Digital TV: New Landscape for Thai Broadcasting Industry

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***Abstract*--Broadcasting industry in Thailand is considered oligopoly due to its six free TV operators dominates the industry. The six free TV operators earned advertisement income more than 3.06 billion US dollars in 2013, and the number is expected to reach 6.2 billion US dollars in the next five years. Recently, the National Broadcasting and Telecommunication Commission (NBCT) – the independent ICT regulatory body of Thailand, began to auction out operating licence for the new digital TV campaign that is based on DVB-T2 technology (Digital Video Broadcasting Terrestrial version 2). Thailand's broadcast will be transformed into the new era through the newly established industry structure that has 3 layers that are consisted of network provider, service provider and content provider.**

The forthcoming digital TV campaign will be diversified and opened itself to business opportunities for small and medium-sized operators. It will enhance content development and consumers will get a variety of content from the six existing free TV stations and newly added 48digital TV channels. This change will draw added investment of 3.06 billion US dollars via networks, set-top boxes, content and channel operation. Also, it will offer an opportunity for satellite TV equipment manufacturing industry to surge. This occurrence will be considered as the second major change in Thai broadcasting industry. The first took place four decades ago when black-and-white TV was converted to colour one.

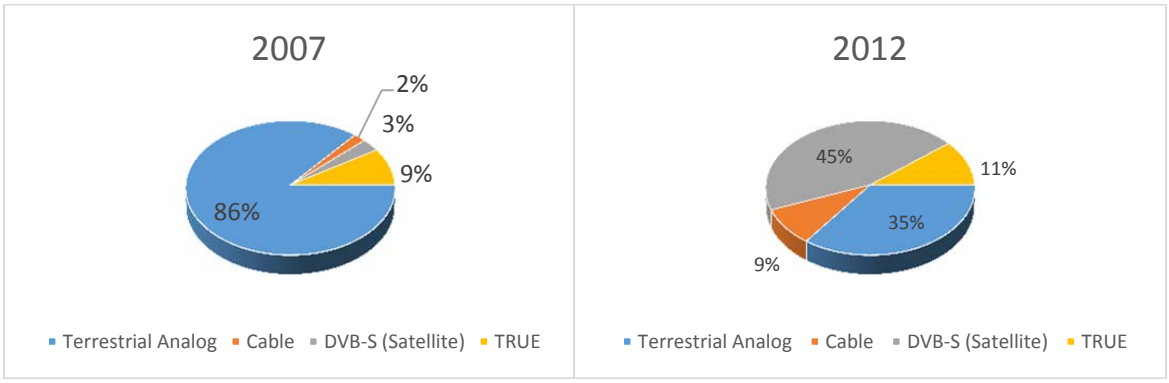
This paper first introduces the existing broadcasting scenario in Thailand, then it investigates the new landscape, especially terrestrial TV, with its inherent opportunities as well as threats. Finally, the author proposes implications and recommendations for digital TV arrival.

I. INTRODUCTION

Thailand television broadcasting started operation in black and white on 24 June 1955. Color telecasts (PAL, system B 625 lines) were introduced in 1969, and color transmissions were launched later in 1975. At present time of Thai TV Industry, there are four categories of TV providers. The four kinds of TV providers is consisted of free over-the-air TV, paid Cable TV, paid Satellite TV and internet TV. In addition, this industry is considered single layer industry in its nature. There are 22 million households that have TVs in the country. TV penetration per household is 99 percent nationwide where coverage area is 98 percent.

The penetration of satellite television in Thailand has grown from less than 10 percent five years ago to 45 percent in 2012 as illustrated in Figure.1. In the case of Internet TV, it has just begun recently, so there are much less subscribers than other types. The advertising expenditure in all media in 2012 was about 3.06 billion US dollars of which 58 percent went to TV which was around 2.08 billion US dollars [4].

In the view of the current terrestrial TV channels, it could be considered as oligopoly industry because the market is dominated by six free TV channels. They are consisted of Thai TV3 (Ch3), Channel 5 (Ch5), Channel 7 (Ch7), MCOT (Modern 9 or Channel 9), NBT (Channel 11) and Thai PBS (Public Broadcasting Service). Ch3 is licensed by Modern 9 who is a state-owned enterprise. Ch7 is in contract with the Royal Thai Army's Ch5. NBT is the station owned by Department of Public Relation. Thai PBS is an independent media-organization funded by percentage from Excise Tax.



Source : AGB Nielsen Media Research

Fig.1 : Market share of all types of broadcast

In 2012, Ch7 topped the list with 47 percent of audience share. Ch3 was ranked the second at 33 percent. Both stations have 80 percent share of audients. In terms of revenue market share, both Ch7 and Ch3 still dominated at the total of 59 percent. Ch7 got only 31 percent followed by Ch3 at 28 percent while Modern 9 was at 19 percent and Ch5 was at 18 percent. [4].

II. NEW ERA OF TV INDUSTRY

Thailand has prepared for the new era of the ICT industry which includes telecommunication, broadcasting and IT sectors. The new telecommunication and broadcasting law had been enacted at the end of the year 2010. The new law had been a result of the new constitution law in the year 2007. One of the reasons to pass such the new telecommunication and broadcasting law was the rapid change of telecommunication and broadcasting technologies, especially their convergence and the impacts on ICT industry. In terms of regulation and policy making, the new law caused two significant changes as follows: 1) a newly established single regulatory body namely "NBTC – National Broadcasting and Telecommunication Commission" instead of two bodies for each broadcasting and telecommunication sectors, and 2) an independent body is under the supervision of Senate, not under Governmental regime.

A. New Industry Architecture

Figure 2 presents the new industry architecture. The industry will have 3 layers: 1) Network provider, 2) Channel provider and 3) Content & Application provider. The new era of broadcasting begins with the transformation from analog to digital of terrestrial television service of the nation. Not only will 22 million households be able to watch superior quality TV programs on more channels, but businesses ranging from upstream to downstream will also benefit from this coming development.

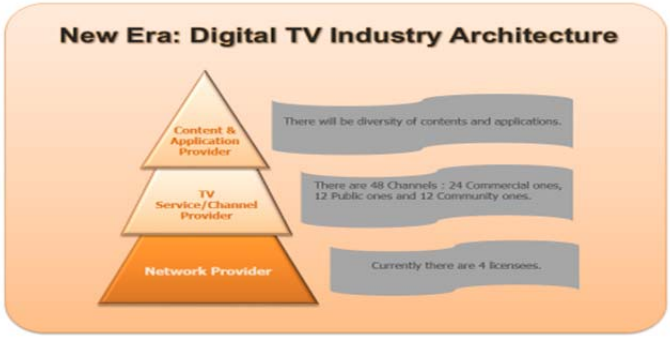


Fig.2 : New Era of TV Industry Architecture

Last year, the NBTC firstly awarded four licenses for network providers. All of them are government units and state-owned enterprises. Then, Channel providers were auctioned in December 2013 and expected to begin broadcasting within February 2014 with 50 percent of household coverage in June 2014 [7].

The NBTC has a plan for the 48 digital TV channels. Twelve (12) channels will be reserved for public interest TV and another 12 channels for community-based service. These channels will be aired in standard definition (SD). The remaining 24 channels will be for commercial purposes, comprising three (3) SD channels for children/family programs, seven (7) SD channels for news/information programs, seven (7) SD channels for variety programs, and seven (7) high-definition channels for variety programs. The NBTC will allocate the 12 public channels via the beauty contest method and the 24 commercial channels via the auction method [6].

Under its master plan for the transition to digital TV and radio, the NBTC expects 95 percent of households will be able to access to such services within five years. However, consumers may have concern on how to receive digital TV and if they need to buy a new TV set. There are two options to receive digital OTA TV broadcast signals. The first is to use a set-top box to convert the digital TV signal to match an analogue receiver. The box costs about 30.6 US dollars currently, but the price is expected to drop in short time. The second option is to buy a new TV set with a built-in digital tuner, marked by the NBTC's sticker of approval. One advantage of digital TV is that consumers will not have to install an antenna. The NBTC requires licensed network providers to provide signal coverage in city areas. Therefore, the screen image will be clearer with no visual noise. For those watching TV on a satellite system, they do not need to change TV sets. According to NBTC rules, a satellite set-top box provider must broadcast at least 12 public TV channels on its network; then, it can choose other channels from the children's, news, SD variety and HD variety categories on their own. The NBTC has earlier approved subsidy coupons to be distributed to 22 million households in Thailand once the auction is completed in order to expedite the digital TV transition. The coupon will be worth about 21.1 US dollars towards the purchase of a converter box. The NBTC will gradually hand out coupons in line with network coverage area.

B. International Compliance

Digital terrestrial television (DTTV or DTT) is the technological evolution of broadcast television and an advancement of analog television. DTTV broadcasts land-based (terrestrial) signals. The purposes of digital terrestrial television, similar to digital versus analog in other platforms such as cable, satellite, and telecommunications, are 1) to reduce the use of spectrum and provide more capacity than analog, 2) to provide better quality picture and 3) to lower operating costs for broadcast and transmission (after the initial upgrade costs). A terrestrial implementation of digital television (DTV) technology uses an aerial to broadcast to a conventional television antenna (or aerial) instead of a satellite dish or cable television connections. Competing

variants of broadcast television systems are being used around the world. Advanced Television Standards Committee (ATSC) creates the ATSC standards that use an ATSC tuner in North America and South Korea, an evolution from the analog National Television Standards Committee (NTSC) standard. Integrated Services Digital Broadcasting (ISDB-T) is used in Japan, with a variation of it being used in most of South America. DVB-T is the most prevalent standard, covering Europe, Australia, New Zealand, Colombia and some countries of Africa. DMB-T/H is China's own standard including Hong Kong and Cuba, though Hong Kong's cable operators use DVB. The rest of the world remains mostly undecided. ISDB-T is very similar to DVB-T and can share front-end receiver and demodulator components. Several European countries have switched from analog to digital terrestrial television.

In case of Thailand, The NBTC has endorsed the adoption of Digital Video Broadcasting – Terrestrial Second Generation, or DVB-T2, as the terrestrial digital television broadcasting standard for Thailand.

In November 2009, at the 10th Conference of the ASEAN Ministers in Vientiane, Lao PDR, ASEAN Ministers Responsible for Information (AMRI) are agreed that ASEAN should adopt a phased approach toward analog switch-off over a period of time from 2015 to 2020. Later, in the joint media statement of the 11th Conference of the ASEAN Ministers Responsible for Information, held in Kuala Lumpur, Malaysia, on 1 March 2012, the ASEAN Ministers noted the progress of the implementation of digital broadcasting in ASEAN Member States towards analog switch-off from 2015 to 2020. The Ministers also endorsed the "Guidelines for ASEAN Digital Switch-Over," which will serve as a shared blueprint to aid all Member States in their transition towards digital broadcasting. These guidelines are based on the best practices of the various ASEAN Member States and referenced from the "Guidelines for the transition from analogue to digital broadcasting" developed by the International Telecommunication Union (ITU). In the area of technical standards, the Ministers noted that the Asian Digital Broadcasting (ADB) recognizes that DVB-T2 be a more advanced technology compared to DVB-T and acknowledges the benefits of migrating directly to DVB-T2. The Ministers also noted that the ADB would develop common specifications for DVB-T2 receivers, to enjoy economies of scale.

The NBTC resolved in its meeting on 30 April 2012 to endorse DVB-T2, a Europe-based consortium standard for the transmission of digital terrestrial television, as the uniform standard for Thailand in the process of moving to digital broadcasting. The NBTC also reported to the Thai Cabinet that, in making the decision to endorse DVB-T2, it attached great importance to the use of broadcasting frequencies for the maximum benefit. This also complied in accordance with Section 47 of the present Constitution of Thailand, which stated that transmission frequencies for radio or television broadcasting and telecommunication were national communication resources for the public interest. According to NBTC, the decision would also promote cooperation with other ASEAN partners, which agreed to endorse DVB-T2 as the ASEAN common digital terrestrial broadcasting standard. The decision was based on the affordability of set-top boxes as well, which would benefit the public, who could be able to buy them at low prices. The Cabinet, during its meeting on 20 May 2012, acknowledged the NBTC's decision, which was regarded as a significant step for Thailand to work out a roadmap for the implementation of digital broadcasting.

C. Migration Plan

According to the draft statement from the NBTC, Digital TV implementation plan will take 4 years from 2013 to 2018 as follows [10]; 1) 2013 – 2014 : 50 percent of households (22 million households nationwide), 2) 2014 – 2015 : 80 percent of households, 3) 2015 – 2016 : 90 percent of households, 4) 2017 – 2018 : 95 percent of households.

However, Thailand adopted soft ASO (Analog Switch Off) scenario. Among the six existing channels, Ch3 and Ch7 belong to private sector. They are under concession contracts from different government agency and state enterprise. The contract will end in 2020 for Ch3 and in 2023 for Ch7. The NBTC has decided to let the concession contracts continue until that time and let the channels shutdown the analog transmission voluntarily. Another reason for such decision is to avoid legal issue. The other four existing channels agree to the NBTC's recommendation and will make ASO no later than 2020 since all are government agency and obtain network provider licenses as rewards. Three of them may also get new licenses in the remaining public license category which means they do not need to enter into auction process.

Fortunately, ASO could be shorter than expected because Ch3, Ch7 and Modern 9 obtained licenses from the latest auction on 26 - 27 December last year (2013). Hence, they could abandon analog transmission as early as possible to avoid operation and maintenance duplication if they run two systems in parallel.

III. IMPLICATIONS OF DIGITAL TV ARRIVAL

There are several issues concerning the challenges of Thai digital TV such as advertisement spending, change of consumers' behavior, contents and applications to support multiple platforms, business model to fairly distribute revenue across value chain, legal right, copy right, censorship and digital dividend.

A. New Investment and Economic Boost

In 2014, a considerable amount of investment may be foresighted following the licenses auction as mentioned below:

- Four network providers will need to invest at least 0.43 billion US dollars on broadcasting towers and facilities to replace existing analog equipment,

- Due to fierce competition in bidding in the NBTC's auction for 24 commercial channels held on 26-27 December last year, NTBC will earn at least 1.56 billion US dollars [11] and 4 percent of winning channel provider revenue,
- Investment in new content and program production Infrastructure will be 1.53 billion US dollars,
- New Digital TV and set-top box will cost about 1.38 billion US dollars; however, the NBTC will offer subsidized coupons worth around 21.1 US dollars per household to assist soft transformation,

This process of auction will create jobs in the industry and generate new businesses such as production houses and network and facility providers, worth about 0.31 billion US dollars. Manufacturers of digital TV sets, set-top boxes and indoor/|outdoor antennas will also gain benefit. TETA (Thai Electrical, Electronics and Telecommunication Industries Association) projects that this manufacturing sector will be boosted by more than 0.62 billion US dollars in investments. Apart from manufacturers of TV sets and signal converters, Cable Thai Holdings (CTH) also plans to import hybrid digital set-top boxes, which are able to work with terrestrial and cable TV signals, from China in 2013.

Another field expected to boost economy in this business sector is a subsidy scheme. The NBTC agreed to offer discount coupons for 22 million households to encourage them to buy either new TV sets or set-top boxes to enable them to view programs on the new digital channels. A local distributor of DVB-T2 set-top boxes, the company has reserved a million sets (antenna plus set-top box) and has been waiting for the NBTC's green light to allow it to sell such products, which are expected to retail for less than 30.6 US dollars per set. This price is quite competitive to boost the industry activities. Authority should consider: 1) to monitor the coverage, quality and price of the digital TV network from network provider to service provider, 2) the possibility to stimulate technology transfer from abroad.

B. Revenue & Business Models

The fiercer competition for advertising revenue will urge TV incumbent operators to adjust their business strategies. It is also increasingly critical for advertisers to understand consumers' television viewing habits in the condition where there are more and more key players, in order to plan their media purchase.

The announcement of auction has drawn keen interest from new players to enter into broadcasting business. Once the digital broadcasting is officially launched later in the year, the transition is expected to boost the economy by more than 1.22 billion US dollars, according to the estimation of the TETA. Therefore, competition among potential digital TV bidders will be fierce as they vie to secure 24 licenses for commercial-purpose channels. Their aim is to share revenue from advertisement spending, which was worth more than 3.06 billion US dollars last year (with 60% going to free TV) and expected to be 4.13 billion US dollars in 2013 and reach 6.12 billion US dollars in the next five years [9].

In case of incumbents, once the quality and popularity of new Digital TV stations increases, advertising expenditures will no longer be concentrated on the incumbents. They may therefore need to lower their ad rates to be on a par with newcomers in order to remain competitive, as well as begin to look for new sources of income. For example, they might consider selling content as re-runs for other channels, or for broadcasting on television networks in neighboring countries. They might also focus on reducing programming costs by effectively use of human resource and production equipment. The acquisition of other successful TV businesses is also a strategic move to encourage the increase of the viewership base in this competitive environment.

In case of new comer, experts forecast that it will take one to four years for new players to confront with financial risk because of high initial investment and fewer audients. As was found in France, it could take as long as 2-3 years before new content starts to receive significant advertising revenue [2]. However, the advertisement spending should grow quite rapidly, allowing newcomers to gain increasing market share over the analog incumbents.

In case of Satellite and Cable TV operators, they also have been threatened by the arrival of Digital TV since advertisement revenue will be moved to the new regime. From the beginning, the new 24 channels will bring the advertisement rate down. Later, there will be 48 channels in operation in the future. It is very difficult for TV broadcasting to rate the programs and all of them may be rated rather in lower rating than present situation. It means the rate will be comparable to or even lower than satellite ad rate. Another threat is that some of satellite TVs and content providers may shutdown their own station due to their new license on Digital TV. In case of must-carry policy from the NBTC, satellite TV has to allow Digital TV signal to be transmitted through its capacity especially with very first channel number. This could expand the coverage of Digital TV, but will reduce numbers of subscribers of Satellite TV. Thus, the rest of Satellite TVs must find the way out by several strategies such as 1) upgrading existing customers with new satellite box embedded digital TV receiver, 2) cooperate and partnership with new Digital TV stations especially in supplementing more coverage area to them during first years, 3) reduce operating cost and 4) seek new and good quality content providers.

In case of Internet TV provider, all of them are telecommunication operators. They may be supplemental or make threat to Digital TV. At the end of 2013, there were 88.9 million mobile subscribers (137 percent penetration), of which 36.4 million (40.9 percent) were internet users. Broadband fixed line is about 5 million users (22.7 percent of households). However, most of them are not strong in content-related business. In addition, they are still using unicast mechanism which is not efficient in providing broadcasting characteristic. Recommendation is to establish

partnership between Internet TV provider and Digital TV provider.

The digital TV also boosts the broadcasting industry with new business within the industry itself and related enterprises in the supply chain. Digital TV will diversify and open business opportunities for small and medium-sized operators. The NBTC's highest goal is that digital TV channels will enhance content development in the market. Consumers will get a variety of content from the six existing free TV stations and 48 upcoming digital TV channels.

C. Convergence & Consumers' change of Behavior

This implication may impact and complicate Digital TV because of convergence of multiplatform that contributes to mobile broadband as seen in figure 3 below [3][5][8]. Mobile, fixed line, TV and data finally come to mobility with higher speed at last or first meters. Thus, TV content may be delivered through Fixed Line Internet, Data or Mobile including Social Media. Digital TV also plays an important role to the contents and applications delivered to the customers who may access from anywhere, anytime with any devices (one could call "Ubiquitous") as described earlier. This trend of convergence may contribute to and be vice versa derived from behavior change of customers as illustrated in Figure 3.

Behavior change of customer is the fact that one could play content such as TV content from a big Screen TV in the living room and may continue watching the same content while traveling to the office through a mobile phone or tablet. When going back home, one does not need to record that content and then replay it at home. He watches it in real-time. This results in multi-screen behavior of viewer. At present, one more behavior change of customer, especially new generation, is that he chats and shares information during watching TV contents. Several contents may not be simultaneously broadcasted. They can be hold off until appropriate time. There is no need for letters any more since he can read and sent e-mail through communication equipment. Furthermore, a smart digital TV set, equipped with internet (Wi-Fi/3G/FTTx), is available to consumer market. New digital TV equipment manufacturing is expanding to the value of 1.38 billion US dollars. This implication affects strategies as follows: 1) TV manufacturer will design TV set with full functionalities of internet and mobility, 2) digital TV station should take partnership with telecommunication operator, 3) digital TV station may cooperate with social media and search engine companies to get more attention and direct access from customers and 4) the involved authority may promote research and development including investment from abroad.

TV and Radio need more applications [1]. This will boost up content and application layer of TV industry architecture's activities. More SME (Small and Medium Enterprise) will be encouraged to enter into the market both as content provider and application developer. New applications could be content rating, apps on mobile, voting, news and message during content broadcasting etc. TV becomes new digital gadget received through big-screen digital TV, mobile, tablet or personal computer as shown in figure 4. Authorities may set forth their policy in assisting SMEs in this area including business start-ups in content and application Industry.

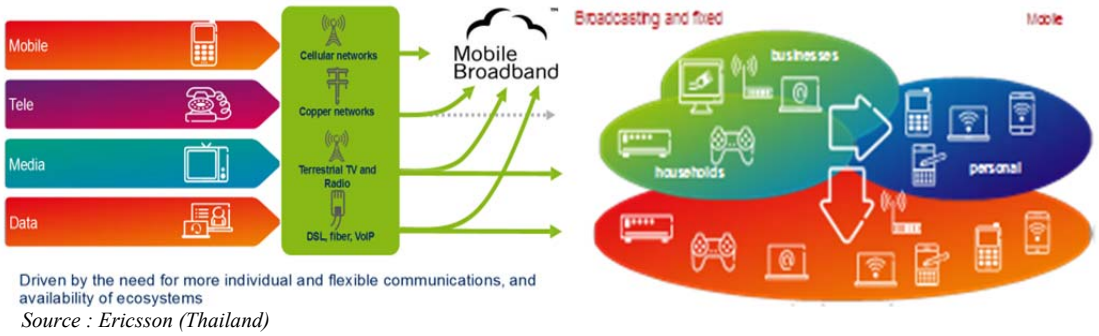


Fig. 3: Convergence of Multiplatform

Fig.4: Change in Behavior

D. Political, Censorship and Copyright Implication

As shown in figure 1 "Market Share of All Types," the penetration of satellite TV increases significantly. It could come from a couple of reasons. The first one is that satellite TV runs hundreds of channels, it satisfies customer's needs more than terrestrial TVs that have only 6 channels. The second reason relates to political uncertainty. Most terrestrial TVs belong to government regime, so they tend to broadcast the programs that do not offend the government. Thus, the anti-governments usually launch their own satellite TV where rules and regulations are far from putting in force with easy-to-open process. However, digital TV regime is different from the old terrestrial one because there will be 48 channels, and it is likely to be more difficult for the government to control. Another difference is that the regulation has been changed from government body to the NBTC, the newly established independent authority. The NBTC was founded from the latest Constitution in 2007, and it is independent from the government because it is under supervision of Senate house instead. However, the independent NBTC is said to not fully support government policy in certain perspectives such as broadband policy since it has their own rules and regulation.

While the NBTC is drafting amendments to the current 2008 Broadcasting Act, the four involved organizations - the National Press Council of Thailand, the Thai Journalists Association, the News Broadcasting Council of Thailand and the Thai Broadcast Journalists Association voice their concern over what is called the first ever regulation to prohibit television and radio from broadcasting content undermining "national security" and "public morality", and also to control how the media should produce their programs. Therefore, while the draft is waiting for public hearing session, the NBTC together with more than ten broadcast-media professional groups are ready to declare a joint statement for a commitment by doing self-regulation, based on media ethics & social responsibility. In February, the NBTC requested a meeting of 24 Digital TV Stations where it came up with the birth of a new professional association whose one of rules is to perform self-regulation.

Digital contents are subjected to protection from piracy. However, since they are easily to be copied, Thai community has to enforce the laws strictly. In the environment where law is enforced successfully, it will not only enable the creators of intellectual wealth, but also encourage the development of variety of contents to consumers.

Therefore, one may suggest the authority to 1) enforce the law and regulation by taking into consideration of people's freedom and transparency and 2) reconsider the independency from Government of the NBTC with pros and cons seriously.

E. Digital Dividend Implication

The digital dividend is the amount of spectrum made available by the transition of terrestrial television broadcasting from analog to digital. There is spectrum efficiency gain due to the switchover to digital terrestrial television services as follows: 1) several parameters determine the overall spectrum required to permit this transition, 2) more advanced technologies become available – digital dividend will increase and 3) analog transmissions need to be switched-off.

To achieve a successful transition to digital terrestrial television and to successfully implement the digital dividend, one could take the followings into consideration: 1) legal and regulatory measures for the migration to digital networks, 2) harmonized allocation of the digital dividend spectrum, 3) integration of all the relevant stakeholders into the process and 4) regional harmonization and cross-border coordination negotiations.

Unfortunately, Thailand Spectrum Management is a delicate issue. The frequency owners are reluctant to return them to the NBTC for re-distribution due to negative effect to their business and national security in some cases. Former frequency allocation was mostly conformed to ITU recommendations with minor exception. This might pose some difficulties in handling this Digital Dividend. This issue may be worsen if some neighboring countries also apply Digital Dividend. It may interfere each other. Suggestions are as follow: 1) The Telecommunication Committee and Broadcasting Committee must resolve the issue first since they are in the same NBTC. However, they have to do public hearing in fair manner, 2) The NBTC should coordinate closely with concerned authority in neighboring countries. It may be through JTC (Joint Technical Committee), 3) Thailand have to follow recommendations from international society such as ITU (International Telecommunication Union) and APT (Asia Pacific Tele-community).

IV. CONCLUSION

This paper investigates the new landscape of broadcasting industry in Thailand, especially the launch of digital terrestrial TV. It elaborates existing broadcasting as an oligopoly industry; then, analyses the upcoming TV industry as a free competition market. This occurrence is the second major change in Thai broadcasting after the first one, taken place four decades ago when black-and-white TV went to colour. According to this new landscape, there will be a very big investment ranging from licenses auction fee, network rollout, content and application production, infrastructure, set-top box and TV set. However, the revenue mainly from advertising spending is growing less than the expenditure especially for new comers who have to invest new infrastructure. It will be challenges for new players in this area in first two to three year to recoup their investment. Several concerned implications are reviewed, starting from new investment and economic boost, revenue and business models, convergence & consumers' change of behavior**,** political, censorship and copyright implication and digital dividend together with recommendations.

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