Strategic Challenges for Expanding South East Asian Telecom Economies: The Case of Thailand

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Abstract

Government driven national telecommunications planning strategies has been one of the main features characterising the booming economies of South East Asia. Yet, there have also been many challenges to be met. In the context of the Thai experience, it is revealed that the strategic planning approaches implemented have much in common with other South East Asian telecommunications administrations. The overall aim of this paper is to analyse the relationship between strategy and organisational structure for telecommunications planning and development in Thailand and compare it to the approaches adopted by other rapidly growing economies. It begins by evaluating the development of Thailand's present infrastructure and planning practices. It also discusses key strategic planning factors which will contribute to the changing function of Thailand's network. We conclude that -- despite the differences in cultures, governments and geography -- the general planning approach adopted is applicable to other South East Asian economies.

1. INTRODUCTION

Strategic network planning and the development of an appropriate implementation program for telecommunications infrastructure development is increasingly becoming a rapidly changing activity. For almost every nation, the difficulties of achieving a best fit between anticipated demands for local and international public telecommunications traffic and infrastructure -- and the available resources -- requires a special consideration. For rapidly developing nations, with inadequate telecommunications infrastructure and limited resources, the choice becomes even more difficult. It is also understood that investment in telecommunications infrastructure has long been an important key to the economic development of a country or geographic region. In addition, the total investment in network expansion will represent a considerable proportion of the GDP for many economies. The successful delivery of a world class telecommunications infrastructure can act as a catalyst to increase trade opportunities and to enhance other economic activities and social functions.

For the developing countries of South East Asia with rapidly growing economies, the planning and implementation approaches adopted will be a key factor in both facilitating and shaping economic co-operation and development in the years ahead. At the level of the technology, these changes mean that there is an increase in the complexity and diversity of networks. As new players in the global economy, many are now in a position to instantly adopt the latest technologies and quickly add new network services such as videoconferencing or cable TV onto the primary network.

Together, these observations call forth and highlight new strategic challenges for the South East Asian telecommunications industry. It is against this backdrop that this paper seeks to identify and evaluate possible key strategic factors which will contribute to the changing function of South East Asian telecommunications infrastructure in the years ahead. Using the case of Thai telecommunications network development, the primary goal was to determine the relationship between strategy and organisational structure for telecommunications in Thailand. The paper also includes a summary overview of the development of Thailand's telecommunications infrastructure and planning practices in the context of TOT's corporate business vision. Finally, the emerging themes are summarised in the context of the rapidly growing economies in the South East Asian region.

2. THAI TELECOMMUNICATIONS DEVELOPMENT

Historically, telecommunications infrastructure development has played a key role in the development of Thailand since the deployment of the first public telegraph service in 1875 (1). A brief chronological history is provided in Table 1. As in most nations, Thai telecommunications history has largely been directed under the influence and control of various government agencies. At present, telecommunications development is under the control of three organisations: the Post and Telegraph Department (PTD); the Telephone Organisation of Thailand (TOT); and, the Communications Authority of Thailand (CAT). PTD is responsible for policy rules and regulation. CAT is responsible for the operational control of international services and TOT for domestic telephone services. Whist CAT and TOT are state enterprises and PTD a government department headed by a director general, all three organisations answer directly to the Ministry of Communications that is also responsible for transport.

On March 28 1995, the Thai Cabinet finally unveiled its long awaited plan to privatise parts of the two major state-owned monopolies of CAT and TOT. However, it is still unclear just how quickly the Thai government plans to privatise TOT and CAT. From the little that has been revealed about the plan, initially it is likely that TOT and CAT will each be divided into two separate companies: The first of each will remain under state ownership and control; the second will be sold on a joint-venture basis with the government retaining a 49% share of each. Of the remaining 51%, 2% will go to Thailand's Crown Property Bureau, and no more than 30% will be held by a single private organisation, while foreign ownership will be limited to 20%. However, there is no time frame for the partial privatisation process proposed.

As can be gleaned from the above brief historical overview, overlapping functions have been a key feature characterising the telecommunications history in Thailand. However, in recent years, increasing responsibility for telecommunications activities has been transferred by the PTD to TOT and

there is now a growing commitment to the future privatisation of the Thai telecommunications industry. It is now agreed by the Thai telecommunications sector -- both public and private -- that the time is now right to give telecommunications strategic planning a higher status as a state and as a process. This emphasis on strategic network planning at the domestic and regional level as a national priority is also a feature of other rapidly growing economies in recent years. For example, in Malaysia, Prime Minister Mahathir published the draft of a national telecommunications policy in 1995 which also emphasised a domestic and regional network development focus. President Ramos's administration in the Philippines has also responded to the challenges by using dynamic government policies to encourage foreign investment to achieve a new industrial status in recent years.

3. KEY STRATEGIC THRUSTS OF GOVERNMENTS

At present two major strategic thrusts are governing the evolution of South East Asian telecommunications services: The first is to decrease the subscriber waiting list to a point where demand can be met in as short a time a possible in major industrial centres. The second involves a program of upgrading network infrastructure to optimise the flexibility and cost, and to increase the range of services available.

To date, the privatisation of national telecommunications services has not been a priority - despite the announcement of the intention to do so by many countries. Rather, further centralisation of management, planning and operational control has been the key strategy adopted by most to improve the overall approach to strategic planning for the year 2000 and beyond. Yet in noting this, and in view of the challenges to be highlighted in the proceeding section, it is recognised that no single methodology is generally applicable for upgrading telecommunications infrastructure in a particular national setting (2).

It is therefore essential for Thai agencies responsible for the development of strategic national telecommunications planning to establish clear policy guidelines and to make preparations well in advance. The announcement of plans to privatise telecommunications in March 1995 was the first step in that direction.

Collectively, the actions of previous Thai governments have reflected a belief that privatisation of telecommunications services is the best policy option to cope with the rapid economic growth of the country and as a means to procure the large financial resources required to extensively develop the infrastructure and to keep pace with new technological developments. Yet, in practice Thai fixed-line telecommunications services are not expected to be privatised for several years. An explicit policy of the Thai government is to strengthen TOT until it is ready to be able to compete commercially with private companies while still ensuring that it retains its role as the nation's leading telecommunications service provider.To help achieve this aim, the specific policy objectives of TOT can be summarised as follows (TOT Annual Report 1993):

(i) establish a base that will enable TOT to compete in a competitive environment;

(ii) Rapid expansion and modernisation of the network to meet social and economic demand; and,

(iii) build up internal expertise and unity among TOT employees.

4. WHAT ARE THE MAJOR CHALLENGES TO BE ADDRESSED?

In practical terms, and in view of the current policy objectives of rapidly developing countries, the immediate challenge for Thai telecommunications strategists is to recreate the role of the internal management arrangements, and to align its regulator and organisational structure with the strategic mechanisms now in place. However, there remain a number of identifiable constraints to further network expansion that need to be addressed so as to ensure that the strategic objectives highlighted above can be achieved within a limited time frame and with existing resources. These can be broadly categorised as follows:

(1) rapid economic growth
(2) privatisation policy development
(3) infrastructural leapfrogging
(4) eliminating large subscriber waiting lists
(5) producing data for accurate demand forecasting; and,
(6) developing technological know-how

Rapid Economic Growth

Thailand is conveniently located in the world's fastest developing geographic region. Thailand's economy has also experienced strong economic growth in recent years in comparison the OECD nations. In the period from 1988 to 1992, the GDP continued to grow at an average of around 16%, while maintaining a comparatively low level of inflation (3). Despite the prolonged recession experienced by most nations in the early 1990s, Thailand and its Asian neighbours have continued to show robust economic growth (4).

However, there has also been an increase in international borrowings to cover the cost of infrastructural development needed to maintain the current rate of economic development. In particular, this means that huge investment in telecommunications infrastructure is now required. Total investment in network expansion in Thailand from 1993 to the year 2000 is forecast to be in excess of US$ 5.5 billion. In addition, telephone demand for 1993 was around 3.5 million lines and this is expected to increase to 5.5 million lines by the year 2000. The Thai government recognises that the total financial and resources investment demands required will be far greater than any previous development plans.

At present, one of the more urgent challenges to be addressed is in Bangkok. The Bangkok area has an inadequate telephone system for its relative size and international importance. Bangkok has an important international airport and many leading international firms have a presence in the Bangkok area. Another major problem is the difficulty of encouraging infrastructural development in the provinces. The expectation of the Thai government is that privatisation will encourage foreign investment and soft loans for infrastructural development. Yet the Thai government, like many other neighbouring economies, has been slow to commit to a time frame for privatisation.

Privatisation Policy Development

Although committed to the expansion of public utilities and infrastructure, Thailand's previous Anand Government rejected the idea of privatisation on the basis that it could be used as a political tool for politicians to profit through corruption during the bidding process. This has also been recognised a challenge to the development an achievable strategic telecommunications plan by neighouring countries such as the administrations of India and the Philippines. However, the Anand I Government, shortly after it took power, decided to review the role of

privatisation. It also reviewed the three-million-line telephone project granted by TOT to TelecomAsia, controlled by the Charoen Pokphand (CP) Group. This resulted in splitting the contract between two companies: The first is with the CP Group (since renamed TelecomAsia), and comprising the development of a two-million-line telephone network to service Bangkok. The second was awarded to the Loxley-Jasmine consortium's Thai Telephone and Telegraph Co. (TT&T) to provide an additional one million lines for the provinces. Telecommunications services are being made available in the metropolitan and provincial regions and access rates do not vary significantly throughout the country even though the services may be provided by different companies or using different technologies. Unfortunately, the decision by the government to review contracts already granted, as well as others, have had the result of undermining the trust of the private sector in the Thai Government's ability to honour contracts (5). Thai politics has also been notoriously unpredictable in the past.

The Chuan Government, has continued to accept the previous government's "spirit of privatisation." It is also recognised by the Chuan government that the underlying demands, trends and growth prospects need to be examined so that a major program of infrastructural development can be implemented to catch up with demand and to influence future socioeconomic growth development patterns and directions. According to the Deputy Prime Minister, Dr Amnuay, privatisation has now become an economic instrument for infrastructure development; as well as the mechanism for a restructuring of management strategies to increase efficiency and to strengthen private leadership in the process of national development (6). Yet, despite the Chuan government's effort to work toward the development of policies that demand a greater input from the private sector, private investors are still not confident in the government's stance in honouring contracts with private investors. Private telecommunications organisations in Thailand have also been encouraged to work towards the establishment of international telecommunications projects. Ventures with Cambodia and Laos have now begun and there are plans for joint ventures with nearby Myanmar and Vietnam.

Another privatisation strategy identified is to allow more players to come into new telecommunications industry sectors. Thailand has recently increased the number of cable TV franchises to seven. The privately owned companies, UCOM and Advanced Info services, operate the two most successful Thai cellular networks (7). However, it should also be noted that although the Chuan government have increased the number of opportunities by awarding more licences, they have not yet relaxed licensing conditions such as network build-out and investment requirements.

Infrastructural Leapfrogging

Rapid modernisation and expansion of infrastructure in nearly all Asian economies are key strategic objectives. Yet, many of the poorer countries of Asia like Thailand, China, Vietnam and India are fortunate that they have lagged so far behind in the provision of telephone services in the sense that they can immediately adopt new technologies and a high level of services which are similar to those now in use in developed countries. However, whilst such technological leapfrogging can offer new opportunities, it also presents some additional challenges that need to be considered.

New cellular networks can now be deployed with less time and money than conventional fixed-line systems. For

example, after the Cambodian peace accord, Ucom of Thailand was able to set up a basic cellular system in Phnom Penh within six weeks. For this reason, the International Telecommunications Union (ITU) has estimated the mobile phones will outnumber fixed units by 1997 in Thailand (8). In addition, TelecomAsia is now deploying a state-of-the-art fibre optic digital network within the Bangkok expansion plan that is capable of supporting a whole new range of services. Services currently in the planning stages include interactive shopping, interactive entertainment, videoconferencing/video telephones, remote medical diagnosis, EDI services and distance education.

TelecomAsia is shifting from the existing switching plan that is designed to support more than 75 exchanges and many RSUs and is adopting a more concentrated approach. The switching hierarchy approach adopted relies on new switching technology and up to 9 switching sites. The capacity to be installed at each Centralised Switching Node (CSN) in the network will cater for a potential 2 million lines. Each CSN consists of a number of 60,000 line capacity Group Switching Processors (GSPs) that are fully interconnected with each other and integrated with TOTs existing crossbar tandem exchange as well as the newer digital tandem exchange networks. Access to the CSNs is facilitated by a transmission network of fibre optic Customer line Interface/concentrator units -- sometimes referred to as Remote Concentrator Units (RCUs) -- which form the front end part of the switching system. The new network is being installed as on overlay to that of the existing TOT network and thus offers maximum flexibility in distribution and switching capacity.

However, this strategy is also not without its difficulties. Replacing electro-mechanical telecommunications networks with digital technology requires very high levels of investment largely because there are many incompatibilities between old infrastructure and new technologies and therefore need to be deployed in full blocks. Given that switching equipment represents one of the most expensive elements of new digital networks in terms of capital costs and ongoing running costs, centralisation offers a better utilisation of resources. In this case, the benefits of a more centralised network have to be weighed against the risks it presents. The failure of a large CSN can isolate whole communities. In Bangkok, this risk has been reduced by parenting concentrators on to different processors and by ensuring that there is adequate built-in redundancy and recovery facilities available (9).

Number of Years to Eliminate Waiting Lists

The idea of a "telephone on demand" also appears to be the key strategic objective that is hoped to be achieved in as short a time as possible in many developing countries. It is the stated goal of administrators in India, Indonesia, Malaysia and Thailand. At present Telephone line penetration in is low in each of these countries. In Thailand, there are only about 3.1 telephone lines per 100 people and in Bangkok alone and there are more than 1 million names in the waiting list of the Telephone Organisation of Thailand (10). This mismatch between the demand for telephone services and the ability to keep pace means that the demand for mobile telephony and paging services has been boosted. Yet despite this, the cellular penetration is also still low and was estimated by Pacific Link in Hong Kong to be 0.72 in 1994 (11).

The 2 million lines to be installed in Bangkok by TelecomAsia and the 1 million lines to be installed in provincial areas by

Thai Telephone and Telecommunication (TT&T) will increase the number of lines to about 8 per 100 people. Both TelecomAsia and TT&T are confident that they can complete their current contracts by 1996. In addition, the Telephone Organisation of Thailand itself, plans to install a further 1.1 million lines in order to achieve a penetration level of 10 lines per 100 people nationally under the current five year plan ending in 1996. However, in April 1994, the line penetration was still less than 5 lines per 100 people. It is believed that because the government is now under pressure to allow other companies into the telecoms market, it will soon ask TelecomAsia and TT&T to waive their 5-year protection rights banning other companies from installing any new lines in current areas granted concessions. These protection rights are due to expire in 1997 for Telecom Asia and in 1998 for TT&T.

It is estimated that Thailand will need to install 13.5 million lines by the year 2001 to meet the projected demand (12). In fact, the ITU has estimated that based on recent growth rates in main lines, the long waiting lists will not be eliminated until around the year 2000 (13). This forecast could also be unrealistic as further economic development will result in a rapid increase in the number of lines required per 100 people. The penetration level forecast of 9.35 for the year 2000 (14) may be well below the demand levels necessary to sustain further economic growth as businesses themselves become more dependent on a range of telephony and information services.

From an economic perspective, there is also pressure from the Asia Pacific Economic Cooperation (APEC) forum for all potential member economies to achieve a national penetration level of more than 20 lines per 100 people. Thailand will not be able to become an APEC member until this level is achieved.

Demand Forecasting

One major difficulty with accurately forecasting demand for new services is the lack of relevant historical and technical data required by the quantitative approaches normally used. In an environment where the technological, and socioeconomic parameters are all rapidly changing, the problem becomes more complex. As a consequence a wide range of methodologies has been adopted by some developing nations (15).

In the case of Thailand too, the ability to demand forecast will be of strategic importance and will depend on a supply of accurate data - in conjunction with the development of appropriate national economic forecast scenarios. This will involve a range of methodologies and input from market information, penetration rates and economic predictions on the demand side. On the policy driven side, this will involve the identification of the effects of policy on demand and the stimulation of new service utilisation. Price capping measures for example, may significantly influence demand.

Developing Technological Know-How

Another key challenge identified is the need to develop essential *know-how* to meet ongoing operational and service requirements for major new infrastructural projects. In particular, digital switching equipment and fibre optic transmission technology know-how are becoming essential to meet the anticipated demand for higher bandwidth and more specialised services such as EDI. This is a difficult challenge for most developing countries as nearly 90% of all telecommunications equipment that forms the technological and economic core of public

telecommunications infrastructure, is produced in OECD countries (16).

Consequently, most developing countries like Thailand have adopted policies to encourage the involvement of major international telecommunications companies in local infrastructure development.

The ability to act effectively will also depend upon the co-development of other core technology related competencies. In particular telecommunications software and systems engineering relating directly to the provision and maintenance of competitive and efficient services need to be developed. These core competencies are now considered by the Thai government to be so important that it is essential that they are developed -- at least to some extent -- within Thailand rather than relying on outside suppliers. Universities such as Bangkok's Assumption University, are at present planning the introduction of new telecommunications degrees to increase both the number and range of formal telecommunications courses available in Thailand. Such course development will also serve as a basis for future R&D programs that will help to undergird the future development of national telecommunications infrastructure.

5 . LESSONS FOR THE FUTURE

Planning under conditions of complexity, rapidly changing economic forecasts, imperfect information and working under the changing views of political representatives, clearly represents a major challenge for telecommunications administrators. The present Thai government -- like the governments of many of its Asian neighbours -- has no alternative but to limit its longer term strategic planning to the construction of visions in deciding what future moves they should make. These visions are not merely the result of processing information received from the environment within which they operate. It also involves interpreting information based on beliefs and historical factors. It is these visions that allow an organisation to envisage the future and therefore decide what actions are to be taken.

Although nowhere it is explicitly stated, the vision of Thailand's telecommunications future embodies the following elements: The first essential element of creating future strategic visions is the establishment of sufficient lines so that demand can match supply in as short a time as possible. Second, the key force driving the future competitiveness is the introduction of competition. Third, most financial, technological and human resources will be supplied by international firms who are encouraged to have a presence in Thailand through concessions. It is also anticipated that competences related to improved competitiveness and returns will also be delivered by co-operation with international telecommunications firms. Finally, and as a way of avoiding excessive reliance on foreign transnational corporations, the development of indigenous telecommunications firms is encouraged through the government bidding process favouring local tenderers.

To date, Thailand, has not undertaken a comprehensive telecommunications sector reform approach. Instead, it has taken a series of tentative steps towards opening up the local telecommunications industry to private investment. However, because of the continued poor performance of CAT and TOT, pressures for reform based on privatisation policy have increased in recent years. Such outlooks are also supported by external views based on the experiences of other developing countries. In a report released by the Word Bank that synthesises lessons of experience of special relevance for Asia's

developing countries, it is concluded that government support for monopolies based on arguments of economies of scale and scope is not a valid one (17). One of the main concerns it raises is the ability of the telecommunications sector of developing nations to keep pace with the region's growth and expansion. It is argued that many nation's have already paid dearly for the limited attention accorded to the telecommunications sector in the past, and the socio-economic costs associated with apparent inefficiencies of state owned and operated telco. The inability to meet underlying demand, is a crucial problem that will impact future economic growth.

At a more general level, we believe that collectively, these developments have highlighted the urgent need for sector wide strategic planning and the parallel development of an appropriate sector wide legislative regime to manage and control the future directions of telecommunications in countries which are undergoing rapid economic change. Only this will ensure that the key strategic objectives can be achieved with a given set of resources, and within the time frame required. A clear statement of the strategic objectives and of the future roles of the principle public and private players is what is needed. We propose that strategic implementation requires a fit between strategy and telecommunications infrastructure design and implementation. This means that strategic planning must be viewed as both a process and a state: It involves a dynamic and interactive search that seeks to align the local telecommunications industry with its environment. This means identifying and aligning the available resources internally to support the external and more competitive stance of the national industry infrastructure. In practical terms, strategy becomes the basic alignment mechanism and the internal arrangements are organisational and regulatory structure and management processes. Although this approach is expected to be applicable for many nations, this analysis suggests that the alignment is critical and more difficult to gauge for rapidly developing nations such as Thailand.

6. CONCLUDING REMARKS

The primary emphasis of this analysis was to determine the relationship between strategy and organisational structure for telecommunications in South East Asian countries such as Thailand. It is presupposed that the regulatory systems in place are needed to link public objectives and concerns with private incentives (18). While the strategy-organisational structure was highlighted, evidence for supporting the longer term strategic goals of Thailand was found to be limited. Yet, current changes in the telecommunications industry are offering rapidly developing South East Asian nations unprecedented opportunities and change affecting social, cultural and economic activities. With the complexity and forecast growth of the Thai telecommunications industry, the study of strategic planning issues has become extremely important. Most South East Asian telecommunications organisations, are operating in markets where competition is rapidly intensifying as both the range and number of competitors is increased. To succeed in these markets, small developing nations must successfully implement strategic planning strategies to provide them with socioeconomic advantages.

We conclude then, that strategic planning as defined in the preceding section is crucial for Thailand. We have identified possible areas of concern and conclude that the time is also now right to give strategic planning a higher status as a state and as a process. In practical terms, to recreate the role of the internal management arrangement

of TOT and aligning its regulator and organisational structure with the strategic mechanisms in place is now the challenge. Whether the strategic stance presently being adopted by the Thai government will be functional, in the sense that it will aid future economic growth in an increasingly complex operating environment, or will be the source of significant shortcomings is a crucial question, the answer to which will only emerge in the years beyond 2000. Placed in the midst of the booming Asian economies, Thailand can be viewed as a prime example of a country which is finding the way ahead - despite the challenges. The planning approach adopted by Thai administrators is general enough to be applicable for other Asian telecommunications administrations and it has a general sense of purpose and commitment to its citizens in the twenty first century.

AUTHORS' NOTE

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1875	First telegraph service
1881	First telephone service
1883	Postal Department and Telegraph Department established
1897	Postal and Telegraph Departments combine to become the Post and Telegraph Department (PTD)
1931	First private citizens' radio station
1936	First long distance telephone service (to Tokyo)
1954	Telephone Organisation of Thailand (TOT) established
1963	First international telex services (to Japan)
1966	Thailand became a member of Intelsat with a 0.1 percent share
1971	First radio paging service
1972	First car phones installed
1976	Communications Authority of Thailand (CAT) established
1979	First facsimile transmission service
1984	Thailand's share of Intelsat increased to 0.49 percent and GTE international was contracted to build the earth station near Bangkok
1991	Shinawatra was given a 8 year monopoly contract to launch Thaisat for television, government and domestic communication needs, as leases expire on other satellite systems
1995	First privatisation plan announced

Table 1. A brief chronology of Thai telecommunications development

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