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LIBERALIZING TELECOMMUNICATION IN TAIWAN

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ABSTRACT

LIBERALIZING TELECOMMUNICATION IN TAIWAN

By

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The objective of this study is to present a comprehensive analysis about the possibility of a more liberalized telecommunications sector in Taiwan. The study has weighed five factors: the telecommunication development in Taiwan, the organization of the government monopoly entity, the laws and regulations on telecommunications, the political environment within which the content of a policy is discussed, and the views of stakeholders and experts on the liberalizing subject.

Several research methods were used, including primary research, secondary research, personal interview, and mail-in questionnaire survey.

The results of the study indicate that Taiwan is pretty prepared to understand the stake of a more liberalized telecommunications sector. Competition, instead of the current government monopoly, on value-added services could be expected as the first move. In the long run, a government-invested public corporation is likely to be established for telecommunications services that need to set up telecommunications apparatus to provide. It is generally agreed that more services could be provided by private sectors.

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INTRODUCTION

Historically, communications have been of strategic importance for national survival, whether for internal administration or defense against external military threat. The evolution of early forms of electronic communications in the nineteenth century both supplemented traditional communications (post, semaphores) and substituted for and facilitated many kinds of transportation (railroads, ocean travel, etc.). It was only natural for most countries that telecommunications emerged by and large within the public sphere.

However, in the past few years, waves from the tide of deregulation that first started to rise in the United States over a decade ago have washed on many distant shores, as far apart as the United Kingdom, Australia, and Japan.

The idea of "deregulation" can mean different things in different countries and contexts. In the United Kingdom, it was the privatization of the British Telecom (BT); the selling of fifty-one percent of the shares, without a transfer of managerial control; the competition between the BT and Mercury and Cable & Wireless within the nation; the creation of a private, rather than public

monopoly and the invention of a quasi-governmental regulatory agency. In Japan, it has transferred the Nippon Telegraph and Telephone (NTT) from the status of a public corporation to that of a special government-controlled company with shares still owned by the government.

Taiwan is no exception. In Taiwan, there are some cons and pros about modifying the present government-owned telecommunications. Geographically small, with only 13,900 square miles in area, Taiwan has been known mostly as an economic machine on the outskirts of the international scene for years. The nineteen million people in Taiwan have made great strides creating its Gross National Product (GNP) of more than one hundred billion US dollars, which ranks as the 21st largest in the world. In one way or another, Taiwan is leaving the age of being an under-developed country behind, and already has been referred to as one of the Newly Industrialized Countries (NICs).

Recently, a series of liberalization policies have caught the headlines. For example, politically, the Emergency Decree, often regarded as the martial law, was lifted on July 15, 1987. Economically, the financial system was opened to foreign firms earlier, and already thirty-five foreign banks have offices in Taiwan. In this climate of liberalization, together with the wind of deregulation blown from those more developed nations, is there a

possibility that some change would happen to the telecommunications sector? What would it be like if Taiwan's government-owned telecommunications monopoly ends? Before that occurs, it is almost impossible to forecast outcomes. But if there is a lesson from our history, the urgent message is to plan tomorrow's telecommunications and anticipate consequences.

There are several reasons for doing this study. First of all, it has been more than one hundred years since the first telegraph cable was installed in Taiwan; up to 1987, the telephone penetration rate already arrived at 33.2. In other words, in Taiwan, every three people have a telephone. And the data communications services are booming. It is high time to examine if the government monopoly could lead the telecommunications development further. Secondly, although a lot of countries in the world are reviewing their telecommunications systems, each of them has limited experience with other options. So does Taiwan. Should Taiwan adopt the British version? Or would the Japanese model fit in better? Furthermore, in Taiwan, there are already some cons and pros about liberalization, about privatization, and about deregulation; but so far, there isn't a systematic study on the subject.

Wishing to provide a more comprehensive analysis, the study has weighed factors such as the telecommunications

developments, the organization of the government monopoly, the laws and regulations about telecommunications, the political environments, and the views of stakeholders and experts.

The research methods employed included primary research, secondary research, face-to-face interviews, and mail-in questionnaire surveys.

"We must gear ourselves for action not reaction. We must not wait until it is too late to respond to threats. Rather, we will begin a positive campaign to be certain that we do not lose what we now have.... It's not going to be business as usual within our organization" (Costin, 1984: 4-8). Yes, the study upholds the belief.

Changes which happen in telecommunications should be guided by research-based policies in which all of the political, economical, technological, and social consequences have been carefully considered. The coming decade will be seeing governments continuously attempt to arbitrate, if possible, the trade-offs between the economic benefits and social cost of advancing technologies. The study has not attempted to write the last word; to the contrary, the claim is to offer some introductory words for what seems an emerging public policy debate on telecommunications.

Chapter 1

LITERATURE REVIEW

For many decades there has been little fundamental change in the public policy concerning the telecommunications. Telecommunications service has been a classic example of a natural monopoly.

A natural monopoly exists when the production of goods or services are characterized by increasing returns to scale, that is, when per-unit production costs decrease as the entity becomes larger. Consequently, the largest entity in the industry should also be the most efficient. It should have the lowest cost per unit of output. Such an entity has the ability to underprice competitors and drive them out of business. The surviving entity then becomes a monopolist, the sole producer of the goods or services. If unregulated, it may pursue price and research objectives that are not considered desirable from the public's viewpoint.

The primary attribute of natural monopolies, and the reason they are allowed to exist, is that they can supply the entire market with a product more cheaply than can any combination of smaller entities.

The value of the traditional telephone service is a function of the number of people with whom a subscriber can talk. A single entity can interconnect large numbers of local subscribers at lower cost because the presence of more than one entity could require wasteful duplication of facilities.

Also, the "universal service" goals form an important part of what might be called the social consensus. It is understood that it is the duty of the government to provide certain services to the public at uniform and reasonable rates. Every attack on this role of the government is automatically seen as an attack on the social balance which constitutes the social consensus. Even minors usually bring up these questions of political philosophy.

The most immediate dimension of governmental intervention is naturally whether the government owns and operates the telecommunications system. Ownership and operation generally come in tandem, although exceptions may exist. As Weizsacker (1986) points out, in a more static environment with substantial economies of scale, the traditional natural monopoly argument for government ownership for the exclusion of competition is strong.

But, changing circumstances can call into question the designation of certain industries as natural monopolies.

The sharp increase in demand for data transmission services has exceeded the single-entity economies of scale of transmission. Also, technological change has reduced the extent of a core natural monopoly, and this has led in many nations to entrepreneurial initiatives, a restructuring of the industry, and a reduction of government involvement.

The opponents of centralized control argue that in most advanced countries the size and diversity of demand for telecommunications services has long since passed the point at which it is provided most effectively through a centralized structure. More diversity of supply, it is argued, will cause services to be better tailored to specific user needs, and will enhance innovation.

Kaiser (1986) has detected a degree of "religious fervor" in the American conviction that telecommunications are no longer a natural monopoly. Yet problems arise when conceptual paradigms tailored to uniquely American conditions---private, commercialized ownership of telecommunications---are extended in other countries, when altogether different conditions usually prevail.

For example, Neumann and Wieland (1986: 122) have pointed out that "many experts still have doubts about whether deregulatory policies as radical as those in the United States would be a reasonable strategy for Germany."

And Snow (1986: 10) also considered that "although the United States has served as a model for other countries by establishing the first and most conspicuous telecommunications deregulation, its example has by no means been uniformly positive, nor has there been slavish or uncritical imitation on the part of others."

Furthermore, Solomon (1986) has called deregulation a "misnomer." In his opinion, deregulation is only achievable when effective competition in all relevant market segments is established and endures. And the telecommunications market is essentially an administered market.

Statist theory proponents (Howard 1979; Aron 1966; Morgenthau 1948) held that policy will favor the enhancement of groups and sectors viewed as essential to the maintenance of state power, internal stability, and the structures that support it, as well as of national wealth. So an industry seen as potentially threatening to the established state structure will be constrained or even prohibited, regardless of the economic growth potential it provides.

Telecommunications are important to the state because of the role of communications in maintaining social cohesion and the importance of communications systems and technologies to national security and the rest of the economic system. Therefore, liberalized policies such as

privatization and deregulation could be viewed as consistent with state interests if the state is certain that forces supportive of the state will control them. A trend toward these policies, then, would be considered as caused by increasing confidence by the state in the supportiveness of the groups that would control the sector.

Researches on non-U.S. countries have concluded that the debate should not be limited to the extremes of monopoly and free competition, but should focus instead on the middle ground of balancing the right amount of regulation with a concern for public service requirements (Bergenderff 1983; Garnham 1985; Voge 1986).

Hills (1986) has observed that a market may be liberalized with one or more entities within that market remaining in public ownership, or, a publicly controlled entity may be privatized with little or no ensuing liberalization of the market, thereby creating a private rather than public monopoly. Or, the sale of the public entity initially may be little more than an actual sale of a majority of shares to the private sector, like in Japan.

Defined by Kent (1987), privatization refers to the transfer of functions previously performed exclusively by government to the private sector at prices that clear the market and reflect the full costs of production. He has

presented four strategies for privatizing services:

1. Sale of a government enterprise to a private organization
2. Contracting with a private organization to provide a service
3. Charging user fees to recover the cost of a publicly provided service
4. Providing vouchers to low-income persons so they can afford to purchase services from private providers.

In the case of postal service, Adie (1987) has explained the process of privatizing. The first step would be to divest the Postal Service into a number of smaller regional companies. Then, by repealing rules like Private Express Statutes, the postal service gets deregulated. Finally, its shares would be sold to private investors.

A liberalization approach has been offered by Weizsacker (1986). The PTTs admit competing suppliers who, either as value-added service suppliers or with their own hardware, offer their services. They would have to pay an access fee to the PTT, which allows them to connect with the PTT network. The PTT goes on to provide service with uniform tariffs, thereby continuing the internal subsidization of those customer groups that obtain the service at relatively high costs from the PTT.

The access fee would be raised as a fixed percentage of the private supplier's net telecommunications revenue. It can be viewed as a contribution to the financing of the overhead of the telecommunications system and the financing of the ongoing subsidization of certain customer groups. Also, the access fee can be seen in analogy to the value-added tax.

This approach does not imply full-blown competition. But the scheme allows making use of some advantages of competition and should meet less political resistance because internal subsidization continues.

Besides ministerial public enterprise, another possible solution is corporatism. Government ministries possess the means to control or at least strongly to influence private decisions and implement their plans through direct contact with officials of industry. This is a more attenuated form of control than a ministerial public enterprise.

Eward (1984) has distinguished six market structures of telecommunications, not to be confined in terms of deregulation, privatization, or liberalization:

1. Government Monopoly (GM)---The classic case of a monopoly vested in a government ministry or department. This monopoly may be based in law or by administrative fiat

or convention.

2. Government Monopoly-Public Corporation (GM-PC)---Government monopoly but instituted through public corporation form rather than through departments.

3. Government Competition (GC)---A structure wherein both the government and private sector entities compete with each other in the market.

4. Regulated Monopoly (RM)---The classic case of private ownership of facilities (one entity) with regulation by a government department.

5. Regulated Competition (RC)---The extent of competition, the number of competitors, and the products or services that can be offered by each are all subject to authorization, licensing, type-approval, and the like, by a government department or agent of the government.

6. Liberalized Entry (LE)---A market situation characterized by the absence of all official government rules and regulations that serve to regulate market entry, structure, or conduct coupled with complete reliance on private sector entities for the provision of goods and services. This situation can include minimal government requirements for notification or meeting independent (non-government) standards.

7. Free Entry (FE)---The extreme case where even minimal government requirements are absent.

With these sturctures, Eward has presented a Continuum

of Market Structure Model, depicted in Figure 1.

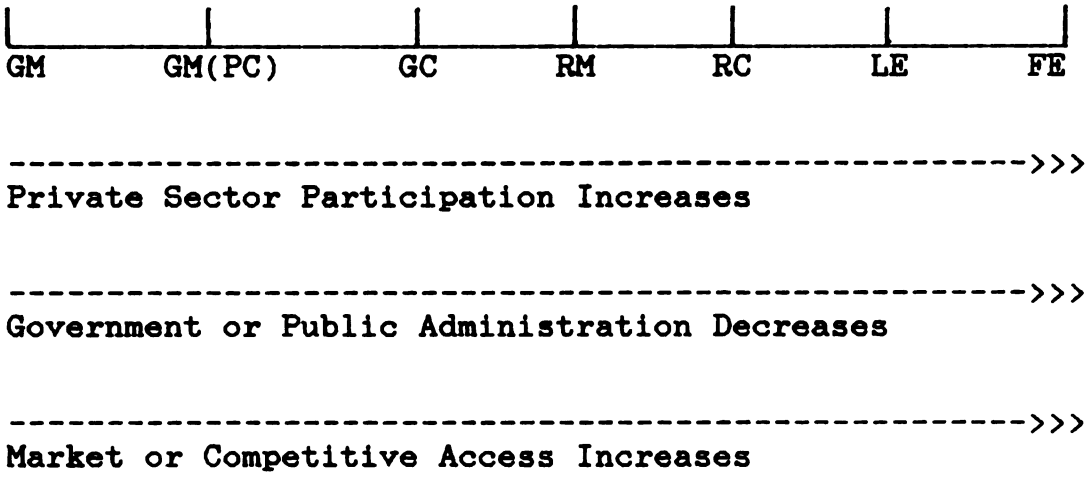

Figure 1 The Continuum of Market Structure Model

Different countries, administrations, and operating entities would select from a wide range of available products, processes, and services, and thus choose a proper structure that is technologically, operationally,and commercially feasible. Reform could be actually a result of institutional obstacles that are inherent in the process of public supply; and change could offer a positive alternative that permits enterpreneurial creativity to help solve public problems.

The organizational forms of the participants and the number and ease of entry of suppliers are two characteristics in the telecommunications supply structure deduced by Noll (1986). He believed that "movements toward less centralized control must overcome considerable political inertia." How fast this takes place depends on

three things: (1) the extent to which a less centralized regime actually serves interests other than those of the supply side; (2) the institutional structure in which change is taking place; and (3) whether telecommmunications can be tied into a currently salient general political issue (Noll, 1986: 61).

To measure the likely policy outcome, therefore, one needs to describe areas of conflict, characterize significant players, enumerate stakes, identify forces in action, mark trends, discuss strategies, and access policy options.

CHAPTER 2

RESEARCH QUESTION, PURPOSE, AND METHODOLOGY

-----Research Question

Not a very long time ago, in all but a few countries, ministries or government enterprises provided telecommunications services. Even in countries that relied on the private sector to supply such services, government bureaus exercised considerable influence on the industry. However, because of technological and economic reasons, telecommunications policy is undergoing transition and reevaluation in many countries.

Yet, each nation has relatively little experience with alternative institutional arrangements of the telecommunications sector. If the trend of telecommunications evolution seems clear, the public policy implications that attend it do not. For Taiwan, then, the question is: Is Taiwan ready for more liberalized telecommunications?

To find out the answer, the study has weighed the following factors which are considered very pertinent:

1) the telecommunications developments in Taiwan (What services are available in Taiwan? Is there a call

for more services? Must all services be provided by the government? Is the DGT making full use of technological and service possibilities?);

2) the organization of the Directorate General of Telecommunications (DGT)---the Taiwan government telecommunications entity (How has the DGT changed over the years? What's the present status of the DGT? Can it change?);

3) the legislation as well as regulations that mandate the telecommunications in Taiwan (What are those acts and regulations which rule the telecommunications in Taiwan? How do they rule the telecommunications? Have there been some amendments to these acts or regulations since they have been put into force?);

4) the political environment within which the content of a policy is discussed (Which authorities have influence on the telecommunications policymaking process? How has the power-transfer in politics affected the telecommunications policymaking? Are the current political conditions favorable or unfavorable for some modifications on the telecommunications policy?); and

5) the views of those stakeholders and experts[1] in this liberalization issue (Are they satisfied with the present telecommunications policies? What would be their recommendations for a different telecommunications policy? How do they view the issue of more liberalized telecommunications in Taiwan?).

The study first explored the archives, using the primary resources to document the development of Taiwan's telecommunications , the DGT history, and the telecommunications-related law.

Furthermore, a secondary research method was employed for providing information on the political environment, which does affect policymaking in any case, from the beginning of the telecommunications until now. As far as the stakeholders are concerned, both face-to-face interviews and a mail-in questionnaire survey were used to observe their attitudes towards liberalizing telecomminications in Taiwan.

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1. These included government officials, from members of the Cabinet to those of the DGT and its subsidiary institutes, legislators, telecommunications industry people, users, and scholars from universities.

-----Purpose of the Study

In her book "Deregulating Telecommunications," Jill Hills confirmed that, "although the development of specialized, privatized services has been presented as the inevitable outcome of the technological convergence of data-processing, telecommunications, and video reproduction, deregulation and liberalization are the product of that convergence only inasmuch as it has altered the interests of powerful companies and governments" (Hills, 1986: 195).

Technology, after all, not only has consequences, but its adoption is often a function of other factors. Therefore, it is hoped that an examination of the conditions listed above will help Taiwan in recasting its perspective on future telecommunications policy-making. By answering the research question, the study wishes to provide a more comprehensive analysis of the performance of the telecommunications sector, to construct some reasonable bases for the expectation toward future policymaking, in the absence of any domestic experience, and to offer some possible outcome variables for policymakers to look at.

-----Methodology of the study

> Primary Research

In order to have basic facts about the telecommunications development in Taiwan, the DGT organization, together with its history, and all the

telecommunications-related regulations as well as legislation, the study had decided that the official DGT documents should be the first place to look. Also included are the DGT publications.

> Secondary Research

In addition, the study employed the method of secondary research to enhance the understanding of the environment within which the content of telecommunications policies were discussed in different political ages. Since research on the telecommunications sector done outside the DGT was considerably limited, the study's efforts had mostly been based on books and articles around the political conditions, which, to varied degree, had affected the telecommunications.

> Face-to-face Interviews

** the interview questions design

Open-ended questions, which are usually assumed suitable for personal interviews, were used by the study. The premise of designing the interview questions was to understand the viewpoints of stakeholders and experts about liberalizing the telecommmunications in Taiwan; therefore, the questions would not go into details about practicing the possible change.

The questions were categorized into three parts: the

services and technology development part, as Part I, the organization and management part, as Part II, and the governmental regulatory agencies part, as Part III.

There were six questions in Part I. The major points in this part included: What are those services and technologies that we will need most in the future? What is the priority in developing these services and technologies? What will be the possible problems in advancing to the services and technologies, and how can they be solved?

Another six questions were asked in Part II. The main points were: For building a modern telecommunications system, should the present status of Taiwan's telecommunications entity change? If so, how should they be changed? What is the best strategy, and what will be the steps to implement the strategy? What are the expected obstacles, and what are the suggestions in dealing with the possible obstacles?

In Part III, there were two questions. If some change happens in the telecommunications sector, could any conflict occur between current governmental departments? Does any power-redistribution need to be considered when talking about a different telecommunications environment?

Given that twelve out of the twenty-six interviewees

were government employees, whose attitudes towards criticizing any current system are often very conservative, the wording of the questions had been done quite carefully. (See Appendix A for the interview questions.)

** the sampling

Chen, currently the Vice Minister of the Ministry of Communications (MOC), the Taiwan PTT, and formerly the Director-General of the DGT, once said that, "not many people outside of here [the DGT] know anything about telecommunications---not even in the universities and other laboratories." (Meyers, 1986: 43) Hence, the first criterion for determining the population was expertise.

Secondly, although Rubin claimed that in qualitative research, how typical the population is needs not be emphasized much (Rubin, 1983: 349), another criterion the study used in building the population was representativeness. Groups that will be mostly affected by any telecommunications rearrangement should not be overlooked.

Most of all, policymakers would certainly be included. Consequently, ninety-five people were drawn into the population by the researcher.

Since the interview questions covered problems of

services and technology development, of organization and management, and of governmental regulatory agencies, a purposive sampling method was used to choose the final interviewees after determining the population. Based on their relative power and interest in the three areas, thirty-five people were selected by the researcher. Among them, there were nine people who refused to be interviewed, making the subject only twenty-six in number.[2]

The twenty-six interviewees consist of seven DGT officials, six policymakers---two members of the Cabinet, one legislator, and three MOC officials---, five telecommunications industry people, three telecommunications users, and five scholars. (See Appendix B for the list of interviewees.)

** conducting the interview

Rehearsals of the interview were practiced several times. Additionally, with the consideration that probably some of the questions need to take a little time to think over, that the study wished the interview could provide real in-depth answers, and that almost all the interviewees were

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2. Four of the twenty-six interviewees expressed their willingness to cooperate, but wished to answer the open-ended questions self-administeredly instead of by face-to-face interviewing.

not able to schedule too much time for a face-to-face interview, the question sheets were mailed to them in advance, with a cover letter to explain the purpose of the study. The first interview was scheduled about seven days after mailing the questions. It took almost two months to complete all the interviews.

** data processing

The answers were recorded by the interviewer during the interview, and typed on other blank question sheets, for the purpose of anonymity.

> Mail-in Questionnaire Survey

Almost always, a personal interview has to face the disadvantages of a limited population, non-quantitative data, and a huge amount of time and manpower. However, the information received in such a focused interview could be taken as supplementing in-depth knowledge on the subject matter, and be very helpful for a further mail-in questionnaire survey. The study, then, decided to employ a combination of personal interviews and mail-in questionnaire surveys. Since no similar studies have ever been conducted, the interviews in the study did provide some original ideas.

** the questionnaire design

The study had adopted closed-ended questions for the mail-in questionnaire. Similar to the interview question

section, the questions for the mail-in questionnaire were divided into three parts. The same categories used in the interview questions were also applied to the questions here. So Part I questions were of the services and technology development; Part II questions related to the organizations and management; and Part III questions polled opinions about the governmental regulatory agencies.

Nevertheless, unlike the interview section, here each part had its own targeted respondents. In other words, Part I questions would only be mailed to Group I respondents; Part II questions were exclusively for Group II respondents; and just Group III respondents would receive Part III questions.

The two Part I questions dealt with the priority in developing new telecommunications services and technologies in the future.

There were five questions in Part II. The first four briefly explained the concept of separating telecommunications into Type-I, the basic services, and Type-II, the enhanced services, and asked the respondent's ideal ways to run the two kinds of services. The last one concerned the possible hindrances in reforming the current telecommunications sector.

Part III had five questions. The first three inquired about the views on adjusting the present governmental organizations that rule the telecommunications. The last two questions asked what would be the proper institutions to take the responsibility of regulating the new services and technologies. (See Appendix C for the mail-in questionnaire questions.)

** sampling

A critical difference between the design of the mail-in questionnaire survey and that of the interview section was that, in the mail-in questionnaire, the respondents were divided into three groups. In the interview section, all the interviewees were asked questions embracing Part I, Part II, and Part III. However, considering the coverage of the questionnaire content as well as a sample larger than that in the face-to-face interview, the study would not expect that every respondent would be professional in all three domains.

Therefore, Group I respondents would be answering the Part I questions, about the services and technology development; Group II respondents would respond only to the Part II questions, about the organization and management; and Group III respondents would reply to no more than questions of the governmental regulatory agencies, that is, Part III questions.

When it came to the sampling for the mail-in questionnaire survey, other than the previous consideration about expertise and representativeness, one more constraint appeared. The researcher's information about people who possess knowledge to answer the questionnaires was limited.

Thus, the snowball sampling method (Rubin 1983) was used. The snowball sampling method is a way of choosing sample elements in which one respondent indicates other respondents who should also be included. By using the snowball sampling, moreover, the study also avoided possible bias from the researcher.

First, the primary sources, on whom the study relied to snowball more respondents, were chosen according to their specialty on at least one of the three parts in the questionnaire. Eighty-four primary sources were picked by the researcher. Among them, there were twenty-six primary sources for Group I, thirty-four for Group II, and twenty-four for Group III.

Each of these eighty-four primary sources later received a complete set of questionnaires, and a letter, asking them to recommend at least three people who would be the most qualified ones to answer the questionnaire. For Group I, twenty-six respondents were recommended by its primary sources, for Group II, thirty-three, and for

Group III, twenty-four. But there were twelve people whose names appeared on the recommended lists in different groups, making the recommended respondents numbering eighty-three, while actually seventy-one persons were recommended.

Further, the eighty-four primary sources would be asked to answer the questionnaire too. But since thirty-two of them had been recommended by sources other than themselves, that is, were already included in the eighty-three recommended respondents, the number of primary sources was reduced to fifty-two.

Similarly, when the fifty-two primary sources were reviewed as people to answer the questionnaire, sixteen of them were qualified to be asked questions in different categories. Consequently, it turned out to be that there were sixty-eight source respondents. From these sixty-eight source respondents, twenty-five were assigned to Group I, thirty to Group II, and thirteen to Group III.

Totally, there were one hundred and fifty-one respondents. One hundred and six of them sent back the questionnaire, making the rate of response 70.2%.

Table 1 The Snowball Sampling

number	Group I	Group II	Group III	total
primary sources	26	34	24	84
recommended respondents	26	33	24	83
source respondents	25	30	13	68
total respondents	51	63	37	151
responding respondents	40	47	19	106
rate of response(%)	78.4	74.6	51.4	70.2

** conducting the questionnaire survey

Every part of the questions had been pretested three times. Some modifications were done afterward. Wishing to have a good response rate, which is usually low when used in mail-in questionnaire surveys, the study exercised the following steps:

1) Five days after the questionnaires were mailed, those respondents with whom the researcher is acquainted received a call from the researcher, and were pleased to fill out the

questionnaire.

2) Ten days after the mailing of the questionnaire, a follow-up letter, together with another set of questionnaires was sent to those subjects that had not responded.

3) Two weeks after the questionnaire was mailed, the researcher called the people she knows who had not sent back the questionnaire, reminding them to answer the questionnaire.

4) Nineteen days after the questionnaire was mailed, the respondents who were called two weeks earlier received a second call from the researcher, asking them to remind their associates, if they were respondents for the study, to answer the questionnaire[3].

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3. Those respondents with whom the researcher is not acquainted had never been called for two reasons. The first was the avoidance of any suspicion, which could be the result. The other was that the researcher had been requested by some of the primary sources not to reveal their names.

Chapter 3

TELECOMMUNICATIONS DEVELOPMENT IN TAIWAN

In 1871, the telegraph cable between HongKong and Shanghai initiated China's telecommunications development[4]. But this submarine cable was built by Cable & Wireless, and the ownership belonged to the British company.

It is interesting to know that, the place for the first telecommunications cable set up by Chinese people was Taiwan. In 1877, Governor Ding Jih-Chang of the Fukien Province, to which Taiwan was only an administrative district at that time, set up the telegraph cable between Tainan and Chyho, two towns in southern Taiwan[5].

Although 1877 had started the inchoate period of telecommunications of China, the development went slowly. In 1881, Prime Minister Li Hung-Chang, the leading

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4. HongKong was under the sovereignty of China until 1900, when it was ceded to the British, under a ninety-nine-year lease, by the Manchu Imperial government.

5. In 1874, Japan's intention to invade Taiwan had been so obvious that General Shen Bao-Jen had once reported to the Manchu Imperial government, asking to implement telegraph cable to connect Tainan, Anpin, Penghus, Amoy, and Foochow. However, the plan had not been carried on because General Shen was later assigned to another position.

reformer in the Manchu Imperial government, created the so-called "Guan Do Shang Bann" strategy for building more telecommunications infrastructure. Literally, "Guan Do Shang Bann" means while the private sectors would be given the privilege to operate the telecommunications system, the government would supervise the operation, as there were no formally written regulations at that time. But first, the Manchu Imperial government had to financially aid the private business with the initial investment.

So at the end of that year, the telegraph cable between Shanghai and Tientsin, a harbor city near Peking, was finished, and seven telegraph offices were scattered from South to North.

On the other hand, since 1871, foreign companies, especially those from Europe, kept setting up telecommunications in China, for there were more and more foreign trading companies which wanted to do business there. Also in 1881, one of the trading companies from Britain, Tait & Co., inaugurated the telephone system within the British concession in Shanghai; but the ownership, again, was not in hands of the Manchu Imperial government.

Despite the fact that Taiwan had been the historical location when the 1877 cable initiated the first operated-by-Chinese telecommunications, Taiwan was not in

the forefront for China's telecommunications until 1949[6]. Since 1949, when Mao Tse-Tung's forces took over the Mainland China, established the People's Republic of China, and the Chiang Kai-Shek Administration retreated to Taiwan, Taiwan's telecommunications has grown steadily.

At that time, of course, like all other underdeveloped countries, Taiwan had to budget its limited revenues on all kinds of development. A series of four-year-long Telecommunications Development Plans were adopted, which has advanced Taiwan's telephone and telegraph growth to a large extent. The first Telecommunications Development Plan was put into work in 1952, followed by the second in 1956, the third in 1960, and the tenth is still going on nowadays.

Table 2 shows the growth of the telegraph facility, in the circuit number of the year that ended the Telecommunications Development Plan. Table 3 shows the growth of the telephone facility, in the circuit number of the year that ended the Telecommunications Development Plan. Table 4 shows the growth of the local telephone service.

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6. From the 1840s to the 1940s, approximately, China had been of interest to many other nations. Japan, one of them, had never given up its ambition to rule over Taiwan. The Sino-Japanese War of 1894 ended with the Treaty of Shimonoseki, under which Taiwan became Japan's colony for fifty years.

Table 2 The Growth of Telegraph Circuits

YEAR	DOMESTIC	INTERNATIONAL (RADIO)	TOTAL
1955	200	22	222
1959	236	26	262
1963	297	38	335
1967	361	62	423
1971	426	116	542
1975	520	328	848
1979	1,296	627	1,923
1983	4,720	1,050	5,770
1987	6,456	1,232	7,688

In the earlier years, the Telecommunications Development Plans placed emphasis on the installation of local telephones in order to ease the burden of long waiting lists of unsatisfied new subscribers. It was then followed by a stage of expanding the trans-island[7] long distance telephone network, including the West-coast and East-coast Backbone Microwave Radio Systems and the Trans-land Coaxial Cable System.

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7. In addition to the island proper, Taiwan comprises thirteen islands in the Taiwan group, sixty-four islands in the Penghu group, and Quemoy and Matsu.

Table 3 The Growth of Telephone Circuits

YEAR	DOMESTIC	INTERNATIONAL (RADIO)	TOTAL
1955	561	6	567
1959	1,049	6	1,055
1963	1,702	10	1,712
1967	2,427	32	2,459
1971	4,266	145	4,411
1975	10,566	265	10,831
1979	34,200	491	34,691
1983	89,318	954	90,272
1987	157,482	2041	159,523

Internationally, there are one satellite communications earth station and three complete sets of antennas facing the communications satellite over the Pacific and Indian Oceans. Also, submarine cable systems were laid through joint ventures with foreign telecommunications administratives. These systems include Taiwan-Okinawa, Taiwan-Guam, Taiwan-Luzon, Taiwan-Hongkong-Singapore, France-Singapore-Eurasia, and Australia-Indonesia-Singapore.

The crossbar switch was introduced in 1969, and the space-division analog electronic switching systems in 1974. During the decade of 1979-1988, the highlight of

Table 4 The Growth of Local Telephone Service

YEAR	NUMBER OF SUBSCRIBERS	NUMBER OF STATIONS	STATIONS PER 100 POPULATION
1955	33,531	46,432	0.5
1959	51,824	73,849	0.7
1963	79,880	132,524	1.1
1967	135,035	230,229	1.7
1971	307,473	492,307	3.3
1975	774,233	1,117,989	6.9
1979	1,860,602	2,566,078	14.6
1983	3,617,528	4,854,861	25.8
1987	4,909,036	6,548,733	33.2

telecommunications technology evolution in Taiwan has been the transition from analog electronic switching systems to digital switching systems. In 1982, the time-division digital switching system was adopted, starting with the installation of AT&T No.4 ESS digital switching system for toll switching.

To date, in the local telephone network, only about 4.85 percent are digitized, while the electronic switching constitutes 23.8 percent. The major portion is still crossbar exchange equipment, counting 70.7 percent of the total capacity. For the toll telephone network, about 30

percent of the toll switching equipment is of the crossbar type, and another 30 percent is of the AT&T No.4 ESS and No.5 ESS digital switching systems. It is estimated that by the end of 1989, digital toll switching systems will reach 77 percent of the total toll switching systems in Taiwan, so as to meet the future demand of the Integrated Services Digital Network (ISDN), targeted in year 2000.

Although the DGT's Data Communications Institute (DCI) did not exist before May 1981, Taiwan's data communications could be traced back to 1971. November 1, 1971, was the date on which the DGT started to let users lease lines from the DGT for data communications within the country. But the transmission speed was not allowed to be faster than 2,400 bits per second (bps) then. After years, at the end of 1985, the number of leased lines reached 4,452. Table 5 shows the usage of leased lines at the end of 1985.

It could be seen that in 1985, 44.7 percent of the leased lines used were for speeds at 600/1200 bps, followed by 33.4 percent for 2,400 bps. Yet, Figure 2 exhibits that the trend for leased lines usage is heading toward that at higher speeds.

Table 5 The Usage of Leased Lines* (1985)

SPEED (bps)	300-	600/1,200	2,400	4,800	9,600	TOTAL
NORTH	101	1,246	942	366	135	2,790
CENTRAL	24	183	186	25	2	420
SOUTH	122	378	293	34	12	839
INTER-REGION TOLL	22	184	64	74	59	403
TOTAL	269	1,991	1,485	499	208	4,452

* Since 1981, the DGT has drawn Taiwan into three regions: the north, the central, and the south. Each region has its own administration office to take care of its telecommunications business within the region, so could be seen as a Local Access and Transport Area (LATA) in the United States. Inter-region toll phones, therefore, are like inter-LATA toll phones.

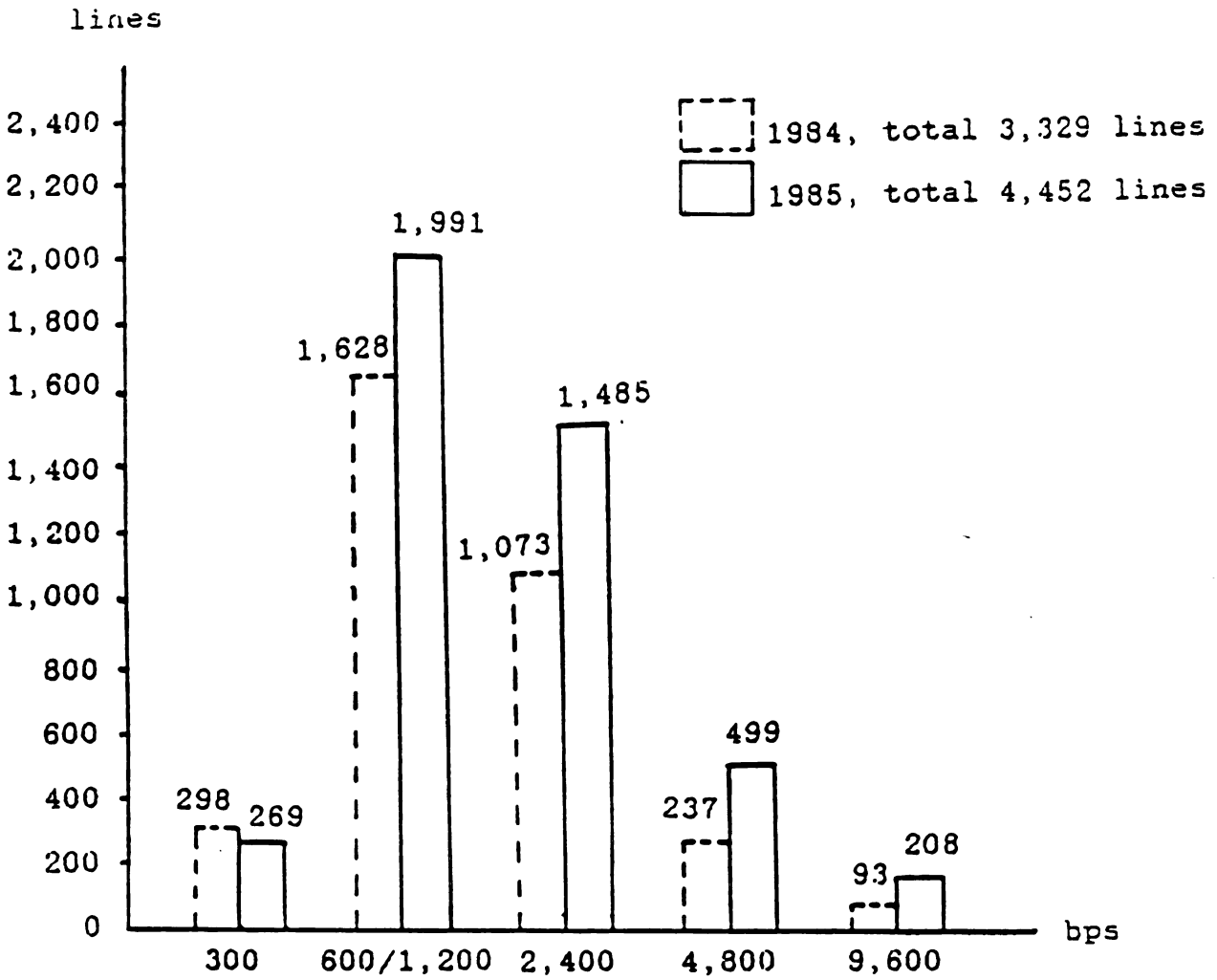

Figure 2 The Comparison of Leased Lines Usage of 1984 and 1985

Further, users were able to enjoy international leased lines service since 1975. The transmission speed could be up to 14.4 K bps (144,000 bps). Table 6 shows the growth of the international leased lines in the 1976-1985 decade. Table 7 shows the nations connected as well as the transmission speed for each of them in 1985.

Table 6 The Growth of the International Leased Lines (1976-1985)

YEAR	LINES	GROWTH RATE (%)
1976	1	---
1977	4	300.0
1978	6	50.0
1979	6	0.0
1980	8	33.3
1981	12	50.0
1982	16	33.3
1983	21	31.3
1984	30	42.9
1985	41	36.9

The next data communications service provided by the DGT was the Universal Database Access Service (UDAS). Starting December 1979, the UDAS enabled users in Taiwan to get thousands of pieces of up-to-date materials which are extracted from magazines, meeting minutes, scientific and technical reports or derived from the source in the commercial, economical, medical, or patent category. The UDAS is now connected with the Telenet and the Tymnet in the United States. However, up to 1985, there were only sixty-three users, from banks, libraries, R & D institutions, and international trading companies.

Table 7 The Usage of International Leased Lines (1985)

SPEED (bps)	2,400	4,800	9,600	14.4 K	TOTAL
HONGKONG	1	2	20	3	26
US	0	0	7	0	7
SINGAPORE	1	0	0	1	2
JAPAN	0	0	2	1	3
PHILLIPPINES	0	0	1	0	1
FRANCE	0	0	1	0	1
BELGIUM	0	0	1	0	1
TOTAL	2	2	32	5	41

The birth of the DCI, in May 1981, has pushed Taiwan's data communications development further. Circuit Switched Communications System was available in June 1982. Both the Dial-up Communications System and the Public Information Processing Service came to reality in January 1984 and the Packet Switched Communications System was offered in October 1984.

At the end of 1985, nevertheless, the popularity of these services differed from each other a lot. The Dial-up System has been the most welcomed one, with six hundred and three users. Among the six hundred and three users, five hundred and forty employed the system at the speed of 1,200

bps. But one point should not be neglected about the Dial-up System is that, when the system was announced in January 1984, only the speed at 300 bps was provided. It was the voices from users that forced the DCI to advance up to the 1,200 bps speed in September 1984 (MOC 1987: 268).

On the other hand, the Public Information Processing Service, provided on the same date the Dial-up System began, had only eighteen users when 1985 was over. The explanation for this embarrassment, admitted the DCI, was that "services similar to the Public Information Processing Service have been listed in many computer companies' service items, making our system less competitive" (MOC 1987: 269).

Sometimes services within the DCI would be rivals for each other. The Circuit Switched System was put in field two years earlier than the Dial-up System and the Packet Switched System, but its one hundred and fifteen users were much less than the six hundred and three of the Dial-up System and the two hundred and ninety-seven of the Packet Switched System at the end of 1985. Even worse, the number of users was decreasing, compared to its own one hundred and forty-three users in 1984. It was the system's first decrease, for which the other two systems were blamed, according to a DCI study (MOC, 1987: 265).

Chapter 4

THE DIRECTORATE GENERAL OF TELECOMMUNICATIONS

When the Cable & Wireless inaugurated China's telecommunications in 1871, it was the Department General of Customs & Duties that took charge of all affairs relating to foreigners. Therefore, the Department General of Customs & Duties became the first government authority to administer the telecommunications.

However, the Department hardly had any influence on the telecommunications matters at all. The situation continued when, in 1902, increasing disputes between the government and foreigners made the Manchu Imperial government set up the Ministry of Foreign Affairs, replacing the Department-General of Customs & Duties.

In 1881, when the talking of a cable between Shanghai and Tientsin was up, the belief that government ownership over telecommunications was necessary did not dominate. So, with a special loan from the Manchu Imperial government, the cable was established by a group of private business. Later, the loan was paid back by yearly installment. Once the loan was clear, the Manchu Imperial government had to amortize the ownership of the telegraph cable to the private business group; but, it

would still keep the power to supervise the operation.[8] That was the way the "Guan Do Shang Bann" strategy was implemented.

Consequently, the Bureau General of Telegraphy was born in 1881. Although this Tientsin-based Bureau controlled nothing more than the Shanghai-Tientsin telegraph, it was the first governmental office especially founded for the telecommunications.

Before long, nevertheless, realizing that the telecommunications ought to be a public utility, the Manchu Imperial government disagreed with the profit-pursuing-only management philosophy kept by its "Guan Do Shang Bann" partners. Continuing bargainings on issues of line expansion plans, of maintenance schedule, and of the tariff, became the catalyst for the Manchu Imperial government to nationalize the telecommunications.

The whole process of nationalization consists of two phases. From 1902 to 1908, the Manchu Imperial government successfully retrieved the right of operation of the telegraphy by exchanging the ownership it had. After the

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8. It could not, however, be considered as a regulated monopoly style, since no regulation existed, only the wisdom of government officials.

action, the telegraph business came out to be run by the government but owned by the private entrepreneurs. During the period, the Manchu Imperial government had appointed a Director of Telecommunications to take care of the operation.

Next, in order to complete the nationalization of the telecommunications, the Manchu Imperial government started buying back the ownership of the telegraph system in 1909. At the end of 1910, the telegraphs installed in the eleven provinces, including Hopeh, Helungkiang, Kirin, Liaoning, Shantung, Kansu, Yunnan, Kweichow, Kwangtung, Fukien, and Kiangsi, were altogether under the control of the Ministry of Post and Communications.[9]

The Ministry of Post and Communications was actually there since 1906. A special five-member commission was appointed by the Manchu Emperor in 1906 to learn the modern administrative organization of foreign countries, most of them European ones. One of the recommendations submitted by the commission when they returned to China was the creation of the Ministry of Post and Communications. Four years later, when the nationalization of the telecommunications

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9. For foreign-owned telecommunications systems, the Manchu Imperial government was powerless to enforce the nationalization.

systems was achieved, the Ministry of Post and Communications became a de facto PTT; it set policies, and had a Directorate of Telecommunications under it as an operating entity.

1912 witnessed the overthrow of the Manchu Dynasty and the establishment of the Republic of China. The functions of the Ministry of Post and Communications had therefore been transferred to the MOC, under which the Department of Telecommunications was responsible for all telecommunications-related affairs.

Actually, however, this 1912 coup d'etat immediately failed the nationalization of telecommunications. Local warlords all over the country soon seized the telecommunications in their occupied territories. Between then and 1927, the year that all of China was finally unified under the Chiang Kai-Shek Administration, the nation's telecommunications had stayed in the decentralized status.

In 1927, a new Department of Telecommunications, under a new Ministry of Communications, was authorized to manage the nation's telecommunications, which had been locally governed for fifteen years. A Directorate General of Telecommunications had been put in Shanghai, but was removed one year after, that was, in 1928.

The present government monopoly, the Directorate General of Telecommunications, the DGT, was originally established in 1943, China. In 1943, the Department of Telecommunications and the Department of Posts were merged into the Department of Posts and Telecommunications, as an administrative office in the MOC. For day-to-day telecommunications operations as well as management, it was the DGT that had the responsibility . Also, the DGT was within the jurisdiction of the Department. This organization construction remained when the MOC came to Taiwan with the Chiang Kai-Shek Administration in 1949.

On April 1, 1949, the DGT set up its first office for Taiwan: the Taiwan Telecommunication Administration (TTA). On May 16, the same year, the International Telecommunication Station was born. These two then began to take care of Taiwan's telecommunications development, the former for domestic construction, the latter for international business. Later, because telecommunications was a highly technology-oriented service and the improvement of service quality depended greatly on the enhancement of its technological level, the Telecommunications Laboratory (TL) was founded as the DGT's R & D institute on May 23, 1951.

Having been too busy at building Taiwan's telecommunications, the DGT had not reviewed its

organization for eighteen years. In 1969, the DGT organization expanded, mainly pushed by the fast-growing telecommunications business in Taiwan. Besides, the International Telecommunication Station was renamed as the International Telecommunication Administration (ITA), and the Telecommunications Training Institute (TTI) was created for providing employees of the DGT on-job training programs. The DGT employee number grew from 3,608 in 1951 to 8,819 in 1969, to which the TTA contributed a lot; its employees grew from 3,355 in 1951 to 8,038 in 1969. Figure 3 shows the basic DGT organization after the 1969 expansion.

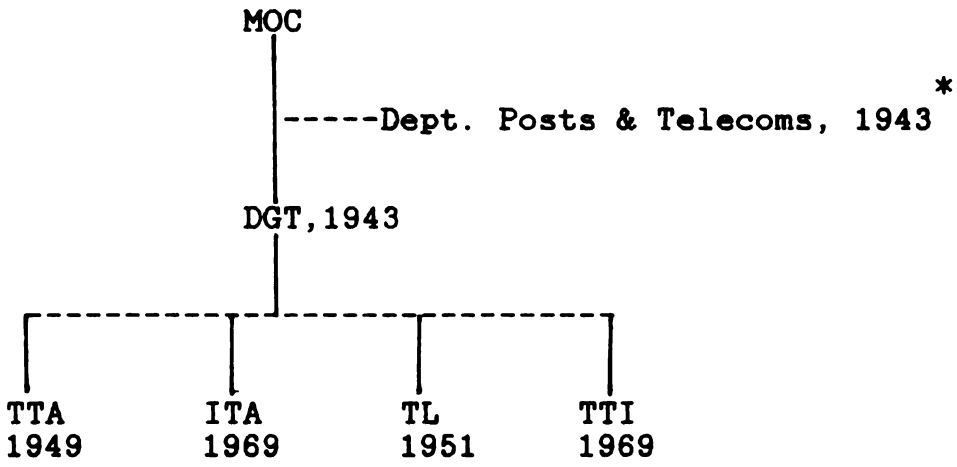

Figure 3 The DGT Organization in 1969

* The numbers show the year it was established

Between 1969 and 1981, nothing changed, except that the ITA was turned from a government bureau into a corporation. In 1971, Taiwan's position in the United Nations was replaced by the People's Republic of China. Many of Taiwan's diplomatic relationships with other countries have

been discontinued ever since. Taiwan's telecommunications relationships with the rest of the world, on the contrary, were not disconnected. But the fact that the ITA, within the DGT organization, was an official office of the government did cause some trouble when bilateral or multilateral telecommunications agreements were concerned. Consequently, in 1974, the International Telecommunication Development Corporation (ITDC) took over all the international telecommunications affairs, which were previously the ITA's charge.

Compared to the organization expansion in 1969, the DGT reconstruction in 1981 was drastic. All the subsidiary offices of the DGT could be labeled into the operating group and the supporting group. For the operating group, the TTA was subsituted by the North Taiwan Telecommunication Administration (NTTA), the Central Taiwan Telecommunication Administration (CTTA), and the South Taiwan Telecommunication Administration (STTA). Each of them is responsible for the telecommunications within the region only. Table 8 shows the subscribers, stations, and exchange lines of each administration, up to March, 1987.

Table 8 The Subscribers, Stations, and Exchange Lines of the NTTA, the CTTA, and the STTA (1987)

	NTTA	CTTA	STTA	TOTAL
SUBSCRIBERS (in 10,000)	227	112	124	463
STATIONS (in 10,000)	303	153	163	619
EXCHANGE LINES (in 10,000)	292	161	170	623

The Long Distance Telecommunication Administration (LDTA) was established to take care of inter-region telecommunications, as well as the trans-island systems. The TL and the TTI, then, were included in the supporting group. Further, the DCI was established for all data communications services.

Figure 4 shows the DGT organization after the 1981 reconstruction. Table 9 shows the assets and the employees of the operating group and the supporting group. The DGT's financial situation is shown in Table 10, up to the end of 1987.

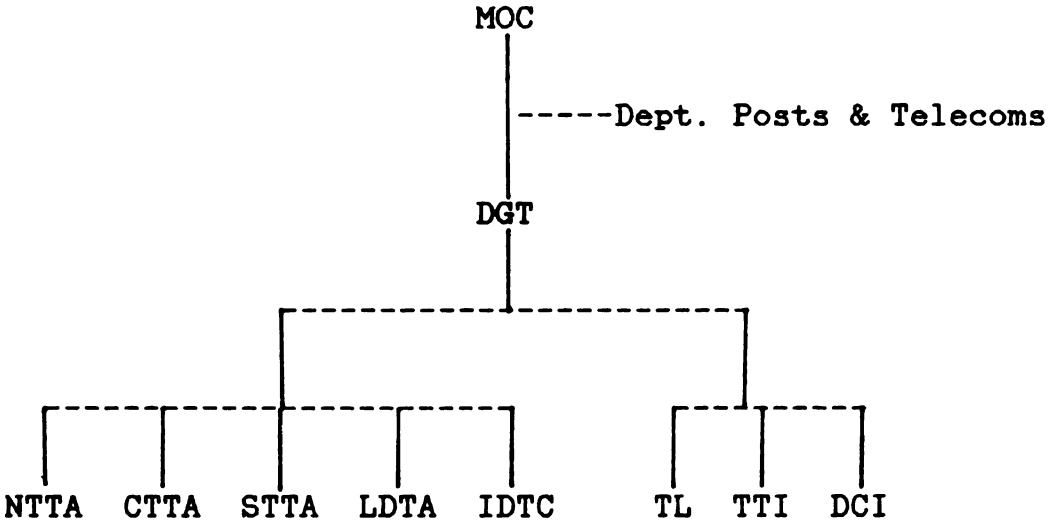

Figure 4 The DGT Reconstruction in 1981

Table 9 The Assets and the Employees of the Operating and the Supporting Groups

	ASSETS (in NT$ 100 million)	EMPLOYEES
NTTA	669	11,564
CTTA	377	6,909
STTA	383	7,327
LDTA	127	2,608
IDTC	200	1,731
TL	12	629
TTI	13	339
DCI	3	251

Table 10 The DGT's Financial Situation (1987)

SALES (in NT$ 100 million)	527.07
SALES GROWTH RATE (%) (1986-1987)	15.28
ASSETS (in NT$ 100 million)	1,966.42
PROFIT AFTER TAXES (in NT$ 100 million)	185.61
NET WORTH (in NT$ 100 million)	1,784.77
CAPITAL (in NT$ 100 million)	144.00
PROFIT/SALES (%)	35.22
PROFIT/ASSETS (%)	9.44
PROFIT/NET WORTH (%)	10.40
DEBT/ASSETS (%)	9.24
EMPLOYEES	31,983.00

The 1981 reconstruction was also important because it has helped to solve some of the problems that the DGT encountered in the following years. For example, before 1981, for almost twenty years, the average growth rate of

telephone penetration was around twenty-one percent; nevertheless, the number started to drop since 1981. Table 11 shows the growth rate of the phone penetration since 1980.

Table 11 The Growth Rate of the Phone Penetration

YEAR	GROWTH RATE (%)
1980	18.6
1981	12.4
1982	9.3
1983	7.4
1984	5.8
1985	6.1
1986	6.8

Consequently, a series of new features, such as call waiting, abbreviated dialing, automatic hunting, call forwarding, hot line, and three way calling, were provided to stimulate demand.

However, how many people know, even merely by the names of these features, that there exist these new services, is still a question to ask. The primary reasons are: the DGT had no marketing division until December 1985, and even after that, the DGT's annual budget has to try to survive in

the Legislative Yuan, the congress that cuts government budgets all the time. The DCI's 1985 budget for advertisement, for instance, was seventy thousand NT dollars, which equaled only two full-paged advertisements in Taiwan's two leading newspapers, or a five-minute commercial on TV.

Therefore, on the one hand, the DGT worked hard to furnish Taiwan's telecommunications with services like videotex, teletex, voice mail, and message handling systems; on the other hand, these services stayed in the pilot trial stage for long, and barely got popular even stepped beyond the trial stage.

Chapter 5

THE TELECOMMUNICATIONS LAW AND OTHERS

In the chronology of China's telecommunications , there were four years concerning the telecommunications law: 1915, 1929, 1958, and 1977.

The Telecommunications Act of 1915 was the first telecommunications law in China, forty-four years after the inauguration of the telecommunications operation. It was a work of collection; the twenty-four articles were adopted from telecommunications laws or acts in other countries.

By the Act, telecommunications were to be run by the government, except for those with special government permission. Basically, these exceptions were for areas where the government was not yet able to telecommunicationalize. Also, the connection between public and private telecommunications lines was allowed. So though the government monopoly of telecommunications has been prescribed since the existence of telecommunications law, the necessary granting of privately-run telecommunications was included too.

Nonetheless, it was an age of coup d'etat and mutiny. Politicians with support from soldiers, or vice versa,

claimed that their government was the solely legal government, no matter how far their commands could reach. The Telecommunications Act of 1915, hence, had been enforced to a very limited extent, if any. The Nanking government itself was far from being able to govern the whole country, not to mention its Ministry of Communications. The creation of the Act could only be seen as one of the many actions the government took for consolidating its position.

In 1929, two years after the anarchy was over and China finally had only one government, the Telecommunications Act of 1915 was amended to be the Telecommunications Act of 1929, with twenty-two articles.

The Telecommunications Act of 1929 was written under the Chiang Kai-Shek Administration. The monopoly right of the government did not change; on the other hand, regulations for privately-run telecommunications appeared to be further specified. All long distance and international telecommunications were included in the turf of the government monopoly, then the Ministry of Communications and the Department of Telecommunications under it. For city local telephone and country telephone business, private suppliers were allowed, with licenses from the MOC. For these so-named "dedicated telecommunications," the MOC reserved the right to monitor the operation.

Moreover, the Telecommunications Act of 1929 contained provisions of regulating telecommunications equipment. All telecommunications equipment, when imported from other countries, needed passports, and would be licensed later. The Act also stated that regulations about telecommunications equipment standard settings and about government employees recruiting should be drawn later.

The milieu in which the Telecommunications Law of 1958 was born was not altogether usual. The Chiang Kai-Shek Administration withdrew from China to Taiwan in 1949, and claimed that the Communist Party that had taken over the Mainland China was a rebellious gang. With the enemy just across the Taiwan Straight, which is approximately one hundred miles in width, Taiwan announced a state of emergency in the same year. Succeedingly, several acts and rules descended from the Emergency Decree, which was usually referred to as the martial law, came into force, including the Posts and Telecommunications Censorship Act (in the Rebellion-Suppressing Era).

It was the Ministry of National Defense (MND) that was vested to enforce the Posts and Telecommunications Censorship Act. Since then, the MND has played a vital role in Taiwan's telecommunications. In 1953, a Communications Advancing Committee was formed, with committee members from the MOC and the MND. Its chief purpose was to provide the

two ministries a better opportunity to consult with each other about the use and the control of the radio frequency, which had become a problem since 1949.

But this Communications Advancing Committee was soon replaced by a Communications Coordinating Committee in 1955, which was within the authority of both the MOC and the MND, while the previous Communications Advancing Committee was only a part of the MND and failed to fulfill its goal. Until today, the Communications Coordinating Committee members meet every month. In addition to the problem of frequency allocation, the Committee had helped in solving other problems, such as radio jamming, line tariffs for military usage, citizen band (CB) control, etc[10].

Largely due to the increasing volume of international telecommunications, in 1958, the Telecommunications Act of 1929 was amended into the Telecommunications Law of 1958 to encompass related international telecommunications conventions. Articles about telecommunications monitor were withdrawn because there were already the Emergency Decree and the Posts and Telecommunications Censorship Act. Nothing had been done to the government monopoly on

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10. The influence of the MND will be further discussed later.

telecommunications, nor to the organization of the DGT.

New technologies and new services which come along with them keep making laws obsolete. The Telecommunications Law of 1977, which has continued to be unmodified until today, was also pushed by emerging technologies and the fast growing need of services. In the forty-four articles, provisions about satellite communications and data communications debuted in the Telecommunications Law of 1977. Further, the Telecommunications Law of 1977 prohibits any foreigner from running telecommunications services in Taiwan, except dedicated telecommunications permitted by the Executive Yuan.

The government-monopoly principal for telecommunications, however, had been brought out during the amending process. The MOC had proposed to rename the DGT as the Institution General of Telecommunications, so that it could be less likely as a government post, and be more easily turned into a public corporation in the future. But the proposal failed in the Legislative Yuan. Besides, the MOC had recommended an article which would endow the DGT the sovereignty in deciding what kind of telecommunications service could be operated by private sectors. This recommendation, nevertheless, was denied by the legislators again.

However, within the Telecommunications Law of 1977, which still applies today, there are several provisions which allow certain services to be privatized. Article 4 states that the MOC is not only the authority to regulate the telecommunications services run by a government department, but also the one to monitor and to assist telecommunications services and dedicated telecommunications run by local government, non-government associations, and citizens. Article 5 prohibits foreigners from operating telecommunications services in Taiwan, but dedicated telecommunications with permission from the Executive Yuan will be allowed.

Furthermore, Item 3 in Article 11 rules that tariffs for telecommunications services run by the local government and citizens shall get approval from the MOC. Article 14 declares that, local government, non-government associations, and citizens can provide city local telephone and country telephone services, when approved and licensed by the MOC.

In addition, Article 28 lists thirteen telecommunications services as dedicated telecommunications that, after receiving approval and licensing from the MOC, can be installed by associations other than the DGT and by citizens. Article 32 requires that technical personnel of the telecommunications services and of the dedicated

telecommunications have to have licenses from the MOC.

Article 33 says that the MOC will annually review the services provided by, the financial situation of, and the equipment used by telecommunications services run by local government and citizens.

In addition, there are some other laws that have provisions which might be extended as a basis for non-government-run telecommunications services.

The Investment-Promoting Act was first adopted in 1960, and has been amended fifteen times through the years; the last time was in January 1987. It was originally designed to advance economic growth by tactics like extra tax reductions to investors. In the Investment-Promoting Act, Item 10 in Article 10 has listed fifteen businesses that are welcomed for investment. Telecommunications services are included. In the Act for Supervising Privately-Run Public Utility Business, Article 2 names eight public utility businessws that can be privatized, and city local telephone is one of the eight.

On the other hand, according to the Constitution, the government is legally authorized to exclusively exercise telecommunications sovereignty. Item 5 in Article 107 declares that telecommunications shall be ruled and run by

the central government. Item 7 in Article 108 says that public utility services shall be ruled and run by the central government, or, can be run by local government. But, Article 144 states that businesses, which are seen with the essence of natural monopoly, such as telecommunications services, shall be run by the government, except those which are permitted by other laws.

Moreover, in the Act for Privatizing Government Enterprises, which was made in 1953, Article 3 prohibits any natural monopoly business run by the government from being privatized.

In any case, the above cited provisions, for or against the government monopoly on telecommunications, hardly caused attention about privatizing telecommunications.

During the process of making the Telecommunication Law of 1977, the intention of the MOC to gradually liberalize telecommunications services had been shown. That was the very first time, in all these years, that privatizing telecommunications had been officially taken into consideration, though nobody had ever elaborated on the issue beyond the name matter. It was seven years later when the subject of privatization of telecommunications was discussed for the second time.

The Act of the DGT Organization was first created in 1943, from which the DGT was born in the same year. Then, in 1981, the Act was modified, resulting in the 1981 DGT reorganization. For some personnel problems, in 1985, there were several changes in the Act. However, while the Act itself doesn't talk about privatization, the issue was given serious attention. On April 2, 1984, the MOC submitted the modified draft of the Act to the Executive Yuan for approval. It was approved by the Executive Yuan, and passed the readings in the Legislative Yuan in the following year. But on October 24, 1984, when the Executive Yuan notified the MOC that the draft was approved, the Executive Yuan further brought up five proposals for the MOC. Among them, the first two were pivotal.

Proposal One suggested that the trend toward privatized telecommunications was obvious in the rest of the world, so it might be better if the DGT could switch from a government department to a public corporation. Proposal Two recommended that the telecommunications services be liberalized further; the ban on the shared use and the resale use might need to be lifted.

Currently, the shared use and the resale use are ruled under the Data Communications Regulation, enacted on May 15, 1986. Its thirty-one articles were a combination of the Domestic Data Communications Regulation of 1979 and the

International Data Communications Regulation of 1980.

The shared use had been banned for both domestic and international leased lines for years[11]. But unsatisfied users kept asking the DGT to loosen the reins. Finally, the regulations were modified in April 1981. At the end of 1985, there were Associated Press (AP), Reuter, General Electric (GE), Citibank, the Sociste International De Telecommunications Aeronautiques (SITA), and the Society of World-wide Interbank Financial Telecommunications (SWIFT) that had been approved by the DGT for share-use international leased lines. Table 12 shows the shared use of international leased lines in 1985.

Yet, still, the Data Communications Regulation of 1986 prescribes that the DCI's testing and approval for any shared use are necessary.

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11. The only exception was the Sociste International De Telecommunications Aeronautiques (SITA). The SITA has been given the privilege to share-use the international leased lines since May 11, 1978. It was under the consideration of flight safety as well as of interantional convention.

Table 12 The Shared Use of International Leased Lines (1985)

USERS	AP	REUTER	GE	CITIBANK	SITA	SWIFT
SPEED (bps)	2,400	14.4 K	4,800	9,600	14.4 K	9,600
NUMBER of USERS	19	51	8	13	71	25
DATES STARTED	10/21 1982	11/26 1982	10/6 1983	10/19 1983	5/11 1978	6/18 1985

The fight for resale use, however, did not happen until recently. Early this year, Li-Ku Automation System Co., Ltd. filed to lease digital circuits at a speed higher than 56K bps for providing teleconferencing and data transmission services in an intelligence building. But the case was rejected. According to the Data Communications Regulation, Item 3 of Article 28, without the DCI's testing and approval, any user who provides data communications services by the equipment he rented from the DGT will be facing legal punishment.

Chapter 6

POLITICAL ENVIRONMENT

The term "Rebellion-Suppressing Era" has been too familiar to people in Taiwan since 1949. It was supposed that the Communists on China would seize every opportunity to take over Taiwan, the island still claimed by the Chinese Communists as under the sovereignty of China even today. Similarly, the government in Taiwan has insisted, all the years, on being the only legal government for Chinese.

Nevertheless, after forty years, the possibility of a war between China and Taiwan is diminishing. The government in Taiwan has been challenged to end the Rebellion-Suppressing Era. Consequently, on July 15, 1987, the Emergency Decree was revoked. The rescission of the Emergency Decree set in motion a wide range of political, social, and economic changes. Chief among these were the formation of new political parties, the legislation of street demonstrations, the right to strike, and the expansion of press freedoms.

To telecommunications, it meant less control from the MND. Since the Posts and Telecommunications Censorship Act, the MND's mandate has been expanded in the name of

national security. The Electronic Equipments Control Rule, and the Telecommunications Monitor Rule were put into action in 1952 and 1954, separately.

Although the two rules were merely administrative fiats, together with the Posts and Telecommunications Censorship Act, they became even more powerful than the Telecommunication Law. The Taiwan Garrison General Headquarters, an authority which functions as an intelligence agency and a security department, has performed in fact as the telecommunications police.

For example, in the Data Communications Regulation, Article 3 prescribes that leasing data communications networks from the DGT for providing information retrieval services has to be approved by the MOC and the "authority concerned." This "authority concerned" means nobody but the Taiwan Garrison General Headquarters.

In addition, before 1980, there was no legislator election in Taiwan. The legislative Yuan consisted of those who were elected in China and went to Taiwan in 1949 with the Chiang Kai-Shek Administration. Then, starting in 1980, elections have been held every three years. Those legislators who were elected before 1949 got their tenure while the newly-elected face the pressure every three years. For the same reason, the post-1980 legislators have to be

very responsive to the opinions of the public at large, and to the interests of the groups that have lobbied on him on her.

Where the telecommunications are concerned, the reduction of telephone installation charges since January 1, 1988, was a contribution from the legislators. The phone installation charge has been a special fund---other than the regular annual revenue---for the DGT. When the DGT began building Taiwan's telecommunications in 1949, its budget was limited. So the scheme the DGT used to push the telecommunications development was to let those who needed telephones most pay (Meyers, 1986: 38-43). The phone installation charge was about US$ 400 at that time, making a telephone a luxury. It worked; the telephone circuits in Taipei, the capital which has the largest number of businessmen, has grown from 1,055 in 1959 to 191,916 in March 1988.

Before January 1, 1988, the phone installation charge in Taiwan was composed of NT$ 1,000 for deposit, NT$ 6,800 for connection, and NT$ 7,200 for a capital contribution, about US$ 500 totally. This was attacked by the post-1980 legislators, arguing that the telephone should be a necessity, and that people in Taiwan were paying more for a telephone than people in the other three NICs in Asia. In 1986, the phone installation charge was, approximately,

US$ 394 in South Korea, US$ 88 in Hongkong, and US$ 35 in Singapore. Now the charge in Taiwan is about US$ 366.

Furthermore, since 1949, Taiwan's politics have been dominated by the Kuomintang (KMT), or the Nationalist Party. Two others, the Young China Party and the China Democratic Socialist Party, formed a small loyal opposition. Then, just before the Emergency Decree was lifted, the Democratic Progressive Party (DPP) showed up as the opposition party, and twelve more parties have sprouted since the decree's removal. It is believed that the opposition party members and other independents will keep on challenging the incumbent government.

Chapter 7

SUMMARY OF THE RESULTS OF THE INTERVIEW AND THE SURVEY

-----The Personal Interview

** Part I: The Services and Technologies Development

The services that interviewees suggested for approaching an information society include: voive mail, mobile cellular phone, teleconference, local area network (LAN), videotex, teletext, information providing & retrieval, data processing, personal computer communications, electronic telephone directory, audiovisual library, direct broadcasting satellite (DBS), and digital fax.

There were several points about new services that most of the interviewees also mentioned. First, market-oriented planning was important. Secondly, it made no sense to have some fancy services simply because they were available in other countries. Thirdly, to promote any new service, it will definitely need to educate the public about the service.

The technologies that interviewees suggested for approaching an information society include: digital transmission & switching, fiber optics, satellite communications, cable television, ISDN, customer premise

equipment (CPE), and very large scale integration (VLSI).

Yet, one interviewee worried about the possible technomania. Another interviewee emphasized that each new technology had to have its target users. The other interviewee denied that there is a need of the ISDN in Taiwan.

Voice mail, teletext, digital fax, information providing & retrieval, personal computer communications, electronic phone directory, data processing, LAN, audiovisual library, digital transmission & switching, fiber optics, satellite communications, and cable TV were ranked in Phase 1 (1988-1990) by the interviewees.

Electronic mail, telebanking, two-way cable and narrow-band ISDN were ranked in Phase II (1991-2000). But, there were three services that appeared in both Phase I and Phase II: mobile phone, teleconference, and videotex.

Listed in Phase III (2001-2010) were home automation, direct broadcasting satellite, intelligent networks, and broad-band ISDN.

Two interviewees considered that it was hard to rank the new services and technologies.

The services on which Taiwan should focus, answered the interviewees, include customer premise equipment, DBS, cable television, intelligent information systems, information providing & retrieval, audiovisual library, and voice mail. The last three, asserted one interviewee, would have a potential marketplace in Taiwan.

Technologically speaking, the most serious problem that Taiwan would run into was standardization, said most of the interviewees. In Taiwan, the problem of standardization not only includes that of interface and protocol, but also that of Chinese character code and input method. Other problems could be: information security, regulation, governmental agencies, quality testing, and liberalizing more services.

Several interviewees considered that government monopoly or free entry was not the real problem; it was that of management that really mattered. One of them said the technology most needed was the management technology, including recruiting people, promoting services, and planning development.

The expected obstacles in developing new technologies viewed by the interviewees include the obsolete regulations, the lack of professionals, the interest groups' interference, the overlap or gap between government regulatory agencies, and the difficulty in getting

technology know-how transferred.

For obsolete regulations, the interviewees suggested amending them. Also, a larger budget would be needed so more professionals could be kept by paying them better. For the interest groups' interference, interviewees suggested systematically liberalizing telecommunications equipment and services.

Moreover, interviewees considered there was a need to redistribute the authorities over telecommunications; one interviewee proposed probably a C & C Committee---Computer & Communications Committee---which directly reports to the Prime Minister, the head of the Executive Yuan. Nevertheless, although the difficulty in getting technology know-how transferred from some countries exists, most interviewees tended to be pessimistic toward solving the problem.

** Part II: The Organization and Management

All but one of the interviewees reckoned that there is a need for the DGT to change. Most interviewees agreed that a bureaucrat, unlike a counterpart in the private sector, does not seek mutually advantageous exchanges directly with the consumers of the product or service.

Interviewees were unsatisfied that under government

monopoly the entrepreneur is denied the opportunity to find ways of better meeting consumer demand at lower cost. It is a quaint paradox that monopoly in the private sector is thoroughly condemned as being high-priced, noninnovative, and unresponsive to consumer needs, yet the same type of negative behavior is tolerated when conducted by a government monopoly.

Further, usually it is the DGT, instead of the MOC, that is given great deference in the construction of the telecommunications laws and regulations. Interviewees considered most of the telecommunications laws and regulations obsolete and that the DGT should not be acting as both the operator and the regulator.

One of the interviewees, however, argued that even though the DGT does not have to face competition, it is looking forward to meeting new requirements. The ISDN, for example, would not be put into reality if not sponsored by the government. Another interviewee avoided giving a straightforward yes/no answer by emphasizing that the problem should be how to preserve the integrity of the vast network, take advantage of economies of scale, avoid excess duplication, and conserve scarce natural resources such as spectrum space, without stifling invention and entrepreneurship.

Still, all but one of the interviewees have agreed that given the telecommunications developments in other countries, the DGT should also change. Yet, interviewees' opinions differed a lot concerning which country Taiwan should follow.

One interviewee pointed out that where vast expenditures and public issues are involved, the arguments can rapidly become ideological rather than pragmatic. So adopting evolutions of some European socialistic nations might receive more support than following that of the US. On the other hand, some interviewees preferred Japan's liberalizing NTT model.

In any case, most interviewees highlighted the importance of a gradual transition towards more competition. As to the solo opponent about reforming the DGT, the same reasons answered for Question 1 were offered for Question 2.

The strategy suggested by an interviewee to reform the DGT was to divest the current DGT organization, and switch the NTTA, the CTTA, the STTA, the LDTA, and the DCI into public corporations. A Telecommunications Regulation Administration, after the model of the Federal Communications Commission (FCC), would be in charge of regulating these public corporations.

Some others supported the flotation, as employed when the Thatcher Administration sold the BT. And several mentioned the necessary prevention of activities like cream-skimming.

Moreover, almost all interviewees affirmed value-added services as the starting services that could be provided by private sectors. Firms buy telecommunications networks and sell them again in a somewhat different form. These rate arbitrageurs, to the extent that they are admitted, can perform some of the functions that a direct competitor would fulfill.

Value-added services are the mildest form of competition with the network. It is not only competition but actually can be complementary to the network and can stimulate demand for the network service. It can be viewed in analogy to the relation between a wholesaler and a retail trader. The two might conceivably compete; more important, however, they perform complementary services, which depend on the other.

One interviewee said that if value-added services were permitted in Taiwan, it would build on advantages within the international cartel by making Taiwan a favorable location from which to conduct business.

Another area that interviewees suggested should not be dominated by the DGT was the customer premise equipment market. Only one interviewee replied that all telecommunications services should be open to private suppliers.

Some of the interviewees answered that only the standard and the quality of telecommunications services need to be regulated; the others emphasized different regulations for traditional telegraph and telephone services and value-added services.

Interviewees mentioned that one of the possible obstacles was that old concepts such as telecommunications should be a natural monopoly have been dominating for too long. Other obstacles include the failure of universal service, the obsolete regulations, the resistance from the DGT employees, the MND's conservativeness, and the handling of the DGT's assets.

** Part III: The Governmental Regulatory Agencies

Is there a need to reallocate the authorities over telecommunications services for different government departments? Some interviewees disagreed, and the others agreed, with nothing but one solution, that is, seeking an independent commission or a higher department in the

government to do the reallocation.

However, all interviewees reckoned the MOC had to reorganize, otherwise it won't be able to govern the telecommunications. Proposals for reforming the MOC include augmentation of the Department of Posts and Telecommunications, establishment of a Ministry of Telecommunications, and endowing more power to the Director-General of the DGT.

-----The Mail-in Questionnaire Survey

The total number of the respondents is eighty-five. The demographics of the respondents are shown in Table 13.

Table 13 The Demographics of the Respondents

AGE	RESPONDENTS	%
29-39	19	22.4
40-49	24	28.2
50-59	26	30.6
60-75	15	17.6
unknown	1	1.2

EDUCATION	RESPONDENTS	%
Ph.D	29	34.1
Master	19	22.4
Bachelor	28	32.9
others	4	4.7
unknown	5	5.9

Table 13 (continued)

OCCUPATION	RESPONDENTS	%
government telecom sector	33	38.8
government non-telecom sector	2	2.4
private telecom sector	22	25.9
users	19	22.4
legislator	1	1.2
others	4	4.7
unknown	4	4.7

** Part I: The Services and Technology Development

Seventeen new telecommunications services were listed to ask respondents to rank them, in the order of the immediacy for advancing Taiwan's telecommunications.

The survey results showed that information providing and retrieval was the first priority; 77.5% of the respondents chose it. The data processing service was ranked number two, with 76.9% of the respondents' agreeing. The third one was electronic telephone directory; 65.0% of the respondents supported it.

The next three services that had been considered needed were local area network, 60.0%, electronic mail, 55.0%, and personal computer communication, 52.5%.

The rest were ranked as follows: videotex, telephone voice mail, cellular mobile phone, telebooking, home emergency alarm & security, direct broadcasting satellite, telebanking, audiovisual library, cable television, video teleconference, and home teleshopping.

Eight new technologies were listed to ask respondents to rank them, in the order of the immediacy for advancing Taiwan's telecommunications development.

The survey results showed that digital transmission & switching was the first priority; 84.6% of the respondents voted for it. Optical fiber communications was ranked the second, with 72.5% of the respondents' consensus. Thirdly, customer premise equipment had the support of 69.2% of the respondents.

The fourth to the sixth services that were perceived needed were VLSI, 55.0%, satellite communication, 28.2%, and intelligent information systems, 23.1%. The ISDN and cable communication were left as the bottom two.

** Part II: The Organization and Management

In Part II, it was supposed that Taiwan's telecommunications services are to be distinguished into two categories. Type I telecommunications services refer to those which provide services by establishing

telecommunications network apparatus, including transmission media, switching facilities, and their peripheral equipment, for example, the traditional telephone services. Type II telecommunications services are defined simply as any telecommunications service other than Type I telecommunications services, for example, the videotex service.

Further, Eward's market structure models were adopted. But some modifications were done because the study's purpose was to find out what kind of organization, and what style of management would be appropriate for Taiwan's telecommunications in the future.

GM---Government Monopoly; the classic case of a monopoly vested in a government ministry or department. This monopoly may be based in law or by administrative fiat or convention.

GM/PC---Government Monopoly/ Public Corporation; government monopoly but instituted through public corporation form rather than through departments.

RM---Regulated Monopoly; the classic case of private ownership of facilities (one entity) with regulation by government department.

The above three are considered in the monopoly (M) category.

GM + RM---Government monopoly and regulated monopoly compete in the market.

GM/PC + RM---Government monopoly as a public corporation competes with regulated monopoly.

The above two are considered in the regulated competition (RC) category.

G/PC + P---Government-invested public corporation competes with all private sectors in the market.

G + P---Government department competes with private sectors in the market.

P only---Only private sectors in the market to compete.

The above three are considered in the liberalized entry (LE) category.

For Type I telecommunications services provided for domestic use, 46.7% of the respondents saw monopoly as the best way to manage them. Liberalized entry was the second choice, with 37.8% of the respondents agreeing with it. Regulated competition was the least welcomed one to manage Taiwan's Type I /domestic telecommunications services, occupying only 15.5%.

Where the organization was concerned, government monopoly in the form of a public corporation was chosen as the first priority; 35.6% of the respondents said so.

Ranked second was the government-invested public corporation plus the private sector, with support from 28.9% of the respondents. The next choice consisted of government monopoly as a public corporation plus a regulated monopoly, with support from 13.3% of the respondents. Table 14 shows the results of Question 1.

Table 14 Type I / Domestic Services

1) GM	8.9%	
2) GM/PC	35.6%	
3) RM	2.2%	___Monopoly: 46.7%
4) GM + RM	2.2%	
5) GM/PC + RM	13.3%	___Regulated Competition: 15.5%
6) G/PC + P	28.9%	
7) G + P	0.0%	
8) P only	8.9%	___Liberalized Entry: 37.8%

For Type II telecommunications services provided for domestic use, the survey results showed that no respondents supported monopoly. On the contrary, 95.6% of the respondents considered liberalized entry as the best.

Consistently, 58.7% of the respondents considered that private sectors can provide the Type II telecommunications services for domestic use. Another 32.6% of the respondents

thought a government-invested public corporation which competes with private sectors will be fine. Table 15 shows the results of Question 2.

Table 15 Type II / Domestic Services

1) GM	0.0%	
2) GM/PC	0.0%	
3) RM	0.0%	___Monopoly: 0.0%
4) GM + RM	0.0%	
5) GM/PC + RM	4.3%	___Regulated Competition: 4.3%
6) G/PC + P	32.6%	
7) G + P	4.3%	
8) P only	58.7%	___Liberalized Entry: 95.6%

For Type I telecommunications services provided for international use, 52.3% of the respondents saw monopoly as the best way to manage them. Liberalized entry was the second choice, with 40.9% of the respondents agreeing with it. Regulated competition was the least welcomed one, occupying only 6.8%.

Where the organization was concerned, government monopoly in the form of a public corporation and government-invested public corporation plus private sectors received the same support from the respondents, both are 34.1% of the total respondents. Another 11.4% of the respondents agreed

with government monopoly only. Table 16 shows the results of Question 3.

Table 16 Type I / International Services

1) GM	11.4%	
2) GM/PC	34.1%	
3) RM	6.8%	___Monopoly: 52.3%
4) GM + RM	0.0%	
5) GM/PC + RM	6.8%	___Regulated Competition: 6.8%
6) G/PC + P	34.1%	
7) G + P	0.0%	
8) P only	6.8%	___Liberalized Entry: 40.9%

For Type II telecommunications services provided for international use, 84.8% of the respondents voted for liberalized entry. While 15.3% of the respondents agreed with monopoly, there was no support for regulated competition.

Similar to the results in Type I telecommunications services for domestic use, for Type II /international telecommunications services, private sectors won 52.2% of the respondents, followed by government-invested public corporation plus private sectors, with support from 30.4% of the respondents. Table 17 shows the results of

Question 4.

Table 17 Type II / International Services

1) GM	2.2%	
2) GM/PC	10.9%	
3) RM	2.2%	___Monopoly: 15.3%
4) GM + RM	0.0%	
5) GM/PC + RM	0.0%	___Regulated Competition: 0.0%
6) G/PC + P	30.4%	
7) G + P	2.2%	
8) P only	52.2%	___Liberalized Entry: 84.8%

No matter what kind of organization will provide telecommunications services, or how the telecommunications services will be run in the future, reforming the current telecommunications sector would not be easy, according to the survey results.

In all fifteen expected hindrances listed, every one was considered a possible obstacle by more than half of the respondents. Among them, the most serious obstacle was that the authority which monitors telecommunications is against any change; 44.4% of the respondents strongly agreed with it.

The second biggest problem was that interest groups are

against change too. 86.7% of the respondents either strongly agreed or agreed with it. Next was that information security would be challenged, with 84.4% of the respondents' consensus. Table 18 lists the expected hindrances, in the order of the percentage of the respondents who agreed, including strongly agreed, that they were obstacles.

** Part III: The Governmental Regulatory Agencies

The MOC's authority over telecommunications was strongly agreed by 94.1% of the respondents. The Ministry of Economic Affairs was strongly agreed by 43.8% of the respondents as a government department that has authority over the telecommunications, while the MND was strongly agreed so by 31.3% of the respondents.

However, adding the percentage of the respondents who marked "x" under "agree," all three ministries were considered as authorized departments by all respondents, that is, 100% of the respondents.

If the current telecommunications sector is to be changed, 77.0% of the respondents said the current situation of the governmental regulatory agencies would need some adjustment. 56.3% of the respondents supported the need for an independent agency to reallocate the authorities. 42.9%

Table 18 The Expected Hindrances

The authority that monitors telecommunications is against any change.	91.1%
Interest groups are against any change.	86.7%
Information security will be challenged.	84.4%
Policymakers stick on old concepts.	80.0%
Reallocating of radio frequency is difficult.	75.6%
There is no consensus on which department should regulate new services.	75.5%
Amending the Telecommunications Law is difficult.	73.9%
Amending the Act of the DGT Organization is difficult.	73.9%
There is no consensus on who will be qualified to provide new services.	72.7%
Recalculating tariff is difficult.	64.5%
Reevaluating the DGT's asset is difficult.	64.4%
The DGT officials are conservative.	61.4%
Employees of the DGT want to stay as government employees.	54.4%
Public opinion won't support.	53.4%
Amending the Constitution is difficult.	51.0%

of the respondents believed that ministries which are

currently in charge can reconcile their authorities, while exactly another 42.9% of the respondents disagreed.

Most of the respondents were doubtful that only the MOC needed to change, with 61.2% of the respondents' consensus. Table 19 shows the results of Question 2.

Table 19 The Reforming Suggestions for Government Agencies*

	4	3	2	1	0
It needs an independent agency to reallocate the authorities.	37.5	18.8	31.3	12.5	
Ministries that are currently in charge can reconcile their authorities.	14.3	28.6	28.6	14.3	14.3
Only the MOC needs to change.	7.7	23.1	30.8	30.8	7.7
The current situation is fine.	0.0	7.7	38.5	38.5	15.4

* The numbers indicate the percentage of the respondents.

Then, if the current telecommunications sector is to be changed, 81.8% of the respondents said the present MOC had to have some adjustments to meet some new requirements. Half of the respondents considered a Ministry of Telecommunications should be established; among them, 25% agreed and 25% strongly agreed. But 37.5% of the respondents disagreed with such a Ministry of

Telecommunications.

As to the other two suggestions, the respondents who strongly agreed or agreed did not outnumber those who strongly disagreed or disagreed. Table 20 shows the results of Question 3.

Table 20 The Reforming Suggestions for the MOC*

	4	3	2	1	0
A Ministry of Telecommunications should be established. ..	25.0	25.0	37.5	6.3	6.3
The Director-General of Telecommunications should be given more power.	15.4	15.4	38.5	23.1	7.7
The Department of Posts and Telecommunications needs to be augmented.	21.4	14.3	35.7	21.4	7.1
The current situation is fine.	0.0	9.1	27.3	54.5	9.1

* The numbers indicate the percentage of the respondents.

In the future, when the telecommunications sector is different from that nowadays, what governmental office shall govern what service? Two government offices had been proposed to the respondents.

Office A is in charge of transmission facilities for

both cable and radio.

Office B is in charge of information, including voice, image, and data, communications.

The survey results show that, within the authority of Office A were: telephone & telegraph, with 82.4% of the respondents strongly agreeing, data communications, with 64.7% of the respondents strongly agreeing, and citizen band, with 92.9% of the respondents strongly agreeing.

Within the authority of Office B were: data communications, with 61.5% of the respondents strongly agreeing, broadcasting, with 73.3% of the respondents strongly agreeing, printed media, with 62.5% of the respondents strongly agreeing, film media, with 62.5% of the respondents strongly agreeing, and video tapes & disks, with 66.7% of the respondents strongly agreeing.

Nevertheless, for information security, Office A and Office B won almost the same number of respondents, 46.7% for Office A, and 46.2% for Office B, both under 50%, though.

For data communications, again, Office B won almost as many respondents as Office A did; but, both were supported by more than half of the respondents. Table 21 shows the results of Question 4.

Table 21 The Authorities over Current Services*

	A				B			
	4	3	2	1	4	3	2	1
TELEGRAPH & PHONE	82.4	11.8	5.9	0.0	21.4	28.6	14.3	35.7
DATA COMMUNICATIONS	64.7	23.5	11.8	0.0	61.5	15.4	7.7	15.4
BROADCASTING	20.0	53.3	20.0	6.7	73.3	26.7	0.0	0.0
PRINTED MEDIA	0.0	7.1	50.0	42.9	62.5	12.5	12.5	12.5
FILM MEDIA	6.7	13.3	20.0	60.0	62.5	18.8	12.5	6.3
VIDEO TAPES & DISKS	6.7	13.3	26.7	53.3	66.7	20.0	0.0	13.3
INFO SECURITY	46.7	20.0	13.3	13.3	46.2	23.1	15.4	7.7
CITIZEN BAND	92.9	7.1	0.0	0.0	40.0	20.0	26.7	13.3

* The numbers indicate the percentage of the respondents.

For the new services, videotex, direct broadcasting satellite, electronic mail, home teleshopping, telebanking, and video teleconference were all strongly agreed by the respondents as being within the authority of Office A. Office B was strongly agreed as the authority for videotex, direct broadcasting satellite, and cable television.

Therefore, both Office A and Office B were strongly agreed by the majority of the respondents as proper regulatory agencies for videotex and direct broadcasting satellite. Furthermore, for video teleconference, 75.0% of the respondents considered it within the authority of

Office A; yet, Office B also got 50.0% of the respondents' support. Table 22 shows the results of Question 5.

Table 22 The Authorities over New Services*

	A				B			
	4	3	2	1	4	3	2	1
VIDEOTEX	80.0	6.7	13.3	0.0	75.0	6.3	18.8	0.0
DIRECT BROADCASTING SATELLITE	71.4	7.1	14.3	7.1	73.3	0.0	20.0	6.7
CABLE TELEVISION	40.0	13.3	33.3	13.3	93.3	6.7	0.0	0.0
ELECTRONIC MAIL	86.7	13.3	0.0	0.0	26.7	26.7	13.3	33.3
HOME TELESHOPPING	56.3	18.8	18.8	6.3	35.7	21.4	14.3	28.6
TELEBANKING	60.0	20.0	20.0	0.0	42.9	21.4	14.3	21.4
VIDEOCONFERENCE	75.0	6.3	18.8	0.0	50.0	0.0	21.4	28.6

* The numbers indicate the percentage of the respondents.

Chapter 8

CONCLUSION

After one hundred and twelve years since the first telegraph was installed, the telecommunications in Taiwan not only has achieved a 33.2 telephone penetration, but also has stepped into areas beyond the traditional telegraph and telephone. Data communications is booming with the availability of circuit switched, dial-up, and packet switched communications systems.

Yet, the study has discovered that there is a need for more services. If Type I telecommunications services are defined as those which provide services by establishing telecommunications network apparatus, including transmission media, switching facilities, and their peripheral equipment, and Type II telecommunications services are defined as any telecommunications service other then Type I services, the call for Type II services is strong.

Those most needed services are: information providing & retrieval, data processing, electronic telephone directory, local area network, electronic mail, and personal computer communications.

Furthermore, for Type II telecommunications services,

either provided for domestic use or for international use, the majority of the respondents agreed on the desirability for liberalized entry and no government involvement is welcomed.

On the other hand, for Type I telecommunications services, government monopoly is still inevitable. Whether it is digital transmission & switching or optical fiber communications, to build and to maintain these telecommunications apparatus are far beyond the capability of any private sector. Also, since the information security is considered a problem, government monopoly in Type I services, both for domestic use and for international use, is recognized as being needed.

However, it is not the classic case of a monopoly vested in a government ministry or department that is perceived workable. Rather, respondents chose government monopoly instituted through public corporation form as proper organization to provide Type I services. In addition, where Type I services provided for international use are concerned, the number of respondents who considered government-invested public corporation competing with the private sector was the same as that of respondents who considered government monopoly instituted through public corporation form.

Accordingly, to let the DGT tansform into a public corporation, instead of a government department seems to be the most favorable option.

It is often assumed that the view of a government monopoly is essentially that of the engineers, with emphasis on orderliness, system continuity, and centrally planned end-to-end service which will satisfy economic infrastructure needs as well as social functions of redistribution. But, it can not be proved as unmistakable in believing that all government-owned telecommunications entities fit the stereotype of a stodgy, change-resistant government bureaucracy.

In Taiwan, a certain portion of voices for change come from the DGT itself. Dr. Chen Yu-Kai, the former Director-General of the DGT, acknowledged that being a government enterprise, the DGT does not "quite have a free hand." (Myers, 1986: 42) The DGT has to observe the procedures, the laws and regulations the government imposes. "For example, when we go out to buy something, it's just like the Premier's office going out to buy. If we say this is the best system based on life cycle analysis, features and the like, we still have to go out on tender," complained Chen. "The [DGT] system is fair but, on the other hand, not efficient," he concluded. (ibid.) Chen was promoted to Vice Minister of Communications in 1986.

That the DGT officials are conservative as an obstacle for reform was ranked the twelfth by the respondents. However, that amending the Act of the DGT organization is difficult and that amending the Telecommunications Law is difficult were ranked the eighth and the seventh, respectively, which would somehow delay the reform of the DGT.

Nonetheless, the current Law does have one advantage. When the Law was amended in 1977, the booming of value-added services was probably not foreseen, so there is an absence of provisions regulating value-added services. Since the interviewees mostly agreed that value-added services, or, in the study's category, the Type II telecommunications services, could be provided by private sectors, there is a hope that they could be liberalized without amending the Telecommunications Law.

The sixth most serious hindrance for changing the current telecommunications sector is that there is no consensus on which department should regulate the services. The problem of which government agency has authority over what service, if not solved, would cause disaster. While the MOC was strongly agreed as the one which should watch over the telecommunications, most of the respondents were doubtful that only the MOC needed to change. Even establishing a Ministry of Telecommunications received

support from only half of the respondents, while 37.5% of the respondents disagreed.

Therefore, it seems that an independent department to reallocate the authorities is the most feasible way. The Executive Yuan appeared to be the most suitable one, not only because it has suggested the proposals about turning the DGT to a public corporation and lifting the ban on shared use and resale use, but also because the pressures from legislators, especially those who are from the DPP, always aim at the Executive Yuan first.

Furthermore, the MND is one of the ministries within the jurisdiction of the Executive Yuan. Although the expected hindrances from the MND were ranked number one, that the authority which monitors telecommunications is against any change, and number five, that reallocating of radio frequency is difficult, the current political conditions are favorable to change. If there were not the rescission of the Emergency Decree last year, the Taiwan Garrison General Headquarters, in the name of national security, would remain as interpellation-free in the Legislative Yuan.

Accordingly, for the question: is Taiwan ready for a more liberalized telecommunications? The study would give a positive answer. Competition, instead of the current

government monopoly, on value-added services could be expected as the first move. In the long run, a government-invested public corporation is likely to be established. Or, the subsidiary offices under the DGT, such as the NTTA, the CTTA, the STTA, and the DCI, could be divested from the DGT to become public corporations for different areas and services. But flotations of such public corporations would not be seen in a few years.

Today, with the diverse new technologies, the ideal approach would be that of a massive piece of systems engineering. The telephone lines, electronic mail service, satellites, data links, mobile radio devices, broadcasting, and cable TV could all be interlinked in one gigantic system that would use the different facilities to their best advantage. The provenance of government monopoly should extend only to the network. The private sector will be relied on to be the information providers.

Although the issue of liberalization could be sensitive, there is a gradually emerging consciousness of the need for an orderly progression toward greater reliance on market forces, if for no other reason than to make Taiwan an information society. Because history has brought us to a position of relatively high concentration, movements toward less concentrated control must overcome considerable inertia.

A positive attitude is wanted to effect successfully the necessary policy changes. Telecommunications executive officials, managers, and workers need to keep an open mind to the larger issues of liberalizing, privatizing, and deregulation. In any event, none of these needs to be the random, chaotic, or uncontrollable force characterized by their detractors. Obvious typologies might serve as heuristic devices, but most real world situations do not conform precisely to ideal types. Different scenarios will appear in front of the world; Taiwan will be the one marching toward liberalization.

APPENDIX A

Appendix A

Personal Interview Questions

-----Part I: The Services and Technologies Development

Question 1: For approaching toward an information society, in your opinion, what are those services and technologies that Taiwan should have?

Question 2: Considering the social demand as well as the technological feasibility in Taiwan, in the services and technologies you mentioned in Question 1, what are those that deserve prior consideration, and what are those that could be provided later? Please rank them into the following three phases:

Phase 1 (1988-1990):

Phase 2 (1991-2000):

Phase 3 (2001-2010):

Question 3: In the services and technologies you mentioned in Question 1, if take into account Taiwan's political, economic, and social conditions, in your opinion, what are those that we should focus on?

Question 4: Technologically speaking, in your opinion, to provide the services mentioned above, is there any special problems that we have to take care of? (For example, the problem of standardization)

Question 5: In your opinion, to develop the technologies mentioned above, what would be the possible obstacles?

Question 6: Then, what would you suggest to overcome the obstacles mentioned above?

-----Part II: The Organization and Management

Question 1: It is generally believed that telecommunications systems are vital to an informatiion society. In your opinion, is it necessary to reform the Directorate General of Telecommunications (DGT) for a future information society?

Question 2: Nations like the United States, the United Kindom, and Japan all have had their telecommunications sectors reformed in the past few years. In your opinion, does the DGT need to change too? If yes, how to change it?

Question 3: If the DGT is to be reformed, in your opinion, what would be the best strategy for the reform?

Question 4: Right now, there are few services that are allowed to be provided by private sectors, that is, other than the DGT. In your opinion, what kinds of service that could be provided by private sectors? And what would be your criteria in deciding what services could be provided by private sectors?

Question 5: If, in the future, some services would be allowed to be liberalized, that is, not be exclusively provided by the DGT, in your opinion, how should they be regulated?

Question 6: If the present government monopoly on telecommuications is to be reformed, in your opinion, what would be the possible obstacles? And could they be solved?

-----Part III: The Governmental Regulatory Agencies

Question 1: Technology has made the definition of telecommunications arguable. In Taiwan, the Ministry of Communications, the Ministry of Education, the Ministry of Economic Affairs, the Ministry of National Defense, the Ministry of Interior, the Ministry of Finance, the Government Information Office, and the National Science Council are all perceived, to different degrees, as government departments that are related to telecommunications. In your opinion, is there a need to reallocate the authorities between them? If yes,

how to reallocate?

Question 2: If the telecommunications sector is to be reformed, in your opinion, does the MOC need to change? If yes, how to change?

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* The above is a translated version. The original is in Chinese. The wording and format alter somewhat because of the difference between languages.

APPENDIX B

Appendix B

List of the Interviewees

-----DGT OFFICIALS

1) Fang Hien-Chee

Special Adviser , Industrial Technology Research Institute (ITRI),

Chairman, American Telephone & Telegraph-Taiwan Telecommunications (AT&T-TT), and

former Director-General, Directorate General of Telecommunications (DGT)

2) Liu Shih-Hwa

Director-General, DGT

3) Chen Pai-Chi

Deputy Chief Engineer, DGT

4) Jea Yu-Huei

Managing Director, Data Communications Institute (DCI) of the DGT

5) Huang Yung-Chang

former Managing Director, Long Distance Telecommunications Administratioon (LDTA) of the DGT

6) Shen Ching-Wen

Chief Instructor, Telecommunications Training Institute (TTI) of the DGT

7) Shiue Cheng-Bih

Deputy Director-General, DGT

-----TELECOMMUNICATIONS POLICYMAKERS

8) Kao Yu-Shu

Minister without Portfolio, Executive Yuan

9) Chao Yao-Tung

Minister without Portfolio, Executive Yuan, and

Chairman, Council for Economic Planning & Development (CEPD) of the Executive Yuan

10) Chen Yu-Kai

Vice Minister, Ministry of Communications (MOC), former Director-General, DGT

11) Chien Yu-Shin

Legislator

12) Shih Shi-Jiann

Deputy Director, Department of Post and Telecommunications of the MOC

13) Yeh Hao-Fang

former Section Manager, Department of Post and Telecommunications of the MOC

-----TELECOMMUNICATIONS INDUSTRY

14) King Shih-Tien

President, United Fibre Optics Co., and

former Deputy Director-General , Taiwan Telecommunication Administration (TTA) of the DGT

15) Chang Ruey-Chang

President, AT&T-TT

16) Lung Wei-Yeh

General Manager, International Business Machines (IBM) Taiwan Co.

17) Huang Tai-Yang

Director, Planning Division, Institute for Information Industry (III)

18) Lin, Wei-Shan

President, Tatung Co.

-----TELECOMMUNICATIONS USERS

19) Lin Jen-Jen

Deputy Chief, Financial Information System of the Ministry of Finance (MOF)

20) Wang Chih-Daw

President, International Commercisl Bank of China (ICBC)

21) Chou Shih-Chuan

Senior Vice President, Dai-Ichi Kangyo Bank, Taiwan Branch

-----SCHOLARS

22) Chow Rong-Yao

Vice President, Tamkang University

23) Lee Lin-San

Chairman, Department of Computer Science & Information Engineering of National Taiwan University

24) Lui Pao-Chiun

Chairman, Department of Information Science of National Central University

25) Cheng Chung-Mo

Professor, Department of Economics of National Chung Hsin University

26) Lui Cheng-Han

former Deputy Director-General, Directorate-General of Posts (DGP)

APPENDIX C

Appendix C

Mail-in Questionnaire Questions

-----Part I: The Services and Technologies Development

It is known that an advanced telecommunications system is vital to the future information society and to the economic development. But it would not be feasible to develop all kinds of new services and technologies at the same time to improve the system. The following two questions have listed some new services and technologies. If they are chosen to be put into reality in Taiwam in the furure, in your opinion, what are those that deserve prior consideration, and what are those that could be provided later?

After each service or technology item, there are five choices; P1 is priority one, meaning it should be provided first; P2 is priority two, meaning it should be provided secondly; P3 is priority three, meaning it should be provided thirdly; P4 is priority four, meaning it should be provided fourthly. Please mark "x" under the priority that you agree, and if you have no opinion, please mark under "0." For each service or technology item, please mark <u>only one</u> "x."

Question 1: NEW SERVICES

		P1	P2	P3	P4	0
1.	INFORMATION PROVIDING & RETRIEVAL	—	—	—	—	—
2.	DATA PROCESSING	—	—	—	—	—
3.	CABLE TELEVISION	—	—	—	—	—
4.	DIRECT BROADCAST SATELLITE	—	—	—	—	—
5.	CELLULAR MOBILE TELEPHONE	—	—	—	—	—
6.	TELEPHONE VOICE MAIL	—	—	—	—	—
7.	PERSONAL COMPUTER COMMUNICATION	—	—	—	—	—
8.	LOCAL AREA NERWORK	—	—	—	—	—
9.	ELECTRONIC MAIL	—	—	—	—	—
10.	VIDEOTEX	—	—	—	—	—
11.	ELECTRONIC TELEPHONE DIRECTORY	—	—	—	—	—
12.	TELEBOOKING	—	—	—	—	—
13.	VIDEO TELECONFERENCE	—	—	—	—	—
14.	AUDIOVISUAL LIBRARY	—	—	—	—	—
15.	HOME TELESHOPPING	—	—	—	—	—
16.	TELEBANKING	—	—	—	—	—
17.	HOME EMERGENCY ALARM & SECURITY	—	—	—	—	—
18.	OTHER (please specify)	—	—	—	—	—
19.	OTHER (please specify)	—	—	—	—	—
20.	OTHER (please specify)	—	—	—	—	—

Question 2: NEW TECHNOLOGIES

	P1	P2	P3	P4	0
1. INTEGRATED SERVICES DIGITAL NETWORK	__	__	__	__	__
2. DIGITAL TRANSMISSION & SWITCHING	__	__	__	__	__
3. SATELLITE COMMUNICATION	__	__	__	__	__
4. OPTICAL FIBER COMMUNICATION	__	__	__	__	__
5. CUSTOMER PREMISE EQUIPMENT	__	__	__	__	__
6. INTELLIGENCE INFORMATION SYSTEM	__	__	__	__	__
7. VERY LARGE SCALE INTEGRATION	__	__	__	__	__
8. CABLE COMMUNICATION	__	__	__	__	__
9. OTHER (please specify)	__	__	__	__	__
10. OTHER (please specify)	__	__	__	__	__
11. OTHER (please specify)	__	__	__	__	__

-----Part II: The Organization and Management

Technology has made possible a wide variety of new telecommunicatios services, and has made doubtful the belief that government monopoly as the best and the only way for telecommunications services. Suppose Taiwan's telecommunications services are to be distinguished into two categories. Type I telecommunications services refer to those provide services by establishing telecommunications network apparatus, including transmission media, switching facilities, and their peripheral equipments, for example, the traditional telephone services. Type II telecommunications services are defined simply as any telecommunications service other than Type I telecommunications services, for example, the videotex service.

Following are some proposed market structure in which the Type I and Type II telecommunications services will be provided.

GM---Government Monopoly; the classic case of a monopoly vested in a government ministry or department. This monopoly may be based in law or by administrative fiat or convention.

GM/PC---Government Monopoly/Public Corporation; government monopoly but instituted through

public corporation form rather than through departments.

RM---Regulated Monopoly; the classic case of private ownership of facilities (one entity) with regulation by government department.

The above three are considered in the monopoly (M) category.

GM + RM---Government monopoly and regulated monopoly compete in the market.

GM/PC + RM---Government monopoly as a public corporation competes with regulated monopoly.

The above two are considered in the regulated competition (RC) category.

G/PC + P---Government-invested public corporation competes with all private sectors in the market.

G + P---Government department competes with private sectors in the market.

P only---Only private sectors in the market to compete.

The above three are considered in the liberalized entry (LE) category.

Following are four questions, and all eight market structures will be listed for every question. There is a blank after each market structure. Please mark "x" in the

blank of the structrue with which you agree. For each question, please mark only one "x."

Question 1: For Type I telecommunications services provided for domestic use, in your opinion, which will be the most suitable market structure for Taiwan?

1) GM ___
2) GM/PC ___
3) RM ___
4) GM + RM ___
5) GM/PC + RM ___
6) G/PC + P ___
7) G + P ___
8) P only ___

Question 2: For Type II telecommunications services provided for domestic use, in your opinion, which will be the most suitable market structure for Taiwan?

1) GM ___
2) GM/PC ___
3) RM ___
4) GM + RM ___
5) GM/PC + RM ___
6) G/PC + P ___
7) G + P ___
8) P only ___

Question 3: For Type I telecommunications services provided for international use, in your opinion, which will be the most suitable market structure for Taiwan?

1) GM ___
2) GM/PC ___
3) RM ___
4) GM + RM ___
5) GM/PC + RM ___
6) G/PC + P ___
7) G + P ___
8) P only ___

Question 4: For Type II telecommunications services provided for international use, in your opinion, which will be the most suitable market structure for Taiwan?

1) GM ___
2) GM/PC ___
3) RM ___
4) GM + RM ___
5) GM/PC + RM ___
6) G/PC + P ___
7) G + P ___
8) P only ___

Question 5: Following are some expected hindrances, if the current telecommunications sector is to be reformed. How do you agree with these expected hindrances?

If you strongly agree, please mark "x" under the number 4; if you agree, please mark "x" under the number 3; if you disagree, please mark "x" under the number 2; if you strongly disagree, please mark "x" under the number 1. If you are not sure, please mark "x" under the number 0.

For example, when you agree with the statement that telecommunications systems are the nerve of an information society, you mark "x" under the number 3.

	4	3	2	1	0
0) Telecommunications systems are the nerve of an information society.	__	_x	__	__	__

For each statement, please mark only one "x."

		4	3	2	1	0
1)	Amending the Constitution is difficult.	__	__	__	__	__
2)	Amending the Telecommunications Law is difficult.	__	__	__	__	__
3)	Amending the Act of the DGT Organization is difficult.	__	__	__	__	__
4)	Policymakers stick on old concepts. ...	__	__	__	__	__
5)	Public opinion won't support.	__	__	__	__	__
6)	Interest groups are against any change.	__	__	__	__	__
7)	Employees of the DGT want to stay as government employees.	__	__	__	__	__
8)	The DGT officials are conservative. ..	__	__	__	__	__
9)	There is no consensus on which department to regulate new services.	__	__	__	__	__
10)	Reevaluating the DGT's asset is difficult.	__	__	__	__	__
11)	Recalculating tariff is difficult.	__	__	__	__	__
12)	There is no consensus on who will be qualified to provide new services.	__	__	__	__	__
13)	Reallocating of radio frequency is difficult.	__	__	__	__	__
14)	Information security will be challenged.	__	__	__	__	__
15)	The authority that monitors telecommunications is against any change.	__	__	__	__	__
16)	Other (please specify)_____					
	_____	__	__	__	__	__

-----Part III: the governmental regulatory agencies

For all the questions followed, you will be asked how do you agree with some statements. If you strongly agree, please mark "x" under the number 4; if you agree, please mark "x" under the number 3; if you disagree, please mark "x" under the number 2; if you strongly disagree, please mark "x" under the number 1. If you are not sure, please mark "x" under the number 0.

For example, when you agree with the statement that telecommunications systems are the nerve of an information society, you mark "x" under the number 3.

	4	3	2	1	0
0) Telecommunications systems are the nerve of an information society.	__	_x	__	__	__

For each statement, please mark only one "x."

Question 1: Following are several government departments that are generally perceived as having authority over the telecommunications services. How do you agree with their authority over the telecommunications services?

	4	3	2	1	0
1) Ministry of Communications	__	__	__	__	__
2) Ministry of Education	__	__	__	__	__
3) Ministry of Economic Affairs	__	__	__	__	__
4) Ministry of National Defense	__	__	__	__	__
5) Ministry of Interior	__	__	__	__	__
6) Ministry of Finance	__	__	__	__	__
7) Government Information Office	__	__	__	__	__
8) National Science Council	__	__	__	__	__

Question 2: Following are certain suggestions for reauthorizing governmental regulatory agencies, if the current telecommunications sector is to be reformed. How do you agree with these suggestions?

	4	3	2	1	0
1) It needs an independent agency to reallocate the authorities.	__	__	__	__	__
2) Ministries that are currently in charge can reconcile for their authorities. ...	__	__	__	__	__
3) Only the MOC needs to change.	__	__	__	__	__
4) The current situation is fine.	__	__	__	__	__
5) Other (please specify)_____	__	__	__	__	__

Question 3: Following are several suggestions for the MOC, if the current telecommunications sector is to be reformed. How do you agree with these suggestions?

	4	3	2	1	0
1) A Ministry of Telecommunications should be established.	__	__	__	__	__
2) The Director-General of Telecommunicatios should be given more power.	__	__	__	__	__
3) The Department of Posts and Telecommunications needs to be augmented.	__	__	__	__	__
4) The current situation is fine.	__	__	__	__	__
5) Other (please specify)_____	__	__	__	__	__

Following are two governmenrt offices that are supposed to have authorities over telecommunications services in the future, when the current telecommunications sector is already changed.

Office A is in charge of transmission facilities for both cable and radio.

Office B is in charge of information, including voice, image, and data, communications.

Question 4: For the following services, how do you agree with the two offices' authorities over them?

	A				B				
	4	3	2	1	4	3	2	1	0
1) TELEPHONE & TELEGRAPH	__	__	__	__	__	__	__	__	__
2) DATA COMMUNICATIONS	__	__	__	__	__	__	__	__	__
3) BROADCASTING	__	__	__	__	__	__	__	__	__
4) PRINTED MEDIA	__	__	__	__	__	__	__	__	__
5) FILM MEDIA	__	__	__	__	__	__	__	__	__
6) VIDEO TAPES & DISKS	__	__	__	__	__	__	__	__	__
7) INFORMATION SECURITY	__	__	__	__	__	__	__	__	__
8) CITIZEN BAND	__	__	__	__	__	__	__	__	__
9) OTHER (please specify)									
_____	__	__	__	__	__	__	__	__	__

Question 5: Following are some new services; for these new services, how do you agree with the two offices' authorities over them?

	A				B				
	4	3	2	1	4	3	2	1	0
1) VIDEOTEX	—	—	—	—	—	—	—	—	—
2) DIRECT BROADCASTING SATELLITE	—	—	—	—	—	—	—	—	—
3) CABLE TELEVISION	—	—	—	—	—	—	—	—	—
4) ELECTRONIC MAIL	—	—	—	—	—	—	—	—	—
5) HOME TELESHOPPING	—	—	—	—	—	—	—	—	—
6) TELEBANKING	—	—	—	—	—	—	—	—	—
7) VIDEO TELECONFERENCE	—	—	—	—	—	—	—	—	—
8) OTHER (please specify) _____	—	—	—	—	—	—	—	—	—

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* The above is a translated version. The original is in Chinese. The wording and format alter somewhat because of the difference between languages.

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