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ABSTRACT

Telecommunications has been considered a critical infrastructure for any nation. National competitiveness increasingly depends upon the telecommunications infrastructure because telecommunications and information technology have become a critical driving factor for social and economic development. However, the telecommunications infrastructure in Thailand is considered below the world average despite its importance to national competitiveness. Thailand is still among a few developing countries that do not have a 3G network. Broadband Internet is uncommon. The telecommunications industry has been influenced by a concession system that creates unfair competition and that lacks freedom. There has been an increase in public dissatisfaction with certain telecommunication services. This paper investigates the various issues in the telecommunications industry in Thailand. The information in the study was acquired through analysis of secondary sources, observation, and focus groups. The results of this study can be used as "lessons learned" for the development of the telecommunications industry in any developing country.

Keywords

Telecommunications in developing countries, Telecommunications industry

INTRODUCTION

The information and communication technology (ICT) business is comprised of four main segments: computer hardware, computer software, computer services, and telecommunication (wired and wireless). Driven by the increasing use of technology in all aspects of society, the industry had been growing rapidly in Thailand as in other countries around the globe, as an ever-expanding diversity of products, lower prices, and wider access to knowledge about how to utilize the various technologies bolstered demand in the public, private, and civil society sectors. In consequence, by 2010, the Thai ICT market, accounting for 11% of the GDP, had risen to become one of the largest in the South East Asian region and was projected to grow at a compound annual growth rate of 12% over the 2010-2014 period (NECTEC 2009). The total value of Thai domestic spending on IT products and services, which had been in the vicinity of US$5.4bn in 2010, was expected to reach US$8.7bn by 2014 (NECTEC 2009).

Increased usage of the internet and software application (NSTDA 2011) had steadily pushed upward the overall market size of the industry. Total ICT market size increased every year from 2009 to 2011, when it reached a value of $22,621 million, with a solid 11.7% growth from the previous year. By far the largest contributor to the market size was the telecommunications industry, which accounted for 61.7% (or $13,945 million) of the total ICT market. The remaining segments, in declining order of the magnitude of contributions to the overall market size, were computer hardware shares (at 14.8%, for a market size of $3,350 million), software shares (at 12.4%, for a market worth of $2,807 million), and services (at 11.1% shares, for a market size of $2,519 million (NECTEC 2009; NSTDA 2011).

THE PUBLIC'S "CONSUMPTION" OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Underlying the above-cited market sizes and growth rates of the several industry segments lay distinct behaviors concerning the use of ICT technology. For example, on the institutional side, while every business trade and service could increase its efficiency in lowering production costs and creating new markets for products and services, the hospital business in Thailand was the one in which the proportion of employees using computers and the Internet at work was the highest (100% and 90%, respectively), as shown in table 1. The next highest was manufacturing, travel agencies, construction, and business trade and services, respectively.

Economic Activity	Number of Establishment Using Computer	Employees Using Computer		Number of Establishment Using Internet	Employees Using Internet	
		Number	Average per Establishment		Number	Average per Establishment
Total	507,447	2,664,335	(5.25)	339,452	1,421,779	(4.19)
Business Trade and Services	417,350	1,740,720	(4.17)	276,192	910,059	(3.30)
Manufacturing	63,311	632,220	(9.99)	41,952	321,542	(7.66)
Construction	11,178	51,649	(4.62)	9,047	36,641	(4.05)
Other Land Transport and Activities of Travel Agencies	14,419	67,918	(4.17)	11,082	45,863	(4.14)
Hospital	1,234	171,827	(139.24)	1,179	107,701	(91.35)

Table 1 Number of employees using computers and the Internet in establishments (Santipaporn, 2010)

However, SMEs had been slow to adopt ICT, despite the fact that research had indicated the positive effect of ICT on firm performance in terms of creating productivity, profitability, market size, and market share. Further, the size of the particular establishment impacted the usage of ICT. As shown in the table 2, establishments with fewer than 16 persons used ICT to a slight degree: computer usage - 21.9%; Internet usage - 14.2%; and, websites - 6.2%. By contrast, establishments with 16 persons or more used ICT at a high proportion, e.g., with more than 81.1% of establishments using computers (Santipaporn 2010).

Indicator[1/]	Total	Size of Establishment (No. of persons)	
		Fewer than 16 persons	16 persons or more
Proportion of establishments using computers	23.5	21.9	81.1
Proportion of employees using computers	22.9	23.4	22.5
Proportion of establishments using the Internet	15.7	14.2	68.5
Proportion of employees using the Internet	12.2	13.1	11.4
Proportion of establishments with a website	7.0	6.2	37.9
Proportion of establishments placing orders over the Internet	2.7	2.5	11.1
Proportion of establishments receiving orders on the Internet	1.8	1.6	9.6

Table 2 Indicators of ICT usage of establishments by size of persons (Santipaporn, 2010)

Among educational institutions, 99.7% of primary educational institutions had computers, while other levels of educational institutions had computers in every institution. Further, the overwhelming major of educational institutions had Internet access. For instance, Internet access for primary educational institutions, vocational and non-formal education levels, and the higher educational institutions, was 97.2%, 99.0%, and 100.0%, respectively.

At the level of the individual person and individual households, (see table 3), mobile phone popularity had rapidly increased from 28.2% in 2004 to 56.8% in 2009. However, the proportion of the population using computers and the Internet increased less robustly, going from 21.4% to 29.3% for computers during the 2004-2009 period, and from 11.9% to 20.1% for the Internet. Moreover, the Internet access of households increased very modestly, from 5.7% in 2004 to 9.5% in 2009; and broadband Internet access increased from 52.8% in 2006 to 55.1, while fixed-line telephone use decreased from 23.4% in 2004 to 21.4% in 2009 (Santipaporn 2010).

Using ICT	2004	2005	2006	2007	2008	2009
Proportion of individuals that used a mobile phone	28.2	36.7	41.6	47.3	52.8	56.8
Proportion of individuals that used a computer	21.4	24.5	25.9	26.8	28.2	29.3
Proportion of individuals that used the Internet	11.9	12.0	14.2	15.5	18.2	20.1
Proportion of households with Internet access	5.7	6.2	7.2	7.6	8.6	9.5
Proportion of households with access to the Internet by type of access						
Narrowband	-	-	26.3	21.7	22.8	24.0
Fixed broadband	-	-	52.8	58.0	48.7	55.8
Mobile broadband	-	-	-	-	4.6	7.7
Proportion of fixed-line telephones per 100 households	-	26.8	24.8	24.3	23.5	22.1

Source: ICT Household Survey, National Statistical Office

Table 3 Penetration and usage of ICT devices; 2004-2009 (population age 6 years and over) (Santipaporn, 2010)

The proportion of students per computer at the primary education level in Thailand was 14:1 persons per computer, 8:1 at the vocational level, 11:1 at the higher education level, and 109:1 at the non-formal education level. The proportion of teachers per computer at the higher education level was 3 instructors per computer, 5 instructors per computer at the vocational level, 10 instructors per computer at the primary education level, and 12 instructors per computer at the non-formal education level.

In 2011, Thailand was ranked 38th (out of 134 countries) in the global competitiveness report conducted by the World Economic Forum. It also was ranked well below the world average on all of the factors related to technology, despite the fact that information technology and telecommunications had been a major factor driving the competitiveness of the country. More specifically, the major problems for Thailand are concerned with the "pillar of technological readiness" – a measured used by the World Economic Forum to assess a nation's capacity to utilize information and communication technologies. Thailand was ranked 86th in number of Internet users, 64th in availability of the latest technologies, 66th in firm-level technological absorption, 88th in broadband Internet subscriptions, and 75th in Internet bandwidth.

ICT AND NATIONAL COMPETITIVENESS

In general, ICT has the potential to have both an economic and social impact on a nation. In terms of economic impact, the World Bank (Kim et al. 2010) found that in low- and middle-income countries, a 10 percentage point increase in broadband penetration could accelerate economic growth by 1.38 percentage points. In a similar study, McKinsey & Company (Company 2009) estimated that every 10 percent increase in broadband penetration in households could boost a country's GDP anywhere from 0.1 percent to 1.4 percent. In addition, Booz & Company (Sabbagh et al. 2010) found that a ten percent increase in broadband Internet penetration in a specific year is associated with 1.5 percent greater labor productivity growth over the following five years. Furthermore, the growth of Internet and mobile applications has created jobs and led to the creation of new businesses, such as e-business, e-commerce, mobile applications, and social media. ICT also has had an impact on entrepreneurship because it provides opportunities to create new types of business models, as well as reduces the cost of doing business. To summarize, there is a direct link between ICT and economic development. Several findings from both the

aforementioned World Bank and UN reports concluded that the more successful economies had more technologies and were better prepared to use them to enhance their competitiveness.

RESEARCH METHODOLOGY

This is a descriptive research. The data collection involves document analysis, and the data were collected from secondary sources, such as research databases, news, and related reports.

THE OVERVIEW OF THE TELECOMMUNICATIONS INDUSTRY IN THAILAND

The ICT market in Thailand had long been dominated by communication equipment and services, followed by computer hardware, and software and services, as can be seen in figure 1. As of 2011, communication accounted for just short of two-thirds (i.e., 61.7%) of the overall ICT market in 2011.
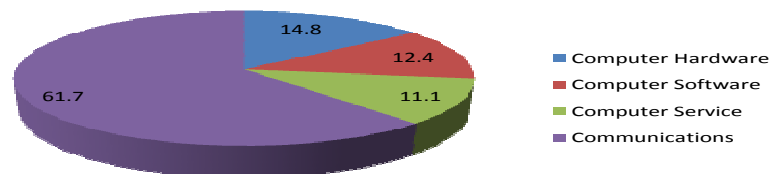

Figure 1 ICT Market Share in Thailand year 2009-2010 and estimation for year 2011

The communication industry in Thailand consists of two main segments: communication equipment and communication services, as illustrated the figure 2 and 3. The communication equipment market consists of voice and data equipment (such as fixed-line and mobile handsets), network equipment (e.g., core equipment and infra cabling), wireline (i.e., PBX/PABX, LAN Cabling), and wireless (access equipment). Communications services involve fixed (voice and value added) and mobile voice services (voice & non-voice), conventional data, IP services, internet access, and mobile non-voice services.
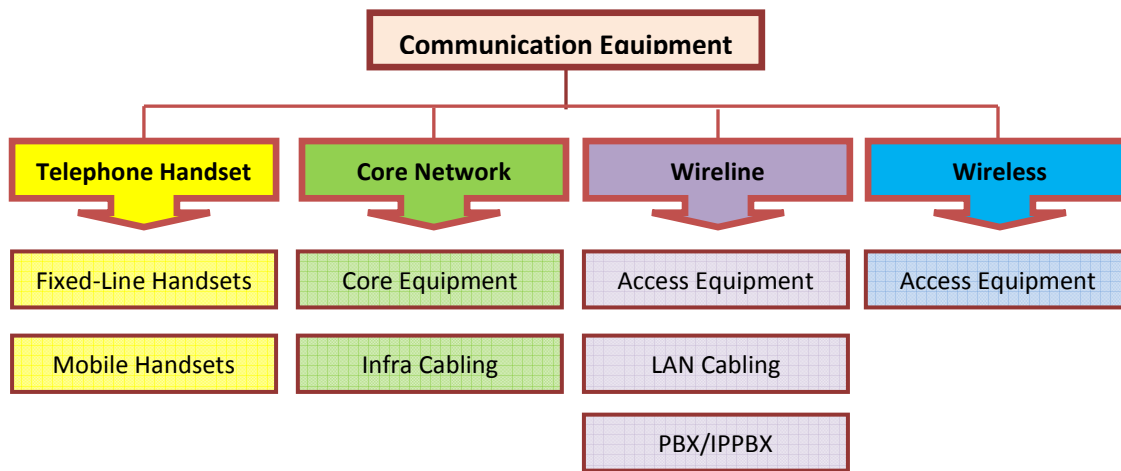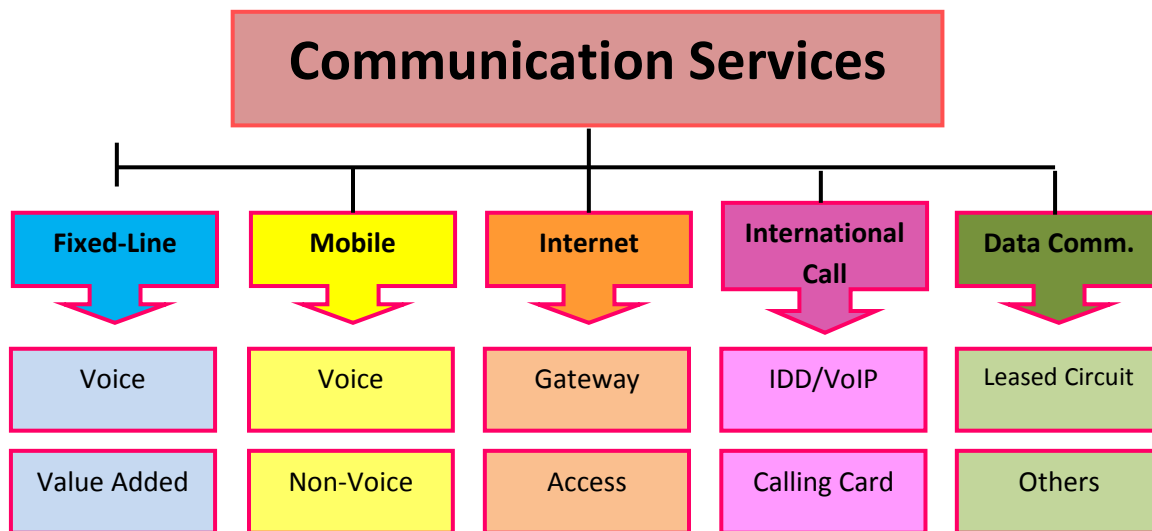
Figure 2 Communication Equipment

Figure 3 Communication Services

Communication equipment contributed to 35% of the total communication market, while the communication services contributed to 65% of the total market. The total communication market had experienced constant growth each year, e.g., increasing from a rate of 5.6% in 2009 to 9.2% in 2010.

There was a negative perspective regarding growth for communication services, especially fixed-line services, the increasing demand for mobile services. Mobile services had grown in popularity because of their perceived ease of use, convenience, and price, which were much cheaper than in earlier years. However, although not growing as fast, fixed-line services remained in the race due primarily to the popularity of subscriber trunk dialing (STD) and international calling. In the mobile services arena, there were two different types of services, i.e., mobile voice service (prepaid, postpaid) and mobile non-voice service (GPRS, SMS, MMS). The market growth for the mobile voice service declined 1% in 2009 due to a combination of factors, including the economic recession and market saturation.

By contrast, the non-voice services, such as SMS, MMS, Mobile Internet, and mobile entertainment service, showed significant growth for 2010, totaling 24,598 million baht. This phenomenally high growth was the result of the popularity of the social media, such as Facebook, Twitter, YouTube, Foursquare, mobile internet, and mobile entertainment applications.

The Internet Access Service of Thailand consisted of the International Internet Gateway (IIG) and (National Internet Exchange), which included narrowband and broadband services, and wireless Internet. In 2009, there was a positive growth of 8.8% for the market, equivalent to a monetary value of 20,840 million Baht. For the Voice Over the Internet Protocol or VOIP market, there was also a positive growth of 3.9%. The force behind the growth of this sector was the increasing speed of the connection at lower prices.

Technology advancement continued to play a significant role in the communications sector. Innovations such as 3G technology and mobile application technologies were driving this sector. Additionally, the 802.11 N or Wireless N Technology and WIMAX for wireless Internet broadband ensured the continued expansion of the market. Further, the use of devices such as smart phones, PDAs, and other mobile computing accessories was growing rapidly, which would further bolster the growth of segment 1.

Apart from the wireless technology, Fiber Optic High-Speed Internet played a vital role in boosting the internet sector. Furthermore, the technology that enables workers to communicate and collaborate with other parties is emerging to be an important tool for businesses to improve employees' productivity while reducing business costs, such as travelling and real estate costs.

Other than the continuous improvement of innovation, support from the government is considered to be one of the most important aspects in improving the efficiency and effectiveness of the communication industry of Thailand. The government has launched various ICT programs to improve the availability of the communication for the country as a whole, most recently the "National Broadband Policy." In 2010, the Ministry of Information and Communication Technology (MICT), in consultation with the National Telecommunications Commission (NTC), set up a task force to prepare a framework for the national broadband policy for Thailand, with the aim of providing broadband internet access at an affordable price to all areas. The policy was expected to cover at least 80 percent of the population by 2015 and at least 95% by 2020 (MICT 2010).

Structure of the Communication Market

Two state-owned monopolies delivered communication services to the Thai market – i.e., the Telephone Organization of Thailand (TOT), the provider of domestic services, and the Communications Authority of Thailand (CAT), which provided international service. Prior to the restoration of democracy in 1992, both organizations had been under the control of the Thai military, with serving and retired army officers managing the TOT and air force officers managing the CAT. Subsequent to the restoration of democracy, both organizations came under the Ministry of Information and Communication Technology (MICT), as can be seen in figure 4.

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[1] The process of the 3G roll out had begun in 2010. Unfortunately, however, by the end of 2011, the spectrums for 3G (1.9 GHz to 2.1 GHz radio frequency band) and other broadband wireless services (WiMax and 4G) had not been awarded to any operators, except TOT and CAT, which greatly limited the availability of service. Since only state-owned TOT and CAT could use the 3G spectrum, the price for 3G services was high and the service area was limited. The other players (AIS, True, Dtac) had to wait for the NBTC to announce the spectrum management master plan, at which time the 3G roll out was to commence in earnest. The 3G and other broadband wireless services were expected to be licensed by auction late in 2012.

Telecom Structure

- In the past, telecom services provision was in the age of monopoly by two state-owned enterprises:
  - ➢ TOT – provided domestic telephone services
  - ➢ CAT – provided all international telephone services
- The PTD was responsible for stipulating policy and a regulatory framework for frequency management.

Organization Acronym: -

MICT: Ministry of Information, Communication & Technology
PTD: Post and Telegraph Dept
NTC: National Telecommunications Commission
TOT: TOT Corporation PLC

MICT
↓   ↓   ↓
PTD   TOT   CAT
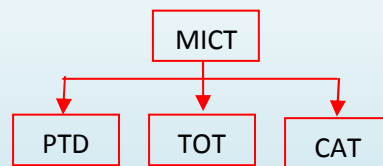
Legal Facts :
- PTD supervision was under the Radio Communications Act 1995
- Telephone Organization of Thailand Act 1954 established the TOT to provide all domestic telephone services
- The Communications Authority of Thailand Act 1976 established the CAT to provide postal & international telephone services

Concession Systems

Because the Thai telecom market was dominated and regulated by TOT and CAT, any private companies that wanted to engage in the telecom business needed to have a concession contract with either TOT or CAT. However, the dispensing of different concession contracts with different conditions made the Thai telecom structure very unique and complex. For example, operators paid different concession fees, and some operators had to pay a concurrent access charge while some did not. Further, TOT concessionaires were obliged to share revenue with TOT, while CAT concessionaires shared revenue with CAT but paid an access charge to TOT. Figure 5 describes the concession systems in the Thai telecom market.
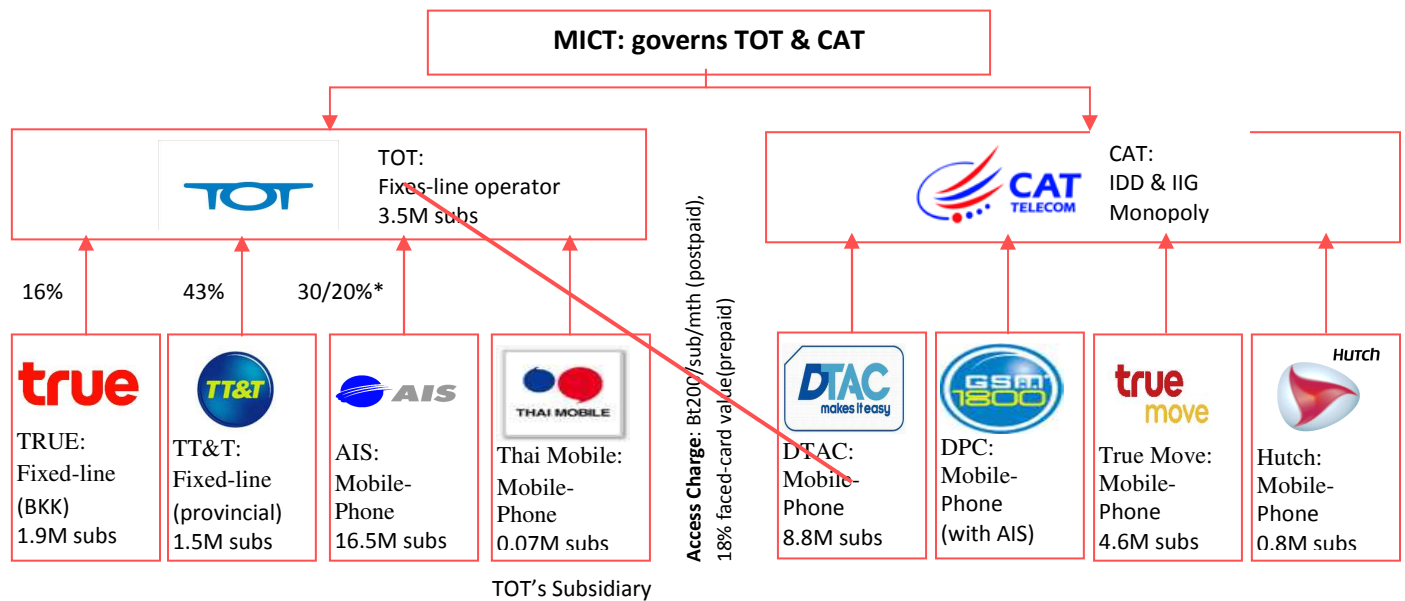
Figure 5 The Concession System in Thai Telecom

Oversight Bodies

Because of the Thai government's later realization that the telecom monopoly and concession systems could hurt competition, two independent regulatory bodies—the National Telecommunications Commission (NTC) and the National Broadcasting Commission (NBC)—were established, pursuant to the Constitution of 1997, to supervise the telecom and broadcast industries, respectively. The law provided that thereafter any government agency that owned a radio frequency in telecommunication or broadcasting needed to return the frequency to either NTC or NBC to be reallocated. The law also provided that upon establishment of the NTC and NBC, the concession systems would end. The NTC commissioners were appointed in December, 2004, while the NBC never became an operating entity due to political conflict that eventually resulted in a new oversight arrangement.

More specifically, the Constitution of 2007 ended the separation between the NTC and NBC by stipulating the establishment of a unitary oversight authority, the National Broadcasting and Telecommunications Commission (NBTC). While waiting for the NBTC to be founded, the NTC sought to act on behalf of the NBTC to supervise the telecom industry. Since Thailand still did not have a 3G (third generation) cell phone network, in September 2010, the NTC made arrangements to hold a 3G license auction (IMT 2100). However, before the auction could be held, the CAT sued the NTC in the Administrative Court, claiming that the NTC did not have the authority to hold the auction. CAT claimed that the NBTC had to be founded before the 3G license auction could be held. The outcome was the September 23, 2010 issuance of an injunction order by the High Administrative Court that stopped the 3G auction. By the Court's order, only government-owned operators (i.e., TOT and CAT) were allowed to roll out 3G. As a result, the subsequent 3G service from TOT's and CAT's rollout proved to be very limited and poorly distributed. It was not until November, 2010 that the NBTC commissioners were appointed. Once the NBTC entered operating status, the telecom structure was to be changed from concession systems to license-based systems (see

figure 6). In such license-based systems, the NBTC was to function as an independent regulatory agency to supervise the policy, regulation and development of the industry, with TOT and CAT to be treated on the same ground as the licensees.
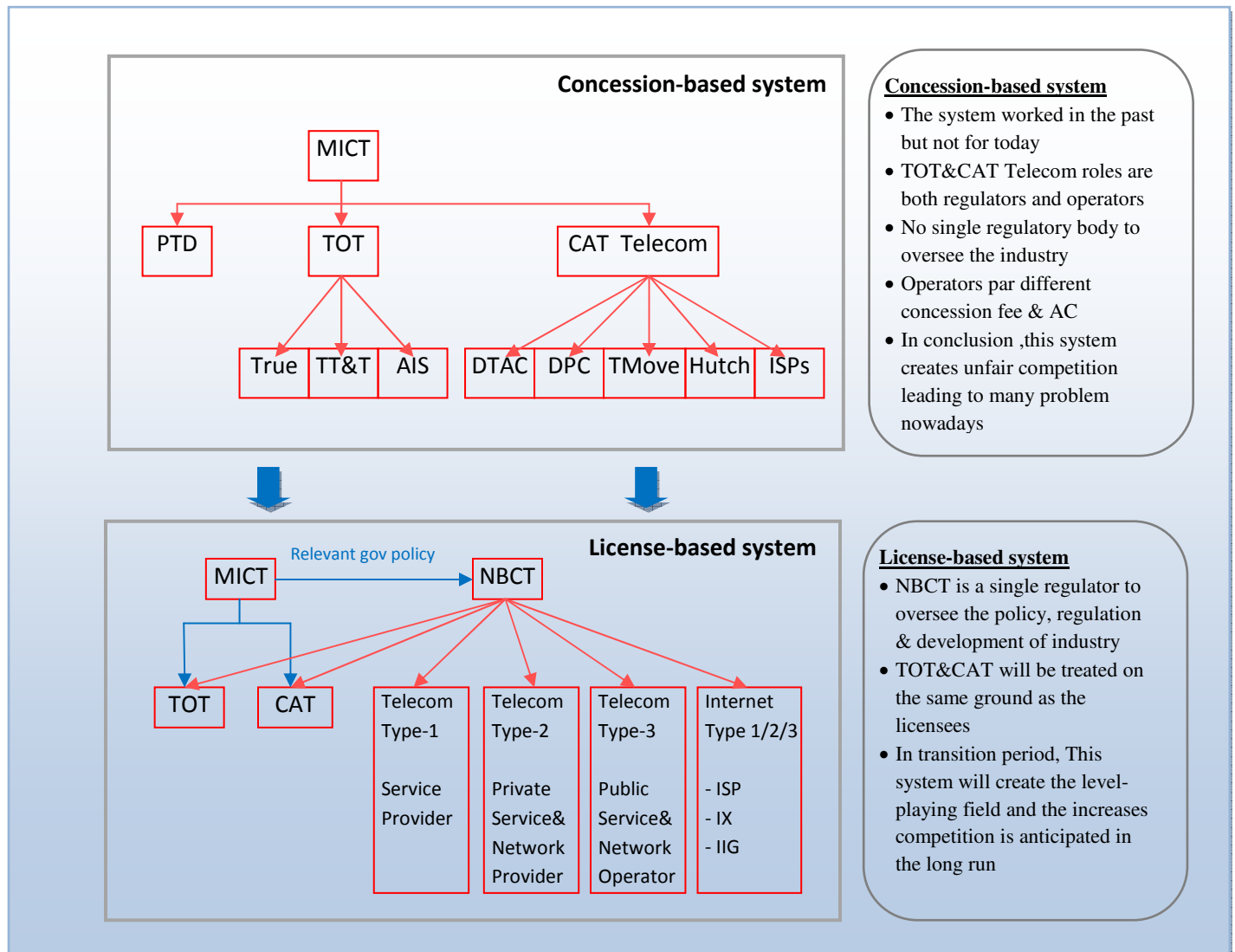

Figure 7 A comparison between concession-based system and license-based system

Despite the strength of a high user-adoption rate for the mobile market, the telecom segment of the ICT industry in Thailand continued to confront the threat represented by governmental interference in the market via concession agreements controlled by the two state-owned companies, TOT and CAT, which resulted in unfair competition in the industry. The continuing delay in implementing a 3G network due to politics and politicking by various entities constituted another ongoing threat—a threat that, in turn, made universal access to ICT impossible in that people in some remote areas still could not access the Internet or telecommunication technology.

ONGOING CHALLENGES AND DILEMMAS CONFRONTING THE THAI TELECOMMUNICATIONS INDUSTRY

Going forward, the country faced a number of challenges and dilemmas in further developing the Thai telecommunications industry and bringing it on par with the advanced economies that Thailand aspired to. These challenges included, among others, the disparity of information access among different segments of Thai society (i.e., the "digital divide"), increased public dissatisfaction with the quality and prices of the various types of telecommunications services, the ongoing lagging behavior of Thai companies with respect to the adoption of ICT innovations, and the continued impasse over the development of a commercial 3G network.

Disparity of Information Access

The country continued to have a wide disparity of information access, with access for some segments of the ICT sector greater than for others. Indeed, this "digital divide" was quite large compared to that in other developing countries. For example, in broadcasting, uniformly across all regions of the country, nearly all Thai households (i.e., over 96%) had access to public television and more than half (i.e., 58.0%) had access to radio. For fixed-line telephones, a technology that was continuing to lose consumer favor to mobile phones, the Bangkok metropolitan area had the highest proportion of households with such devices (i.e., 56 telephones per 100 households), while the proportion in the provinces ranged from 6 to 40 per 100 households (see table 4). On the mobile phone front, the gap between urban and rural areas was considerably smaller—an approximately 76% usage rate in Bangkok and environs versus a range of between 50% and 62% in the regions, with an overall country rate of nearly 57% (see table 4).

Region	Proportion of households with[1]		Proportion of individuals that used[2]		
	television	Radio	Computer	Internet	Mobile phone
Entire Kingdom	96.3	58.0	29.3	20.1	56.8
Bangkok	97.8	67.3	45.8	38.0	75.5
Central	96.5	54.3	29.8	19.3	62.3
Northern	95.7	64.4	27.8	19.5	54.8
Northeastern	96.2	56.6	25.3	16.7	50.2
Sothern	95.5	47.2	27.6	17.5	52.6

Source: 1/ Household Socio-Economic Survey, National Statistical Office
2/ ICT Household Survey, National Statistical Office..(See Annex 1)

Table 4 Proportion of households with television, radio, and proportion of individuals that used computers, the Internet and mobile phones, 2009 (Santipaporn, 2010)

Region	Proportion of households in rural area		
	With Electricity	With Computer	Connect Internet
Whole Kingdom	**98.1**	**9.2**	**30.3**
Central	98.1	12.7	40.7
Northern	96.6	10.2	29.2
Northeastern	98.8	6.4	18.4
Southern	97.5	8.5	29.8

Source: Fundamental Telecommunication Services in Local Area Survey, National Statistical Office

Table 5 Proportion of households in rural areas with electricity, computers, and Internet connection, 2010

However, the situation was appreciably less rosy in the area of information technology, where the gap between people that were able to access information technology and people that could not use ICT continued to be quite wide. For example, in 2009, with only about 29.3% of the population using computers and only about 20.1% using

the Internet (Santipaporn 2010), the proportion of people using information technology in Thailand was much lower than that of other developing countries (such as Vietnam, Philippines, Malaysia and China), particularly with respect to the Internet usage proportion (Stats 2011). In addition, the disparity of ICT use between the Bangkok metropolitan area and the regional areas was quite high.

Government Efforts to Narrow the Digital Divide

Although helping people at every level and in every region of the country to have a computer and access to the Internet in a short period of time was difficult, the government had tried to fix the disparity of computer and Internet use by conducting projects and creating strategies to support educational units, as well as helping community and district units obtain computers and Internet access. However, people still lacked enhancement for effective accessibility to information and communication in remote areas. However, with only 10% of rural households having computers (despite nearly 100% rural electrification), it was likely that the prices of computers still placed them beyond the pocketbook of most of the farming population, which constituted the majority of rural citizens. Further, a lack of education or instruction on how to utilize computers was believed to further contribute to the urban-rural gap in usage of information technology (see table 5).

A particularly difficult challenge to overcome was the big gap between rich and poor people, especially in urban and rural areas, which had mainly impacted human development in terms of intellectual property, as well as social and economic status. This was a main challenge for Thailand—to reduce the gaps between the rich and poor, and between the educated and uneducated related to accessibility to information technology, by providing Internet and mobile networks for everyone in all areas in order to disseminate information, news and education to them at the same level. This would lead to developing the country's sustainably through ICT development, which was an important and basic factor for improving the quality of people's lives in the long run.

Increasing Public Dissatisfaction with Certain Telecommunication Services

With the use of ICT having become such an integral part of people's lives, particularly in the urban areas, it was not surprising that complaints about services would increase in proportion to the spreading usage of the services. According to the Telecommunications Consumer Protection Institute, problems related to telecommunication services had become the highest among all complaints. In the first quarter of 2011, there were 1,382 complaints related to telecommunication services, categorized as shown in table 6.

Types of Complaints	Number of Complaints	Percentage
Mobile Phones	1,019	73.73
Internet	311	22.50
Fixed Phones	52	3.76
Total	1382	100

Table 6 Top complaints in Telecommunication Services

Source: http://www.tci.or.th/complain_stat.php#complain_stat

Regarding mobile services, the top complaints included SMS spam and highly-expensive charges for data roaming services, as well as prepaid services. Regarding Internet services, the top complaints were that the actual speed of the Internet did not correspond to the high speed that Internet operators had advertised and that the bills were often incorrect. For fixed-phone services, the top complaint was incorrect billing charges. These complaints had been increasing as the adoption rate increased due to these services having become necessary for people's daily lives and business.

Government Efforts to Remove the Causes of the Complaints

In the effort to remediate these problems, in 2007, the government established the Telecommunications Consumer Protection Institute (TCI) under the supervision of the NBTC to protect consumers that experienced telecommunication problems, whether with a home phone, mobile phone, public telephone, or the Internet. The TCI was empowered to investigate any dispute between telecom providers and consumers and to render legally-binding decisions, accompanied by the requirement that the telecommunications providers resolve the consumer complaint within 30 days. However, a subsequent focus group comprised of telecom providers revealed that telecommunication companies were very dissatisfied due to the perception that the position that the TCI took was biased in favor of consumers. Also, apart from the telecommunications sector, there was no evidence of any consumer protection bodies on the hardware, software, and services side. For example, it was not clear who would be legally responsible for a software or hardware failure—the producer organization or the user organization. If it were treated in the same fashion as a machine that harms or injures, the software or hardware producer would be held liable. However, the laws to protect software and hardware users did not exist as of 2011.

Continued Impasse over the Development of a Commercial 3G Network

Beginning in 2001, third-generation cellular network technology ("3G") had played an increasingly important role in developing the ICT cluster both in developed and in developing countries.   However, Thailand was among a very few countries in Southeast Asia that did not have a 3G (third generation) network as of 2010, despite the fact that, with 69 million users, its mobile phone usage rate was beyond 100%, its 24 million Internet users represented a penetration rate of 35%, its 12 million mobile Internet users represented a 17% penetration rate, and its 1.2 million smart phone purchases in 2010 suggested a rapidly-growing market.

The continued lack of a 3G operation in Thailand was deemed to have contributed to the relatively slow improvement of ICT in the country, compared to neighboring countries. Until 2011, Thailand was still among a very few countries in the world that still operated under the 2G network (second generation cellular network). In the view of some experts, the lack of a commercially available 3G network would generate a THB 50 billion loss in investment during 2010-2011, and also cause the country's banking sector to lose the income that would have resulted from lending capital to the would-be operators of a 3G network (Sander et al. 2010).

The lack of a commercially-available 3G as of 2011 could be traced, broadly, to inter-agency politics, and narrowly, to August 2010 court decisions that the NTC did not have the power to issue a new spectrum which would support 3G. The country would have to wait, the court essentially said, for the operationalization of the newly-established National Broadcasting and Telecommunication (NBTC) that had been recently formed from a merging of the roles of the NTC and NBC, before 3G licenses could be issued. These judicial developments had prompted numerous expects to speculate that the telecommunications market in Thailand was a widely-orchestrated conspiracy because the emergence of NBTC would mean the end of concession systems. That is, ownership of the frequency spectrums presently owned by many government organizations (e.g., CAT and TOT) would have to be transferred to the NBTC for re-allocation (see figure 5 and 6). As a result, these organizations would lose the majority of the revenues generated by granting concessions of the current 2G networks to mobile network businesses such as AIS, DTAC, and Truemove. Indeed, some experts pointed out that without concession systems, TOT and CAT would not be able to survive financially because 60-70% of their revenue came from concession fees. Therefore, in the view of many industry observers, government organizations involved in telecommunications in the country were attempting to prevent the emergence of a new broadband such as 3G in order to preserve the concession benefits as long as they could.

Numerous experts speculated that the longer that Thailand had to wait for 3G and other mobile broadband technologies, the slower would be the improvement in the ICT cluster. This, in turn, would likely lead to Thailand falling behind others in terms of information and telecommunication technology, as the country could not upgrade new technologies to the extent that its neighboring countries could. Among other unfortunate outcomes would be the potentially-adverse impact on the educational development of the country, in that people in rural areas would still lack access to technology and information, a principal cause of the digital divide in the country.

CONCLUSION

No country can be competitive without having an efficient telecommunications infrastructure. Telecommunications affect the way in which people share information. In other words, telecommunications have become an enabling factor in enhancing the competitiveness in every sector. There is general agreement that ensuring access to information is one of the most significant investments any country can make. However, Thailand has fallen behind many developing countries in terms of its telecommunications infrastructure. Thailand is one of a few developing countries that still do not operate a 3G network due to political and legal conflicts. The concession systems in the telecommunications industry have created unfair competition, and a digital divide is prevalent. In addition, although the number of mobile phones and Internet users has been steadily increasing, complaints related to telecommunications services are rising. The lessons learned from this study can be used to guide policy for telecommunications development in other developing countries.

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