incentives for improved economic performance;
- (e) provide incentives for technological change and innovation;
- (f) provide protection against cross-subsidization and other potential abuses of market power; and

(g) promote competition and its resulting benefits to customers.

However, the regulative authority should take care about four major loop holes of price cap regulation. The first loop hole is selection of inflation index. There are two indexes for calculating inflation; general price index (Consumer Price Index or Resale Price Index) or telecommunications related inputs price index. General trends of calculation uses general price index, CPI in UK and RPI in the US. Usage of later index will be able to avoid effect from non-telecom-related costs, but it is difficult to calculate that specific index. The second is decision of productivity factor adjustment, as "X" factor. It is difficult to calculate productivity factor adjustment exactly, the regulative authority should amend the rate frequently. The third is composition of service basket for price cap regulation. Under price cap regulation, operator can vary price for each service in the service basket. If monopolistic service will be included in more competitive service basket, operators will be able to subsidize competitive service from monopolistic service. The fourth is need of periodical amendment of price cap to avoid estrangement from real cost for service provision.

(4) Long Term Incremental Cost

**Recommendation**

The regulator have to set up an internal study team for "cost" of telecommunications services to implement cost base tariff regulation. The notion of the "cost" affects style of competition. The study team would intensively focus on the treatment of "Long term incremental cost", as a type of forward looking cost, which becomes dominant notion in the competitive markets.

Circular No. 3/1999/TT-TCBD, hereafter Circular 3/99, is an important step to realize cost based tariff regulation. For further step ahead to competitive market, the regulative authority should decide which cost will be used to calculate tariff and charge, "historical - full cost principle" or "forward looking - long term incremental cost principle".

**Background**

The fundamental questions are, what are the "costs" of inter-connection, how should such "costs" be determined, and who should pay for them?

Most important issue for regulators is the level at which interconnect charges should be set. Most regulators agree that interconnection charges should be aligned with the incumbent's cost of providing interconnection, though there are

many different ways to apply this general principle, for example by fully allocated costs or long term incremental costs. Cost-oriented interconnect charges would enable an adequately efficient entrant to compete by matching or undercutting the incumbent's "retail" price to end-users.

Interconnection for competitive supply of telecommunications service entails several elements, each raising different issues: First, is the requirement for investment by the incumbent for equipment and software to accommodate the traffic offered by the entrants. These so-called "start up costs" represent a burden on the incumbent's operation, and must be apportioned somehow between the incumbent and the entrants. Second, are the costs of the facilities or services actually required for the connections to the incumbent's network and from the facilities of the entrant.

Because of the complexity and controversial nature of these issues, it is essential that the regulator conduct its proceedings aimed at determining these problems in an open and transparent manner, in order to ensure that all stakeholders understand the reasoning behind decisions as they are rendered.

Since cost-based pricing may be difficult for various reasons, for example in some developing countries without an established method of determining costs, regulators could alternatively require interconnect charges to be aligned with "bench-marking" exercises, so that interconnect charges in a given country should not exceed the charges made by efficient incumbents in other similar countries. Benchmark pricing may be regarded as a means of approximately identifying what the incumbent's cost of providing interconnect service is, or at least ought to be. Temporally, the regulator can use this alternative ways, bench-marking, to determine access charge.

Article 9-2 of Decision 547/98 set cost based interconnection charges in Vietnam. That decision has not included which type of cost would be used to calculate interconnection charges. Decision No.99/1998/QD-TTg, hereafter Decision 99/98, is referred in Decision 547/98, it states "The post and telecommunication prices and charges shall be set on the basis of the product or service prices, ensuring that the enterprises can cover costs,..." in article 3-2. Decision 99/98 also has not specify cost structure to adopt regulation. Circular No. 3/1999/TT-TCBD, hereafter Circular 3/99, should be judged as an important step to realize cost based tariff regulation. Especially, "a break-down sheet of the service production cost" of article 3.2.2 is an important information to regulate tariff and charge. For further step ahead to competitive telecommunications market, the regulative authority should decide which cost will be used to calculate tariff and charge, historical or

forward looking.

World trends to set up interconnection charge tends to adopt "long term incremental cost" for regulate interconnection charge. The regulator would be better to start studying the notion of "long term incremental cost" and considering whether that notion of cost would be suitable in Vietnamese regulatory system.

Regulators of the US and the UK have taken serious steps towards introducing new rules for interconnection among carriers. Other countries can learn from those models with some points to be held in mind. For example, the same or similar terms or economic models may carry different meanings and implications in the two countries. The base of that difference stand that "interconnection" refers only to the physical linking of networks in the US whereas the UK it covers more than that. It includes traffics to the end users in there.

(5) Arrangement of International Accounting Rate

**Recommendation**

The regulative authority should continue to adjust international accounting rate to cost-oriented level. Disclosing adjustment plan would be desirable for international negotiations such as WTO Basic Telecommunications Agreement.

**Background**

The accounting rate system is the product of a world that is rapidly vanishing, in which international telecommunications traffic was exchanged between national monopoly providers, through correspondent relations. There are three key factors hastening the break-up of the old system; The rapid introduction of new technologies and new modes of operation; the 1997 WTO Basic Telecommunications Agreement and the application of the basic GATS disciplines to the global telecom market through that Agreement; and the emergence of even more open competitive conditions within certain pairs of countries with competitive industry structures.

Collection charges and accounting rates tend to be based on costs among developed countries. These countries increasingly do not like to regard high accounting rate for developing countries as preferable subsidies for them.

Since effective competition in foreign markets is beneficial to the US consumers, FCC announced the policy that will decrease prices paid by US consumers by increasing the pressure to bring down above-cost accounting rates. According to FCC order, Vietnam would apply 23 cents per minute accounting rate at January 1, 2002.



The US case is very extreme one, like other developed countries sue against FCC decision. However, OECD member countries on the whole disagree with the notion that the accounting rate system should be used as a means of transferring funds, especially hard currency, to the developing countries for telecommunications development.

A number of developing countries consider a long, 5-10 years, adjustment period necessary. That period has come from technologically backwardness and inefficient telecommunications operations. Developed countries should consider each countries specific reasons on one hand, developing countries should disclose reasons of long adjusting time and adjustment plan on another hand.

### **1.3.5 Standardization**

#### **(1) Strengthening Standardization Program**

##### **Recommendation**

The regulator would be better to make a plan to establish its own laboratory facilities to examine certification process. A practical future vision for the standardization program in Vietnam will have to be clarified under which the necessary human resources and financial assistance are prepared.

##### **Background**

Vietnam well recognizes the importance of standardization to stimulate domestic economy. Based on this recognition, DGPT has reorganized a department which can manage the overall standardization activities and established RIPT (Research Institute of Posts and Telecommunications) annexed to VNPT to perform a program on R&D and HRD.

In Vietnam, an index indicating the present status of telecommunications industries such as "R&D and HRD", "Production techniques", "Privatization and telecom business" and "Standardization activities" looks like daybreak. At the same time, it is tackling to decree domestic standard, however, a number of staffs who are directly assigned to the department or RIPT, is considered small and not fully skillful.

The establishment of a system for standardization in which all the matters such as establishment of the committees or working groups, discussion and approval of contributions, management of R&D and HRD laboratory, dispatch of experts and etc., including the management of ITU-T, ITU-R and ITU-D will be firstly proposed. The structure of the system can be referred to the current system being

in force in Indonesia or Malaysia.

Continuous participation in ITU-Study Group meetings at expert level will be very important not only for grasping the direction of study but gathering the meeting information. Regular seminars concerned with standardization will have to be convened in cooperative basis between Vietnam and foreign countries to accelerate R&D and HRD program.

A practical future vision for the standardization program in Vietnam will have to be clarified under which the necessary human resources and financial assistance are prepared. Especially, standardization activities by the up-stream will have to be included in the future vision. Concerning an item on standard and certification system for radio communications equipment, a majority among the APT countries performs the testing to radio communications equipment from overseas. It will be real situation that mutual recognition with other countries is not applied except a small number of the APT countries.

In this view, Vietnam will be advised to have a plan to establish its own laboratory facilities to examine certification process.

(2) Expansion of "De Facto" Standardization and Mutual Recognition Agreement (MRA)

**Recommendation**

The regulatory authority would designate specific technical areas to promote procedure of "de facto" standards. With an adoption of "de facto" standards, the regulatory authority should consider acceptance of Mutual Recognition Agreement in specific technical standards at first, such as Global Mobile Personal Communications System (GMPCS). The regulatory authority should also consider how Vietnamese government accept APEC's "Mutual Recognition Arrangement for Conformity Assessment of Telecommunications Equipment", such as legislation for coordinating MRA and domestic standards.

**Background**

"De dure" standard means recommendations or provisions which are provided as a consensus approved by the representative of each country in the international organizations or institutes such as ITU or ISO. Of which, ITU-T, one of inner section in ITU, is entrusted to standardize the items on telecommunications, and ITU-R for radiocommunications. Concerning a processing speed for standardization in ITU, it becomes difficult for ITU to terminate in time as the work of standardization conforming to the progress of technology being greatly

remarkable. Especially, the items on digital techniques are requested to be recommended in detail and were mainly occupied by those related to hardware, so far. Recently, because of software part being included in addition to hardware, a problem on working efficiency while standardizing became emergent as a serious concern. On the other hand, the specification of products is normally different from that in each country or region so that a conflict on benefit might occur between the telecom operators concerned. By these reasons, to be "de dure" standard might take a lot of times or not to be "de dure" might happen in the special case.

In order to avoid these situation, ITU-T and ITU-R established inter-departmentally a telecommunication sector advisory group and radiocommunication sector advisory group, respectively. They are entrusted a work on the decision of priority of Questions, the verification of working strategy, the monitoring of present status of working process in Study Groups, the verification of working method and etc. to accelerate the work for standardization.

"De facto" standard means standard which practically looks like the world-wide standard without approval process by a various kind of the international standardization organizations. The products or systems having a qualification for "de facto" standard normally occupy a monopolistic share in the world as a result of competition in the market. Especially, at present, the degree of progress on technical developments greatly influences the market trend for selling so that the telecom enterprises have to be encouraged to bring the products integrated the newest technology into the market as immediately as possible. At the same time, it is common to start selling in the market the products or systems in parallel in the stage of promoting a procedure to "de dure" standard.

"De facto" standard doesn't aim at being "de facto" from the beginning. It will be decided by the market on the way to request to be "de dure" standard. Besides, it has such a fact that the products or systems with the most prominent technology might not always occupy the market. At present, GSM (Global System for Mobile Communications) which is an European system, looks to have conquered all over the world in the field of mobile communications systems. It took a regional standard of ETSI (European Telecommunications Standards Institute) and all the European administrations, telecom operators and makers deployed together the GMS business in Africa, Middle East and Asia. As a result, GSM was employed as a domestic mobile communications system in more than 100 countries. With this fact, GMS will be able to call "de facto" standard. On the other hand, Internet will be also able to recognize as one of "de facto" standard.

With development of mobile communications, there are some region wide or world wide mobile communication services and roaming services among mobile service providers in different countries. In this environment, it is useful for customers to use same equipment across national border lines. Mutual Recognition Agreement (MRA) among countries that plan to providing those services will be able to stimulate markets for mobile services by simplification of standardization for network and equipment. MRA seems to be effective for the development of Global Mobile Personal Communications System (GMPCS). ITU-T has recognized the effect of MRA and considered adoption of MRA in GMPCS equipment.

The WTO Agreement on Technical Barriers to Trade requires that "Members are encouraged to permit participation of conformity assessment bodies located in the territories of other Members in their conformity assessment procedures under conditions no less favorable than those accorded to bodies located within their territory or the territory of any other country.". Responding WTO requirement, APEC has arranged "Mutual Recognition Arrangement for Conformity Assessment of Telecommunications Equipment." This Arrangement is intended to streamline the Conformity Assessment Procedures for a wide range of telecommunications and telecommunications-related equipment and thereby to facilitate trade among the Parties. It provides for the mutual recognition by the importing Parties of Conformity Assessment Bodies and mutual acceptance of the results of testing and equipment certification procedures undertaken by those bodies in assessing conformity of equipment to the importing Parties' own Technical Regulations.

APEC members should respect the arrangement to develop own IT industry with promoting telecommunications trade. There is a tendency to protect "infant IT industry" in each members, but over-protection for infant industry should bring conflict between APEC members. Developed and developing members should recognize profits of removing obstacles for IT trade in step by step manner.

(3) **Type approval for Customer Premises Equipment**

**Recommendation**

The regulator should simplify type approval of Customer Premises Equipment and manage its procedure. It also important for the future co-operation to harmonize type approval procedures with other members of international organization.

**Background**

Historically, type approval of Customer Premises Equipment and certification

procedures have been bound up with protectionism, possibly being used in an attempt to safeguard a local industry, and cutting off competition, though in many countries now the market for Post & Telecom Organization equipment and CPE equipment has been fully liberalized. An incumbent PTO with the power and responsibility to type approve CPE is in a powerful position.

Type approval has also reflected safety concerns, though these have often proved to be exaggerated in practice. Practice among countries now varies widely: in some countries type approval of single line equipment has been abandoned, while in others a large measure of authority is retained. Moreover, a country's level of development will have a major impact on type approval: there may be simply no resources to type approve or certify.

Whatever the mechanism for type approval, there has to be a separation of that mechanism from the dominant incumbent telecommunications operator. In some countries that separation has already been achieved.

There are growing regional efforts, for example in the APEC countries and within the European Union, to harmonize type approval procedures because of the growing impact that restrictive type approval or certification procedures can have on international trade. In short, CPE certification issues should be seen as part of a broader package of telecom issues in a country, and not an isolated question.

### **1.3.6 Regulation for Operators**

#### **(1) Regulation on Incumbent Carrier**

##### **Recommendation**

For realizing "fair and clear" competition, the regulatory authority should limit bargaining power of incumbent operator. It would be effective to make check list for competition and to direct incumbent operator rationalizing management.

While imposing limitation on incumbent carriers, the regulator should consider providing the compensation for Universal Service Obligation to the incumbent as well. Furthermore, the policy making body also consider how to raise national flag carrier in this penetration rate stage, from 2 to 10 per 100person.

##### **Background**

In the normal case, a new entrant will be dependent upon the incumbent Post & Telecommunication Organization (PTO). Clearly, the new entrant must conduct a variety of transactions with the incumbent on technical, operational and commercial matters. In order to ensure that these transactions are as smooth and

efficient as possible, regulators should consider clearly defining the protocol and charges for the transactions before the onset of competition.

The growth of competition requires that regulators actively promote market opening and equitable participation, given the historic presence of monopoly providers.

Regulatory authority may be required to assure equitable access to essential facilities. The existence of bottleneck facilities such as support structures (e.g. poles and underground ducts) which are prohibitively expensive for competitors to replicate, and owned by incumbent operator that must share these facilities with their competition. Public lands and rights-of-way that may be controlled by local governments can also present a similar form of barrier for new entrants.

For eliminating barrier, the regulator can prepare Check list for competition, the list including, Fairness of interconnection (we set recommendation for interconnection above), Observation of cross-subsidies in VNPT, Openness of available data and information of R&D in VNPT, etc.

When conversion of telecommunication market developed, potential leveraging of dominance in one market to achieve dominance in multiple markets. This could occur, if dominant telephone operator were to obtain unrestricted and control opportunities in new service areas such as related markets traditionally controlled by broadcasters. The potential for dominance is especially serious where telephone carriers are allowed to own or control directly both infrastructure and content at the same time.

Usually, incumbent operator should owe Universal Service Obligation, because the operator succeed telecommunications infrastructure that had developed in monopolistic situation. The regulator should decrease that burden from incumbent operator, not eliminating incentive for network development. And, in the period of low penetration rate, the policy decision body should encourage national network development. The body make policy making incumbent operator main engine of the development in certain extent.

## (2) Preparation for Unbundling Network Elements

### **Recommendation**

It is the first step to unbundle telecommunications network for competitive access, that incumbent operator should separate each financially independent subsidiaries' accounting and disclose those balance sheets to the regulator. This business development is very crucial for fair and clear circulation of cost-based interconnection charges.

The regulator should establish the procedure for unbundling network elements

foreseeing cost-based interconnection charges. Circular 3/99 should be recognized as an important step to realize unbundling network elements.

### **Background**

In order to discern the cost at which one part of the incumbent's organization produces interconnect service for another part of the incumbent's organization, some regulators have insisted that the incumbent's overall organization be separated, either structurally or in accounting terms, into a part that competes with the entrant and a part that supplies interconnect service to it as well as to the entrant. Many regulators also use this device as an instrument for satisfying a broad regulatory rule against undue discrimination, which requires the incumbent not to charge any entrant more for interconnect service than the incumbent charges its own competing accounting unit or competing subsidiary.

Take the US for example, FCC requires incumbent local exchange carriers (LECs) to provide requesting telecommunications carriers non-discriminatory access to network elements on an unbundled basis at any feasible point of rates, terms and conditions. The Commission identified a minimum set of network elements that incumbent LECs must provide. These are: local loops, local and tandem switches, interoffice transition facilities, network interface devices, signaling and call-related database facilities, operators support systems functions, and operator and directory assistance facilities. The Commission concludes that access to such operations support systems is crucial to affording new entrants a meaningful opportunity to compete with incumbent.

To reach cost-based charge setting, there is need for structural separation of independent subsidiaries. However, structural separation could be harmful for development of infrastructure at low telephone penetration level. The incumbent should separate subsidiaries' accountings for preparation of competition in the telecommunications market.

Circular 3/99 should be recognized as an important step to realize unbundling network elements. Article 2.2.2.1 of the Circular require to set separate tariffs on trunk lease, domestic long distance and international channel lease, leasing gate and installing subscriber line with direct access to the internet, international outward telephone calls, etc. Telecommunications network would be able to unbundle more subordinate network elements. However, it is important to keep the direction set by the Circular in this telecommunications development stage.

(3) Separation of Postal and Telecommunications Business

**Recommendation**

The regulatory authority should consider structural separation of postal and telecommunications business. At least, there is a need for financial separation of posts from telecommunications business.

**Background**

Postal and telecommunications services are grouped under the same organizational structure. The provision of telecommunications services is organizationally linked with that of postal services, because of the early history of the sector. In the middle and late 1800s, when telegraph and telephone services were first being developed, many European countries treated them as an extension of postal service communication.

Since the invention of telegraphy, there has been constant state involvement in telecommunication services. Initially this was for military reasons, to enable the mobilization of armies and for their subsequent command and control. Telegraphy and later telephony were integrated into national economic and industrial policies, to protect the valuable postal monopoly. This usually resulted in a pairing of post and telecommunications that has persisted to the present day, sustained by a regular flow of funds from telecommunications into the postal service. Additionally many governments extracted substantial subventions and taxes from their PTO. It was the state that provided the framework for telecommunications and it decided how much to invest and in which services and regions. In times of economic crisis it has been easy for governments to cut investment in telecommunications infrastructure in favor of social programs.

Until very recently, a typical PTO engaged in extensive cross-subsidy in order that it might introduce new services and support manufacturers. PTOs were also used by governments as a sink for unemployment. Long distance and international tariffs were kept at high levels to help cover these costs. The higher charges fell mainly on businesses that are now much less willing to pay.

Three important arguments can be made for separating the management of postal and telecommunications services.

- (a) Although advanced technology and management systems play a big role in the provision of postal services, in general, postal operations are highly labor intensive, whereas telecommunications operations are capital intensive with rapidly decreasing labor inputs.



- (b) The provision of telecommunications services requires a much higher proportion of skilled labor and professionals than does the provision of postal services lumping them together in a developing country often contributes to telecommunications salaries that are too low to retain qualified staff or to personnel regulations that are overly rigid.
- (c) The contrasts between the technologically dynamic and rapidly evolving telecommunications sector and the more mature labor- and physical-transport-dominated postal sector are so great that the same organizational structure and management style cannot plan for and implement both services efficiently.

Given such considerations, a growing number of countries have partitioned, or are beginning to consider partitioning their PTO, then are establishing each service as an independent entity. There may still be some advantages to an organization that combines posts and telecommunications, particularly in more isolated areas and small towns in which the local post office building may house not only postal mail services but also savings bank facilities and a telephone public call office in a developing country. However, the Post and Telecommunications business do not have to be combined organizationally for a combined facility to function effectively.

At least, organizationally as well as financially separating posts from telecommunications can streamline the management structure, and hence increase the long-term efficiency, of both the postal and telecommunications sectors. If using telecommunications revenue to subsidize postal services was thought to be desirable, it would just have to be done on a more explicit basis.

#### (4) Regulations for Relatively New Services

##### **Recommendation**

There is a need of coherent "Telecommunications Business regulation". The start point of that regulation is to establish common accounting rules for telecommunication service providers. The regulator should prepare Decisions or Decrees for new services, i.e. Mobile Communications regulation, Multimedia regulation including Cable Television regulation for stimulate telecommunications market.

##### **Background**

In competitive market, operators should obey same rules for accounting and

auditing. That rules can decrease the burden of the regulative authority and keep telecommunications business transparent.

Decree 109/97 and Circular 4/98 state basic procedures for setting up entering into telecommunications market in Vietnam. However, some texts of articles have difficulties to understand exact implications. For example, we are not able to find out how is mobile telephone service categorized in Circular 4. And, it is also difficult to find out multimedia regulation. Decree 21/1997/CP has already established regulation for Internet.

In developing economies, there is the added goal of growth through the energies of new players, and the attraction of additional sources of investment. In this way, new players may be invited to serve unserved or under-served telecommunications sectors that based on relatively new technologies. For stimulating these entrants, the regulator should prepare fair and clear standard for regulation.

(5) Protection of Customers

(a) Outgoing

**Recommendation**

To prevent sudden discontinuing service providing, the regulator should establish legal articles for entering into and outgoing from the market of the business organizations.

**Background**

Entering into the market and outgoing from the market is one of three main considerations for regulating public utility business.

Circular 4/98 set regulation for entering into telecommunications market in the part V, in another word "licensing ". Article 5.2 of Circular 4/98 stated "DGPT will decide the number of licenses". DGPT should notify that number as soon as possible for transparent market forming.

However, Circular 4/98 does not set any regulation for outgoing from the market. As the Vietnamese government regard that telecommunications service is one of public utility business, the government should set conditions how the organizations should be able to close their business. In competitive market, some organizations will be able to fail in the market.

It would not be a problem to set conditions in some specific service market, like reselling and Value Added. Basically, it should depend on the existence of competitive service providers. For example, Number of Basic Telecommunications Service provider, like Category 1 or 2 service providers in

Circular 4/98, should be regulated strictly, and that providers have exclusive rights to protect their business field. In this situation, the provider should not close business, because outgoing of that provider from the market means no service provider in the market. If the market for Value Added Service provider would be competitive, there are no need to regulate outgoing from the market. Because, if one provider close their business, customer can switch their service provider easily.

(b) **Quality of Service**

**Recommendation**

From the view point of customer protection, the regulatory authority would be better to establish a system that force operator to report quality of service. Parameters should be reported at the beginning are: call success rates; network faults per line per annum; provision of service, in terms of time to provide, and completion by agreed date; fault repair, in terms of time to clear; delay on directory inquiries service and operator services; and public payphone serviceability.

**Background**

At present, few telephone operators publish quality of service statistics in a systematic manner. The absence of systematically provided quality of service data permits selective reporting of quality of service statistics by telephone operators in advertising literature which can give a misleading impression of quality. The need is for greater transparency in the reporting of quality statistics and for more formal mechanisms for handling customer account queries.

There is little doubt that competition has served to improve quality of service for large business users. It is becoming increasingly common for telecommunication operators to establish formal contracts on service quality with their leading customers in competitive market. Ensuring that quality of service for the low-revenue, marginally or unprofitable customers also improves or at least does not deteriorate may be quite another matter. To ensure that quality of service for such subscribers is maintained may require formal processes of regulatory monitoring and assessment.

Take OFTEL of UK for example, OFTEL required BT in October 1987 to

introduce regular six monthly reports based on measurements of its quality of service. The reports have expanded over time and cover one or more indicators in each of the following areas: network reliability (call success rates and network faults per line per annum), the speed of response on operator services, serviceability of public payphone and various indicators relating to its private circuits business.

Article 2.2.7 of Circular 4/98 set operator's obligation for compliment of service quality standards. However, the operator does not have obligation for report for quality of service statistics. These information would be crucial for recognizing abilities of operators. The regulative authority should report key quality of service to the customer for their protection. Parameters should be chosen are: call success rates;  
network faults per line per annum;  
provision of service, in terms of time to provide, and completion by agreed date;  
fault repair, in terms of time to clear;  
delay on directory inquiries service and operator services; and  
public payphone serviceability.

### **1.3.7 Other Policy and Regulatory Issues**

#### **(1) Legislative Framework**

##### **Recommendation**

The government should arrange structure of legislative documents, those are Law, Decree, Decision and Circular. The government and the parliament should continue to make effort to legislate "Post and Telecommunications Law" for fair and clear competition.

If it matches with current legal framework to add "Guideline", the regulative authority would be better to consider to use that new category of legislative documents for regulating frequently altering matters, like standard for services or calculation for tariff setting.

##### **Background**

As mentioned in 1.1.1(1) of this chapter, Vietnamese regulative authority has many Decrees, Decisions and Circulars to arrange the competitive telecommunications market. We regarded that Decree 109/97 has a function as supreme legislation for telecommunication, today. However, there is a need to prepare basic law

regulating post and telecommunication with approval from parliament. Department General of Post and Telecommunications is making best effort to prepare a bill for "Post and telecommunications Law" in this time. We hope DGPT continues that legislative effort for development of telecommunications industry in Vietnam.

"Post and telecommunications Law" should be a supreme legislation to direct whole regulations and policies as the rule that would be approved Vietnamese people through parliament. The law should be more difficult to amend rather than other legislation. Thus, the legislative body would be better to keep the law to state principals for regulating telecommunications sector and making telecommunications policy. The law aims to regulate long-term phenomenon, 5 - 10 or more years range. This range is a rough idea, the regulative authority should amend the law when there is need.

Decree and Decision by Prime Minister serve to assist the law with treating newly emerging issues and details in the telecommunications field. They aim to regulate mid-term phenomenon, 3 - 5 years range. Decree and Decision by Secretary General, or newly appointed Minister of Information Industry, set the principals for regulation in detail, such as management for technical things, tariff and charge setting, etc. They also aim to regulate mid-term phenomenon, 3 - 5 years range. Circular should serve as a legislation for implementation rules of Decree and Decision.

If it matches with current legal framework to add "Guideline" under Circular, the regulative authority would be better to consider to use that new category of legislative documents for regulating frequently altering issues, like standard for services or calculation procedure for tariff setting. Guideline aims to regulate short-term phenomenon, 1 - 2 years range, for example the regulative authority should amend tariff setting in annual base under the price cap regulation. It would be better to simplify the procedure to announce Guideline for quick response. Guideline will be set and announced by each Director General who has duty to decide the regulation for concerning issue. Then, Secretary General will approve the guideline, if it should be needed. The regulative authority can substitute existing Circular system for recommending Guideline. Essence of this recommendation is to prepare the legislative framework for quick response to altering telecommunications market, thus, the name of the legislation is not matter.

While the legislative system is very different country by country, we would like to take Japanese tariff setting for example. Telecommunications Business Law (As amended Law No. 58 of 8 May 1998) set the general procedure for charge in the

Article 31 (3), as underlined (a);

(3) The Minister of Posts and Telecommunications shall, at least once a year, in accordance with the provisions of the ordinance of the Ministry of Posts and Telecommunications, specify the level of charges, representing the level of charges which can be normally accomplished in consideration of reasonable cost under efficient management as well as economic conditions including price level (a), of a particular type of telecommunications services (hereinafter specified as "specified telecommunications services"), which are, due to their significant impact on the benefit of general users resulting from their contents and the range of users etc., specified by the ordinance of the Ministry of Posts and Telecommunications (b), and which are delivered using relative specified telecommunications services by Type I telecommunications carriers with specified telecommunications facilities provided in Article 38-2 paragraph (2), based on the charge index (charge index refers to price figures which are specified by individual types of telecommunications services and represent the level of charge such as the distance of communication, speed of transmission and charges by individual categories as well as distinctions including volume of communication and the number of circuits in accordance with the method specified by the ordinance of the Ministry of Posts and Telecommunications (hereinafter referred to as "Standard charge index" (b)) by individual categories of specified telecommunications services provided by the ordinance of the Minister of Posts and Telecommunications (referring to the type and mode of telecommunications services based on distinctions which further sub-classify the distinctions provided for in the ordinance of the Ministry of Posts and Telecommunications in accordance with the provision of Article 9 paragraph (2) item ii); the same shall apply hereinafter in this paragraph) by the day prior to the number of days specified by the ordinance of the Ministry of Posts and Telecommunications, and shall notify the relevant Type I telecommunications carriers of the charge index relating to the charges of particular telecommunications services (hereinafter referred to as "specific telecommunications services") provided in the ordinance of the Ministry of Posts and Telecommunications and which fall under the category of having significant impact on the benefit of general users due to their contents and the range of users, etc., by individual types of specific telecommunications services, prior to the date of application and within the number of days specified by the ordinance of the Ministry of Posts and Telecommunications.

Article 19 of Ordinance that is referred in the Article set details of regulation, like underlined (b), for type I carrier's service charge. Ministry of Post & Telecommunication, Japan occasionally issues Guideline to regulate particular issues from Director General level who has duty to decide the regulation for concerning issue, for example announcement of physical rate of charge, terminology of the regulation, etc.

(2) **Relations between Domestic Regulations and International Agreements**

**Recommendation**

The regulative authority should make clear relation between domestic regulations and international agreements.

**Background**

Authorities and policies relating to telecommunications that are determined at global level are becoming to supersede national policies and regulatory practices. Because, technological and market trends are beyond the control of national regulators. International tendencies toward open markets and global competition for telecommunications services are compelling national authorities to move in the same direction, in order to encourage domestic investment and growth in all areas of the communications field.

Since telecommunications in one country is more and more affected by regulatory decisions in other countries, effective and responsible management by the government and regulator in one country of their relations with regulators in other countries is necessary. This could not be more clearly demonstrated than by the impact of the recent "benchmark" decision on accounting rates by the FCC of the US, although the FCC is not the only regulatory agency which makes unilateral decisions which broadly impact carriers from other countries. Decisions with far-reaching international effects should be made only after extensive bilateral or multilateral consultation.

Decree 109/97 does not include how the government treat relations between domestic regulations and international agreements. When the country sign an international agreement, the authority should amend domestic regulations. Japanese Telecommunications Business Law admits superiority of international agreement that the government have signed.

(3) **Foreign Ownership**

**Recommendation**

The regulative authority should specify limitation for foreign ownership by descriptions.

**Background**

The 1997 WTO Basic Telecommunications Agreement and the application of the basic GATS disciplines have strong effects to the global telecoms market through

that Agreement. The key elements include the so-called Most Favored Nation principle (MFN) requiring non-discriminatory treatment of foreign operators and superseding "reciprocity" policies; commitments to provide market access for foreign operators; national treatment (i.e., treating foreign operators the same as national operators); and the comprehensive set of regulatory principles included in a large number of countries' WTO commitments through the Reference Paper. All these are backed up by the WTO's Dispute Settlement procedure. These features of the 1997 Agreement have established new rules of the game for over 90% of the world's international telecommunications traffic.

The WTO Agreement has very far-reaching implications that are now only beginning to be fully understood. Certain countries, including a few developing countries, have made commitments in the WTO Agreement for very extensive dismantling of barriers against cross-border competition; these include removal of foreign-ownership restrictions. By committing themselves to the provisions of the Reference Paper on regulation, they have also committed themselves to extensive regulatory safeguards assuring fair treatment of foreign operators.

DGPT is establishing steps for permission of foreign ownership. For joining WTO, the authority have to disclose these steps for opening Vietnamese market to foreign telecommunications operator. The regulator, policy decision body, should make policy implications clear with description. The description have to clearly make public criteria for foreign ownership and the reasons why there is limitation of foreign ownership.

#### (4) Regulation for Cyber Space and Stimulation of IT Industry

##### **Recommendation**

The regulative authority and the policy decision body would be better to start considering how cyber space should be regulated and how IT industry should be promoting. There are some issues to tackle immediately, these are regulation and development plan of Electronic Commerce, establishment of computer crime act accordance with new Civil Law, and determination for the extent of government intervention to cyber space including content control.

##### **Background**

Basically, internet initiative should be taken by private sector in developed countries, especially in the US where internet was born. But it is difficult to distinguish which is better to take initiative, government or private. For example, IT project that is driven by the government is very stimulate measure for IT industry



in developing countries. Basically, there is no order for large scale informatization project other than the government or public companies. Malaysian experience would be good experience to consider merit and demerit of those kind project.

The benefits brought by promoting Electronic Commerce (E-commerce) are mainly increasing social benefits and economic impacts on the whole industry. The increase in the level of convenience that would be brought by IT can reduce various social costs. Computer networks will facilitate the instance of transactions across national borders and will radically transform our social and economic structure.

The basic role of the government is create an environment which is conducive toward encouraging private sector activities. The government should avoid imposing unnecessary regulations or restrictions. To ensure wide acceptance of electronic commerce and its successful development, transactions must be conducted under a secure and reliable environment, so that any risk that may exist for the parties involved in the transaction can be eliminated as much as possible.

Since electronic commerce is an electronic version of conventional economic activities, the basic concepts and rules which have been applied to conventional commercial transactions should be applied to electronic commerce as well. However, problems may arise which are unique to electronic commerce and which are not necessarily limited to electronic commerce but will require new solutions due to the easy distribution of electronic information. Conventional approaches may not work sufficiently to solve these problems. It is, therefore, necessary to study these problems as they arise and seek solutions while taking into account the rapidity of technological innovation. And, as it is necessary, the current rules should be reviewed or interpreted to be clearer.

For regulating this new E-commerce environment, the government start to coordinate stimulating E-commerce policy with existing regulations, e.g. civil law, commercial law, decree and decision for telecommunication, etc. In reference for how to consider the regulation for E-commerce under competitive market structure, we would like to attach Appendix II-1-4 as an example for pilot study project.

There are some new type of crimes that has taken place after cyber world has been grown. Some governments have started to consider regulation for electronic authentication, protection of privacy, consumer protection, security against computer crimes, etc.

Internet allows users access to all the on-line materials inside and outside the country. Some of those materials are either deemed indecent by Vietnamese standards or are under control and restriction by the government. Vietnamese

government should carefully structure its content control matching with freedom of speech principle in Vietnam.

Take China for example, the Chinese government regulate network content through institutional arrangement, network control, and user regulation. All the direct links are required to go through Ministry of Communications' gateways which retain a physical point to set up a national firewall. At service level, Internet Service Providers (ISP) should register to the Ministry for starting business. Any ISP is in danger of losing its license if convicted of not cooperating in enforcing content control. The creation of regulations soul be regarded by end users. It should be difficult to distinguish whether strict regulation for contents is good or bad, because freedom of speech is one of main engine for development of internet.

62

63

64

**CHAPTER 2**

**TELECOMMUNICATIONS  
INDUSTRY DEVELOPMENT**



## **CHAPTER 2 TELECOMMUNICATIONS INDUSTRY DEVELOPMENT**

### **2.1 From Industrialization to Informatization**

The global economy is currently undergoing an information revolution which will be equally as significant in effect as the industrial revolution of the 19th century. The production of merchandise, such as agricultural products or manufactured goods, has traditionally been the staple output of an economy. Lately, however, the goods producing sectors of the economy are contributing a smaller share of economic output, while the contribution of the service sector is growing.

The service sector already accounts for over half of national economic output in many countries and this trend is not limited to developed economies; a number of emerging economies as diverse as Singapore or Senegal, Hong Kong or Hungary, have service sectors that contribute over 60 per cent of the nation's economic activity. Even in the world's LDCs (Least Developed Countries), the share of the service sector (43 per cent) is higher than agriculture (37 per cent) or industry (20 per cent).

### **2.2 Telecommunications Industry and Economic and Social Developments**

As the economy of Vietnam modernizes, the telecommunications industry will become increasingly important to the economic and social development of the country. The development of a strong telecommunications infrastructure will not only facilitate economic growth but also contribute to the fair distribution of national welfare. As the information and communications industries develop and telecommunications services spread across the country, people in rural areas will also be able to enjoy the benefits of medicine, education, and culture which have been heretofore monopolized by only a small portion of those in urban areas. Elimination of the regional differences between telecommunications services will improve the productivity and living quality of the nation as a whole.

For Vietnam, the relation between telecommunications and economic and social developments should be discussed from the following three viewpoints:

- (1) The information and communications industries are expected to play a leading role in global industry in the 21st century. They will strongly impact economic and social developments, employment increases, and quality-of-life improvements in

the future.

- (2) Considering that economic and social development is an important national target for Vietnam, telecommunications will also function as an infrastructure for these developments, ensuring that the status quo will no longer prevail.
- (3) Telecommunications and the information and communications industries are expected to contribute to economic and social developments because of underlying social changes such as rapid innovation in information technology, development of multimedia, and intensified competition in global markets.

### **2.3 Framework for Analyzing the Information and Communications Industry**

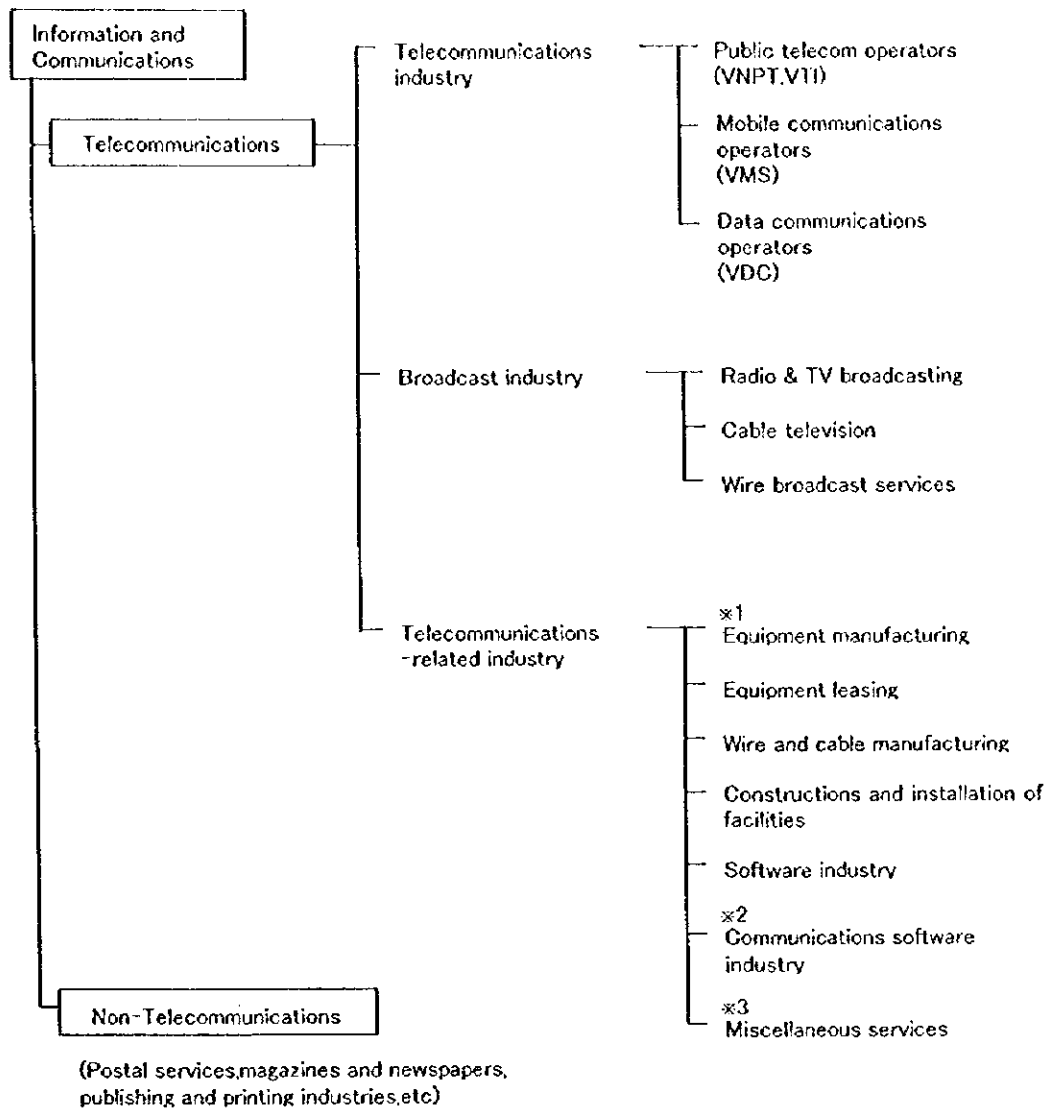
Figure 2.3-1 gives a macro-framework which we can use to describe and analyze the information and communications industry.

The telecommunications industry is composed of three separate industries:

- (1) industry providing traditional telecommunications services
- (2) broadcast industry
- (3) telecommunications-related industry

The traditional telecommunications industry provides telecommunications services to consumers, enterprises, and governments. The broadcast industry encompasses radio, TV, CATV, and wire-broadcast services. The telecommunications-related industry manufactures and supplies the physical equipment and software required by the telecommunications services.

With the dramatic growth of digital broadcasting in recent years, including multicast and push technologies, TV and Internet technologies have begun to meet and merge. WebTV is a good example. Up to now, the telecommunications and broadcast industries have been run as separate services and governed by separate regulations. But new technology has increasingly blurred the previously distinct industrial domains. Since the middle of the 1990s, the Internet has developed rapidly in the US, Europe, Asia, and Oceania. This growth is significant for the telecommunications industry for the following three reasons.



- Note:    \*1 Equipment manufacturing of office business machine, communications equipment or terminals, computer, video machine,etc.  
           \*2 Create TV and videotext contents.  
           \*3 Provide music cassettes, video, disc,etc.

Source: Ministry of Post and Telecommunications Japan

**Figure 2.3-1 Framework of Telecommunications Industry**

- (1) Increases in Internet traffic and data traffic are outpacing growth in voice traffic. To meet such rapid growth in Internet traffic, a large number of Internet service providers (ISPs) are appearing in various countries, leading to heightened competition. ISPs are also beginning to acknowledge and handle voice-over-IP-

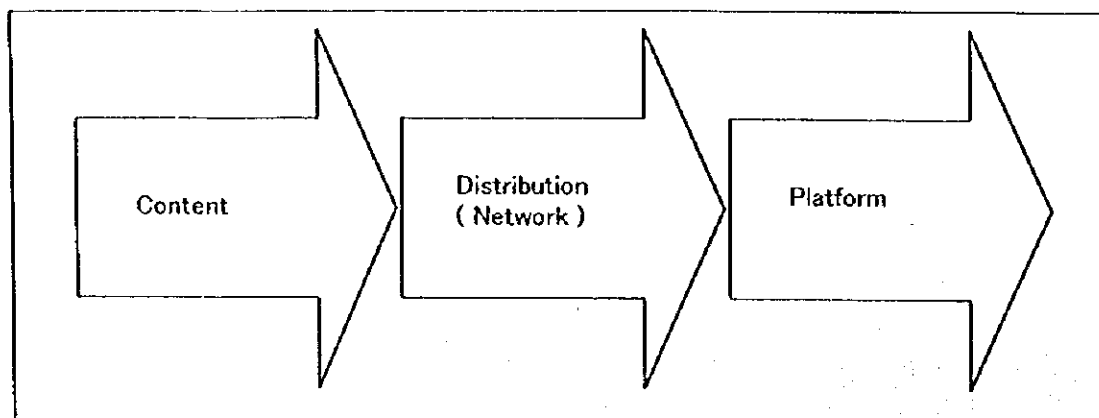


networks (VOIP), which transmit packeted voice traffic across IP networks.

- (2) Reflecting these trends, AT&T, Deutsche Telekom, and other public telecommunications giants now provide Internet technology and services as well, in a field characterized by ever-intensifying competition. These new services reflect a permanent shift in business emphasis from voice to Internet services, to which telecommunications companies throughout the world will inevitably adapt.
- (3) Enterprises have applied Internet technology to corporate networks to create Intranets. The popularity of such Intranets has led to the conversion of corporate network infrastructures to the IP protocol, and indicates that electronic commerce will be a strong future trend.

The question of Internet service had been widely discussed in Vietnam until November 1997, when at least two regulations were promulgated to govern procedures for the licensing of Internet service providers. The establishment of a legal framework should lead to growing use of the Internet in Vietnam by 1998.

The convergence of the two industries suggests that improved assessment and analysis of the information and communications industry might occur within a new framework as shown Figure 2.3-2, taking into account such value chains as contents, platforms, and distributions, in place of the traditional framework dividing the industry into its two functional areas. In an information-intensive society, content joins high-quality transmission and bandwidth as key factors.



Source: InfoCom Research, Inc Japan

Figure 2.3-2 New Value Chain

The development of the information and communications industry also requires the development of the publishing, magazine and newspaper, communications, and software industries. 21st century telecommunications can be discussed from two perspectives:

- (1) software that improves networks
- (2) telecommunication operating systems

Telecommunications may also be assessed in three industrial areas:

- (1) telecommunications service providers, including telecommunication service companies and Internet service providers
- (2) platform providers, makers of the hardware and software underlying the Internet
- (3) content providers, including magazine, newspaper, and other print publishing sources

## **2.4 Telecommunications Service Industry**

### **2.4.1 Overview**

Recognizing the importance of a modern telecommunications network for economic growth and in attracting foreign investment, the Vietnamese government has made the telecommunications sector a national priority since 1992.

Because the telecommunication service industry features rapid technological development, requiring innovations in equipment, Vietnam, which don't have legacy telecommunications system, is free to create a state-of-art digital system from the ground up. As shown in Table 2.4.1-1 the number of telephone lines in Vietnam grew from less than 100,000 in 1990 to 1.1 million in 1996, making Vietnam the fastest growing market among ITU countries. Backing this rapid growth is the government, which has set a teledensity goal of five lines per 100 people by the year 2000.

As shown in Table 2.4.1-2 and Figure 2.4.1-1, this national policy is reflected in the shift in economic emphasis from agriculture, forestry, and fisheries to industry, construction, and services. Figure 2.4.1-2 shows the rapid growth in VNPT revenue, contributing to the development of sector service. (The precise contribution made by VNPT to the sector

service is difficult to determine, since figures for telecommunications services are combined with those for transport and postal services.)

**Table 2.4.1-1 Main Telephone Lines**

	Main telephone lines			Main Telephone lines per 100 inhabitants		
	(k)		CAGR (%) 1990-96	1990	1996	CAGR (%) 1990-96
	1990	1996				
Viet Nam	98.5	1,186.4	51.4	0.15	1.58	48.4
Thailand	1,324.5	4,200.2	21.2	2.40	7.00	19.5
Malaysia	1,585.7	3,771.3	15.5	8.97	18.32	12.6
Indonesia	1,066.2	4,186.0	25.6	0.59	2.13	23.7
China	6,850.3	54,947.0	41.5	0.60	4.46	39.6
Korea(Rep.)	13,276.4	19,601.0	6.7	30.97	43.04	5.6
Cambodia	5.0	8.1	8.3	0.06	0.08	5.6
Japan	54,528.0	61,525.9	2.0	44.14	48.92	1.7
United States	136,337.0	170,568.2	3.8	54.55	63.99	2.7

Source: ITU

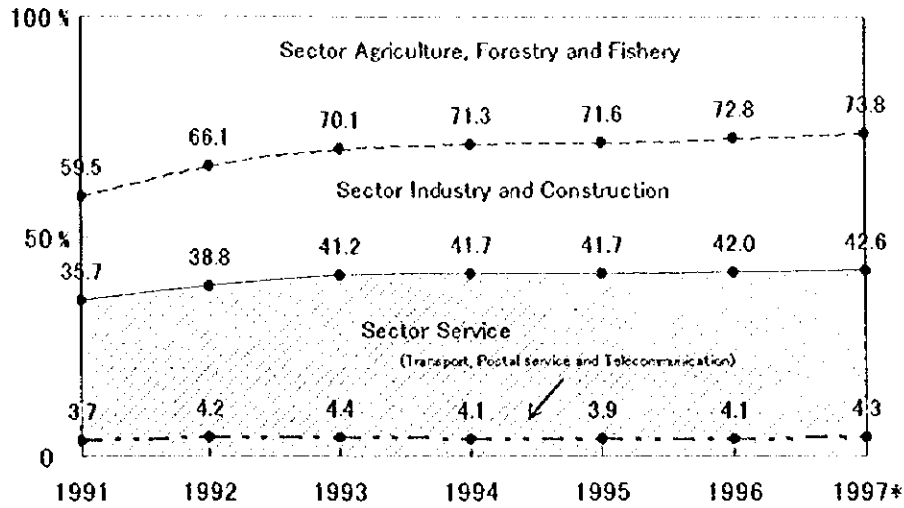
**Table 2.4.1-2 Gross Domestic Product at Current Price  
by Kind of Economic Activities**

	(Billion dong)						
	1991	1992	1993	1994	1995	1996	1997*
<b>Agriculture, Forestry and Fishery</b>	31,058 (40.5)	37,513 (33.9)	40,796 (29.9)	48,865 (28.7)	63,219 (28.4)	70,334 (27.2)	77,520 (26.2)
<b>Sector Industry and Construction</b>	18,252 (23.8)	30,135 (27.3)	39,472 (28.9)	50,481 (29.6)	66,804 (29.9)	79,501 (30.8)	92,357 (31.2)
<b>Sector Service</b>	27,397 (35.7)	42,887 (38.8)	56,303 (41.2)	70,912 (41.7)	92,817 (41.7)	108,774 (42.0)	125,819 (42.6)
<b>(Transport, Postal service and Telecommunication)</b>	2,860 (3.7)	4,662 (4.2)	6,036 (4.4)	6,924 (4.1)	8,747 (3.9)	10,634 (4.1)	12,779 (4.3)
<b>Total</b>	76,707 (100)	110,535 (100)	136,571 (100)	170,258 (100)	222,840 (100)	258,609 (100)	295,696 (100%)

Note: 1 1997 is estimated

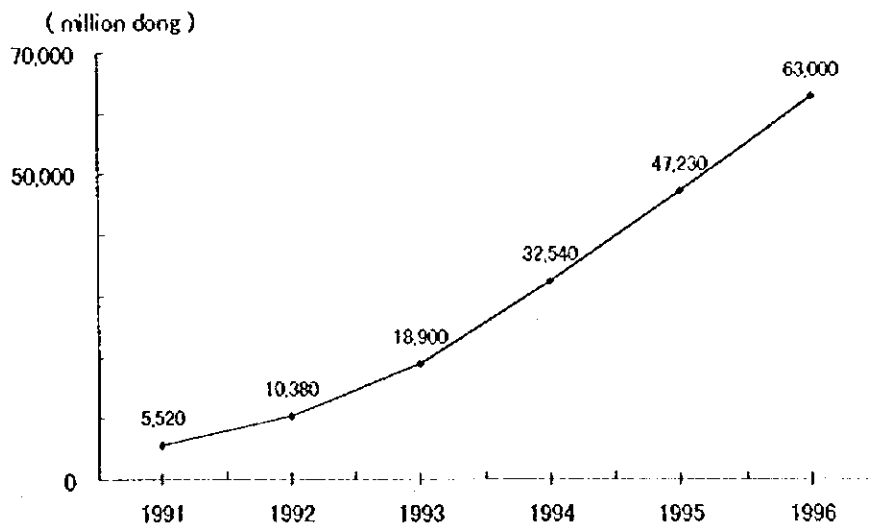
2 Transport, Postal service and Telecommunication 1991-1996 is changed to Transport ; Storage and Communication in 1997.

Source: Statistical Yearbook 1997



Note: 1 1997 is estimated  
 2 Transport, Postal service and Telecommunication 1991-1996 is changed to Transport ; Storage and Communication in 1997.  
 Source: Statistical Yearbook 1997

**Figure 2.4.1-1 Structure of Gross Domestic Product at Current Price by Kind of Economic Activities**



Source: VNPT

**Figure 2.4.1-2 VNPT Operating Revenues (1991-1996)**

With a population expected to reach 80 million by the year 2000, Vietnam's target density of five lines per 100 people would produce a total of four million telephone lines by the target date --- or an additional 2.7 million lines. At an average cost of \$1,000 per line, the total investment in telecommunications equipment by the target year will reach \$2.77 billion. To promote development and competition within the telecommunications industry, Vietnam in 1995 established two additional telecommunications companies, Vietel and Saigon Postel.

VNPT is a mammoth enterprise, integrating domestic and international telecommunications, including voice and data. It will also be involved in the procurement, design, manufacture, and introduction of related equipment, with subsidiary companies under its umbrella.

A fraction of all telecommunications equipment will be delivered to local and foreign business promoters, hotels, and offices. The overwhelming majority will go to VNPT. Thus, VNPT is primary purchaser as well as monopolistic provider of telecommunications system equipment. Vietel and Saigon Postal, the two newly established companies, are expected to cooperate rather than compete with VNPT. Their creation will most likely provide a beneficial, if limited, effect on competition within the national telecommunications industry.

Without competition to drive improvements in coverage and customer services, VNPT's efforts are likely to be bounded by social and political obligations. Since privatization or true market liberalization appears unlikely in the near or somewhat distant future, responsibility for improvements in the telecommunications infrastructure will rest primarily with DGPT and VNPT. Improvement will depend on their resolve to offer effective and efficient telecommunications services.

#### **2.4.2 Positive and Negative Prospects**

We foresee both good and bad trends for the immediate future of the telecommunications industry in Vietnam. On the plus side, the signing of the basic service BCCs provides a tremendous boost to the Telecommunications Development Plan. The confidence shown by foreign companies in local markets, along with their technical credibility, considerably improves prospects for the Plan. Given the apparent willingness of the government to continue to explore relationships with foreign telecommunications companies, the next several years may see the conclusion of additional agreements.

On the minus side, Vietnam will suffer fallout from the Asian currency crisis. Given Vietnam's heavy reliance on direct investment from Asian countries, which accounted for nearly 70% of total investment in 1997, we can expect the flow of foreign capital into the country to drop significantly over 1998 and 1999. In fact, foreign investment had already begun to fall even before the currency crisis, with foreign investment declining 50% from 1996 to 1997, according to the government. Slow economic growth throughout the region weakened consumer demand within the telecommunications market and dampened or delayed foreign investment in the country's telecommunications industry.

### 2.4.3 Challenges Ahead

Starting with the restoration and improvement of telephone facilities following the Second World War, Japan began building a nationwide telephone network under a five-year plan for economic self-reliance, extending from fiscal 1956 to 1960. In this process, service providers operated as monopolies, and demand was created by public enterprises. In countries where the penetration ratio has not reached certain levels, government and telecommunications industry promoters must establish and implement a plan for the development of telecommunications technologies. At the same time, government and industry need to increase the penetration ratio and eliminate the gap between the technological haves and the have-nots created during the process. In both developed and developing countries, the popularization of telecommunications services and the development of a telecommunications industry are considered essential for the development of economy and society.

Vietnam's current situation differs from Japan's past experiences and that of other Southeast Asian countries in two respects. One is the current pace of technological innovation and the concurrent growth in bandwidth-heavy digital information. The other is intensified global competition. Within this climate, Vietnam needs to address the popularization of basic services and the implementation of new services and the nurturing of its domestic telecommunications industry.

Increasing competition through privatization is one option, but not the only one. Competition requires a certain level of infrastructural development to function effectively, and the process of putting this infrastructure in place will likely lead to severe competition.

Table 2.4.3-1 shows a sharp increase in the number of VNPT subscriber lines in the period from 1992 to 1996. In 1995 alone, 333,000 new subscriber lines were installed, a

substantial increase from 182,000 in the previous year. The total number of subscriber lines increased from 442,000 in 1994 to 775,000 in 1995, and teledensity, or the number of subscriber lines per 100 people, increased from 0.61 in 1994 to 1.58 in 1996. The anticipated penetration ratio of 5 to 6 per 100 by the year 2000 as prescribed by the 1996-2000 Telecommunications Development Plan may be dropped to 4.5 to 5.5, due to delays involving BCC and subsequent construction work. However, the target up to 1997 in the Telecommunications Development Plan had been attained after being revised upward.

**Table 2.4.3-1 VNPT Main Telephone Lines**

	1992	1993	1994	1995	1996
Main telephone lines	152,727	260,000	442,000	775,000	1,186,367
Main telephone lines per 100 inhabitants	0.22	0.37	0.61	1.05	1.58

Note: year ending 31 December

Source: ITU

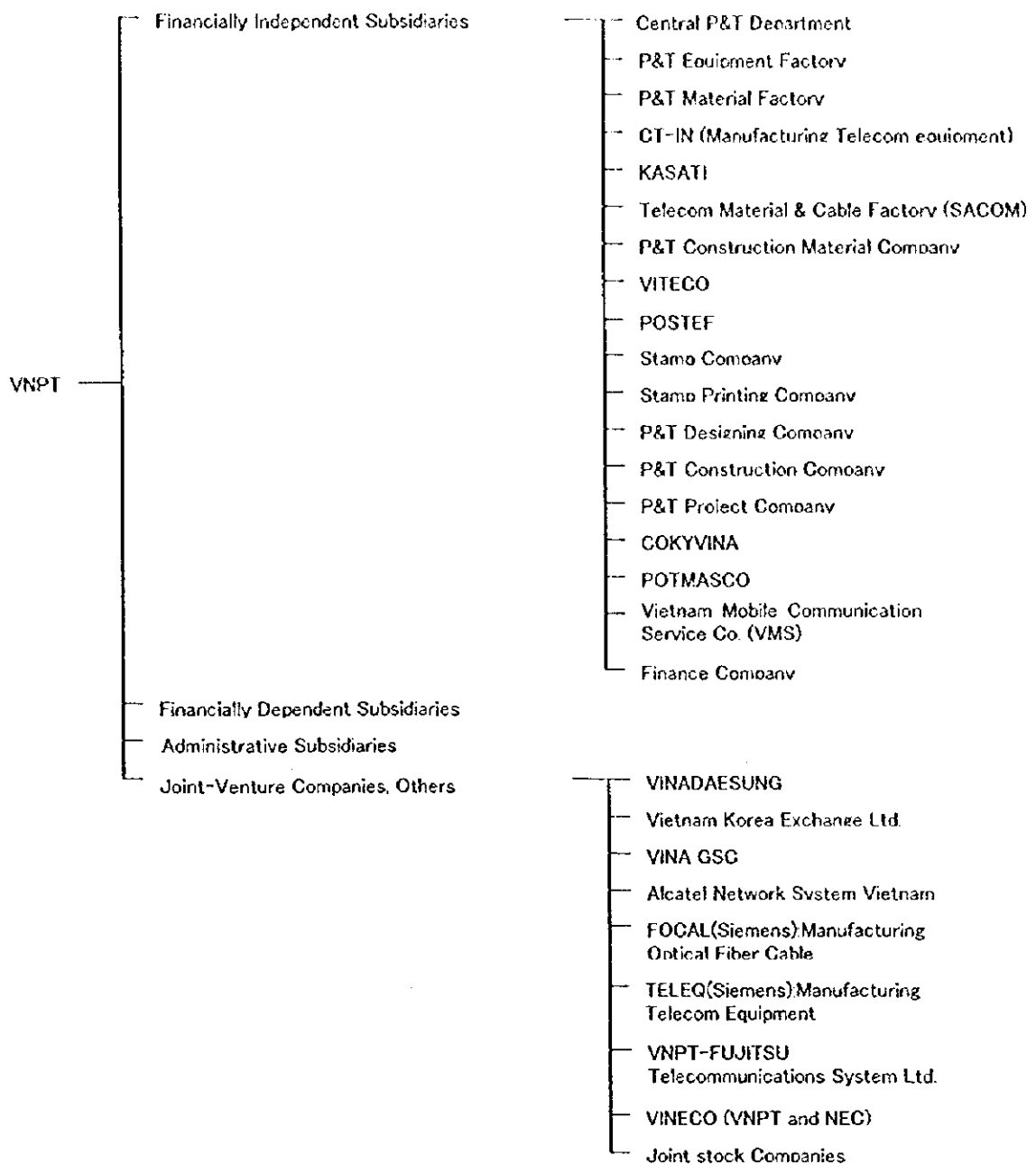
## 2.5 Telecommunications-Related Industries

### 2.5.1 Categories of Telecommunications-Related Industries

The telecommunications-related industry can be roughly divided into the following three categories:

- (1) manufacture of equipment, wires, and cables
- (2) construction and installation of facilities
- (3) software

Except for some equipment and software sales and maintenance companies, most of equipment, wires, and cables are manufactured and sold by, and most facilities are constructed and installed by, financially independent subsidiary companies and joint-venture companies of VNPT as shown Figure 2.5.1-1. Software on the other hand appears to be developed in house by VNPT's own manufacturing and operating companies. Its development doesn't yet appear to be an independent industry. According to Vietnamese government policy, all telecommunication operation businesses in Vietnam should be promoted by a BCC agreement. Joint ventures are approved for manufacturing equipment.



Source: VNPT

**Figure 2.5.1-1 VNPT Financially Independent Subsidiaries and Joint-Venture Companies**

Joint ventures are an effective means to implement up-to-date infrastructure improvements over a relatively short period. However, joint ventures make it difficult to standardize on equipment, construction, and maintenance, and enterprises generally find it difficult to master operational management, although the transfer of piecemeal technologies may be



possible.

Vietnam currently uses 12 types of digital switching equipment, including equipment manufactured by Alcatel, Ericsson, NEC, and Goldstar. This lack of uniformity presents difficulties for efficient maintenance and for the future expansion of the telecommunications network.

## 2.5.2 Public Telecommunications Equipment Markets

Expanding and upgrading the public switching network (PSTN) remains one of Vietnam's highest priorities. One research firm predicts that Vietnam's telecommunications equipment market will reach an estimated \$623.55 million by 2002, up from an estimated \$404.50 million in 1998 as shown in Table 2.5.2-1.

**Table 2.5.2-1 Public Network Equipment Market, 1993-2000**

EQUIPMENT MARKETS (US\$ millions)	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Switching	34.88	42.53	54.53	111.23	38.36	63.57	71.15	82.32	96.99	111.07
Transmission	30.73	52.53	69.50	99.80	63.46	81.62	82.73	94.92	104.51	118.21
Access Network	8.86	20.84	28.16	29.46	29.52	31.83	31.40	37.35	40.65	47.53
WLL Systems	-	-	-	14.92	28.34	13.63	17.59	24.35	30.30	38.47
Local Cable / Outside Plant	44.29	104.21	140.79	147.29	147.61	163.32	157.10	182.22	193.33	220.41
Public Data Network	0.05	0.11	0.20	0.22	0.58	0.78	0.56	0.76	1.07	1.65
Terminal Equipment	6.92	12.58	17.56	19.52	22.10	19.80	24.26	29.95	33.64	40.01
Other	10.06	18.62	24.86	33.79	26.40	29.96	30.78	36.15	40.04	46.19
Total	135.78	251.43	335.60	456.22	356.36	404.50	415.58	488.03	540.53	623.55

Source: Pyramid Research

## 2.5.3 Status of the Telecommunications-Related Industry

The major suppliers to the telecommunications equipment markets are VNPT's financially-independent subsidiaries and joint venture companies, shown in Figure 2.5.1-1.

Financially-independent subsidiary companies and their major products or markets are given in Table 2.5.3-1:

These corporations are able to construct, maintain, and operate networks, but cannot

manufacture or supply basic network equipment such as digital switching systems, optical fiber cables, or transmission systems. Such basic high-technology hardware is supplied through joint ventures.

Four joint venture companies have recently started operations. Two manufacture digital switching systems, with a total expected capacity of nearly 400,000 lines per year. The third manufactures paired copper cables of the anti-humidity grease-seal type, producing 100,000 km annually in its initial stages. The fourth manufactures optical fiber pair cables, producing 43,000 km annually. Two other joint venture plants are now under construction, representing a total investment over \$32 million, of which 40 to 50% will be borne by Vietnam. These six licensed joint venture companies should be capable of meeting future network demands.

**Table 2.5.3-1 Financially-independent Subsidiary Companies and Their Major Products**

POSTEF	Telephone sets, GSM mobile phones, PABX, fax equipment, main distribution frames (MDFs), optical distribution frames (ODFs)
Postal Material Factory	CCP cables
Telecom Material & Cable Factory (SACOM)	PCC cables, LAN network cables, electric materials
Vietnam Telecommunication Equipment Co. (VITECO)	Installation, operation, maintenance, and technical assistance for high-capacity digital switching systems and imported switchboards for hotels, offices, and enterprises
CT-IN Company	Manufacture, installation and maintenance of microwave radio and fiber-optic transmission systems.
Postal Construction Material Company (PCMC)	Concrete poles
Post and Telecommunications Equipment Import-Export Service Corporation (COKYVINA), Posts and Telecommunications Material Supply Company 2 (POTMASCO2)	Equipment import, export, and supply

Source: TELECOM'97 CATALOGUE'98

## 2.6 Computer Industry

### 2.6.1 Internet

The Internet and mobile telecommunications are the two fastest-growing fields in the worldwide telecommunications industry. As discussed in 2.3, the telecommunications and computer industries are rapidly converging. This movement has been fueled by the Internet, which is transforming the voice-telecommunications-based world of telecommunications services. The Internet is seeing growing use among business users in the US, Europe, and ASEAN countries for the transfer of files and electronic mail, video conferencing, and other applications that use IP protocol as a platform.

Although no reliable data is available on the total number of Internet accesses, the growing number of internet hosts is an index of the rapid growth of the Internet in various countries. Table 2.6.1-1 shows 1996 ITU statistics on the number of Internet hosts and PCs in Vietnam and in other eight countries.

The Vietnamese government adopted a policy for the introduction of the Internet under Decree No. 21/ep, effective March 1997, which sets forth technical provisions. Before the institution of this Decree in 1996, the number of hosts would have been quite low. The number of dial-up users in Vietnam in August 1997 was estimated to be 6,000. By now, the number of PCs in use should have risen significantly from the 25,000 recorded in 1996, as low-price PCs have begun entering the country.

However, the popularity of the Internet will be limited by controls placed by the government on Internet access for commercial purposes. The range of Internet services is also limited. Given that current policies would limit the application of Internet technologies primarily to the transfer of information domestically, it would be optimistic to expect a growth curve comparable to other ASEAN countries.

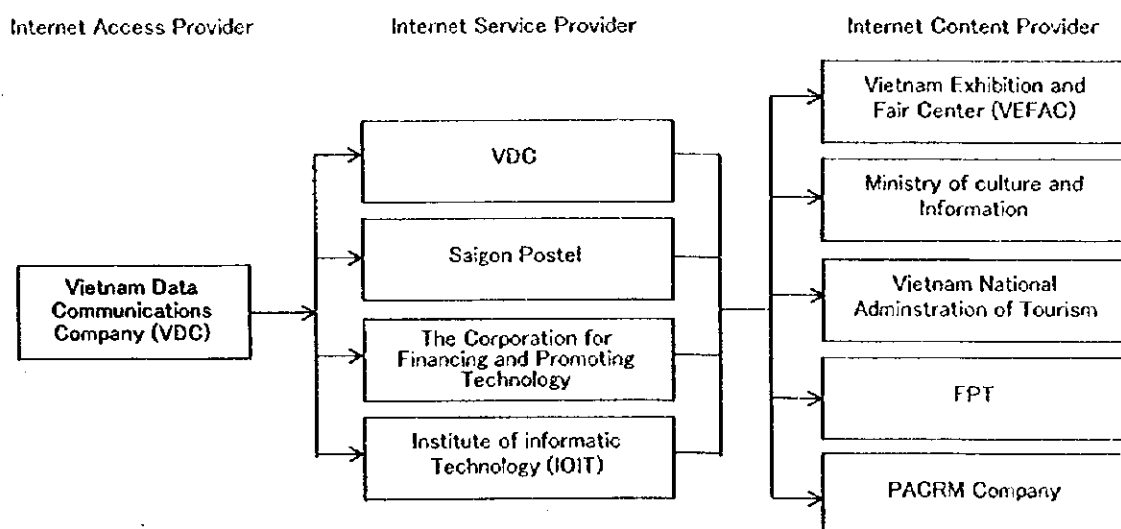
In November 1997, DGPT appointed the Vietnam Data Company (VDC) as its sole Internet Access Provider (IAP) and the four companies as Internet Service Providers (ISPs).

All communications requiring data transfer from a foreign host will be routed through the pipes (lines) of the VDC, the sole IAP, before being routed through the ISPs. Figure 2.6.1-1 outlines the structure of Vietnam's Internet industry.

**Table 2.6.1-1 Internet and Estimated PCs**

	Internet				Estimated PCs	
	Hosts Total 1996	Hosts per 10'000 inhab 1996	Users Total 1996	Users per 10'000 Inhab 1996	Total (k) 1996	Per 100 inhab. 1996
Viet Nam	5	-	100	0.01	250	0.33
Thailand	9,245	1.54	80,000	13.33	1,000	1.67
Malaysia	25,200	12.24	63,945	31.07	880	4.28
Indonesia	9,591	0.49	80,000	4.06	940	0.48
China	19,739	0.16	150,000	1.22	3,700	0.30
Korea(Rep.)	66,262	14.55	600,000	131.74	5,997	13.17
Cambodia	-	-	...	...	...	...
Japan	734,406	58.40	7,000,000	556.61	16,100	12.80
United States	10,112,888	379.39	21,000,000	787.82	96,600	36.24

Source: ITU



Source: VDC, VNPT

**Figure 2.6.1-1 Vietnam: Internet Industry Structure, 1997**

The Internet will be the core technology of the telecommunications industry in the 21st century, with the potential to affect both economy and society. It is expected to be the primary force in the replacement of analog technologies with digital, with globalization and downsizing keeping pace with open Internet access worldwide. But Internet use will remain proportional to progress in the introduction of enterprise LANs, development of information systems for corporate activities, and the development of software and database industries and the application of PCs to education and entertainment uses. That is, an increasing number of PCs won't necessarily lead to higher rates of Internet usage.

Driven by technological improvements and better applications, electronic commerce

markets are rapidly developing in the US, Europe, Asia, and Oceania. Like it or not, manufacturing plants in Asian countries must adapt to the instantaneous supply-chain system increasingly employed by US enterprises. The Internet is rapidly becoming the global infrastructure for business activities.

For Vietnam, the growth of the Internet has the following three major implications:

- (1) The Internet will be the most powerful force behind the information and telecommunications industries into the 21st century.
- (2) Competing global players in the telecommunications industry are shifting from voice to Internet communications and from a hardware to software emphasis.
- (3) Internet technologies have become indispensable for business activities.

Despite the optimism of the DGPT, attaining 50,000 Internet subscribers by the end of 1998 appears doubtful, given the slow rate of Internet use increase predicted by ISPs. Due to delays in the introduction of Internet service, the total number of subscribers in 1997 was as low as 700. Future increases in the number of subscribers will be determined largely by government policies and economic development.

#### 2.6.2 PCs

Since the mid-1970s, general-purpose computers and PCs have been introduced into government-owned enterprises, airline companies, and universities throughout Vietnam. Up to several years ago, Vietnam assembled and exported PCs with components imported from Taiwan, Singapore and Hong Kong. Since then, however, relatively few PCs appear to have been manufactured in Vietnam.

It is estimated that Vietnam currently has 80 to 90 software manufacturing companies, including those for information-processing services, most of which are engaged in the manufacture and sale of Vietnamese versions of US-made software.

The computer industry currently employs about 2,000. Several hundred students majoring in computer technologies graduate annually from 100 universities across the country. Approximately 200 additional students complete a software training course at private junior colleges every year. This forms the foundation of Vietnam's computer industry labor force.

The government is currently enacting policies to promote computer-related industries, encourage computer use, protect software, and develop other information services.

The Ministry of Education and Training plans to:

- (1) introduce PCs into 50% of senior high schools and 5% of junior high schools and primary schools by 1995
- (2) eventually complete the introduction of PCs into all senior high schools and 25% of junior high schools and primary schools
- (3) open information science departments at universities over the period 1996 to 2000
- (4) train 5,000 computer experts annually until the year 2000.

The Ministry of Science, Technology and Environment proposes the installation of information processing service and software training centers, construction of networks between Ministries, and the development of various applications.

Vietnam currently has independent data transmission networks such as Varnet, Netnam Toolnet, HCMnet, and Vinanet that provide information in various fields, including science and technology, education, finance, bank statistics, commerce, markets, production and services. Some of these networks are also linked to the Internet.

For both hardware and software, the computer industry in Vietnam is still in its infancy.

## **2.7 Broadcast Industry**

### **2.7.1 Convergence**

As discussed in the telecommunications industry is currently experiencing the convergence of several platforms. Once distinct services are now being offered on different infrastructures, blurring former boundaries. Broadcasting has historically been an affair of point-to-multipoint electronic transmission of information, as embodied in TV and radio, with electric waves broadcast from towers and through satellites and networks.

Several new services akin to traditional broadcasting have recently debuted. An example is the Internet. Voice-broadcasting by Internet has spread widely, and video signal broadcasting has begun. The Internet has shaken fundamental assumptions about the distribution of news and information.

In its present state, the telecommunications and computer industries in Vietnam appear to be a long way from convergence. For the following two reasons, an assessment of the

broadcasting industry is crucial in any prediction of the future of Vietnam's telecommunications industry:

- (1) Future development in the telecommunications and computer industries may lead to the emergence of new types of services.
- (2) The quality and variety of content distribution in the broadcast industry will speed the development of the telecommunications and computer industries and promote convergence.

### 2.7.2 Radio and TV

In Vietnam, the national radio broadcasting services are provided by Voice of Vietnam, and TV broadcasting services by Central Television Station, founded in 1970. Despite the limited number of channels, the number of TV sets is 18 per 100 persons, based on the 1996 ITU indicator as shown in Table 2.7.2-1.

This rate is higher than in Thailand and close to rates found in Malaysia and Indonesia. The penetration ratio per household in Vietnam is higher than in those countries. The increasing number of TV sets in Vietnam, an increase that will predicate a demand for program variety, is expected to drive technologies in software manufacture.

As discussed in 2.8, Vietnam's development as an information-intensive society will be significantly determined by government policies, in parallel with the development of newspaper, publishing, and print industries.

Telecommunications Development Plan targets the launching of its own telecommunications satellite in the period 1998 to 2000. This is significant not only for lowering transmission costs, but for the possibility of exploring new broadcast technologies. Developments in digital broadcast technologies will make it possible the distribution of multimedia content and interactive access.

**Table 2.7.2-1 Television**

	Television receivers		Television households		Cable TV subscribers Total (k) 1996	Home satellite antennas Total (k) 1996
	Total (k) 1996	Per 100 inhabitants 1996	Total (k) 1996	As % of total households 1996		
Viet Nam	13,500	18.0	11,500	75.7	-	2.5
Thailand	10,000	16.7	9,000	62.9	210	100.0
Malaysia	4,700	22.8	3,100	75.8	-	45.0
Indonesia	45,700	23.3	25,500	57.9	-	1,000.0
China	310,000	25.2	220,000	62.5	35,000	600.0
Korea(Rep.)	14,870	32.6	13,160	101.6	3,864	500.0
Cambodia	90	0.9	75	4.5	-	...
Japan	88,000	70.0	35,816	81.0	11,005	9,430.0
United States	212,000	80.6	96,830	95.2	63,840	6,000.0

Source: ITU

### 2.7.3 CATV

Saigon Tourist Cable Television Company is Vietnam's only cable television provider. At the end of 1997, estimates put the company's subscriber roll at 700 foreign subscribers and 80 local subscribers. The extremely low penetration rate of the service in Ho Chi Minh City indicates the vast potential for growth in the CATV industry, but growth within the CATV industry will be hobbled by continued restrictions on foreign programming, stringent regulatory guidelines, and low per-capita income.

Saigon Tourist Cable Television Company's network was built without consideration for multimedia or converging services. The limited number of channels offered by the company indicates the current scope of the CATV system.

### 2.8 Non-Telecommunications Industries

Magazines, newspapers, and the publishing and print industries can form the foundation of the content supply industry through high-level network infrastructures such as those found in the broadcast industry, as discussed in 2.7.

Although harmful or objectionable information is also distributed across the Internet, the popularity of the Internet in the US and its prospering information and telecommunications industry is largely the work of the film, television broadcast, newspaper, publishing, and other content medium industries. By itself, the Internet is merely a tool for transmitting



information, but it can become a truly revolutionary medium if it is used for the accessing and distribution of content.

Since the classification of industries in Vietnam is unknown or unclear, we assume that the Gross Domestic Product of the information and communications industry is the combined outcome of four industry sectors:

- (1) service sector, made up of transport, postal, and telecommunications services
- (2) print, copy, and publishing industries
- (3) computer and office equipment manufacture sector
- (4) radio, TV and telecommunications equipment manufacture sector

As shown in Tables 2.4.1-2 and 2.8-1, proceeding under this assumption, the information and communications industry's share of the GDP in 1996 was approximately 6.8%, lower than the 8 to 10% recorded in 1980 in Japan, the US, and in European countries at a time when these countries were working to improve and expand the telecommunications infrastructure as an important economic and social target.

Except for telegrams, steady growth occurred from 1990 to 1996 in output indicators and receipts for postal service and telecommunications, as shown in Table 2.8-2, and for information and telecommunications related to books, newspapers and magazines, as shown in Table 2.8-3. To make Vietnam a viable information-intensive society, more investment is required in the information and communications industry, including the content industry.

The Vietnamese government is making efforts to modernize the information technology of news publication (information technologies related to news and newspaper publication), with a goal of providing daily newspapers to all provinces and 90% of its districts by 2000. Vietnamese educational levels are already adequate. As per capita income increases, demand can be expected to increase for magazines, newspapers, and for other publishing and print industry products.

**Table 2.8-1 Industrial Gross Output of Industry in 1996 by Kind of Industrial Activities ( At current price ) (Bill dong)**

	Total	State owned enterprises	Non state	Foreign investment
Manufacturing				
Printing, copying and publishing	3,044.2	2,860.1	129.3	54.8
Computer and office equipment	40.3	7.2	1.6	31.5
Radio, TV, telecommunication equipment	3,816.9	1,215.1	145.9	2,455.9
Gross domestic product of Sector Service, Transport, Postal service and Tele-communication in 1996 (At current price)	10,634	-	-	-
Total	17,535.4 (6.8)	-	-	-
GDP	258,609 (100%)	-	-	-

Source: Statistical Yearbook 1996

**Table 2.8-2 Output Indicators and Receipts of Postal Services and Telecommunication 1990-1996**

	1990	1991	1992	1993	1994	1995	1996
Postal matters-Mill pieces	65.8	71.4	71.6	79.3	93.9	116.5	121.4
Postal parcels-Thous pieces	124.0	47.0	60.8	75.8	93.0	162.0	230.0
Letters and money transfer cables-Thous pieces	734.0	644.0	714.0	806.0	1,070.0	1,365.0	1,744.0
Newspapers-Mill copies	136.5	117.3	133.9	158.2	194.3	223.5	238.9
Central newspapers-Mill copies	113.7	98.8	116.8	133.0	165.1	183.9	196.0
Telegrams-Mill sounds	73.3	66.2	90.8	60.0	56.2	49.6	45.9
Far calling-Mill minutes	...	...	...	228.0	491.5	845.8	1,180.0
Receipts of postal services and telecommunication-Bill dong	219.7	489.6	899.4	1,630.0	2,774.8	4,207.4	5,930.0

Source: Statistical Yearbook 1997

**Table 2.8-3 Books, Newspapers, Cultural Published Articles and Magazines**

	1991	1992	1993	1994	1995	1996
Total Books						
Titles	3,429	4,707	5,581	7,020	8,186	8,263
Mill copies	65.1	71.5	83.0	114.1	169.8	167.1
Cultural Published Articles-Thous copies	13,179	16,846	6,246	6,200	19,500	18,633
Newspapers and Magazines -Thous copies	297,300	445,785	352,670	470,380	433,200	552,990

Source: Statistical Yearbook 1997