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Smart TV business regulation and collaboration among business operators and regulators: Focus on the case analysis of Smart TV blocking and IPTV regulation process in Korea¹

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Abstract

The lack of detailed guideline of network traffic management has led complex conflicts among ICT players. Among them, the most severe case was KT and Samsung's case: Korea Telecom (KT) once blocked Internet connection of Samsung Smart TV service users. This aroused the needs of a reasonable policy establishment. On the process of making policy regarding network management, participants, for example network operators, device and platform providers, and contents providers, are sticking to their own stances. Their passive responses are now leading deepen problems. Thus, we focused on the way of conflict management in a policy level. With internal and external case studies and conflict management grid, we substantiated that the dispute participants will be better off altogether under a reasonable regulation and collaboration.

Keyword: Smart TV Service, Conflict Management, Regulation, Collaboration.

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1. Introduction

Information & Communication Technology (ICT) eco-system is changing. The authority, which used to belong to hardware manufacturers or network provider who traditionally held dominant positions in the market, moves to business operators who are making eco-system by themselves. Hence, the change in ICT eco-system has engendered many conflicts among groups in the policy making process. Mainly due to the lack of conflict management ability of current Korea Communications Commission (KCC) as a control tower of ICT and swiftly changing environment, the future of ICT in Korea is concerning. Another issue caused from an unclear guideline decreases consumers' convenience, KCC is struggling to solve this problem through forming an advisory committee and debates and they showed little possibility to give one-size-fit-all solution for tangled interest groups. Thus, in this study, to suggest fair competition and symbiotic plan, we analyzed 1) conflict cases of Smart TV and IPTV business in Korea and 2) effective conflict management by comparing net neutrality policy establishment country-by-country to progress win-win strategy with collaboration in the future.

This study is differentiated as the first trial to give aggregating focuses about regulation policy of Smart TV by dealing with interest problems of network operators, conflicts between network operator and contents provider, and consumers' status. We referred conflict management model adjusted to Korea environment from Jung & Jung (2005) and suggested implications by analyses of conflicts between businesses and internal and external cases of net neutrality policy making processes. In addition, we compared and analyzed internal and external current market status and policy of Smart TV to suggest what style of conflict management that Korea policy makers should guide to.

2. Background

2.1 Definition of Smart TV and its supply status

Smart TV is a convergence media: a device, set-top box, contents, network, and platform are synthetically connected (Lee, 2012). In 2007, Samsung electronics introduced “infolink,” which is the Internet connectable. The next brand name of this product was introduced as “Smart TV” and the brand name has widely spread as a name of terminal in Korea TV market. According to The Diffusion Group analysis (2011), global penetration volume of Smart TV is forecasted as 241.6 million in 2013 and Korea Telecom Economics Research Institute (DIGIECO) positively anticipated that domestic sales volume of Smart TV will achieve 1.31 million and occupy the half market share of a TV market in Korea.

2.2 Definition of IPTV and its supply status

IPTV is a multimedia service: moving picture, voice, data are provided through managed IP network which qualifies all the required quality of service (QoS), quality of experience (QoE), security, bi-direction, and reliability (KISA, 2011). According to MRG IPTV Global Forecast (2010), globally 83.2 million subscribers are forecasted in 2013, and domestic IPTV subscriber is reported as 5.13 million in last May (KCC, 2012). This is acknowledged as a contribution to activate contents market and promote competition in a pay TV market (KCC, 2012). For reference, it took nine years to achieve 3 million subscribers of satellite broadcasting, six years for four million subscribers of cable TV, and three years and four months to achieve five million subscribers of IPTV.

2.3 Introduction of Smart TV and characteristics of current law

Based on current law, Broadcasting Act, Telecommunications Business Act, and IPTV Act, we

considered what regulation would control Smart TV. Broadcasting Act imposes social and industrial responsibility classified by network types; Telecommunications Business Act controls responsibility of using telecommunications equipment and facilities; and IPTV Act classifies business by network ownership. These current laws imply that Smart TV is not under Broadcasting Act and it might play a role as a pay platform operator. Also, the Smart TV business does not have responsibility of telecommunications equipment and facilities so Smart TV business is not accountable to legal, physical responsibility of network; instead, it qualifies a value added common carrier (VACC). Using Best Effort, it is not under regulation as a service provider. The overall analysis is charted below.

Table 1. Rearrangement of the introduction of Smart TV and current law (Kim, 2010)

	Broadcasting Act	Telecommunications Business Act	IPTV Act
Target of regulation	-Terrestrial network operator -System Operator (SO) -Satellite network operator -Program provider -Relay operator -Others	-Key telecommunications business operator -Special category telecommunications operator -Value added common carrier (VACC)	-IPTV service provider -IPTV contents provider
Role	Social and industrial responsibility	Responsibility of using telecommunications equipment and facilities	Network possession
Influence on Smart TV provider	-No regulations for Smart TV business with Broadcasting Act due to its lack of social influence -An authority of OS platform provider as a pay platform provider when it owns real-time channels by merger	-No physical responsibility for network due to a lack of telecommunication equipment and facilities -An authority of VACC similar to the Internet portal service provider when it offers service based on web or application	-Not regulating Smart TV using Best Effort and regulating IPTV using premium network

2.4 Current issues and expected problems resulted from the lack of proper regulations

Applying current law to Smart TV business leads unfair competition in the same line of business. First, incumbent broadcasting business operators receive strict regulation under Broadcasting Act, but Smart TV business operators are considered as VACC under Telecommunications Business Act;

eventually, they barely receive regulation (Kim, 2005). Second, when it comes to foreign Smart TV operators, it is impossible to regulate them. Therefore, an unbalanced regulation may exist between external and internal business operators. Thus, to protect domestic business operators and resolve unbalance among operators, structural understanding about the eco-system should be counted as the first. A regulation of Smart TV without proper understanding of this eco-system is expected to repeat the unbalance issues in the market.

Currently, the operators are fettered to conflict by overlapping service between IPTV and Smart TV. This part connotes unfair issues. A comparison between two services is charted below.

Table 2. Rearrangement of comparison between IPTV and Smart TV business (Hwang, 2010)

	IPTV	Smart TV
Example	myLGtv, Qook	Samsung Smart TV, LG Smart TV
Transmission system	Internet	Internet
Bi-direction	Partially available	Available
Contents view system	Network operator offers broadcasting contents (push)	Searching broadcasting and moving picture contents on line (pull)
Revenue model	<ol style="list-style-type: none"> 1. Subscriber license 2. A pay video on demand (VOD) subscription fee 3. Home-shopping fee, high-speed Internet 4. Internet telephone 	<ol style="list-style-type: none"> 1. No license 2. Pay contents sales 3. TV application sales 4. Advertising revenue

3. A case study of conflict outbreak between Smart TV business operators in Korea

Network operators have asserted that Smart TV operators should pay reasonable cost to use network. Their definite difference of opinions made KT to block Internet connection of Samsung Smart TV (10 Feb 2012). This case was tentatively settled with compromise between the two operators in five days and expressed a severe conflict in Smart TV industry. Their basic stance, opinions on the blocking case, response to a consumer issue, common opinions, and opinions on responsibility are charted below.

Table 3. Rearrangement of conflict report between KT and Samsung electronics (Na, 2011; EBN Industry news, 13.02.2012; Lee, 2012)

	KT (a network operator)	Samsung electronics (a device and platform provider)
Basic Stance	<ul style="list-style-type: none"> ● Smart TV service should be transmitted through premium network based on QoS <p>- Under the current law, network operators should voluntarily install more network if a deterioration in quality of network engenders</p> <p>- Expecting additional profits from device and platform providers by offering managed service such as securing transmission bandwidth</p>	<ul style="list-style-type: none"> ● Smart TV is just one of various devices which engender traffic. ● When a problem of traffic increases due to additional device, it is desirable to require high-speed Internet subscriber to pay the costs. <p>→ Shifting cost responsibility to consumer</p>
Blocking case	<ul style="list-style-type: none"> ● Smart TV possesses network illicitly <p>- a reason for blocking: under Article 79 of Korea Telecommunications Business Act, 'no one can interrupt telecommunication by impaired function of facilities</p> <p>- Smart TV is not one of the mentioned services with net neutrality and the principle of net neutrality implies it only secures legal traffic</p> <p>→ KCC and FCC mentioned that specialized service in which Smart TV service is involved is excluded from network neutrality</p> <ul style="list-style-type: none"> ● Extreme investment is necessary to secure margin capacity to maintain stable quality <p>- Smart TV requires 5 to 15 times of the average transmission volume of IPTV so it can cause black-out of network.</p>	<ul style="list-style-type: none"> ● KT's blocking infringed network neutrality ● Data usage volume of Smart TV is similar or lower than that of IPTV ● Not all the device providers need to pay network usage fee
Consumer issue	<ul style="list-style-type: none"> ● Many network users may experience damages due to invigoration of Smart TV service 	When a consumer is blocked its connection, it is a definite discrimination.
Responsibility	<ul style="list-style-type: none"> ● Violation of term –not supported <p>: Smart TV had never been permitted to our high-speed Internet</p>	<ul style="list-style-type: none"> ● This is not a defect of device <p>: We had never monthly charged Smart TV service to consumers so we don't follow the compensation standard.</p>
Common opinion	<p>Imposing heavy users a certain amount of fee to invest network improvement à to upgrade the backward regions</p> <p>Problem 1. Practiced a discriminating measurement to consumer right</p> <p>Problem 2. Shift responsibility of operators to consumers</p>	

4. Net neutrality process in Korea

To solve the conflicts, KCC announced network usage guideline (13.07.2012). The guideline pursues open and fair Internet usage environment and sound, sustainable development in ICT by establishing principles about net neutrality and Internet traffic management (Na, 2012). However, OIA (Open Internet Association) opposed the guideline which eventually permits network operator to manage traffic. Both stances are indicated below.

Table 4. A guideline announcement of KCC and response of OIA

	KCC (supporting regulation)	OIA (supporting openness)
Stance	Announced a guideline for reasonable management and usage of network (2012.07.13)	Opposed some parts of guideline (2012.07.18)
Reasons	<p>Accepting those practices as a reasonable traffic management such as preferentially limiting contents, application, and service which are not following standards of organization which has public confidence</p> <ul style="list-style-type: none"> - limiting the speed and time consuming for P2P transmission. - regulating traffic from Smart TV, tiving, pooq service, etc. - limiting the transmission speed of P2P traffic in a certain time zone with many connections - limiting the speed of transmission for the fixed line Internet users who exceed monthly usage limit -limiting heavy users' traffic 	<ul style="list-style-type: none"> ● It violates upper standards such as network neutrality and a guideline of Internet traffic management - A target traffic management makes upper norms ineffective
A preventive measure of network operators' authority abuse	<p>Five situations that are acceptable for reasonable traffic management</p> <ol style="list-style-type: none"> 1. Security problem (e.g. DDOS) 2. Network overload due to swift increase in traffic volume 3. when practicing legislation 	<ul style="list-style-type: none"> ● This may form an unreasonable environment for Smart TV manufacturers. ● This may hinder development of application developers and violate users' right.

	<p>4. when users request</p> <p>5. when getting user agreement by a licit contract</p> <p>Network operators should notice consumers these information beforehand on the website or terms</p>	
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Thus, OIA suggests that “P2P” and “the contents not following the standard established for effective network usage by external and internal standardization organization” should be deleted or revised. Their opinion oriented from the judgment that making compliance of technology standard as a compulsory norm for blocking packet may hinder innovation. Based on this opposition, KCC clarified that network operator will not set adverse standard for consumers, contents providers, and terminal providers since they are all in a market competition. Also, consumers can select network operator referring the aforementioned traffic management standard to secure consumer right (Na, 2012).

5. Country-by-country approaches of net usage problem

5.1. U.S.A

Network utilization standards of the United States are based on four principles of network neutrality: 1) transparency, 2) no blocking, 3) no unreasonable discrimination, and 4) rational traffic management. This is simple when compared with the domestic standards which mentioned “managed services” and “mutual cooperation” in addition (Na, 2011). Shin & Han (2012) analyzed the policy of U.S., “the regulator imposed rules which ex ante determine the bounds of permissible conduct by IP-based networks.” The U.S. policy is protecting contents application providers and solves some parts of the network investment cost by increasing communication rates (Shin & Han, 2012).

Conflict cases in the U.S. according to the explosion of video traffic on the net neutrality issue as follows:

Comcast had forced Level3 as an Internet service provider (ISP) to continuously pay online video transmission charges, and then Level3 accused them. Comcast decided blocking of Web traffic connection when transmission charges unpaid in response to Netflix-Level3 merger. Level3 turned this burden to the customers through this decision. In Comcast's case, if a particular user's upstream traffic occupied that exceeds 70% of the transmission band, his or her transmission speed is limited.

5.2 Japan

In the case of Japan, they prepared a mixed bill that performed both competition and regulator. That is, they mix notifying allowable business and regulatory for competitive activation (Shin & Han, 2012).

As of right now, net operators established "Guidelines of bandwidth control" under the market autonomy principles, NTT and KDDI, Japanese network operator, are taking action to limit daily uploading capacity as 30GB. Also, KDDI limits transmission speed of users who exceed 366MB per day from 21:00 to next day 1:00.

5.3 EU

EU show signs of eschewing direct intervention and trust that a competitive market will solve the problems. Also, they imply that competition law can serve as an ex post complement. In the case of Britain, they postponed regulations about the management of traffic and BT and T-mobile provide the convenience of majority of users by limiting or bringing down peer-to-peer (P2P) traffic transmission speed at a specific time zone. France cares the possibility of dominance exercise in the platform and the terminal layer and protects its own. In the case of Netherlands, KPN, a net operator, has shown different attitudes between countries and expressed plans to impose additional charges for YouTube (Na, 2011).

6. Analysis

In precedent studies, following the introduction of new media, a conflict management plan was discussed since a complex conflict has been raised between operators in the process of broadcasting and communication convergence (Jung & Jung, 2005). KCC is struggling to control services which are out of the border of regulations. A major issue is Smart TV related policy conflict management. Korea regulator has experience to manage complex conflict engendered by convergence service, such as IPTV case. However, KCC supervises conflict management again due to the diffused unfairness issues oriented from the introduction of Smart TV service. As the incipient stage of conflict management has significant influence on a future policy process (Jung & Jung, 2005; Park & Seo, 2004; Mills, 1994), current policy-making body is asked to respond the conflict solution as soon as possible.

Hong & Hwang (2004) implied that before the introduction of IPTV in 2004, conflicts among policy departments were major to secure the leadership of regulation. On the contrary, the conflict case of IPTV formed “iron coalition” between a regulator and parties who are regulated, and the conflict was intensified as they secure and magnify their area.

Smart TV eco-system is composed with contents, platform, network, and device providers. Since this industry mainly based on the platform, a platform and device provider, for example, Samsung electronics and Smart TV app, LG and LG app, has significant influence power within the industry. The leading network operators in Korea are KT and SKT. Interest problems of regulator and business are tangled in this industry (Shin & Han, 2012). For this problem, we analyzed the conflict management for the regulators and business based on the four types categorized below. The analytical norm is based on the category which Jung & Jung (2005) rearranged multiple types of conflict managements: compromising, smoothing, competing, avoiding, and collaborating style (Pruitt & Rubin, 1986; Putnam & Wilson, 1982; Blake & Mouton, 1964; Lindblom, 1980). The rearranged category reflects the situation of Korea broadcasting and communication industry.

Korea broadcasting policy conflict management type 1, controlling style conflict management is applicable for the dispute parties who pursue their objectives regardless of cost or sacrifice. This is the

previous stage of multiplicative broadcasting policy and suggested to compound policy structure for valid public interest protection (Jung & Jung, 2005).

Type 2, compromising style conflict management has a tendency to negotiate in the middle of concession or taking loss each other. An authoritative regulator plays a role of mediator. Re-transmitting terrestrial wave of satellite broadcasting is one of the cases (Jung & Jung, 2005).

Type 3, avoiding style conflict management is categorized into the case which has scarce possibility to solve the problem and limited time to negotiate. The parties directly involved in the conflict and mostly have the same level of authority. Conflicts between policy makers and regulators and conflicts within IPTV service are categorized into this type (Jung & Jung, 2005).

Type 4, collaborating style conflict management, a win-win approach, is applicable for the conflict subjects who desire to achieve more than 100 percent of their objectives. This type of conflict requires an arbitrator and a solution that gratifies both sides (Jung & Jung, 2005).

7. Results and expected effects

7.1 Results

The current issue of establishing Smart TV policy will lead the better comprehension by referring the transformation process of IPTV regulation and policy that we went through in the past. Above all, regardless the sustained policy consultation, the government policy makers and regulators were fiercely against to each other from the beginning of IPTV service. This case is deemed an avoiding style conflict management; it is difficult to solve the problem in spite of the third party's mediation and the incipient response of policy makers and regulators is essential to handle this type of conflict (Jung & Jung, 2005; Pruitt & Rubin, 1986). The problem of this conflict management is that it has tendency to sustain conflict due to the lack of practical alternative. In a complex conflict situation, we can consider a practical alternative by expanding value and minimizing cost from conflict so as to

design a collaborating style conflict management, or win-win approach (Jung & Jung, 2005). Originally, collaborating style conflict management is deemed the most idealistic alternative. In the aspect of achieving this ultimate goal, policy makers should consider current issues in a practical approach. We can take following ways for tips to achieve collaboration: 1) To find practically possible alternative by referring successful cases of countries who are leading ICT area, 2) to simplify conflict structure by removing conflict from one side, 2) to consider the way to resolve conflict with a flexible response, and 4) to delegate the party a conflict management work.

For Korea IPTV case, they tried to simplify the conflict structure, referred precedent cases from leading countries, and communicated with regulators unofficially at best. Their trial to delegate the problem to the third party, multi-media policy association, was failed to be an improper response (Kim & Sung, 2010). In summary, this problem was evaluated as it had chance to be improved after the departments of policy sufficiently discussed and maintained collaborative attitudes to broadcasting communication convergence.

The problem is that Smart TV case is not that different from that of IPTV. This problem is also categorized as avoiding style conflict management as it contains diverse conflict agents and hardly bridges their different stances. Instead, it is hopefully expected that this problem may shorten the duration of conflict as participants are active in communication than before. Nevertheless, the most concern is that Smart TV policy makers already formed an association, network neutrality policy consultative committee, to delegate the role of third party without sufficient consultation or collaborative understanding about network related business operators. A superimposed conflict, one of the characteristics of complex conflict, can be extended forever when it is intensified. Thus, when the discussion sustained without a clear regulation of business, a conflict from regulators will shift to a conflict from business operators and it will turn to be superimposed.

As we reflected on the past roles and attitudes of business operators and regulators in the complex conflicts, we have to cope with the intensified conflicts caused from the introduction of Smart TV with more active and positive attitudes.

To implement collaborating style conflict management, a definite region of regulator is pre-requisite. In the revised guideline, KCC delegated authority of network management to network operator, but specific level of management is not clarified in the revision; thus, it is likely to accompany secondary problem. This secondary problem or unreasonable blocking can be prevented when KCC indicates a certain level of network management. In short, a clear and detailed guideline is suggested to minimize the duration of conflict and cost loss.

7.2 Expected effects

Above all, the expected effect of collaboration is to attain comprehension between business operators who provide the overlapping services such as VOD. Compared with the past business model which invaded the other side with providing the same contents from both IPTV and Smart TV, mutual collaboration can give symbiotic alternative. One of the collaboration cases, KDDI launched “Smart TV Box” (Engadget, 20.07.2012). It was the first trial in the globe to embed Android 4.0 with set-top box, manufactured by Panasonic, and served as a lease from CATV operators. In addition, NTT supplied OTT box manufactured by Korean telecommunication equipment and facilities company (Datanet, 26.03.201). Compared with these cases, LG Smart Upgrader, Samsung electronics Smart TV Function Blue-ray player, and Daum TV plus are dominantly sell set-top boxes in Korea market (<http://news.mk.co.kr>).

We can find collaboration between device provider and network operator to bring out positive influence on the development of Smart TV eco-system (Fransman, 2010). Samsung electronics is cooperating with Verizon, an American network operator, to use IPTV service without set-top box; Samsung Smart TV users can view the same IPTV contents through Verizon Fios App with the contents secured from collaboration with Verizon (NSP Communications, 07.08.2012). From this collaboration with Verizon, Samsung electronics secured Smart TV contents, expanded the eco-system of Smart TV, and based on the strategy of targeting North America TV market.

On the other hand, the expected effects of regulation are 1) to prevent consumers from black-out situation with a reasonable network management, 2) to be helpful by promoting fair competition among business operators in Korea market for symbiosis of ICT eco-system, 3) to prevent unfairness issues caused from entry of external operators, and 4) to be acknowledged competence from collaborating relationship between a device provider and a network operator when they enter oversea markets. In addition, consumer benefits can be protected from network congestion by a reasonable traffic management and reasonable regulations will minimize any inconveniences from using Smart TV services (Na, 2012).

8. Discussion

In this study, we examined fierce conflicts between business operators and regulators who are in the middle of network neutrality regulation process precipitated from KT and Samsung electronics case. Korea already experienced a complex conflict of ICT service in establishing IPTV regulation, but complicated interest relationships delayed KCC to make a compromise between conflict participants and caused confusions when using network. This study intensively analyzed Korea case between KT and Samsung electronics, current issues from leading countries, conflict management type analysis, and concluded a reasonable regulation and collaboration between operators and regulators will make the basis of symbiosis of ICT eco-system and development. Thus, we suggest that all the participants should make cooperation instead of asserting their own stances for entire development (Fransman, 2010; Maeil Business Newspaper, 23.07.2012).

This study is significant since it examined multi-national respects regarding overall ICT eco-system by analyzing internal and external cases. It will be helpful to understand current ICT issues for the countries who are in the incipient stage of ICT since this study generally explained conflicts in Korea, a leading country of IT area, and a general process of policy conflict management. According to Kim & Kim (2004), policy conflict defers by countries due to the discrepancy of cultural bias from the

aspect of technology acceptance model and the culture theory. Therefore, this analysis of Korea policy regulation and collaboration might be under the understanding that different society members earn different culture and policy. However, for the late comers who are planning to launch convergence service, this study will give positive influence for them to progress proper policy in the beginning stage of complex conflict by referring Korean case.

Overall, this study generally based on changes in the eco-system and status. Its academic implication is that it approached conflicts between business operators and regulators in the process of establishing policy. A practical implication is that conflict participants should collaborate which is based on the suggestion from Fransman (2010) who asserted that the probability of development increases when business operators between various layers collaborate together. For a political implication, a government should make collaboration oriented from environment and establish policies based on them. This study, however, is in progress and limited in the respect of empirical study using interviews or statistic data. Thus, to compensate defects, we will study more about the aforementioned parts in the future study.

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