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Reshaping the broadcast sector: Regulation, business rules and the potential for evaluation of new policies

La reconfiguración del sector de radiodifusión: regulación, reglas de negocio y su potencial en la evaluación de las nuevas políticas

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Abstract

The broadcast sector lives a continuous reconfiguration, and television broadcasters must adapt to new technologies in order to keep the leads. The emergence of new platforms over the Internet and the multi-platform services that allow watching any content at any time in mobile devices, reinforce the importance on the development of innovative business models to satisfy customer demands. In this paper the authors will analyze this dynamic market and its strategies for the future from a regulatory and political perspective, as there are key changes in the sectorial regulation that need to be evaluated as they are impacting the status-quo of the actors of this market and the relationships among them. At first, the regulatory framework will be analyzed: this research will include the changes in the European regulations for broadcast telecommunications focusing on the spectrum and the digital dividend. After that, main current business models and strategies will be reviewed. Finally, some conclusions about the future of the sector and the evaluation of the new policies are proposed.

Key Words: broadcast; regulation; spectrum; convergence; digital dividend

Resumen

El sector *broadcast* vive una reconfiguración continua, y los distribuidores de televisión deben adaptarse a las nuevas tecnologías con el fin de mantener el liderazgo. La aparición de nuevas plataformas a través de Internet y los servicios multiplataforma, que permiten ver cualquier contenido en cualquier momento en los dispositivos móviles, refuerzan la importancia del desarrollo de modelos de negocio innovadores para satisfacer las nuevas demandas de los clientes. En el presente artículo analizaremos este dinámico mercado y sus estrategias para el futuro desde una perspectiva regulatoria y política, ya que hay cambios clave en la regulación sectorial que necesitan ser evaluados y están afectando el status quo de los actores de este sector y las relaciones entre ellos. En primer lugar, se analizará el marco regulatorio: nuestra investigación incluirá los cambios en la normativa europea para las telecomunicaciones audiovisuales centrados en la gestión del espectro radioeléctrico como recurso escaso y el dividendo digital. Después, se revisarán los principales modelos de negocio y estrategias actuales. Por último, se proponen algunas conclusiones sobre el futuro del sector y su evaluación.

Palabras clave: broadcast; regulación; espectro; convergencia; dividendo digital

1. Introduction

The television, as main medium of communication, has suffered radical changes in the recent past years and faces coming years of uncertainty. The new scenario presents a hybrid situation shared by the traditional digital ways of television and new emergent platforms. The transition from one model to another forces the sector to rethink not only the company's business models, but also the strategies, policies and also the international regulations.

There is a completely reconfiguration for the XXI century: the broadcast sector is in a critical moment in all aspects:

- Technological changes: from traditional platforms to new ways of broadcasting content, such as connected TVs, IPTV, Over The Top services (OTT), mobile TV etc
- Different ways of consuming contents: the behavior of the consumer has evolved along with the industry.
- In the regulatory framework there are drastic changes in the assignment of a critical resource as it is the radio-electric spectrum that need to be carefully evaluated
- The proper dynamism of the sector allows to test new business models on financial formulas previously unknown.

This paper presents a detailed analysis of the changes in this market focusing in two key aspects. At first, the regulatory framework will be analyzed: this research will include the changes in the European regulations for broadcast telecommunications focusing on the radio-electric spectrum and the digital dividend that need a careful evaluation. The second section of this paper reviews the market strategies and the evolution of the consumer. As it will be mentioned several times, the consumers are the most important pillar of the sector because they lead the trends and the future of the market.

2. Regulatory Framework

This section will analyze the current situation of the regulatory framework related to the broadcast ecosystem and its main changes and predictions for the future.

After the *Convention of Transfrontier Television and the Non-frontier Television Directive 89/552/CEE (Oct 3rd 1989),* a period of European politics about broadcast communications and TV begun and set the basis for its future in Europe. The most important regulations that have recently affected the sector and that will change it in the following years are:

- Digital Agenda for Europe, Europe 2020.
- Market and competition rules surveillance.
- Converging technical programs and digital dividend (Digital Terrestrial Television, DTT).

In order to create a single European TV market and establish some common rules, the European Union (EU), as part of the Digital Agenda for Europe, adopted the Audiovisual Media Services Directive (AVMSD). The main objective of the AVMSD is to promote Media freedom and Media pluralism in the market.

Goals of EU coordination (European Commission, 2010) were the following:

- Creation of rules to shape technological developments.
- Preserving cultural diversity.
- Protecting children and consumers.
- Promoting media pluralism, fighting against racial and religious hate.
- Guaranteeing the independence of national media regulators.

2.1 Digital Dividend and Frequency spectrum

The digital dividend is the group of frequencies that are available in the radio spectrum that traditionally were used for TV broadcasting. These frequencies end up to be free thanks to the migration of analog TV to digital TV (ITU, 2010). This means, that with new communication technologies and compression techniques the possibilities of use of the spectrum are continuously increasing.

The origin of the first digital dividend comes from the need to provide the citizens proper ways to access the new mobile broadband services of 4th generation, redistribute the radio spectrum for media broadcasting and adapt it to new technologies. That is the case of the introduction of HDTV services in Direct Terrestrial Television (DTT) platforms. The increasing of the demand in this kind of services induced to an increase in the spectrum demand. This technology promoted the development of a new compression technique called MPEG-4 Part 10 (H.264) and a new standard for Digital Terrestrial Television, DVB-T2. However, after the development of the MPEG-4 and the DVB-T2, the spectrum demand drastically decreased and the discussions about a second digital dividend begun.

The amount of frequencies that can be released on the digitalization of the Television services usually depend on national parameters such as geographic (topography of a country) or technology used (expansion of cable or satellite Television services) but also on legal aspects. As the same spectrum is used by several agents (mainly broadcasters and operators) there is a continuous fight between both sides in order to keep their part or increasing their amount of available frequencies.

Currently, there is a wide range of potential users of the new spectrum. It is not only about digital Television anymore, there are now additional services such as mobile multimedia applications (for example mobile Television), mobile communications (as mention before the 4G technology and the for coming fifth generation, 5G) and wireless broadband access systems. So this means that if the spectrum is now going to be used for other purposes, it needs to be harmonized (region-wide) in order to increase the productivity and expansion of the industry through different regions. For example, the acquisition of spectrum bands by the mobile broadband operators will make them be able to reach a larger market. According to the International Telecommunication Union (ITU), the digital dividend spectrum will be totally available only after the analogue switch-off.

In the ITU Regional Radiocommunication Conference 2006, the ITU approved to redistribute the use of the UHF band 470-862 (radio-electric channels from 21 to 69) for broadcasting services in what is called *Region 1,* in which Europe is included. However, one year later, in the World Radiocommunications Conference (WRC) 2007 was approved for Region 1 to set the sub-band of frequencies available for both mobile operators and broadcasting services.

Pascal Lamy, former director of the World Trade Organization until September 2013 and European Commissioner for Trade, suggested in 2014 a new formula known as 2020-2030-2025 with the main objective of accomplishing the requirements included in the Digital Agenda for Europe about the use of the broadband spectrum. This new formula is divided in three steps (European Commission, 2014):

- Use the 700 MHz band for wireless broadband across Europe by 2020
- Regulatory stability below 700 MHz until 2030
- Evaluate market and technology development in 2025

The digital dividend is scheduled in phases and it is confirmed that after the second digital dividend there will be enough available spectrum for DTT in 2020. In addition, thanks to the digital dividend the mobile operators will be able to offer the implementation of new services like eMBMS (enhanced Multimedia Broadcast Multicast Service), that offers LTE to optimize multimedia services like video streaming or video on demand (VoD).

All this ideas were also exposed in the World Radiocommunication Conferences in 2015 (WRC-15) that took place in Geneva. As Lamy suggested, the use of the 470-694 MHz band will remain for use of the broadcasters, at least, until 2023. This means, no further changes in the Digital Dividend (3rd) until the next WRC, which will be in 2019.

The ITU stated that this decision, and the one to allocate mobile broadband in the 694-790 MHz spectrum band, will help bringing a globally harmonized solution for the implementation of the digital dividend.

2.2 Conflict between broadcasters and operators

The European Commission evaluated from 12th Jan 2015 up to the 12th of April 2015 the opinions of the public, including not only citizens but also Telecoms, Regulatory Agencies, experts and others about Lamy's report. All contributors to this consultation presented to the EC their view and perspectives about the main Lamy's proposals of use of the UHF band (470-790 MHz).

The majority of the opinions were in favor of clearing the 700 MHz band in order to expand the 4G communications by 2020. As it is obvious, mobile operators backed up this point. Data communications are expected to multiply themselves by 8 before 2020 (CISCO, 2016). However, cultural and creative industries disagreed on this point since they consider 2020-2022 an unrealistic deadline for clearing the 700MHz band.

Mobile network operators do not agree to establish a common deadline for first topic until the 470-694MHz band is configured for DTT with the latest and most efficient technologies (i.e. DVB-T2), so they can deploy new services in other frequencies without interfering the DTT bands.

Therefore, there is an open conflict between the network operators and the broadcasters. While most telecommunications operators pressure to make the spectrum below 700MHz (470-694MHz) available for wireless broadband as soon as possible, cultural and creative industries try to change the deadline to a common European deadline in 2025 or 2030 for only the first Lamy's topic (European Commission, 2014).

Broadcasters say DTT is the most common television platform in Europe and it is the one that offers the wider range of free television services. That is why the loss of the 700 MHz band will reduce the channels capacity and so, it requires a migration to, what has been mentioned before, DVB-T2 and MPEG-4 technologies. Then, as the European Broadcasting Union (EBU) defends, the cost of migrating all the DTT technology and its consumers to another required platforms due to the change of frequencies would be four times bigger than the benefits. This is an important obstacle for Lamy's objectives.

At the same time, operators disagree oppose by showing their statistics about the growing of data traffic through mobile devices. For operators, 4G is not a future technology but a present one, and the delay in the realizing frequencies in some countries means a delay in the development of the technology, due to the fact that companies would have to keep their investments in the old frequencies waiting for the release. The conflict between telecommunications operators and broadcasters remains open and need to be carefully evaluated.

2.3 Digital dividend in different European countries

The digital dividend has been followed differently in other countries. In this section, it will be shortly analyze what has happened in some of those ones.

Spain

The spectrum of the digital dividend can be used, as mentioned before, for multiple services, both traditional and innovative; from television broadcasting and connected TV to a new and improved mobile communication and Internet connection.

In figure 1, the previous and present 800 MHz spectrum band situation is shown. The last frequencies realignment was mainly approved in 2015 in order to develop mobile 4G technology. The main goal was to set free the 800 MHz band (in Europe was established to set free from 790 to 862 MHz) that was occupied by some DTT channels broadcasting (channels from 61 to 69 in the UHF band) for expanding the mobile technology. Since the liberalization in March 31st, the 800 MHz band stopped being used as DTT broadcasting and it begun to provide fourth generation broadband services (4G).

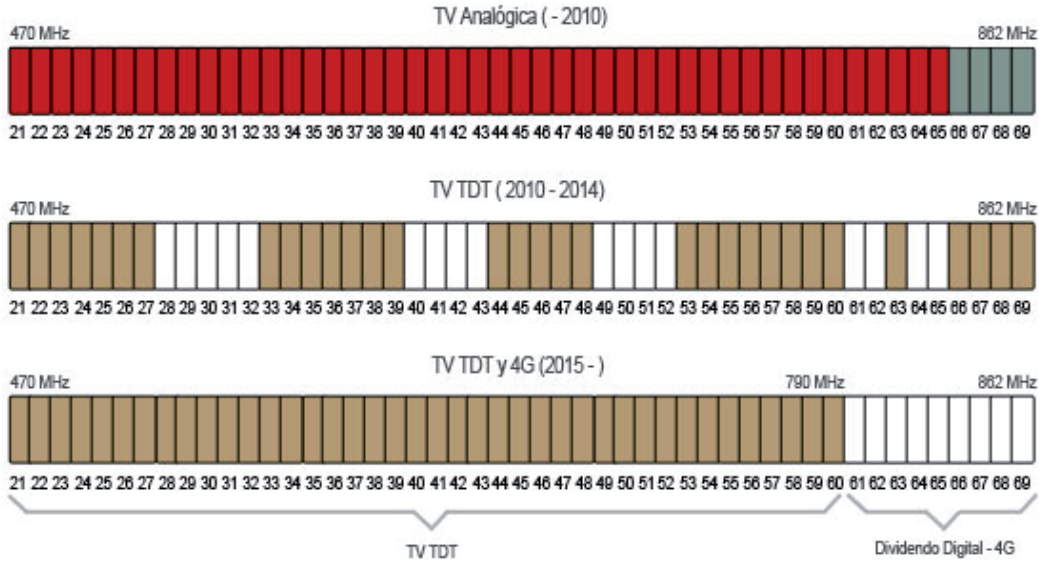

Figure 1. Evolution of the frequencies spectrum
Source: Ministerio de Industria, Energía y Turismo, 2014.

Spain was one of the first countries of the European Union to begin with the DTT broadcasting, in November 2005, and unlike most of the EU countries, in which the 790-862 MHz band had not been used because of historical reasons, in Spain most of the DTT broadcasting started precisely in that frequency band. In that moment, the country was immerse in the transition from analog to DTT transmissions, so forcing to use that band was a big risk to take.

This first digital dividend was initially scheduled to be implemented between January 2012 to December 2014, two years delayed with respect to the European deadline: January 1st, 2013 (European Commission, 2013). However, the Ministry of Industry postponed to March 2015 the deadline for all the State in order to avoid areas without DTT coverage.

In 2020, the second Digital Dividend will take place. As 4G is quickly increasing and mobile communications support bigger and bigger amount of data every day, it is planned to liberate the 700 MHz band for 4G technology in the second digital dividend. The European Commission and the ITU after the last World Radiocommunication Conference in 2015 agreed to schedule it for 2020.

France

In March 2007, the law 2007-309, in which it was established that the analog transmissions had to stop before November 2011, was written and approved (Ministère de la culture et de la communication, 2012). The main difference with Spain was that while Spain was one of the first ones to broadcast DTT, and then it was forced to redistribute the channels according to what the EU established; France waited until the EU agreed to allocate DTT channels below 800 MHz and set the 790-862 MHz band for mobile communications. As a result, France started later than Spain with the DTT transmissions but they did not have to face the problem of an initial reallocation of the channels, and once the analog turn off happened, that band was completely released.

In order to make the analog to digital transition easier, France counted with the economic support of the *France Télé Numérique,* a public/private alliance between the State and the national analogue television broadcasters.

On December 10th, 2014, Prime Minister Valls, announced which were going to be the deadlines for the implementation of the second digital dividend:

- On December 2015 the frequencies to be released for telecommunications operators were adjudicated.
- Between 1st October, 2017 and 30th June, 2019, the transference of adjudicated frequencies will take place, with the exception of some areas in which this transference might start from April 2016.

Once again, even though they started the DTT transmissions later than our country, France is ahead of Spain. The simple fact of waiting until the EU agreed on a common spectrum gave our neighbors the opportunity to finish the implementation of the first digital dividend on time and focused their resources in planning the second one.

Germany

Germany was the first European country to achieve a digital dividend, this happened in 2010 with the public auction of the 800 MHz band. The four participants in such auction were T-Mobile (Deutsche Telekom), Vodafone Germany, E-Plus and O2 (Telefonica Germany). As mentioned before in Spain, the real expansion of 4G technology was not finished until April 2015, when the digital dividend was completed.

Germany opened during 2015 the public auction of the 700 MHz band. Two sets of 30 MHz after the release of DTT transmissions in DVB-T2, and the same for the 900 MHz and 1.800 MHz for a total set of 270 MHz. The spectrum will be assigned in sets of 2x5 MHz, with a minimum fixed price of 75 million euros per package. Germany is, along with Finland and Sweden, leading the actions for the second digital dividend in the continent; it is even thinking about the third one which is planned to be destined to 5G technology and that will probably affect the 500 MHz and 600 MHz.

United Kingdom

The UK, together with Spain, is one of the five biggest broadcast European markets and is pioneering in introducing the DTT to Europe. Like Spain, in the UK the DTT is the main television platform nowadays and far ahead of its competitors, both countries have a big dependence on this service, but the Spanish one is based on a decentralized structure while the British one, is centralized.

Due to its structure, the release of spectrum was easier than in other countries. Even though before the DTT transmissions begun, the digital dividend was already one of the main topics in the British agenda. This means, that all the digital dividend process has been well planned and though long before other countries. The first national release of frequencies plan was done in 2003.

3. Market analysis and strategies for the future

For the past 3-5 years the broadcast industry has been involved in a re-invention period of time. Three main trends have speeded up the evolution:

- High penetration of the broadband in urban territories.
- Multi-connected devices and better mobile broadband networks: *anycast content (anywhere at any time).*
- Change in the consumer: the new consumer habits change the way broadcast companies work.

In this section the most relevant movements of the main players in the television market will be analyzed. Traditional broadcasters have done alliances, merges or acquisitions of other companies in order to place themselves in a better position against the new players, while the second ones have opted for exploring new areas like the original content, or the use of available third-party networks for a private benefit.

3.1 Market situation and evolution

The spends on media are quickly shifting from traditional to digital products and that digital spending will reach more than 50 % of the overall worldwide by 2019. Digital video spending will overtake the traditional model by 2018 and, Internet and mobile advertising will become the largest advertising category by 2017, surpassing TV; and mobile will more than double its share of the digital ad market (McKinsey & Company, 2015).

This rapid change is happening mainly due to the growing number of users with access to the Internet, mobile broadband expansion and other services over high speed connections that allow the consumption of high quality media content from different platforms. The market analysts expect that the emergence of the over-the-top (OTT) online options (Internet access) will cause a moderate decrease on the pay-tv traditional services as those options seem to be preferred by the consumers because of their customized options and cheaper prices. To unsubscribe from a pay TV service due to availability of online content in OTT platforms it is called cord cutting. Some OTT business models have included traditional access providers (e.g., telecom companies) deploying content, traditional content providers (cable networks) seeking new delivery channels and terrestrial content and access providers (terrestrial broadcasters) seeking additional delivery channels.

It seems that the OTT services want to become an extension of a pay TV service onto multiple platforms, offering both streaming live content and VoD services. Therefore, the chain value has radically changed (Eun-a Park, 2015). From traditional TV to IPTV, provided by telco operators on their managed networks, or OTT platforms, the world of TV has changed building new business relationships (see figure 2). In the new environment the value chain can be divided in three main segments:

- Content production
- Content aggregation
- Content distribution

With the new VoD platforms, the final distributors are both aggregators and distributors; this is one of the reasons why the scenario has radically changed. At the end, the most important part of the television sector are not the platforms or the technologies, it is the content, both the existing and the potential one.

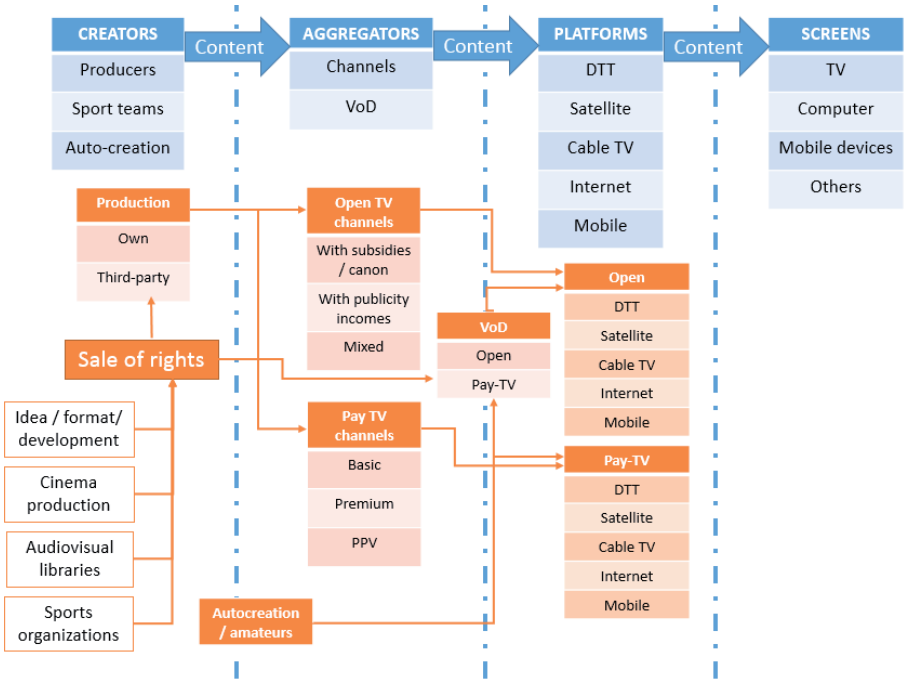

Figure 2. Main segments of the new television industry's value chain.
Source: own creation on Monzonillo, 2011.

New digital media platforms grow and become more popular, advertisers have perceived the opportunity and are increasingly accepting the validity and persuasiveness of advertising on these media, moving away from the typically high cost-per-thousand (CPM) traditional media to less expensive, low-CPM Internet and mobile advertising, further accelerating the shift of analog dollars to digital (McKinsey & Company, 2015).

The preferred online platform for advertisement companies is YouTube, but the short form content providers will lose their lead to companies distributing television programming through over-the-top (OTT) connected devices (Wolk, 2015). Even though all researches point to a big shift in the business models, it is important to remark that traditional media remains as the primary market. But by 2020, give or take, there will be no distinction between OTT and TV buying (figure 3).

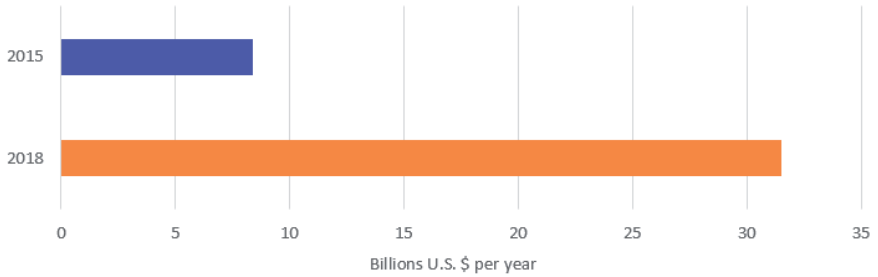

Figure 3. OTT TV ad revenue forecast.
Source: own creation from data by The Diffusion Group: Blattberg, 2015.

Millennials is the term coined in 1987 to describe the children born around 1980; it refers to a generation that grew up in an electronics-filled and increasingly online and socially-networked world. In each market, millennials are the ones who boost the use of mobile devices and multi-platform services. The number of digital natives grows every year (a 58 % at the end of 2015) and the use of *only-desktop* platforms is below 50 % in every country among this generation (table 1).

Table 1. Users for mobile devices and multi-platforms services.
Source: ComScore, 2015.

Users for mobile devices and multi-platforms services (*)		
	ALL USERS	**MILLENNIALS**
Unites States	75 %	97 % (+22)
Canada	59 %	83 % (+24)
Australia	66 %	75 % (+9)
Brazil	44 %	-
France	63 %	70 % (+7)
Germany	68 %	74 % (+6)
Italy	61 %	73 % (+12)
Russia	30 %	51 % (+21)
Spain	74 %	78 % (+4)
Taiwan	70 %	76 % (+6)
United Kingdom	77 %	85 % (+8)

(*) desk-top only is the difference to complete 100 %

Even though it may seem like this generation is not willing to pay for an online service, low cost plans, a wide range of new services and the possibility of choosing a personalized offer have gained their confidence and convinced them that it is worth to do so.

Young people from 18 to 34 years old spent in the U.S. and Canada in 2015 an average of 750 $ in broadcast content. But millennials usually do not buy CDs and DVDs and pay for cable TV at home: this generation keeps spending money on broadcast content but in different platforms and new services. For that reason, main platforms are focusing their advertising campaigns in getting the attention of this public, who has become main target for emerging companies and services. The idea is not to give up on fixed platforms but to expand the services to a multi-platform model. The consumption through desktop still remains as the one with more audience and it is the dominant for publicity incomes yet.

However, the conclusion could be that the market needs to focus on millennials generation. They are willing to pay for TV, but just for certain content and platforms. The audience will increase in these services and therefore the business models will adapt to this new situation until it changes again.

3.2. Business models in the broadcast industries

This section will briefly introduce the main business models of the broadcast sector, focusing on the emerging ones.

Some years ago, the market had only simple business models for television, with few players involved, but the situation has radically changed. Nowadays, companies need to develop new and more complex business models and offer new cooperative relationships, funding models, distribution platforms, marketing strategies, etc., because consumers, technology and financing options are rapidly evolving.

One of the most important things to reconsider is the possibility to provide content through different platforms that belong to the same group: multi-platform and innovation are the keys for the new business models.

It has been estimated that OTT video on demand platforms without subscriptions have generated 2,500 M€ in Europe in 2015, mostly coming from partnerships and advertising. Moreover, big players of the sector, like Google Inc., have a clear model of revenue based on introducing short advertisements in some of their videos: the service is offered free with incomes based exclusively on publicity (Altran Innovación, 2012). Figure 4 shows the most valuable business strategies followed by the stakeholders in 2015. It can be seen that, in 2015, the key factors to compete were the capacity to develop new services and multi-device platforms. The growing of IPTV platforms and the OTT market (both fixed and mobile), together with the consumers' trend of being always connected to a second screen seems to be the main drivers for those strategies.

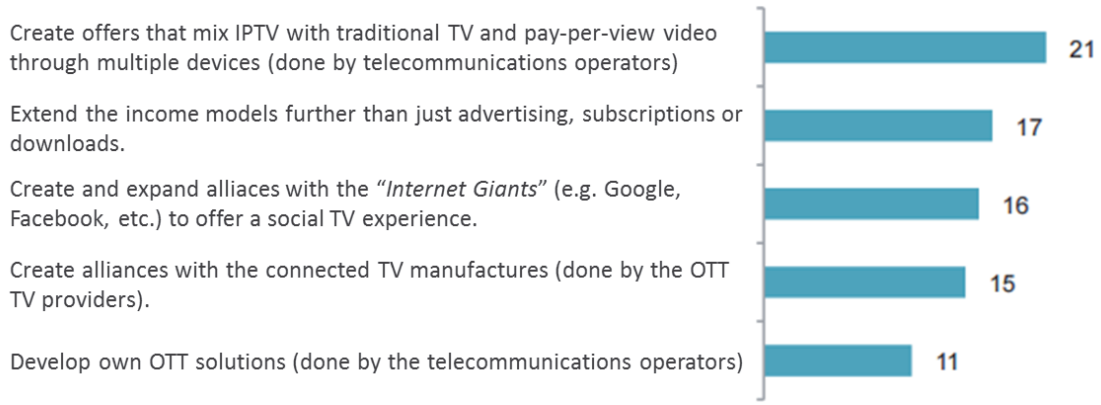

Figure 4. Most valuable business strategies in the broadcast sector.
Source: own creation on Altran Innovación, 2012.

The type of revenue model depends on two different statements: first, on distribution way, i.e. the platform used to offer contents to the consumer. Second, the source of the income streams, that is, if it is the common end-user or a third party.

In the following paragraphs, the main customer based revenue model will be analyzed. This kind of model are the second most important ones after the purely advertising models. Traditional communication media and new players like IPTV offers different kind of payment options to their consumers. There are two main customer-based models to distinguish: the *clear-cut* model (figure 5) and *the seller-supported* model (figure 6).

Clear-cut model

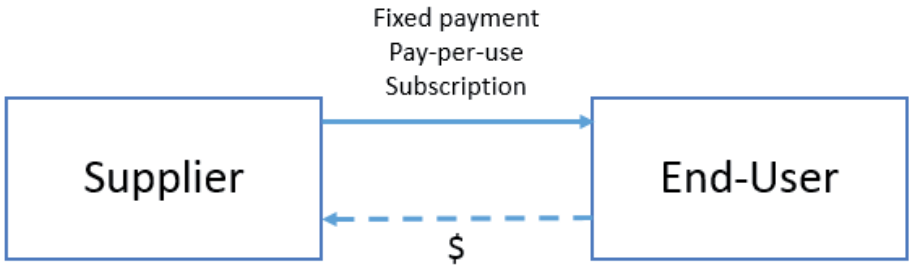

Figure 5. Clear-cut customer-based revenue model diagram.
Source: own creation on Filmby Aarhus, Alexandra Institute and High Tech Accelerator Innovation Center University of Lodz Foundation, 2011.

This model covers three different kind of payments:

- *Fixed payment*: The consumer pays just one time for a product.
- *Pay-per-use*: The consumer pays for a one time use product, such as Blockbuster video on demand or Pay Per View (PPV) TV events.
- *Subscription*: The consumer pays regularly for access to a service, example, Netflix.

Seller-supported model

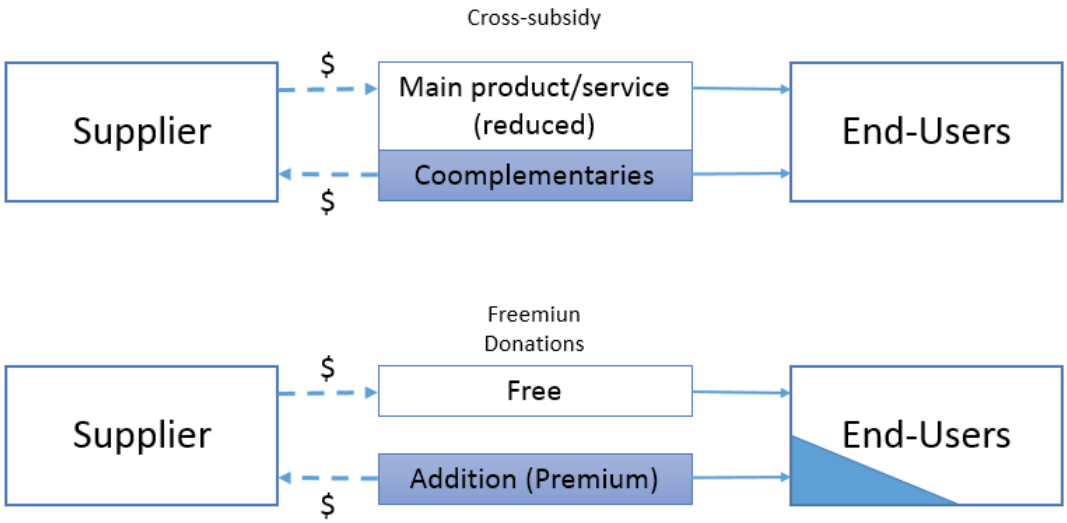

Figure 6. Seller-supported customer-based revenue model diagram.
Source: own creation on Filmby Aarhus, Alexandra Institute and High Tech Accelerator Innovation Center University of Lodz Foundation.2011.

This model has two different versions:

- *Cross-subsidies*: The consumer receives an offer for a new product to add to his plan with a discount.
- *Freemium*: The service is provided by free but the user has the possibility to pay for additional products: better quality, remove advertisements, premium content, etc. For example, access to the basic services provided by the platform is for free but the consumer has to pay a subscription for a wider catalogue and to remove the adverts.

On the other hand, the third-party supported revenue model (figure 7) refers to a service that is offered for free to the end-user and a third party pays for it in exchange to a returned service. This model covers two main versions:

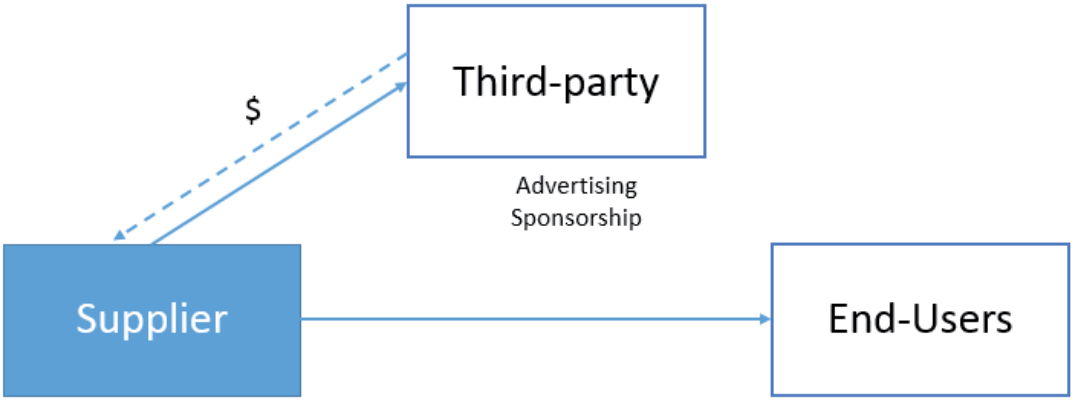

Figure7. Third-party supported revenue model diagram.
Source: own creation on Filmby Aarhus, Alexandra Institute and High Tech Accelerator Innovation Center University of Lodz Foundation, 2011.

- *Advertising*: this is, as mentioned before, the preferred model and the most expanded one. All traditional platforms follow this system, however there are many variations in their services: normal advert spots, pop-ups during transmissions, banners, etc.
- *Sponsorship*: a third party formally pays the platform and it is present in all the content through colors, names or slogans. This is typically done in some TV platforms when an important event, a TV show or a movie is broadcasted.

4. Conclusions

In this paper, the broadcast sector has been analyzed from two points of view, the regulatory framework, focused on the radio-electric spectrum and the digital dividend, and the market strategy, mainly focused on the consumer. The main conclusions related to both aspects are:

- From the first digital dividend towards the next digital dividend in 2020, the war between traditional television broadcasters and mobile telecommunications operators is in a critical moment. Even though the sector will maintain its agreement on Lamy's main points, the last WRC and the evolution of technology and consumer will probably pressure the European Commission to allow the third digital dividend before than expected.
- The spectrum points to an unstoppable change in the next future, so the best strategy that a player can take is the adaptation to changes in all aspects. To use the technology to arrive to a wider audience from different platforms, to study and understand the consumers to give them what they expect and to fight in the market to bigger players with innovative products, such as social TV, interaction, adaptive catalogue and offers, better quality, etc.
- With the new technologies, the sector lives on a continuous reconfiguration, building a new scenario where the consumer has all possibilities to access to any content from any kind of platform: anycast and anywhere service. Therefore, it is the consumer who decides how to consume television personalizing his own offer. This new design of the situation leads to a radical change in the ecosystem. Now, all platforms want to broadcast content, the broadcast business keeps increasing and day after day it becomes a more attractive market.
- The regulatory environment is dramatically changing and new policies have been introduced. In the article some of them are initially evaluated, but their novelty and quick evolution require new and careful efforts of evaluation, opening simultaneously new avenues of research in this field.

New platforms have revolutionized the value chain of the sector by playing several roles of the value chain simultaneously: producer, aggregator and distributor. The publicity incomes are switching to digital platforms and the audiences and demand of the new digital players steady increase. Based on what has been previously exposed, the broadcast sector should be follow a consumer centric approach.

5. References

Altran Innovación (2012). La perspectiva de sus propios actores. In *Evolución del macro-sector de las Telecomunicaciones en España 2012-2015 (pp*. 17-19). Spain: Informe Altran.

Blattberg, E. (2015). *The future of digital TV advertising, in 5 charts*. Retrieved from https://digiday.com/media/future-digital-tv-advertising-5-charts/

Cisco (2016). *Cisco VNI (Visual Networking Index)*. Retrieved from: http://www.cisco.com/c/en/us/solutions/service-provider/visual-networking-index-vni/index.html

ComScore (2015). España 2015. *2015 Europe Digital Future in Focus*. Retrieved from: http://www.comscore.com/Insights/Blog/2015-Europe-Digital-Future-in-Focus

Eun-a Park (2015). *Business Strategies of Korean TV Players in the Age of Over-The-Top (OTT) Services. Pacific telecommunications council annual conference, 2015*

European Commission. (n.d.). *Digital Agenda for Europe: Digital Agenda Scoreboard*. Retrieved from http://ec.europa.eu/digital-agenda/en/digital-agenda-scoreboard

European Commission. (n.d.). *Digital Agenda for Europe: Media policies*. Retrieved from https://ec.europa.eu/digital-agenda/en/about-media-policies

European Commission. (2010). *Digital Agenda for Europe: Broadcast Media Services Directive (AVMSD)*. Retrieved from https://ec.europa.eu/digital-agenda/en/broadcast-media-services-directive-avmsd

European Commission (2013): press release. Europeans suffering because most Member States are too slow delivering 4G mobile broadband spectrum. Retrieved from: http://europa.eu/rapid/press-release_IP-13-726_en.htm

European Commission. (2014) Report on the results of the work of the High Level Group on the future use of the UHF band. Retrieved from: https://ec.europa.eu/digital-agenda/en/news/report-results-work-high-level-group future-use-uhf-band

Filmby Aarhus, Alexandra Institute and High Tech Accelerator Innovation Center University of Lodz Foundation(2011). *Report on business models, value chains and business development services in the broadcast/creative industries: cases of the Łódź and Małopolska provinces and West Denmark*.

Gual, J and Ricart J.E. (2001) *Estrategias Empresariales en Telecomunicaciones e Internet*. Barcelona: Fundación Retevisión.

ITU - International Telecommunication Union (2010). *The digital dividend: opportunities and challenges*. Retrieved from https://www.itu.int/net/itunews/issues/2010/01/27.aspx

ITU-R Recommendations (1992-1994). *Digital Television Terrestrial Broadcasting in the VHF/UHF bands*. Retrieved from http://www.itu.int/dms_pubrec/itu-r/rec/bt/R-REC-BT.798-1-199407-I!!PDF-E.pdf

McKinsey & Company (2015). *Global Media Report 2015. Global Industry Overview*. Retrieved from: https://www.mckinsey.com/~/media/McKinsey/dotcom/client_service/Media %20and %20Entertainment/PDFs/McKinsey %20Global %20Report %202015_UK_October_2015.ashx

Ministère de la culture et de la communication (2012). *Le dividende numérique*. Retrieved from: http://archive.dgmic.culture.gouv.fr/rubrique.php3?id_rubrique=208

Ministerio de Industria, Energía y Turismo (n.d.). *¿Qué es el dividendo digital y en qué consiste su liberación?* Retrieved from: http://www.televisiondigital.gob.es/DividendoDigital/Paginas/que-es-dividendo-digital.aspx

Monzoncillo (2011). *La televisión etiquetada: Nuevas audiencias, nuevos negocios.Madrid:* Fundación Telefónica. Retrieved from: https://mediaandentertainmentobservatory.files.wordpress.com/2012/04/la_television_etiquetada.pdf

Wolk, A. (2015). *The Future of OTT TV Advertising, 2014-2020.* Retrieved from: http://tdgresearch.com/report/the-future-of-ott-tv-advertising-2014-2020/