

MOBILE OPERATOR

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Within the mobile telecommunications sector, fierce competition between mobile phone service providers has encouraged the deployment of a wide range of marketing strategies and spurred high levels of investment in the expansion of network coverage. Following the introduction of 3G connections in mid-2013, demand for data services accessible via mobile networks has grown very rapidly and earnings from non-voice and data services has accordingly developed significantly. Nevertheless, when compared to the service income growth rates of 4-5 years ago, in 2017, rates of expansion are not so high and this may indicate a signal of early stage for market saturation and a gradual recovery of consumption.

Over the next 3 years, mobile operators believe that they have the potential to continue building income due to recovering consumption and the growth of their customer bases through the expansion of service networks. At the same time, competition on price and investment will remain strong and costs incurred through bidding for access to government-controlled frequencies and continuing investment in network development will place downward pressure on profitability.

Overview

In 2016, the Thai communications sector had a total value of slightly under THB 580 bn, or some 4% of GDP. This represented growth of 7.7% on the 2015 figure and is split between services and equipment, with the former having a value of THB 330 bn (57.3% of the total) and the latter THB 250 bn (42.7% of the total) (Figure 1). Of the total communications sector, mobile communications have a combined value of around THB 400 bn (68.7% of the total), divided between services (THB 240 bn or 60.9% of the total) and equipment (THB 160 bn, or 39.1% of the total) (Figure 2). Most of the growth in the communications sector has come from development of the wireless industries, which, when compared to the earlier development of wired communications, has been very fast. This has been a result of the rapid technological development of both networks and devices, though operators have also been very active in making investments to expand coverage. The outcome of this is that over a short period of time, wireless communications have improved in quality and have found a wide range of applications and uses and when this is combined with customer preferences for ease and convenience in all things at all times, the continuing expansion of the sector is clearly strongly supported.

The first Thai mobile phone carriers were two state enterprises, the Telephone Organization of Thailand (TOT) and CAT Telecom Public Company Limited^{1/} since these two organizations held the rights to the radio frequencies used for mobile communications and also operated as service providers. Operations commenced in 1986, first by TOT, which used the Nordic Mobile Telephone (NMT) system, carrying signals at 470 MHz. CAT used the alternative Advanced Mobile Phone System (AMPS), carrying signals at 800 MHz. However, both organizations switched their model of operations to the granting of concessions to private operators which then provided services

Figure 1: Thailand Communication Market

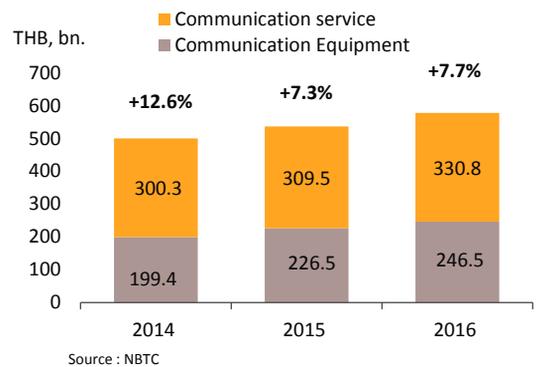
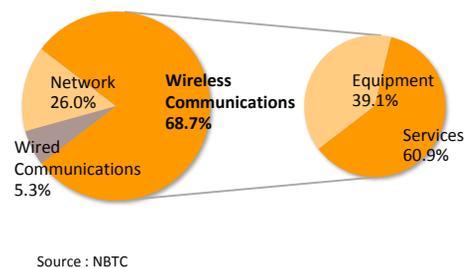


Figure 2: Communication Market classified by Type



^{1/} Before taking their current form as TOT and CAT Telecom, the forerunners of these organizations had responsibility for managing, respectively, domestic and international telecommunications.

under a build-transfer-operate (BTO) contract (Figure 3). In this system, the private sector service provider invested in building and running the network and then collected fees under a revenue-sharing agreement (with 20-40% of revenue being returned to the grantor of the concession). On the termination of the concession, ownership of the equipment used to provide services is transferred from the concessionaire to the concession grantor (i.e. to TOT or CAT Telecom). The private companies which were initially granted concessions were: (i) Advanced Info Services (AIS), which operated the analogue NMT 900 system, transmitting at 900 MHz, before switching to the digital GSM 900 system; and (ii) Total Access Communications (TAC and now DTAC), which operated the AMPS system on Band B at 800 MHz, before transitioning to a digital system, transmitting at 1,800 MHz. In addition, TOT and CAT granted concessions to other mobile service providers, including DPC, Hutch and RealMove.

In 2005, for the first time, officials allowed a greater degree of freedom for the communications sector to operate under a licensing system, although no new frequencies were allocated to the private sector. More important for mobile operators was the decision of officials the following year to raise the limit on foreign ownership in telecommunications businesses to 49%, which had previously been set at 25% in the Telecommunications Business Act (2001). In addition, the 2010 Act on Organization Assigning Frequency Waves and Supervising Broadcasting and Telecommunications Business Operations legislated for the National Broadcasting and Telecommunication Commission (NBTC)^{2/} to organize bidding for operators' to purchase licenses to use specified frequencies to carry mobile traffic. This paved the way for bidding for the 2.1 GHz frequencies in 2012, which in turn helped to open the way to the third generation of the Thai mobile telecommunication and the provision of 3G (3th Generation) services within the country. A new system of licensing was then instituted such that from 2013, when CAT and TOT concessions expire and return to these organizations, the relevant frequencies will be managed by the NBTC, which will organize competitive bidding for them.

Figure 3: BTO Contract vs. License

	BTO	License						
Grantor	TOT/CAT	NBTC						
Period	25-27 years (term ending 2018)	15-18 years						
Asset Ownership	TOT/CAT	Operator						
Regulatory Cost Structure	20-30% of Revenue Share	Auction License Fee + 4.0% of Revenue Share						
	$\text{BTO Contract Fee} = \text{Revenue + Access Charge Sharing}$ <p style="text-align: center;">20-30%</p>	$\text{License Fee} = \text{Auction License Fee} + \text{Annual Fee} + \text{USO}$ <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: 1px solid black; padding: 2px;">Year 1-4</td> <td style="border: 1px solid black; padding: 2px;">1.5%</td> <td style="border: 1px solid black; padding: 2px;">2.5%</td> </tr> <tr> <td colspan="3" style="border: 1px solid black; padding: 2px; text-align: center;">4.0%</td> </tr> </table>	Year 1-4	1.5%	2.5%	4.0%		
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- The Build-Transfer-Operate (BTO) contracts let mobile operator be entitled to build and raise capital for investment in the cellular network and transfer the network ownership to the grantor (TOT/CAT), then operate the network and service commercially.
- The Universal Service Obligation (USO) is for the Broadcasting & Telecommunications Research & Development Fund for the Public Interest under the supervision of the NBTC

Source : NBTC

These developments have helped to stimulate rapid growth for Thai mobile telecommunication, especially since the introduction of 3G services. At the same time, the ability of operators to partner with non-Thai companies means that they are able to draw on large investment pools and these have been sufficient to cover not just operations but also upgrades from analogue to digital systems and spending on the expansion of networks to cover almost the whole country. As a result, quality of service has constantly improved and broadened.

^{2/} The National Broadcasting and Telecommunication Commission (NBTC) is an independent state agency established by the Act on Organization Assigning Frequency Waves and Supervising Broadcasting and Telecommunications Business Operations (2010). Under this Act, two sub-committees have been established to carry out the work of the NBTC. These are (i) the broadcasting committee, which manages matters related to television and radio and (ii) the telecommunications committee, which, naturally enough, looks after issues related to telecommunications.

To date, the NBTC has run four sessions of competitive bidding to license frequencies for mobile operators. These have been for:

- 1) The 2.1 GHz frequencies (2012), which went to (i) Advanced Wireless Network (AWN), part of Advanced Info Services (AIS), for THB 14.63 bn, (ii) DTAC TriNet (DTN), part of Digital Total Access Communication (DTAC), for THB 13.50 bn, and (iii) Real Future, part of True Corp., for THB 13.50 bn.
- 2) The 1.8 GHz frequencies (2015), which went to (i) True Move H Universal Communication (TUC), part of True Corp., for THB 39.79 bn and (ii) AWN, for THB 40.99 bn.
- 3) The 900 MHz frequencies (2015), which went to (i) TUC for THB 76.29 bn and (ii) Jas Mobile Broadband (JMB) for THB 75.65 bn. However, JMB failed to fulfill its obligations within the specified time so the frequency was re-auctioned^{3/}
- 4) The second offering of the 900 MHz frequency (2016) went to AWN for THB 75.65 bn.

Mobile service providers

Operators in the Thai mobile sector can be divided into two groups.

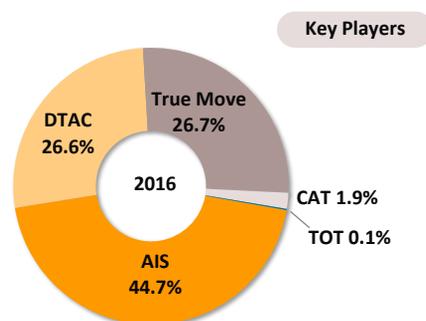
The first group comprises those operators which have the right to carry signals on a certain frequency (i.e. mobile network operators, or MNOs) and which have the infrastructure or network to independently offer mobile telecommunications services. This group may be subdivided into:

- 1) The state enterprises TOT and CAT Telecoms.
- 2) Private enterprises, such as AIS (e.g. AWN), DTAC (e.g. DTAC and DTN), and True (e.g. TUC).

Private operators enjoy almost complete dominance of the market, having a 98% share of all users (Figure 4), and all mobile operators offer a wide variety of services. These include voice services, for making telephone calls both domestically and internationally, and non-voice/data services, which might be used to send data, images, and audio to other users, to access the internet or other content, or for additional telecommunication services. Payment for services may be made either on a monthly billing basis or via prepaid credit (Figure 5).

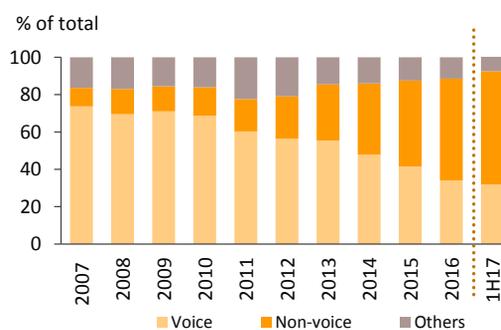
The second group is made up of operators which offer services on virtual networks, and which are thus called mobile virtual network operators (MVNOs). These companies are able to offer mobile services, although they do not have a license to operate at a specified frequency and do not have their own networks. Instead, they buy capacity from TOT and CAT Telecom, and in some cases act as wholesalers and resellers to consumers. Examples of companies in this group include (i) Real Move, (ii) companies which operate on the TOT network, such as i-Mobile 3G, I-Kool 3G, IEC 3G and MoJo 3G, and (iii) companies which operate on the CAT network, such as 168 Communication (previously 365 Communication) and White Space (Penguin Sim).

Figure 4: Share of Major Mobile Operators by Subscriber



Source: NBTC

Figure 5: Proportion of Mobile Service Revenue



Source: Operators

^{3/} JMB was unable to make the required payments to cover its license and guarantees in the specified time-frame and so the NBTC invalidated that auction, holding a new one (its fourth) on 27th May 2016.

Table 1: Mobile Operators and Spectrum Capacity

850MHz	900 MHz	1800 MHz	2100 MHz	2300 MHz	2600 MHz	Total
 15 MHz end 2025 *	 10 MHz License end 2030	 15 MHz License end 2033	 15 MHz License end 2027			 55 MHz
 10 MHz Concession end 2018		 25 MHz Concession end 2018	 15 MHz License end 2027	 60 MHz Partnership with TOT (License end 2025)		 50 MHz
	 10 MHz License end 2030	 15 MHz License end 2033	 15 MHz License end 2027			 40 MHz
 15 MHz License end 2025		 20 MHz Dtac unused, end 2018				 35 MHz
			 15 MHz License end 2025	 60 MHz Partnership with DTAC (License end 2025)		 75 MHz
					 48 MHz	 48 MHz
					 24 MHz	 24 MHz

* Wholesale agreement with CAT

Source: Compiled by Krungsri Research

The mobile telecommunication services in Thailand have some characteristics of oligopoly because entry to the market requires access to sizable funds to cover the cost of building a network and keeping abreast of rapid technological changes, and so operators which are on a sound financial footing will be able to exploit this fact and to enjoy a semi-monopolistic position in the market. In addition, restrictions posted by government regulations also help to influence the market structure. These include specifying the initial price of operating licenses, the annual revenue sharing fee, and the requirements and timescale for investing in systems, installing equipment and expanding networks to ensure complete coverage. Moreover, at present, foreign share-holding is limited to a 49% stake. Entry into the market by small and/or new operators is therefore difficult and new operators will face a large number of obstacles so it is no surprise that in the auctions for operating frequencies, no new entrants to the market have appeared. Instead, new companies which have been set up by existing operators have bid for and won licenses, for example TrueMove H Universal Communication, a subsidiary of True Corp. Those new operators which have moved into the market have been MVNOs which are renting network capacity from state enterprises and in 2016, there were only two new operators including White Space (Penguin brand) and Data CDMA (My World brand).

▲ Situation

Despite a small number of key operators, the market competition for mobile telecommunications has recorded stiff competition especially after the introduction of 3G services in mid-2013. The development of a variety of operating systems (iOS, Android and Windows Mobile) for use on mobile devices also helped to boost demand for mobile data services and operators seized the opportunity caused by the transition to a new era of on-line mobile communications to invest in the expansion of their networks and so secure and expand market share. The extent of mobile coverage is an important influence in deciding which service to use and because of networks' continuously expanding area, the number of fixed telephones (or landlines) has gradually declined. In fact, the Mobility Report states that in 2016, there were more mobile than fixed phones and by 2021, at a total of 80 million, the number of smart-phones in use will be double the 40 million in use in 2015 ^{4/}. Meanwhile, the International Telecommunications Union (ITU) reports that because of the speed of development of its use of ICT over the past 5 years, Thailand has been classified as one of the 'most dynamic improvement countries' in 2015 and due to the rapid take up of 3G and 4G services and the widespread use of mobile internet. In 2017, Thailand ranked 78th among 176 countries in ICT Development Index, better ranked from 2016 (Table 2).

Overall business situation 2016 and 2017

- **The key service providers** remain the big three private operators, namely:

- 1) AIS, together with other members of its network such as AWN, dominates the sector with a 49.2% market share in terms of service income and 40.5 million customers' accounts.
- 2) True Corp. (with RealMove, TrueMove H, and TUC) is in second place with a 25.5% market share and 26.2 million accounts.
- 3) DTAC (together with DTAC Trinet) has a 25.3% market share and 23.6 million accounts.

Given the rapid development of digital technology and the borderless nature of the modern world, **mobile service providers depend for their continuing survival on winning the race to invest in networks and in the complicated, hi-tech equipment on which they rely.** The sector is dominated by a small number of large operators each with their own preexisting customer base and so the market has had oligopolistic characteristics for quite some time but despite this, competition remains fierce over not just price but also constant investment in networks, which are now being upgraded to handle global mega-trends such as 4G technology and the development of digital platforms to meet the challenge of the 'internet of things' (IOT). Service providers which have restricted access to carrier frequencies and which may see their concessions come to an end first, such as DTAC, are thus emphasizing a broad range of business and marketing strategies to reduce competitive disadvantages and to increase network utilization.

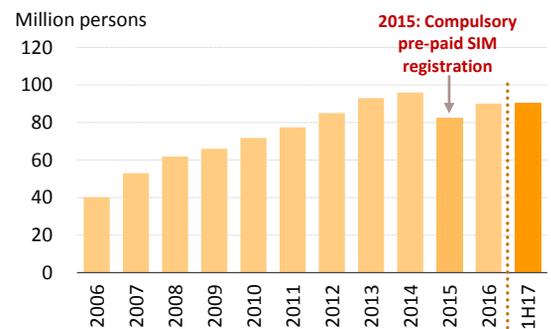
- **The number of mobile phone accounts and the mobile penetration rate have steadily increased**, driven by constant demand, consumers' day-to-day behavior (customers now typically use their mobile phone as their main communications device), the expansion in network coverage which includes even the most distant areas, continuous development and improvement of mobile devices which are available in a wide variety of types and at ever lower prices, and technological developments which have led to faster and more reliable network connections. The outcome of this is that **in 2016, there were around 90 million phone numbers in use, up from 80 million in 2012**, when auctions of 3G (3rd Generation) frequencies were held, **and increased to 90.3 million phone numbers in 1H17**. Accounts are split between pre- and post-paid (i.e. payment is made either in advance through the purchase of credits or after the fact through monthly billing) with 71.4 million of the former numbers and 18.9 million of the latter. Overall, in 1H17, the mobile phone penetration rate was around 130% representing more than one telephone number in use per member of the population (Figure 8).

Table 2: IDI 2017 Regional Rank: Asia & Pacific

Economy	IDI 2016 Rank	IDI 2017 Rank
Korea (Rep.)	1	2
Hong Kong	6	6
Japan	11	10
New Zealand	12	13
Australia	16	14
Singapore	20	18
Macao, China	29	26
Brunei	54	53
Malaysia	62	63
Thailand	79	78 
China	83	80

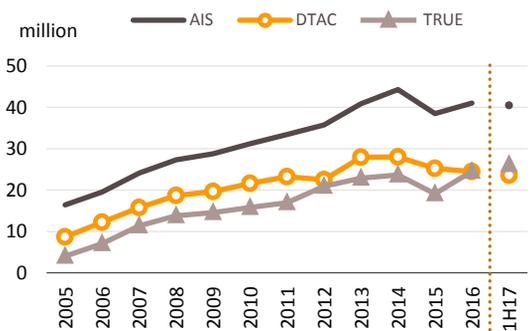
Source : ITU

Figure 6: Mobile Subscribers



Source: Operators

Figure 7: Private Mobile Operators' Subscribers



Source: Operators, compiled by Krungsri Research

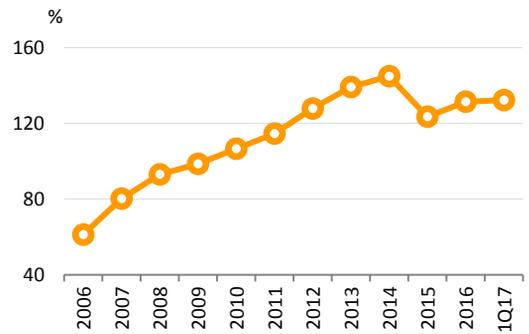
In 2015, the number of users dropped somewhat as a result of the introduction of government measures which required the registration and confirmation of identity of purchasers of prepaid telephone numbers.

- Income for mobile operators' service (Voice, non-voice/ data services and others)** For the first half of 2017, Income from services posted 6.9% YoY expansion, continuous growth from 5.7% YoY in 2016. Supporting factors to serve income partly came from extending network coverage to all corners of the country and converting prepaid payment system of some customers. For those, service income of AIS increased by 4.8% YoY, followed by True 20.7%. While DTAC posed 0.7% contraction (Figure 9). Notably, service income growth was not an impressive rate when compared to the average of some 10% seen in 2011-2012, partly explained by 1) high levels of price competition between providers, for example, offering the cheap service packages and subsidizing the costs of mobile phones 2) weakened consumers' purchasing power affected by high level of household debt and 3) the market condition that is likely close to saturation, with a penetration rate of over 130%, and so expanding the customer base will proceed only slowly.

- Non-voice/ data services are playing an increasingly important role in building income growth** due to changing consumer behavior which is encouraging the use of mobile devices more for data transmission. By the end of 2016, data service income grew by 24.4% YoY with 54.5% share of total income, partly compensated 12.3% drop in voice service with 38.8% share of total income. As for other service income, for example fees for network connections or overseas call charges, increased by 2.0% YoY. **For the first half of 2017, Income from data services rose by 31.8% YoY provided 60.6% share of total income**, while voice services decreased 22.7% (share 31.9%) and other services rose 18.6% (share 7.5%) (Figure 10).

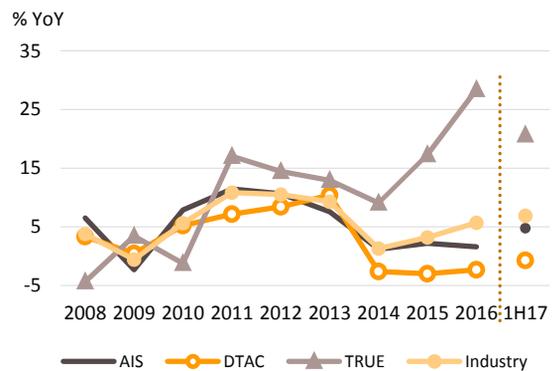
- Meanwhile, net profits have fared less well, although revenue recognition is up.** High levels of price competition and heavy investment in network expansion and the construction of new transmission towers have eaten into profits. Some providers, for example True, have also had to pay for its spectrum license in order to access transmission frequencies and this too has put downward pressure on profitability. For 2016, the net profit margin for the sector therefore fell to 12.0% from 19.9% in 2015. **For the first half of 2017, Net profits stood at 10.4% YoY.** At 23.5%, AIS enjoyed the highest net profit rate. For DTAC, the rate was 3.0%, while for True investment expenditure pushed margins into negative territory (Figure 11).

Figure 8: Mobile Service Penetration Rate



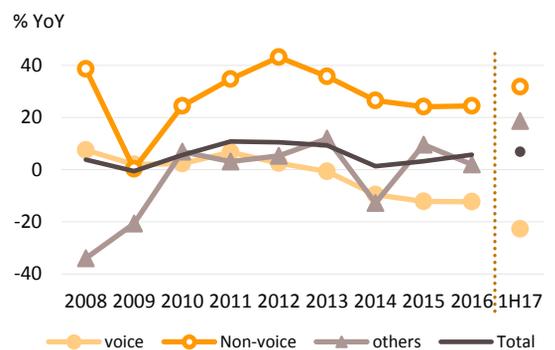
Source: NBTC

Figure 9: Growth of Mobile Service Revenue



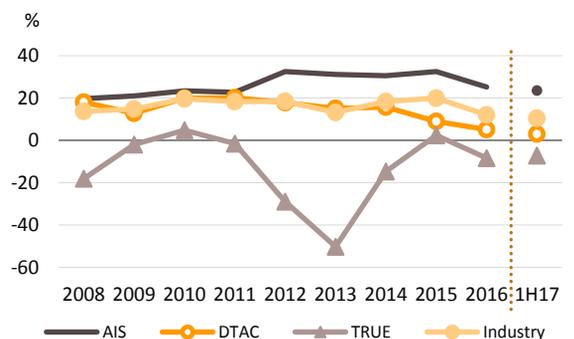
Source: Operators

Figure 10: Mobile Service Revenue Classified by Type



Source: Operators

Figure 11: Net Profit Margin



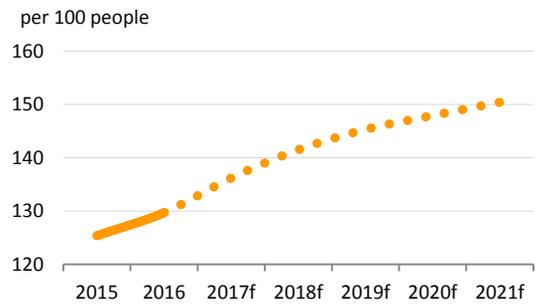
Source: operators

Industry Outlook

For the next three years, mobile service providers are expected to see continuous growth in the market, and income from services should grow at 4-5% per year. This will be supported by:

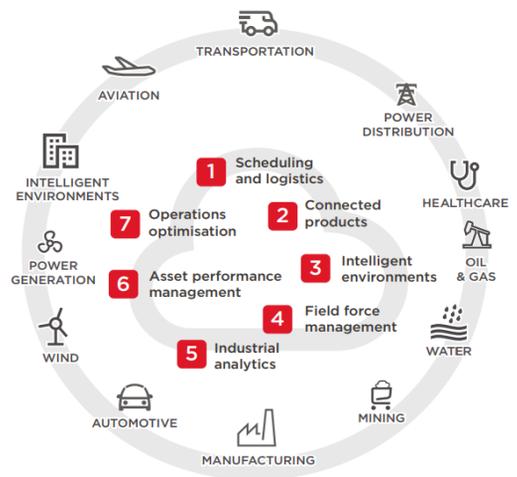
- **Businesses have the opportunity to gain new customers in the provinces** following the upgrade of networks to provide 3G and 4G services. Coverage has now been extended very widely and so the speed and quality of access of mobile internet has improved markedly, and this encourage increasing use of and demand for internet access via mobile devices in new areas, especially among those with higher levels of purchasing power outside the Bangkok region (Figure 12).
- **Rapid innovation and development of digital technology is having an effect on almost all businesses as they try to adjust to the new digital world.** This is also changing consumer behavior, which strongly favors the use of smart-phones, in particular mobile internet and applications which are used as e-commerce platforms and at the same time, familiarity is growing with the use of online services, an area in which Thailand ranks third in Asia. Applications which are particularly popular include those connected with financial services, online purchases of goods and services, entertainment, lifestyle, live broadcasting, social media, travel, promotions, and accessing new content. This will all be important in building demand for the provision of mobile services ^{5/}, while the internet of things is gaining a foothold in agriculture and industry and this too will likely feed into greater future demand for mobile access. (Figure 13).
- **Income from data services is replacing voice services as the main source of income** thanks to increasing use of smart-phones. The NBTC forecasts that demand for smart-phones will help the market for mobile devices grow by 7.8% in 2017 from 6.7% in 2016, while Ericsson estimates that by 2023, number of smart-phones in use in Thailand will reach 100 million, increasing from 65 million smart-phones in 2017. For this reason and to meet growing demand from increasing number of users, service providers will accelerate market promotions for smart-phones by offering cheaper smart-phone devices, a wider range of service packages and more various value-added services.

Figure 12: No. of Mobile Subscriptions



Source: EIU, these numbers are the EIU's own projections and estimates with standardized measures globally

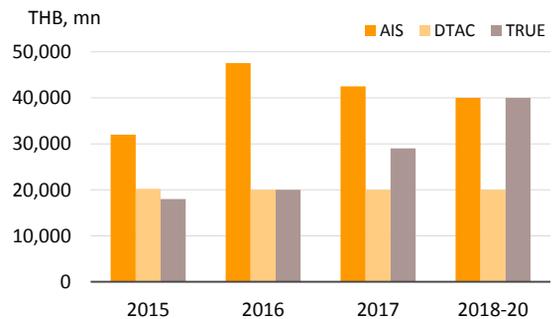
Figure 13: The Industrial Internet Platform



Digital technology will be linked into industry mostly via mobile platform.

Source: GSMA Intelligence, General Electric

Figure 14: Investment Budget in 2015-2020



Source : Compiled by Krungsri Research

5/ Ericsson Mobility Report: June 2017

- **Cost pressures on operators are beginning to abate** following the switch from the government running concessions, that the operators have to pay a full 20-30% of their annual income to the government, to bidding system for licensing operations which need only certain fees for licenses that pose lower cost burdens for operators. In addition, fees for Universal Services Obligation (USO)^{6/} have also been cut to be at 2.5% of service incomes compared to the previous 3.75% (effective in May,2017) that help reduce operating cost. However, the operators remain to carry investment cost burdens for further development in networks that would somewhat restrict growth potential to a certain extent but with this, operators have full rights to the equipment in which they have invested and they are able to rent this out or to use it as they wish to generate further incomes, or to use existing facilities for business expansion with lowering costs in the future. (Figure 14).
- A further advantage for the sector is that **the government's 'digital economy' policies** will help to develop the national broadband infrastructure and to spread this technology to all the villages of the country (e.g. through the netpracharat project). Other policies, such as the Eastern Economic Corridor (EEC) will also increase demand for information technology and support income growth for mobile service providers.

However, operators will face a number of challenges which will restrict their ability to raise profitability;

- Increasing rivalry over price as operators fight to increase income from data services by expanding their 4G customer base and this has the potential to multiply competition. Moreover, **even though the number of mobile phone users has steadily increased, average income per user has remained stable or increased only slightly.**
- **Other factors which may impact income growth include:** the imposition of price ceilings on service charges by the government; uncertainty in the economy, which may hold back private sector investment and household spending (users in household sector occupies higher proportion of expense in telecommunication market rather than do those in business and public sectors); efficiency allocating government funds for spending on communications infrastructure; quality control and the expansion of service provision according to the government specifications; and making sufficient investment in network coverage that would put an impact on total cost.
- **There is only a limited number of frequencies for use by operators and plans for auctioning them are unclear,** while at the same time, the world moves closer and closer to the advent of 5G. This latest round of mobile technology development (5G) promises to bring unprecedented data transfer speeds to the mobile world, allowing for very large quantities of data to be transmitted, based on the internet of things that data system will be automatically interconnected among various devices via digital technology such as electric appliances and electrical vehicles. 5G is, therefore, expected to have potential impacts on lifestyles and business operation in the future. The International Telecommunications Union (ITU) anticipates that 5G should be deployed by 2020 with the bandwidth^{7/} capacity of least 100 MHz required for the service providers. The NBTC states that 5G requires access to the 690 MHz frequency but at present, Thailand has only 420 MHz available. Given unclear frequency allocation plans, there will remain uncertainty risks for the business that need strategic investment plan in new technology, this may lead to an economic opportunity loss in overall.

Table 3: Plans for future frequency allocation

Year	Details
2018	<ul style="list-style-type: none"> ● The 1.8 GHz (45MHz) and 850 MHz (10 MHz) bands that are still under concession contracts from state-owned enterprise CAT Telecom, both agreements will expire in September 2018. <ul style="list-style-type: none"> ■ Plan to auction in January, so as to avoid service disruption. ■ There will be one 15-year license for 5 MHz of bandwidth on the 900 MHz spectrum, with a starting price of 37.9 billion baht. The 1800 MHz spectrum will have three 15-year licenses, each with 15 MHz, with bids for each to start at 37.5 billion baht. ● The 2.6 GHz (80MHz) band which is owned but unused by state-owned public broadcaster MCOT, is planned to auction by 2H18.
2020	<ul style="list-style-type: none"> ● The World Radio Communication Conferences (WRC) in 2015 officially endorsed Thailand's position to allocate the 700MHz band for mobile communications. Currently, it is being used by analog television channels. ● Planned to allocate 45MHz, divided into 3 licenses, for mobile telecommunications in 2020.

Source: Compiled by Krungsri Research

Note: * unofficial target date

6/ Universal Services Obligation (USO): providing universal service supply for basic telecommunications services covering both spatial and social dimensions, to mitigate the problems and enhance potential of digital usage within the country. It has collected partial revenue generated by licensed service providers as subsidization for the operations.

7/ Bandwidth: the range of frequencies

▲ Krungsri Research's view

This business has a potential to expand along with consumer's purchasing power recovery. However, strong competition on price and the burden of high costs such as investment in technology, network expansion, transmission towers and licensing fees, and business costs coming partly from marketing expenses, and subsidizing mobile handsets would restrict profitability.

- **Mobile Operator:** Service providers on their own network will benefit from the opening up of 4G services and the subsequent likely increase in demand for mobile internet services but fierce competition and the cost of ongoing investments will weigh on profitability, which is unlikely to reach very high levels as ever.
- **Network Contractor:** Companies providing services to expand network capacity will grow in line with the expansion of the coverage of, for example, wireless services (3G and 4G), terrestrial digital television services, and networks which are part of the infrastructure of the digital economy.
 - **Large operators** have income growth potential and opportunities to expand operations into neighboring countries. In addition, income will be generated from upgrades to network systems, for example by burying data cables.
 - **SMEs/ Subcontractor** will face challenging levels of competition in the marketplace, due to their disadvantages of business network weakness and higher operation costs compared to large operators as well as high numbers of competitors in the market.
- **Wholesale of mobile phone and mobile phone shop (SMEs):** Companies will see continuing growth in sales thanks to solid demand for smart-phones. Cheap devices and subsidies from service providers will provide increasing opportunities for consumers to enter the market, particularly up-country. However, risks exist for members of this group as competition remains strong and devices undergo constant and rapid technological change so sellers may face losses as a result of stocking old models and having to cut prices. Wholesale agents, who have greater negotiating power, will face lower levels of risk than will smaller, independent retailers.

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