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Snapshot of the Video Entertainment industry's transformation and an analysis of the effects of DVB-T2 switch-off on broadcasters' strategies and business models in the Italian Market

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Abstract

English

The Video Entertainment industry is passing through a period of great changes started some decades ago. It involves a complete paradigm shift caused by the digital transformation and characterized by a totally new way to access to video contents. It has started shifting from analogical to digital transmission, and now it is possible to see its last developments with the most recent distribution standards of the digital terrestrial television combined with the introduction of the Internet services in the broadcasting world.

The aim of the thesis is to study the current state of the Video Entertainment industry in Italy and the effects of the introduction of DVB-T2 on it, deepening the comprehension of this theme and answering to specific questions that were not completely treated in the literature. In fact, by analysing and studying many documents and researches, some gaps were found in the scientific literature. For example, these gaps concerned the way in which Video Entertainment players establish strategic alliances with each other, the economic impact of the transition to DVB-T2 on Italian traditional broadcasters, and the evolution of contents, customer behaviours, and fruition models after the advent of the new digital terrestrial television.

Nowadays, players in the Italian video market have changed compared to years ago. New players have entered the market disrupting the competitive strategies that characterized the environment up to that moment. Before the advent of OTTs, the market was fully controlled by traditional companies strongly competing with each other. Today, they are willing to sign contracts even with direct competitors and new entrants in order to be sustainable in the long term, following and feeding the co-opetition phenomenon, a competitive-cooperative trend emerged in recent years.

Furthermore, traditional players are forced by the DVB-T2 transition to adapt their contents, platforms, and services to the new digital trends, integrating video on demand and offering cross-device video contents. This will release the constraint imposed by the television set of watching their video contents exclusively in a linear way and from a fixed location.

Italiano

L'industria dell'Intrattenimento Video sta attraversando un periodo di grandi cambiamenti, iniziato alcuni decenni fa. Si tratta di un completo cambio di paradigma causato dalla trasformazione digitale e caratterizzato da un modo totalmente nuovo di accedere ai contenuti video. È iniziato passando dalla trasmissione analogica a quella digitale, ed ora è possibile vedere i suoi ultimi sviluppi con i più recenti standard di distribuzione della televisione digitale terrestre combinati con l'introduzione dei servizi Internet nel mondo del broadcasting.

L'obiettivo della tesi è quello di studiare lo stato attuale dell'industria dell'Intrattenimento Video in Italia e gli effetti dell'introduzione del DVB-T2 su di essa, approfondendo la comprensione di questo tema e rispondendo a domande specifiche che non sono state completamente trattate in letteratura. Analizzando e studiando molti documenti e ricerche, infatti, sono emerse alcune lacune nella letteratura scientifica. Tali lacune hanno riguardato, ad esempio, il modo in cui i player dell'Intrattenimento Video stringono tra loro alleanze strategiche, l'impatto economico del passaggio al DVB-T2 sulle emittenti tradizionali italiane, l'evoluzione dei contenuti, dei comportamenti dei clienti e dei modelli di fruizione dopo l'avvento della nuova televisione digitale terrestre.

Oggi, rispetto ad anni fa, gli attori del mercato italiano dei contenuti video sono cambiati. Nuovi player sono entrati nel mercato stravolgendo le strategie competitive che fino a quel momento ne avevano caratterizzato l'ambiente. Prima dell'avvento degli OTT, il mercato era completamente controllato da aziende tradizionali in forte competizione tra loro. Oggi esse sono disponibili a sottoscrivere contratti anche con concorrenti diretti e aziende appena entrate nel mercato in modo da essere sostenibili nel lungo periodo, seguendo e alimentando il fenomeno della coopetizione, un trend competitivo-cooperativo emerso negli ultimi anni.

Inoltre, gli attori tradizionali sono costretti dalla transizione DVB-T2 a adattare i propri contenuti, piattaforme e servizi alle nuove tendenze digitali, integrando video on demand e offrendo contenuti video multi-dispositivo. Ciò libererà il vincolo imposto dal televisore di guardare i propri contenuti video esclusivamente in modo lineare e da una postazione fissa.

Executive Summary

The goal of this thesis is to study the Italian Video Entertainment industry, understanding its past and analysing its present for being able to hypothesize possible future scenarios deriving from technological developments of digital terrestrial television and Internet services. Just in these years, the preliminary phases of the switch-off that substitutes DVB-T standard with the new DVB-T2 are happening. This evolution will probably cause a change in the way in which television contents are produced, delivered, and watched.

This research is focused on the consequences that the digital revolution is having on the business model of players that belong to the video market. In particular, in this document it is possible to find facts about changes that companies are making in terms of strategic alliances, fruition models, and content distribution.

The content of the thesis is divided into two main parts introduced by an initial chapter and closed by a conclusion section. The first part is the analysis of the existing literature, divided into five chapters. It has been written after the consultation, the selection, and the study of scientific and non-scientific papers, and it has been fundamental to understand and describe the market and the terminology of reference. All the analysed sources have been catalogued in a spreadsheet according to many variables such as year, theme, and author, in order to keep track of the articles read and summarize their information in a structured way. The second part is the empirical research, covered in a single chapter.

In the introductory part, there is an overview of the Video Entertainment market that allows the reader to be aware of its current situation. Furthermore, it is present a definition of the most important elements that must be known to understand the following contents of this thesis.

Chapter 1 is dedicated to the classification of the articles and documents read and studied for the analysis of the literature, and the methodologies used to structure the work in a proper way. In fact, it is possible to find in this section the number of articles found per typology, language, phase of the analysis, and time period, considering both scientific and non-scientific writings. Moreover, to classify this material, some labels have been used, such as: phase of the analysis, focus theme, and priority.

Chapter 2 is a description of the Video Entertainment industry and its supply chain, divided into sub-sections. The first one is about a qualitative analysis of this market with the classification of the industry's players both traditional and OTT, a comparison between them, and an excursus on the Italian competitive landscape. The second section describes the Video Entertainment supply chain, deepening its history and models and highlighting the differences and looming analogisms between the traditional and the OTT chains. In the third sub-chapter data about broadcaster's audience and market shares in Italy are shown, for adding a quantitative view to the analysis.

Chapter 3 refers to the technologies behind the television both of compression and transmission. In four sub-sections there is a description of the technical definitions and performances of the DVB and compression standards, of their implementation in Italy and in other European countries, and of the issues related to the advent of the New TV in Italy.

Chapter 4 presents opportunities and threats that players in the Video Entertainment industry are facing and will face in the future. Each kind

of company will have the possibility to exploit the newest technologies such as 5G, space economy, and DVB-I, to acquire or consolidate market shares in a continuously changing environment.

Chapter 5 is dedicated to the definition of four future competitive scenarios that can come true depending on how the players in the market will move, change, and react to the competitive dynamics.

The final goal of the analysis carried out in these firsts five chapters has been to identify gaps in the literature and to decide which of them to cover, answering to the related research questions. Furthermore, it has been important to decide which methodology to follow in order to deepen the comprehension of each specific theme.

Gaps founded in the literature are: lack of information about the strategic alliances between Video Entertainment players; lack of information about the economic impact of the transition to DVB-T2 on Italian traditional broadcasters; lack of information about the evolution of consumers behaviour after the advent of new digital terrestrial television. As the second lack in the literature would have required confidential information about companies, it was not possible to cover it and only two out of three research questions have been selected and extended: what are the current players of the Italian Video Entertainment industry and how strategic alliances among them work and will change in the future, due to the advent of DVB-T2? How is DVB-T2 transition changing the video landscape in Italy in terms of contents, customer behaviours, and fruition models? Starting from these questions, the research has treated themes such as the relationship between the characteristics of the players and the typology of strategic alliance established, the actual impact of DTT evolution on organizational decisions, and the technological development that could influence video distribution and fruition.

Chapter 6 is the part of the thesis containing the empirical research carried out through the methodologies of the census and the interviews. It is structured in four sub-chapters, the first two describing the aim of the research and the methodology adopted, the last two reporting the results of the census and the interviews respectively.

The census has been used to create the most comprehensive picture of the Italian video market and of the strategic alliances that happen within it. It has been realized on a spreadsheet, classifying companies according to multiple variables (e.g. number of channels, type of distribution, etc.) and strategic alliances according to the type of deal (e.g. content reproduction rights, channel transmission).

The interviews have allowed this thesis to contribute to the literature with three case studies containing opinions and knowledge of top managers working for relevant video companies. In this way, it has been possible to collect direct and pluriannual experiences on the field and visions about the future developments of the Video Entertainment industry. Each interview has been structured in six phases: the questionnaire drafting, the questionnaire submission to managers, the questionnaire revision, the actual interview, the recording transcription, and the case study drafting.

In the last section of the thesis, conclusions are drawn putting together and summing up the results of the previous areas, intertwining the information gathered in both the analysis of the literature and the empirical research.

The research has highlighted three main results. The first one is the trend of convergence that the Video Entertainment industry is following, creating a competitive landscape with blurred boundaries and more short-term alliances. The second one refers to the fact that the DVB-T2 switch-off is completely different from the previous one (analogue to digital DVB-T transition) as it is a complete interruption

of the old standards of transmission. The last one is about the identification of the actual disruptor of the video market, that is the Internet service and not the DVB-T2 transition. From the conclusion of the research, it is evident that the digital revolution in the Video Entertainment industry has just begun and will increasingly be based on cross-platform and cross-device video contents delivered by bigger and bigger aggregators and strategic groups coming also from external industries.

Introduction

Video contents fruition is to all effects a form of entertainment, probably one of the most relevant in the entertainment industry. It comprehends all the possible kind of video formats, such as movies, TV series, live events and programmes, video clips, and every form of contents that can be watched by digital devices like television sets, smartphones, tablets, computers, or consoles. This industry has changed a lot in the last years as OTT players has introduced a new way of thinking the television joining and disrupting the traditional broadcasters' market in many countries in the world. Television is no longer just the fixed-space set on which to see linear contents, but it is rather a cross-platform and cross-device service offering the largest possible catalogue of video contents and accepting all the fruition modes present in the market.

A central theme of this thesis is precisely the change of the Video Entertainment industry in Italy due also to the advent of the new digital terrestrial television standard. In fact, by the next two years there will be a complete digital switch-off that will initially update the compression standard MPEG only, bringing it to the 4th generation, then will replace DVB-T standard with DVB-T2. This technological evolution will allow people to see higher-quality channels and to optimise the usage of bandwidth for DTT transmissions saving some frequencies for the 5G implementation.

The choice of writing a thesis about this theme comes from the fact that video is becoming the media content par excellence. This is demonstrated by the huge success of social media platforms such as YouTube, Tik Tok, Instagram and of OTT services like Netflix, Disney+, and Amazon Prime Video, that are able to reach wider and wider audiences exploiting the power of the Video on Demand revolution. Apart from this quite recent example of video services, in this sector there are also traditional broadcasting players like Rai, Mediaset, and

Sky, that have always been the market leaders in Italy but are now struggling to react to the OTT disruption. It will be interesting to see who will succeed and who will surrender, and how the competitive landscape will change in the future. What is sure by now is that traditional broadcaster evolution can no longer be delayed.

The aim of the research is to go beyond the simple DTT transition event, understanding the big picture and the evolution of the competitive landscape that it will imply. In particular, the focus is on the strategic implication of the transition, how it will influence the way in which alliances are established within the Video Entertainment industry. In this document the term "strategic alliances" will be used 360 degrees, considering both vertical and horizontal alliances, including all the phases of the supply chain such as production, aggregation, and distribution. Some examples of these alliances are: co-productions, distribution rights, distribution infrastructures and platforms sharing.

The methodologies used for the empirical research are two, the census and the interviews. The census has been used to catalogue players, being part of the Video Entertainment industry, according to a set of variables, and the strategic alliances established among themselves. For doing this, it has been structured a spreadsheet with multiple pages and various graphs and tables. Regarding the interviews, they have been organised preparing a list of questions to propose to each selected player. Then, a case has been written for each interview, based on the answers obtained.

1. Analysis of the literature

To analyse the existing literature and write the thesis, 45 scientific articles and 44 non-scientific articles were read and studied. Among these sources are excluded the websites in which it is possible to take general information and definitions of concepts and terms used to contextualize the analysis.

Scientific articles

They are various typologies of article, taken in a quite large time span from official and academic sources. Table 1 contains the numbering of these scientific articles.

Type of article												
Academic		Report		Government		Conference paper			Book extract			
16		13		12		3			1			
Language												
English				Italian								
36				9								
Article per phase of the analysis												
1. Description of the Video Entertainment industry and its supply chain		2. Definition of DVB-T standard and implications of the TV 4.0 in the Italian market		3. Opportunities and threats for traditional broadcasters and OTT				4. Identification of future competitive scenarios				
20		14		7				4				
Article per time period												
2005	2008	2009	2011	2012	2013	2015	2016	2017	2018	2019	2020	2021
1	1	1	1	3	1	2	3	2	4	6	15	5

Table 1 - Scientific articles

Phases of the analysis: to properly organize the analysis of the literature and distinguish among the various papers, four different

steps have been done. They are subsequent phases that start with the description of the Video Entertainment industry and its supply chain. The second one is about the definition of DVB-T standard and implications of the TV 4.0 in the Italian market. The third one is about outlining opportunities and threats for traditional broadcasters and OTT. Lastly, comes the phase of identification of future competitive scenarios.

Together with this division in phases of the analysis, to further classify and label articles, it has been created a category variable, called "focus". Its labels are "Market", "Supply Chains", "Compression Standard" "DVB", "DVB-T2", "DTT", "Future" and "Strategies". "Market" articles are related to the general definitions and information about the market; "Supply Chains" ones relate to the description of the different areas of the industry; "Compression Standard" papers explains why and how television signals need to be compressed; "DVB" and "DVB-T" describe this standard and its evolution; "DTT" generally the Digital Terrestrial Television; "Future" relates to forecast and predictions; "Strategies" is about possible moves for players. For the first phase, "Market" and "Supply Chain" labels were used; for the second "Compression Standard", "DVB", "DVB-T2", "DTT", and "Market"; for the third "Future", "Market", and "Strategies"; for the last one "Future" and "Strategies".

Non-scientific articles

They are articles of important national newspapers, corporate news, and articles written by journalists and bloggers that offer vertical contents about the specific topic of the thesis. Table 2 contains the numbering of these non-scientific articles.

Language									
English				Italian					
24				20					
Articles per phase of the analysis									
1. Description of the Video Entertainment industry and its supply chain		2. Definition of DVB-T standard and implications of the TV 4.0 in the Italian market			3. Opportunities and threats for traditional broadcasters and OTT			4. Identification of future competitive scenarios	
19		10			13			2	
Articles per time period									
2008	2009	2012	2014	2016	2017	2018	2019	2020	2021
1	2	1	2	2	4	3	4	19	6

Table 2 - Non-scientific articles

These sources have been labelled in the same way as scientific articles, thus using as focus word such as "Market", "Supply Chains", "Compression Standard" "DVB", "DVB-T2", "DTT", "Future" and "Strategies".

Thanks to the analysis of the literature, it was possible to deeply understand the characteristic of the Video Entertainment and media industry market. Players have been analysed and classified according to the type of distribution, revenue model and content offered to customers. Many documents have been further elaborated to describe the supply chain in a structured and easy-to-read method, despite the complexity and the interceptions that characterized this environment. The history and the evolution of technologies of the lasts 20 years have been other key aspects to be explored, because they have disrupted the business models that were prevailing in the past. In this document it will be possible to read about the technologies' characteristics that punctuate the evolution of the market that people will leave in the short term. With the fruition of academic studies, companies' reports and article written by journals specialized in the sector, it has been possible to deepen the topic of the future, specifying the technologies that will

enter the Video Entertainment and media industry. With this kind of study, it was feasible to design the possible scenarios that could characterize the market in the long term. Moreover, the acknowledgment of these information enabled the possibility to understand some other documents that present case study of companies that are facing up to changes, designing new strategies for dealing with innovation.

Conclusions of the analysis of the literature

The analysis of the existing literature has been useful to understand the overall characteristics of the video market and of the digital terrestrial television. In particular, the description of the supply chain, of the technical features of the transmission and compression standards, and of the current and possible future competitive landscapes were present and examined in depth in the existing literature. Instead, lacks in the literature were found regarding information about the strategic alliances between Video Entertainment players, about the economic impact of the transition to DVB-T2 on Italian traditional broadcasters, and about the evolution of consumers behaviour after the advent of new digital terrestrial television. The literature referred to the Italian market does not treat in depth the digital terrestrial television scenario and its last developments. Furthermore, papers referred to other European markets cannot be used as proxies as they have a completely different television context with a limited use of DTT transmissions.

2. Description of the Video Entertainment industry and its supply chain

In this chapter it is described the Video Entertainment industry starting from a qualitative description of the broadcasters who populate the television market, classifying them depending on their characteristics. In particular, after an overall vision of the market, it is outlined the definitions and the properties that clarify the distinction between traditional broadcasters and OTTs. In addition, it is introduced a general model of the supply chain of the player competing in this field. About this last point, the distribution networks of traditional broadcasters and OTTs have been further developed, highlighting their differences, similarities, and the intertwining process that has occurred in recent years. Finally, a quantitative analysis of market value and audience is reported in order to have a better and clear vision of the numbers that describe the vastness of this business field.

2.1. Qualitative analysis

Analysing qualitatively the Video Entertainment and Media industry, it is possible to highlight the fact that it is characterized by a large number of heterogeneous players, as it can be seen in Figure 1. In this picture are shown big multinational companies with their subsidiaries and brands, each with their peculiarities and market size[1]. For sure, it is not a complete and comprehensive schema, it lacks for example many smaller players and also country players that are part of the industry too. However, it conveys how wide and crowded is this kind of business arena, and how much these brands are crossing the boundaries of pure Video Entertainment, since they are more and more definable as technology and media companies.

[1] https://www.vox.com/2018/1/23/16905844/media-landscape-verizon-amazon-comcast-disney-fox-relationships-chart

It is possible to classify these players by many different factors, like the age, the geographical area of interest, the predominance of the physical or of the digital processes in their business. However, the best and more comprehensive way to understand this "red ocean" industry, as it can be called borrowing the expression coined by Kim and Mauborgne, is to divide it into two macro categories of competitors, depending on their historical belonging to the world of video content: traditional broadcasters and Over-The-Top (OTT) video players. The structure of the thesis is based on this distinction, which will continue throughout the whole analysis. In the next paragraphs there will be further details of both sides, outlining their characteristics and comparing their activities, especially in terms of distribution, fruition, content typology, and revenue models.

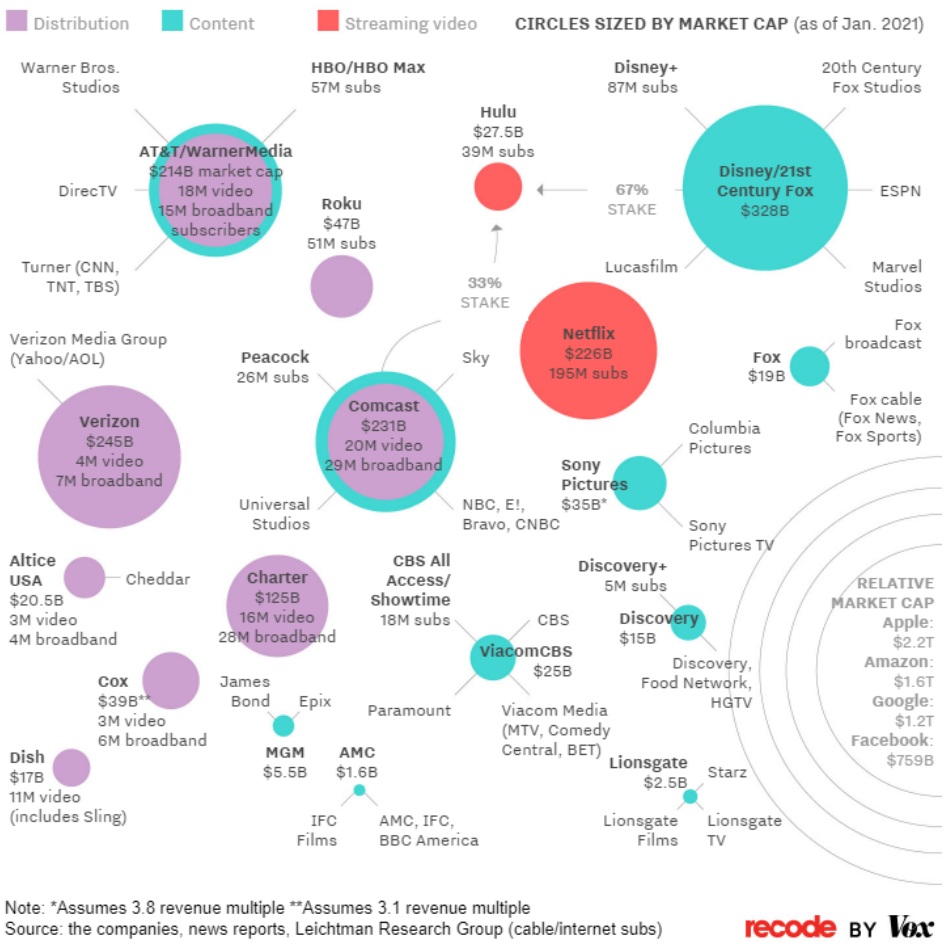

Figure 1 - Global Media Landscape (Recode by Vox, 2021)

2.1.1. Classification of the industry's players: traditional broadcasters

The term "traditional" means historical, original, continuous over time. Traditional broadcasters are the incumbents of the Video Entertainment industry, the companies which have generated the business itself thanks to their technological innovations in the transmission of digital video contents. Regarding the old way of transmitting videos, the analogue one, it will not be analysed in this study as it is out of scope. From now on, the term "video content" will refer only to the digital side of it.

Distribution: DTT, SAT, Cable TV

Traditional broadcasters use to distribute their video contents in three different ways: via Digital Terrestrial communications, through cable, or using satellites[2]. Hence, they are used to be classified in Digital Terrestrial Television (DTT), Satellite Television (SAT), and Cable Television.

Digital Terrestrial Television is a technology for terrestrial television in which land-based television stations broadcast contents by radio waves to television sets in consumers' residences in a digital format.

Satellite Television is a service that delivers television programming to viewers by relaying it from communications satellites orbiting the Earth directly to the viewer's location. The signals are received via an outdoor parabolic antenna commonly referred to as a satellite dish.

Cable Television is a system of delivering television programming to consumer via radio frequency (RF) signals transmitted through coaxial cables or, in more recent systems, light pulses through fibre-optic cables.

[2] https://www.wipo.int/edocs/mdocs/copyright/en/sccr_30/sccr_30_5.pdf

Of course, there are also hybrid models that allows to choose which of the offered distribution ways to use. Sky is an example of this hybridity, as it provides platforms for all the three typologies of transmission.

Fruition: palimpsest

Regarding the fruition of videos, traditional broadcasters use to offer linear contents to the audience. This is called "linear television", meaning that the content is consumed at the time of broadcast, direct from the broadcast source[3]. In this kind of model, on the supply side, there is a precise palimpsest of programmes to be followed with specific schedule and timing, while for the viewers there is not the possibility to choose what to see and when to see it, except by changing the channel.

Content typology

For what concern the content typology, traditional broadcasters tend to prefer news and sport events for their transmissions because this kind of programmes are more suited to a linear television system[4].

In fact, news and sports can be watched almost exclusively live, as it would be useless to watch them the following days since, at that time, they would become obsolete.

For sure broadcasters used to air also films and tv series, but this contents usually represent a much lower part of their offer. In particular, the ones that work well also on traditional television are historical fictions and comedies, which have been watched by generations of televiewers.

[3] https://www.wipo.int/edocs/mdocs/copyright/en/sccr_30/sccr_30_5.pdf
[4] https://www.libertyglobal.com/pdf/public-policy/The-Value-of-Content-Digital.pdf

Revenue models: FTA and pay-tv

How do broadcasters make money? How do they finance their operations in a sustainable way? To answer to these questions, it is essential to divide the possible revenue models in two apparently opposed typologies, which however have some common aspects: Free-To-Air and pay-tv (also referred as subscription-tv).

In the first category, depicted in Figure 2, there are the national broadcasters, also called public service media (PSM), the one that, when needed, are supported by the public sphere with *ad-hoc financing*[5]. This means that, in particular situation of need and difficulty, the government intervenes with financial aids in order to allow them to continue their activities.

They also have as secondary stream of income, the one that comes from making deals with *advertising investor*, which have to pay for taking up the commercial space between transmissions, or sometimes interrupting a programme itself[6].

However, their main source of revenue are usually the *TV license fees*, which must be paid periodically by the population. An example of this is Rai, the Italian PSM, which has integrated the annual fee owed to the State by citizens in the electricity bill, regardless of the provider with which the individual has signed the contract. Another example is BBC, which operates thanks to these fees and possible financial aids, but does not present the advertising stream.

A last stream of income, always provided by the public, meaning both individuals and organizations, is the one related to voluntary donations, which is for instance adopted by the company Public Broadcasting

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5 https://www.lettere.uniroma1.it/sites/default/files/837/Slides%20Fabiano%202008%20modelli%20di%20business%20tv.pdf

6 https://www.lettere.uniroma1.it/sites/default/files/837/Slides%20Fabiano%202008%20modelli%20di%20business%20tv.pdf

Service. PBS is a US no-profit public television which is economically supported by such contributions and, for this reason, does not need to exploit television advertising.

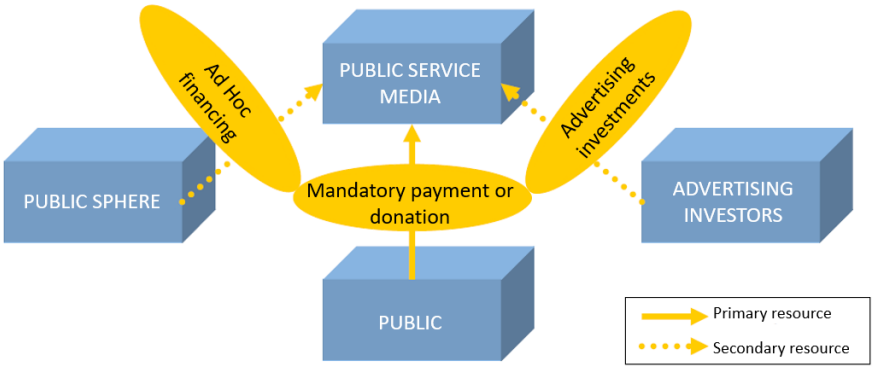

Figure 2 - Adapted from "Modelli di business e strategie di sviluppo dell'impresa televisiva" (Thesis of Andrea Fabiano - Università La Sapienza Roma, 2008)

The second revenue model, represented in Figure 3, is called pay-tv because the audience have to voluntary pay to watch the programmes broadcast on television. This payment can be made through a subscription, that consist of a periodic fee that viewers owe to broadcasters. There is also the possibility to receive advertising investments from companies that want to increase their visibility to pay-tv audience[7].

7 https://www.lettere.uniroma1.it/sites/default/files/837/Slides%20Fabiano%202008%20modelli%20di%20business%20tv.pdf

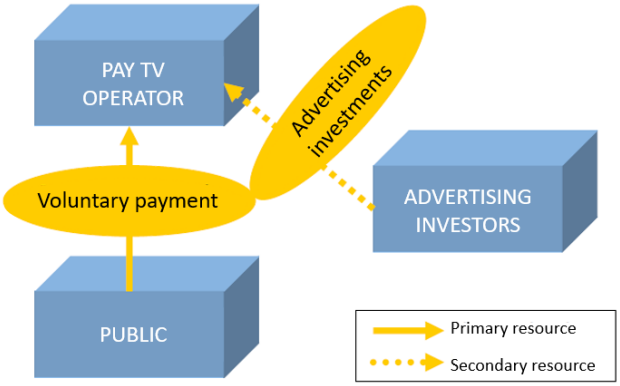

Figure 3 - Adapted from "Modelli di business e strategie di sviluppo dell'impresa televisiva" (Thesis of Andrea Fabiano - Università La Sapienza Roma, 2008)

2.1.2. Classification of the industry's players: OTT

Over-The-Top players are companies providing services, contents, and applications directly to viewers via a high-speed Internet connection, bypassing cable, terrestrial, and satellite television systems. This business model has been disrupting the industry since 2007, the symbolic data in which Netflix has shifted from an online DVD retailer to an online streaming platform[8].

Distribution: Internet

As stated before, OTT players exploited the power of Internet to deliver their contents. To be more precise, they use both wired and wireless broadcasting systems. In the first case it is possible to access them through a Local Area Network (LAN) or a Wide Area Network (WAN); in the latter, the available technologies are Wi-Fi (Wireless Fidelity) or 4G/5G (Fourth and Fifth Generation of Mobile Networks).

[8] https://www.wipo.int/edocs/mdocs/copyright/en/sccr_30/sccr_30_5.pdf

Fruition: VOD, live, vMVPD

OTT services are so disruptive for the Video Entertainment industry as they allow a different type of fruition, the non-linear one. In fact, they offer the possibility to access to the video contents at any time and as required by the user. This kind of fruition is called "on-demand". Hence, maybe the most important category of OTT service is the Video On Demand (VOD) one. There are also other ways of accessing the contents, definitely more similar to the ones of the linear broadcasting: live streaming and vMVPD. Live streaming is the real-time broadcasting and recording of programmes and events delivered to the viewers through Internet. The term vMVPD means virtual Multichannel Video Programming Distributor, also referred as streaming TV service. It is the evolution of Multichannel Video Programming Distributor (MVPD), an operator such as Comcast, Dish, DirectTV, or Verizon that provides in a traditional and linear way multiple television channels to the final customer. Virtual MVPD is slightly different from that because it aggregates both live and on-demand TV contents, delivering them over the Internet[9]. It has a multitude of television channels, often fewer than the traditional satellite and cable models, and for this reason is sometimes called "skinny bundle". Some examples of vMVPD are Sling TV, Hulu Live TV, YouTube TV, DirectTV Now and others[10].

Content typology

Non-linear television allows viewers to watch programmes on their own schedule. The most suited contents for this model are entertainment videos, like movies and tv series. In fact, these kinds of programmes are perfect to be watched on-demand, without the pressure of being present at the exact moment in which the

[9] https://www.thewrap.com/vmvpd-svod-avod-tvod-streaming-market-explained/
[10] https://www.thewrap.com/vmvpd-svod-avod-tvod-streaming-market-explained/

programme is aired. Figure 4 is a chart taken from a report done by Ofcom in 2014, the United Kingdom's communications regulator, in which is represented the share of time-shifted viewing as percentage of total genre viewing. It is clear that Entertainment is the most preferred non-linear content, meaning that often its fruition is not live, but in a second time[11].

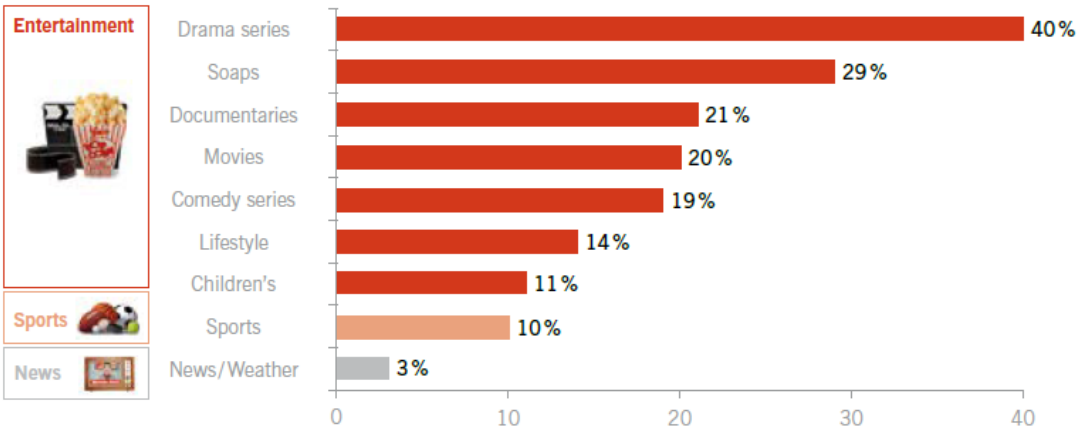

Figure 4 - Share of time-shifted viewing as % of total genre viewing in UK (Ofcom, 2014)

In another graph taken from an article of Frost & Sullivan and reported in Figure 5, the growth pipeline company, it is further clear that OTT services prefer to air genre such as film and tv fiction, and generalist (appealing to the general public with undifferentiated programmes) rather than documentary, sport, and children's contents[12].

An exception of this, is the new platform Disney+, because within its library are present many Disney-Pixar cartoons and animation films for children, National Geographic's documentaries, and the possibility for US subscribers of integrating ESPN+ sports in the same bundle offer.

[11] https://www.libertyglobal.com/pdf/public-policy/The-Value-of-Content-Digital.pdf
[12] https://ww2.frost.com/frost-perspectives/growth-over-top-ott-video-market-europe/

However, this is justified by the fact that Disney was already the owner of that contents.

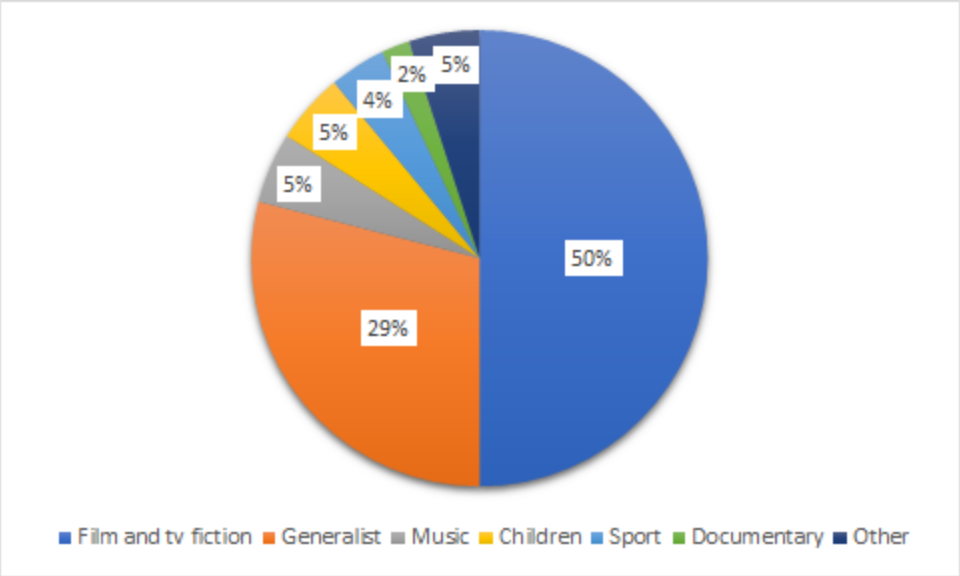

Figure 5 - Adapted from "OTT Services by Genre in Europe" (Frost & Sullivan, 2016)

Revenue models: subscription, transaction, and advertisement

There are three different revenue models for the OTT players: subscription, transaction, and advertisement[13]. Subscription, as the term suggest, means that the user have to pay a monthly fee to access to a wide catalogue of contents; the transaction model is based on recurrent payments for single contents; in the advertisement model the contents are provided to the user for free, but interrupted by some commercials paid by advertisers. Combining the VOD fruition model with the three revenue models just explained some recurring terminologies emerge: Subscription Video On Demand (SVOD); Transaction Video On Demand (TVOD); Advertising Video On Demand (AVOD). Some examples of them are Netflix, Amazon Prime Video,

[13] https://us.sganalytics.com/blog/80-consumers-subscribed-to-at-least-1-paid-vod-service-which-is-better-svod-tvod-or-avod/

Disney+ as SVOD; iTunes and Google Play as TVOD; YouTube as AVOD[14].

Obviously, there are hybrid cases in which some platforms make money mixing some of these models. An example of this is Chili, which was born as a TVOD and now also offers AVOD contents, with a wide selection of films and documentaries visible for free, thanks to the insertion of advertising[15].

2.1.3. Comparison between traditional players and OTT

Summarizing the classification of the players of the Video Entertainment industry some conclusions come up. For sure, it is not possible to say that one category is better than the other one, both have strengths and weaknesses. In Table 3, the characteristics of the two groups of companies are represented in a synthetic way.

	Distribution	Fruition	Content typology (most suitable)	Revenue models
Traditional broadcasters	DTT, SAT, Cable TV	Palimpsest	News, live events	FTA, Pay TV
OTT	Internet	VOD, Live, vMVPD	Movies, TV series	Subscription, Transaction, Advertisement

Table 3 - Summary table about video players features

The differences between traditional broadcasters and OTT are not only technical, but they emerge also from a socio-cultural perspective. Traditional broadcasters leverage on the fact that older generations like

[14] https://us.sganalytics.com/blog/80-consumers-subscribed-to-at-least-1-paid-vod-service-which-is-better-svod-tvod-or-avod/

[15] https://corporate.chili.com/it/press-room/chili-apre-ai-servizi-avod-film-gratis-con-la-pubblicita-tacchia-prevediamo-una-crescita-importante/

Generation X (1965/1980), Baby Boomers (1946/1964), and Traditionalists (1925/1945), are used to watch television linearly and often do not want to change this habit. They want to have some programmes on air when they turn on the television, without having the responsibility to choose from a catalogue. At most then, they will change the TV channel to watch at something they prefer. Their favourite contents are fictions, television news, festivals, and sport events. For this reason, traditional broadcasters are investing in original contents, carrying on with their historical drama and tv series, and introducing some others.

However, as it is true that population is growing older and older, it is also true that people are getting smarter in their approach with technological devices and used to the pervasiveness of the digital world. OTT are taking advantage from that, proposing online platforms, with all their flexible, technological, and easy-to-use interfaces. These digitalization process suggests that the two players will increasingly resemble each other in the future, in a mimic process that will bring to a convergence of the whole industry. More about this will be discussed at the end of this chapter.

What emerges nowadays is that traditional broadcasters are joining OTT in the online offering in order to keep in step with the times, while OTTs are further increasing their provision of original contents, as their only source of differentiation in a time in which all companies started to exploit algorithms and platforms.

2.1.4. Italian competitive landscape: local vs global

Analysing the Italian competitive landscape, it is possible to observe the same peculiar aspects of the global Video Entertainment industry reproduced in a local context. The trend of switching to online platforms is becoming more and more diffused also in Italy. In fact, not only new

players but also traditional broadcasters are trying at least to create their proprietary video streaming platform. For example, Rai has launched its service Rai Play in place of the web portal Rai.tv in 2016, and Mediaset has started Mediaset Play in 2018. Both online platforms are used to show live and on demand contents that once could only be seen at the time of broadcast on tv.

In this new environment the competition is becoming fiercer as in each country local players are trying to react in the best way possible to the entry in the national market of the country division of international or global companies such as Netflix and Disney+.

2.2. Video Entertainment supply chain

After the qualitative and quantitative analysis of the market it is important to understand how traditional and OTT players perform their business activities, and how much they are integrated along the Video Entertainment supply chain.

2.2.1. Introduction to the supply chain: history and models

Before starting to talk about the current Video Entertainment supply chain, it is important to understand a little bit of history of video contents, which had its inception with television, intended in its strictest technological sense. As stated by Amanda Lotz in her 2009 article "What is U.S. television now?" and more deeply in her 2007 book "The television will be revolutionized", the history of television can be divided into some phases, each of them generated by a profound change in the transmission of video contents, in the television technologies and in the cultural dynamic, compared to the previous state[16]. It is only by retracing these steps, that is possible to

[16] What is US Television Now?, Amanda Lotz (2009)

understand the current situation and the ongoing trends that are another time reshaping the whole video ecosystem.

Network era

In the network era, the one that went from early 1950s to mid-1980s, television was as a pure-domestic device that allows people to watch, on the so called "small screen", what happened in the world outside the walls of the house and also away from their countries. At that time, no one had ever thought about making the television portable. It was rather intended to be a fixed and quite cumbersome device placed in a specific area of the house, usually the living room, around of which started to be organized the domestic space. Few national networks started to offer their channels on such devices. They had limited program options and a linear and routinized daily schedule. Viewer had little to do but turning on the device and getting into the flow of programs and promotional messages. Another issue was about what to watch, as most houses had just one set and television viewing was largely a shared experience. For this reason, national networks delivered homogenous content likely to be accepted by a heterogeneous audience.

Multichannel transition

From the mid-1980s throughout the 1990s there were a transition phase in which new technologies, as the remote-control device (RCD), the video cassette recorder (VCR), the first cable services, and in a second time the digital video recorder (DVR), entered the industry. These devices allowed audiences a higher control over viewing, transforming television from a flow of content that was available only at particular moment to individual programs that could be reordered, saved, and re-viewed at will. Furthermore, the number of channels

started to expand and to target niche audience: women, children, African Americans, and others[17].

Post-network era

Started around early 2000s, the post network era is characterized by the sign that television as it has always been intended, does not exist anymore. Digitalization, defined in this field as the digital transmission of television signals and the adoption of digital production and reception technologies, has changed irreversibly the industry and the whole world. It enabled higher transmission efficiency, interoperability between television and other device such as computers and smartphones, quality improvements like the ones generated by the adoption of the high-definition (HD) standards[18].

Models

The Video Entertainment supply chain is a sequence of phases in which a multitude of companies contributes to the delivery of contents to the final customers starting from their production. A clear representation of this has been described by Jean K. Chalaby in 2019, who has extended the concept of Global Value Chain (GVC) to the television industry. In Figure 6, it is possible to see the television GVC framework generated by the juxtaposition of two semi-chain, the tv content value chain and the tv communication value chain, also called media delivery value chain. The whole GVC is composed of seven subsequent phases[19].

[17] What is US Television Now?, Amanda Lotz (2009)
[18] What is US Television Now?, Amanda Lotz (2009)
[19] Outsourcing in the U.K. Television Industry: A Global Value Chain Analysis, J.K. Chalaby (2019)

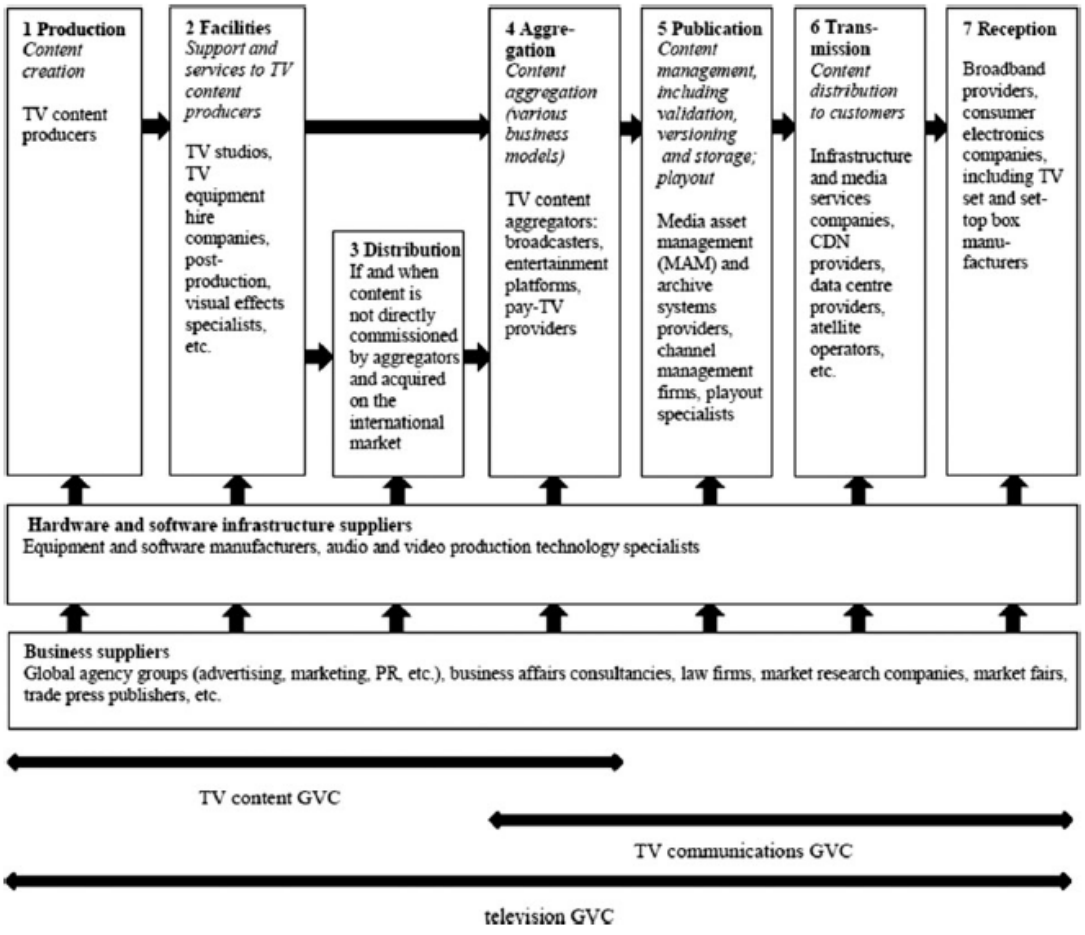

Figure 6 - The Television GVC (J.K.Chalaby, 2019)

Production

The production phase consists in the creation of contents for the television transmissions. Content producers, supplied by facilities, generate videos such as films and tv series and then license them to aggregators[20].

Facilities

The facilities sector is made up of tv studios, also called factory floors, tv equipment hire companies, post-production visual effects

[20] Outsourcing in the U.K. Television Industry: A Global Value Chain Analysis, J.K. Chalaby (2019)

specialists, outside broadcast (OB) firms, Media Asset Management (MAM), and others. They provide support and services to tv content producers, and they are in turn supplied by software and equipment companies like Cannon, Panasonic, Sony, Arri, Sennheiser, Avid, Blackmagic Design.

Distribution

The distribution stage deals with the coordination between production and aggregation. If content is not directly commissioned by aggregators and acquired on the international market, distributors act as intermediaries between content producers and broadcasters.

Aggregation

Aggregators are the buyers of the value chain: on one side they buy commissioned contents from producers and bring them together under the umbrella of a single brand; on the other side they pay media services for the content delivery to audiences and advertisers. As buyers they have buying powers and their core competence is marketing. They are experts in building relationships with viewers. According to Chalaby, there are four categories of business model in these field: linear and free to air (like public service broadcasters), linear and pay to view (like pay-tv such as DirectTV and Sky), free to view on demand (like video-sharing platforms such as YouTube and Facebook), pay to view on demand (like TVOD and SVOD such as Netflix). They are supplied by satellite operators (such as Intelsat, Eutelsat, SES), infrastructure and media service companies, and Content Delivery Networks (CDN)[21].

[21] Outsourcing in the U.K. Television Industry: A Global Value Chain Analysis, J.K. Chalaby (2019)

Publications

Publication companies are Media Asset Management (MAM), archive systems providers, channel management firms, playout specialists. Their work is to manage content, including validation, versioning, storage, and playout.

Transmission

In order to properly deliver contents to the audience is necessary to have the right infrastructure. Media services companies, CDN providers, data centre providers, satellite operators take care of this. Content Delivery Network (CDN) industry transport 56% of Internet traffic (72% by 2022). It is made up of a worldwide network of servers that stores content as close as possible to end users. Players in this field are Akamai Technologies, CloudFront (AWS), Limelight Networks, Verizon DMS, Google Cloud CDN, Microsoft Azure DN[22].

Reception

Viewers need infrastructures and devices that allow the fruition of contents. Broadband providers, consumer electronics companies, tv set and set-top-box manufacturers supply the right equipment at this stage of the value chain. Tv set industry is dominated in terms of revenues by Samsung, followed by LG and Sony[23], as reported in Figure 7.

[22] Outsourcing in the U.K. Television Industry: A Global Value Chain Analysis, J.K. Chalaby (2019)
[23] https://www.t4.ai/industry/tv-market-share#:~:text=Global%20TV%20Market%20Share%20by%20Sales%20Volume%2C%202019&text=The%20leading%20Vendor%20in%20the,%2C%20and%20Others%20with%2030.6%25

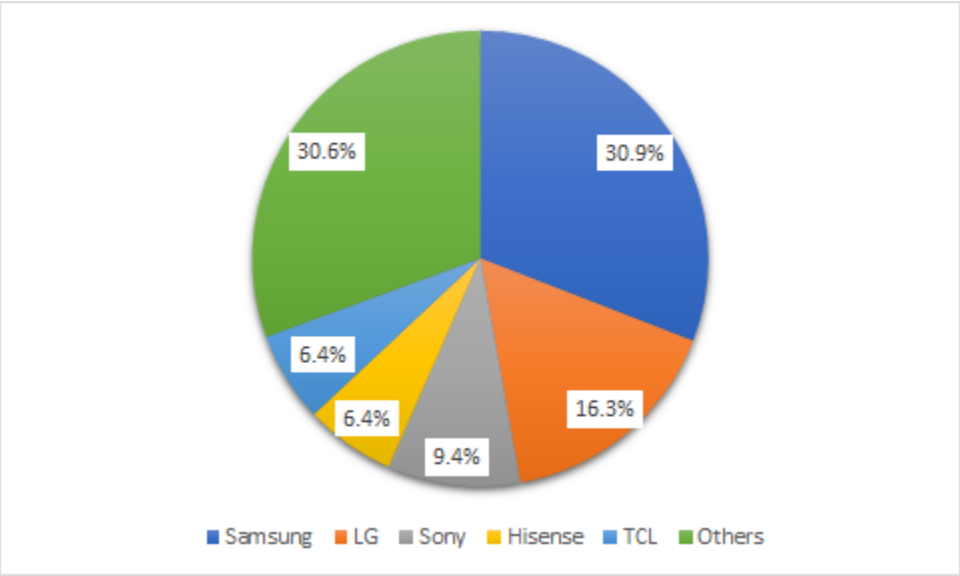

Figure 7 - Adapted from "Global TV Market Share by Sales Volume" (T4, 2019)

Another supply chain model, represented in Figure 8, is the one presented in the report "La filiera e il mercato dei contenuti digitali in Italia" by Osservatorio Digital Content of Politecnico di Milano, which more generally represents the Video Entertainment industry as two subsequent stages: production and content distribution[24]. Producers are those companies that design, realize, and market contents, owning and managing the rights. They make relationships with Content Creators, which concretely conceive and carry out the work. Distributors are instead those companies that use their channels to deliver to the final users the digital videos. In the last few years, the production process had been disrupted by User Generated Content (UGC), that is content directly distributed on dedicated platforms, such as TikTok, Twitch, and YouTube, by Content Creators, bypassing producers.

[24] La filiera e il mercato dei contenuti digitali in Italia, Osservatorio Digital Content (2020)

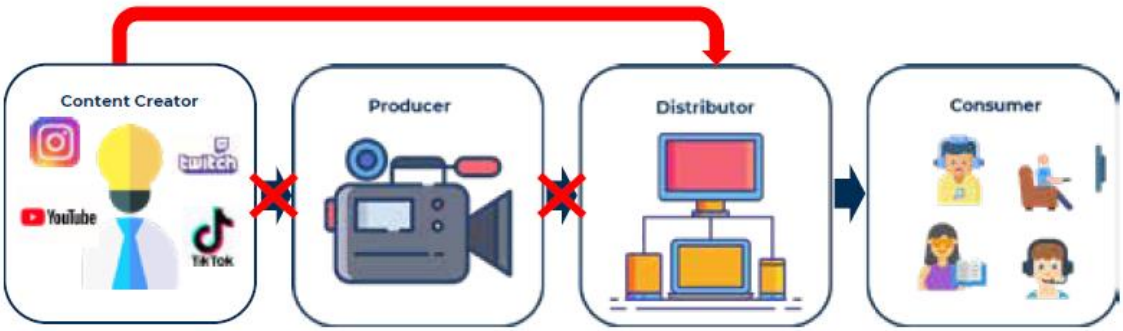

Figure 8 - User Generated Content in Italy (Osservatorio Digital Content, 2020)

As reported in Figure 9, there are also other players influencing the video industry like the Collecting Management Organizations, or Collecting Societies, which gather and redistribute owed royalties to the players upstream of the supply chain. These activities are increasingly important as the industry is more and more fragmented both in the demand and in the supply side, and the correct use of contents protected by copyright must be granted. Last but not least, there are the so-called Service Providers, that is the companies which supply IT, legal, and payment services to the whole industry[25].

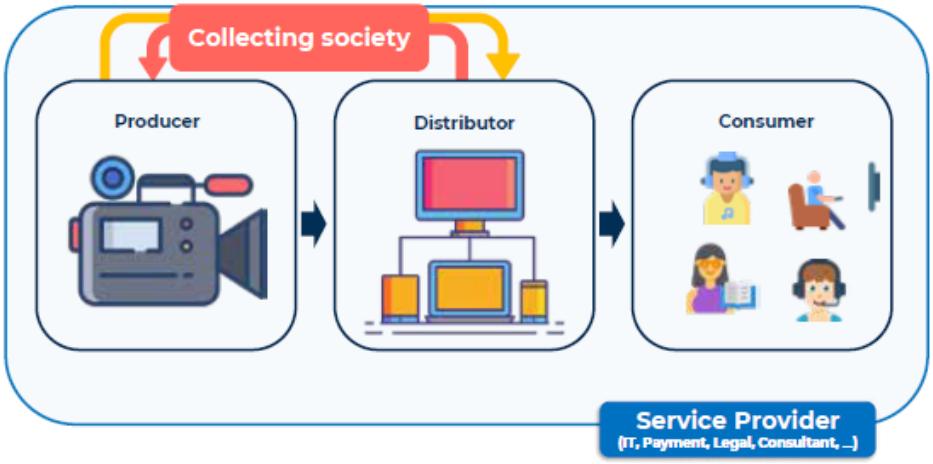

Figure 9 - Extended Supply Chain of Digital Contents (Osservatorio Digital Content, 2020)

[25] La filiera e il mercato dei contenuti digitali in Italia, Osservatorio Digital Content (2020)

2.2.2. Traditional broadcaster supply chain

For what concern the traditional supply chain, it is based on two categories: FTA/broadcast and subscription tv. As it can be seen in Figure 10, taken from "The Value of Content" report done by Liberty Global and BCG[26], they have in common most of the stages of the supply chain, excepted for the content aggregation, in which there are some differences in the characteristics of the channels. In fact, while broadcasters such as BBC, Fox, and RTL offer free contents, the subscription tv transmits premium channels, that people can watch paying a periodic fee[27].

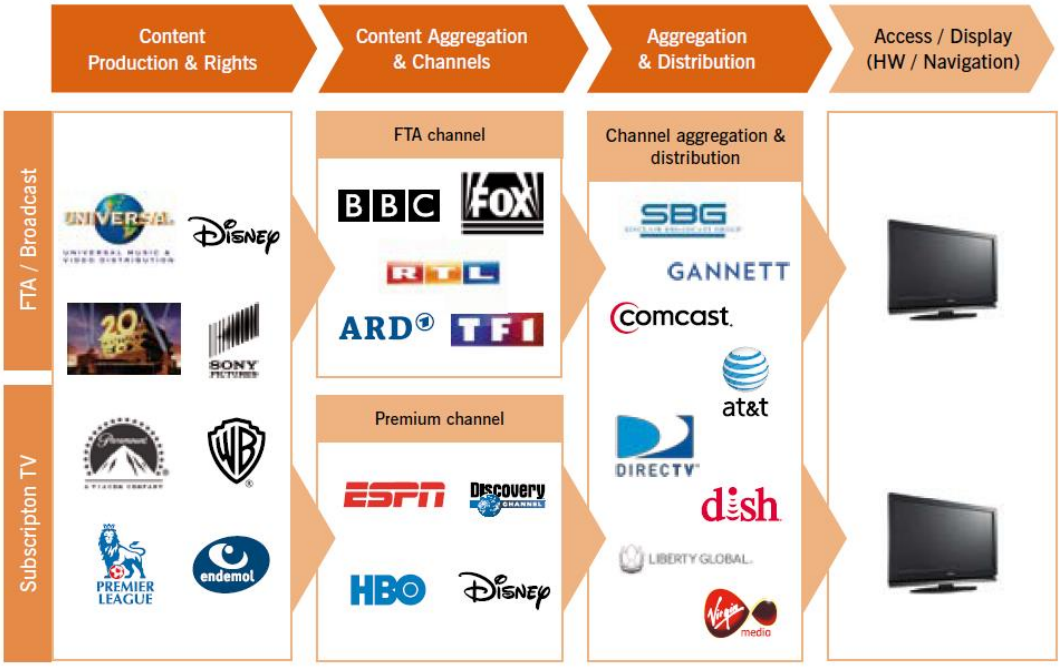

Figure 10 - The full view of the two value chains: FTA and subscription tv (Liberty-BCG, 2016)

Taking as reference the UK television industry, it is possible to understand the ongoing trend that pushes traditional broadcaster to outsource media delivery tasks. First of all, outsourcing is driven by

[26] https://www.libertyglobal.com/pdf/public-policy/The-Value-of-Content-Digital.pdf
[27] https://www.libertyglobal.com/pdf/public-policy/The-Value-of-Content-Digital.pdf

the fact that companies are under the constant pressure to deliver more for less. This can be achieved in two ways: reducing costs and exploiting technological innovation. Outsourcing often allows to do both. In fact, companies gain in efficiency, content quality, and reliability externalizing activities in which they are not experts, especially the ones that needs scale and computing power.

In the article "Outsourcing in the U.K. Television Industry: A Global Value Chain Analysis" written by Jean K. Chalaby in 2019, it is well described the example of BBC, company that started a selection process of its activities, keeping within its organization the ones in which it had core competencies and outsourcing the ones in which it had not[28].

In Table 4, it is shown the result of this process, in which BBC kept in-house core activities such as its on-demand platform BBC iPlayer, while outsourced publication and linear transmission to external companies, such as Arqiva and Red Bee Media.

	Publication (playout and media management)	Linear transmission (multicast)	Nonlinear (on-demand) distribution (unicast)
BBC	Red Bee Media	Arquiva	BBC
ITV	Deluxe/Ericsson	Arquiva	BT
Channel 4	Red Bee Media	Arquiva	Channel 4
Channel 5	Red Bee Media	Arquiva	Red Bee Media
Sky	Sky	Sociètè Europèenne del satellites	Sky
BT Sport	Arquiva / Red Bee Media	BT Media & Broadcast	BT

Table 4 - Adapted from "Outsourcing by British Broadcasters in the Communication GVC" (J.K.Chalaby, 2019)

[28] Outsourcing in the U.K. Television Industry: A Global Value Chain Analysis, J.K. Chalaby (2019)

2.2.3. OTT supply chain: the case of Netflix

It is possible to extend the Global Value Chain model to OTT services. In fact, in one of the articles present in the literature and written by Anders Fagerjord in 2019[29], it is explained a framework of the OTT supply chain, which takes as example Netflix, and is realized in a similar way. In Figure 11, it is possible to see the model, with six subsequent phases that still follow the production-reception process. This model is a simplification and generalization of the OTT supply chain seen from a technological perspective and it assumes that Netflix operates only in the television industry. Its use for this thesis is justified by the fact that Netflix operations is mostly run exploiting state of the art technologies, and these are indistinguishable from its core business, the video streaming service.

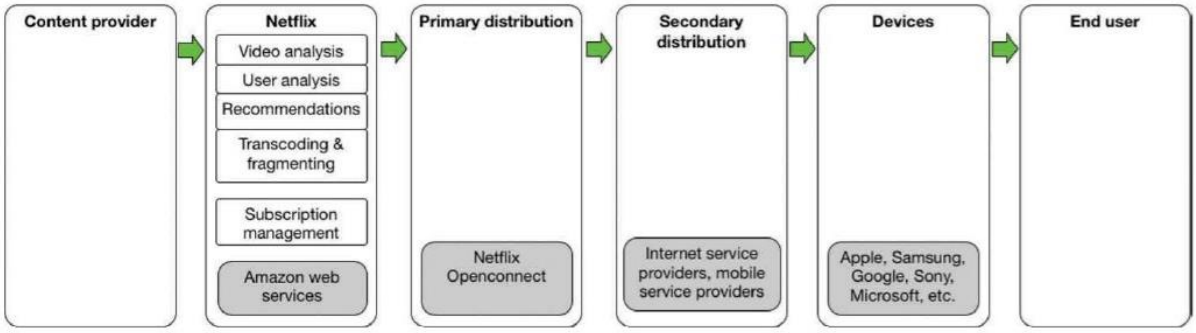

Figure 11 - Core stages and actors of Netflix's streaming video service (A.Fagerjord, 2019)

Content provider

In the Video Entertainment industry, more and more platforms are used to offer their original contents, as they can have more control on the quality of the video and benefit in terms of brand image. However, they also license contents from suppliers, as outsourcing remains a relevant strategic movement in this field. Netflix, for example, spent

[29] Mapping the core actors and flows in streaming video services: what Netflix can tell us about these new media networks, A. Fagerjord (2019)

$15.3 billion on contents in 2019, $17.3 billion in 2020, and is projected to spend $19.03 billion in 2021. As shown by Figure 12 realized by Statista, this budget is growing year by year since 2013[30].

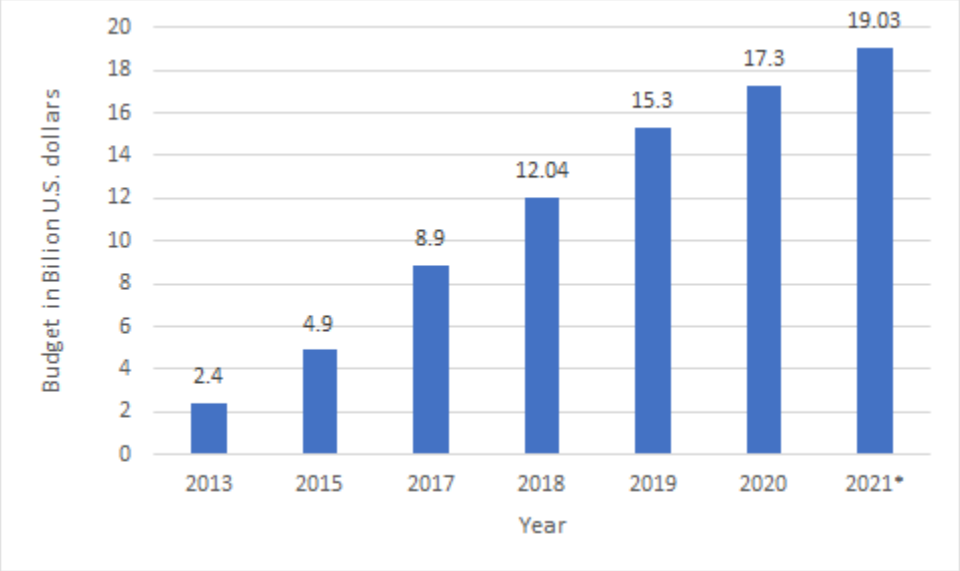

Figure 12 - Adapted from "Video content budget of Netflix worldwide from 2013 to 2021 in bn U.S. dollars" (Statista, 2021)

Despite spending billions of dollars on original content, Netflix still relies heavily on classic shows like The Office, Friends, and Grey's Anatomy, licensing them from external production studios such as NBC, Warner Bros, and ABC[31].

"Netflix" stage

In the aggregation stage Netflix is king, as it provides a streaming platform with all the best technologies that, on one hand, offer to the users the best experience possible, and, on the other hand, allows an

[30] https://www.statista.com/statistics/707302/netflix-video-content-budget/
[31] https://www.forbes.com/sites/greatspeculations/2019/07/19/netflixs-original-content-strategy-is-failing/?sh=698480c36075

impeccable *management of subscriptions* and analysis of the preference of the users[32].

Netflix's contents are consumed on a wide variety of screens. For this reason, it is fundamental to start a process of content *transcoding and fragmentation*, in order to obtain many different versions of each video file which are used to allow viewers to keep watching from where they left off, even if they switch devices.

Netflix technological flagship is the *recommendation system*, through which, thanks to *video and user analysis* (generally called data analytics), it can show to the users exactly the content that they are searching for. In this way, it seems to the viewer to be in control of consumption.

All the computational power needed by Netflix for operating such technological activities is rented from *Amazon's AWS cloud computing service*[33].

Primary and secondary distribution

Talking about the primary and secondary distribution shown in Fagerjod's supply chain, Netflix has its proprietary CDN, called *Netflix Open Connect*, through which it can store contents as close as possible to end users (Figure 13). It makes agreements with *Internet Service Providers (ISP)* in order interconnect its CDN with ISP networks and provide through them the content to the customers' devices[34].

[32] Mapping the core actors and flows in streaming video services: what Netflix can tell us about these new media networks, A. Fagerjord (2019)
[33] Mapping the core actors and flows in streaming video services: what Netflix can tell us about these new media networks, A. Fagerjord (2019)
[34] https://openconnect.netflix.com/Open-Connect-Overview.pdf

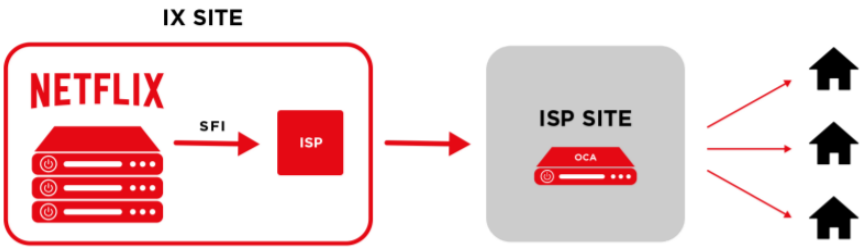

Figure 13 - Netflix Open Connect CDN functioning (Netflix, 2016)

Devices and end users

As already said, Netflix contents can be viewed on a wide variety of devices such as smartphones (Apple, Samsung, …), computers, smart TV sets, set-top-box (Apple TV, Google Chromecast player), gaming consoles (Sony PlayStation and Microsoft Xbox). For this reason, Netflix must guarantee its content works on a diverse range of screens, regardless of the size and the resolution.

It is important to notice that also a pure SVOD company as Netflix releases contents in an analogic way. For example, it provides some movies to theatres, like it has done with "The Irishman" in 2019[35]. The video streaming platform has also started a process of acquisition of some theatres, as the Hollywood's historic Egyptian Theatre[36]. These moves are justified as major cinema chains had been reluctant to play films from Netflix, since it would not adhere to the same exclusive windows, usually consisting of 90 days.

2.2.4. Intertwining of the Video Entertainment supply chains

Comparing the two supply chains, the traditional and the OTT ones, it is possible to understand that they are becoming more and more

[35] https://cineguru.screenweek.it/2020/10/netflix-uscite-in-sala-mank-il-processo-dei-chicago-7-oscar-28601/
[36] https://variety.com/2020/film/news/netflix-hollywood-egyptian-theatre-1234619985/

similar one to the other. The edges that separate them are increasingly blurred, so much that some experts talk about "convergence" when they want to describe the trend taking place in the Entertainment and Media industry[37]. This convergence has started to cross the borders of E&M, involving players coming from adjacent industries like Telecommunications and Technology, as showed in Figure 14.

Three major consolidations that took place in the last few years are of this type: AT&T/Time Warner, Disney/21st Century Fox, and Comcast/Sky[38]. AT&T, a fixed and cellular network operator and video distributor (U-Verse and DirectTV) acquired Time Warner, a media, broadcasting, and video producer (CNN, TNT, and HBO) company, for $85 billion in 2018. The Walt Disney Company, a multinational mass media and entertainment conglomerate, had continue its consolidation process acquiring, after Pixar, Marvel, Lucasfilm, and National Geographic, the multinational mass media corporation 21st Century Fox, for $71.3 billion in 2019. Last but not least, Comcast, an American telecommunications conglomerate, acquired Sky Group, a British media and telecommunications conglomerate, for $39 billion in 2018. These three main M&As, together with other deals and alliances that are taking place in these years, are creating a unique convergence market in which all companies are competing for customers' attention.

[37] https://www.robert-schuman.eu/en/doc/questions-d-europe/qe-559-en.pdf
[38] https://www.robert-schuman.eu/en/doc/questions-d-europe/qe-559-en.pdf

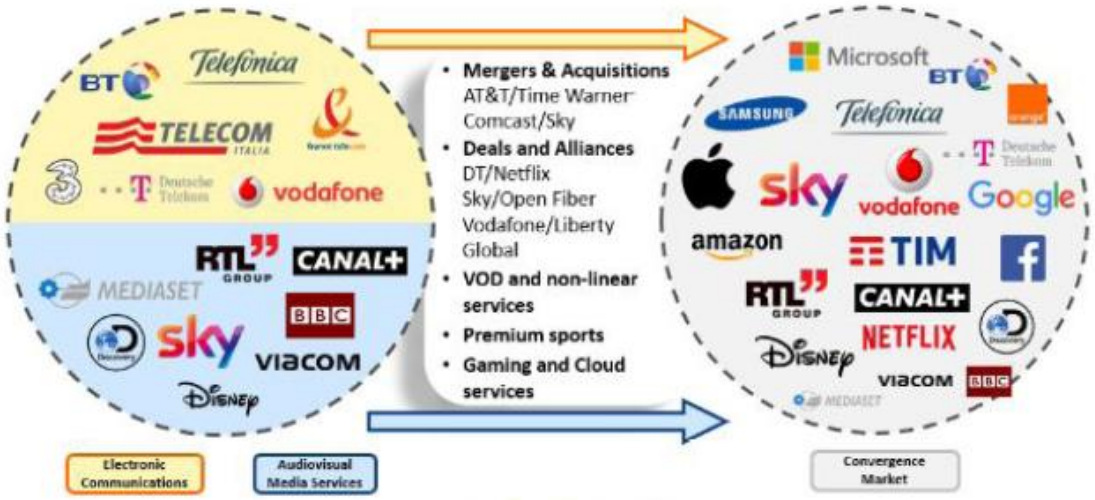

Figure 14 - Convergence in Media and Telecom (ITMedia Consulting, 2020)

2.3. Data about the Video Entertainment market in Italy

In order to perform a critical and functional analysis of the Video Entertainment industry is fundamental to introduce some data about its state and some estimates of its potential growth. To better understand these dynamics the study is restricted to the Italian context as it is the main focus of this thesis.

2.3.1. Traditional broadcaster's audience and market value

Audience

According to the data provided by Auditel and elaborated by Studio Frasi in 2020, the audience of the traditional tv in the average day has risen by 15.78% with an average of 11.9 million viewers in the first six months of the year, and by 11.68% in the prime time, with an average of 26.9 million viewers[39].

[39] https://www.ilsole24ore.com/art/la-tv-on-demand-fa-pieno-abbonati-ADMawvs

Rai and Mediaset are competing for the attention of these viewers, both having in the prime-time transmissions more than 30% of the audience share in the first half of 2020 (Figure 15). Sky Italia totalize a much lower number, however considering that this chart refers only to traditional television[40].

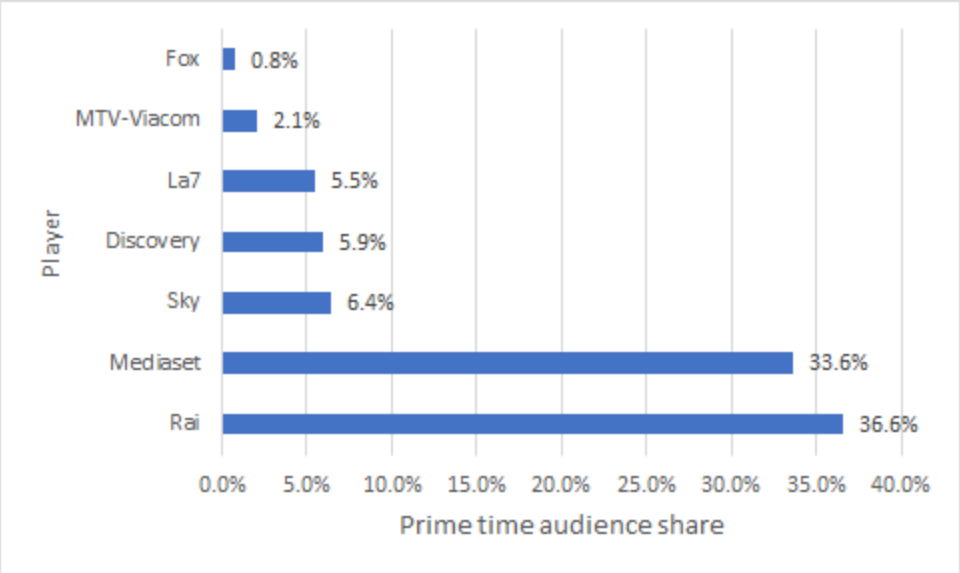

Figure 15 - Adapted from "Prime time audience share of the leading TV broadcasters in Italy in the 1st half of 2020" (Statista, 2021)

Subscribers and users

Italian subscription TV households totalled 5.5 million in 2019[41], with a penetration of about 21.2 per cent, well below the Western European average of 66.0 per cent. Sky Italia has a near monopoly of the pay-tv sector, accounting for an estimated 88.3 per cent of total pay-tv subscriptions at the end of 2019[42].

[40] https://www.statista.com/statistics/655600/tv-prime-time-audience-share-italy/
[41] https://www.pwc.com/it/it/publications/emoi-2020-2024.html
[42] https://www.sportcal.com/Insight/Features/129905

It is interesting to analyse the results of the streaming platforms of traditional broadcaster. Looking at the example of Rai with RaiPlay, in a press release of January 11, 2020, it is evident the success of RaiPlay that has reached 6 million active users, with a growth rate of 49% over the previous year. As a term of comparison, in the same article is reported that Tg1, despite obtaining almost 2.4 million visualizations, is only in second place in the ranking of live transmissions, leaving the top position to VivaRaiPlay!. Thus, RaiPlay can be defined as a first successful step toward the digital transformation of the Italian public media service[43].

Revenues

In 2019 the television broadcasting industry in Italy has registered a turnover of 8 billion euros (8.7 billion euros considering both radio and television broadcasting), as reported by a research of Area Studi Mediobanca in collaboration with AGCOM and Nielsen[44]. In this report is also defined a ranking of the main Italian players well represented in Figure 16 made by Statista. This figure depicts Sky Italia in the first position with more than 3.1 billion euros of revenue, followed by Mediaset Group with almost 2.9 billion euros, and Rai, with more than 2.6 billion euros. However, considering only the revenues generated within the Italian market (as the asterisk in Figure 16 highlights), Mediaset Group accounts for 1.9 billion euros, leaving the second position in the ranking to Rai. There are also minor players like Walt Disney Italy, Discovery Italy, and others, but they have lower revenues compared to the one in the first three positions[45].

[43] https://www.rai.it/ufficiostampa/assets/template/us-articolo.html?ssiPath=/articoli/2020/01/Rai-leader-negli-ascolti-2019-su-informazione-e-programmi-in-tutti-i-generi-35881c11-589e-48a4-a7c2-8e47ffedab9b-ssi.html
[44] https://www.areastudimediobanca.com/sites/default/files/2021-02/rs_TV%202020_COMUNICATO%20STAMPA_0.pdf
[45] https://www.statista.com/statistics/803536/television-broadcasters-turnover-in-italy/

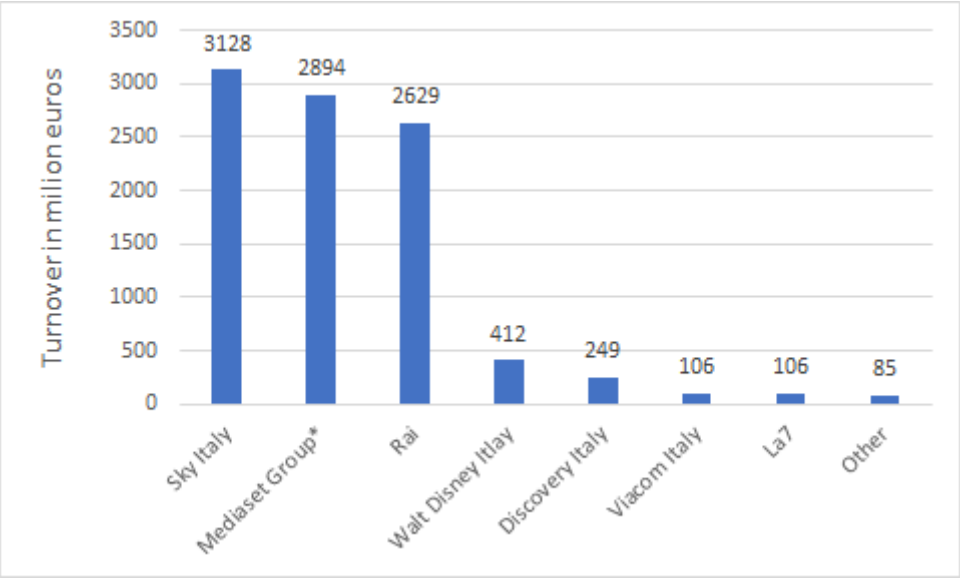

Figure 16 - Adapted from "Television broadcasters' revenue in Italy in 2019 in million euros" (Statista, 2021)

2.3.2. OTT's user base and market value

OTT's customers are increasingly growing all over the world. They are getting used to pay a monthly subscription in order to have the possibility to see what they want whenever they want. This is true also in Italy.

Subscribers and users

According to a study undertaken by Ernst & Young (EY), a global leader in advisory services, in collaboration with Discovery and Fastweb, SVOD services added 2.1 million subscribers in Italy during 2020, taking the total to 10.7 million in October. However, the overall number of users is estimated at 16.2 million, as one subscription can be used by more than one person[46].

[46] https://advanced-television.com/2021/01/04/italy-adds-2-1m-svod-subs-in-2020/

Data about the usage share in 2019 show Netflix as the main OTT player in Italy with 30% of the market, followed by TIM Vision and Amazon Prime Video. Smaller shares are taken from Mediaset Infinity, YouTube Premium, Now TV, and others[47] (Figure 17).

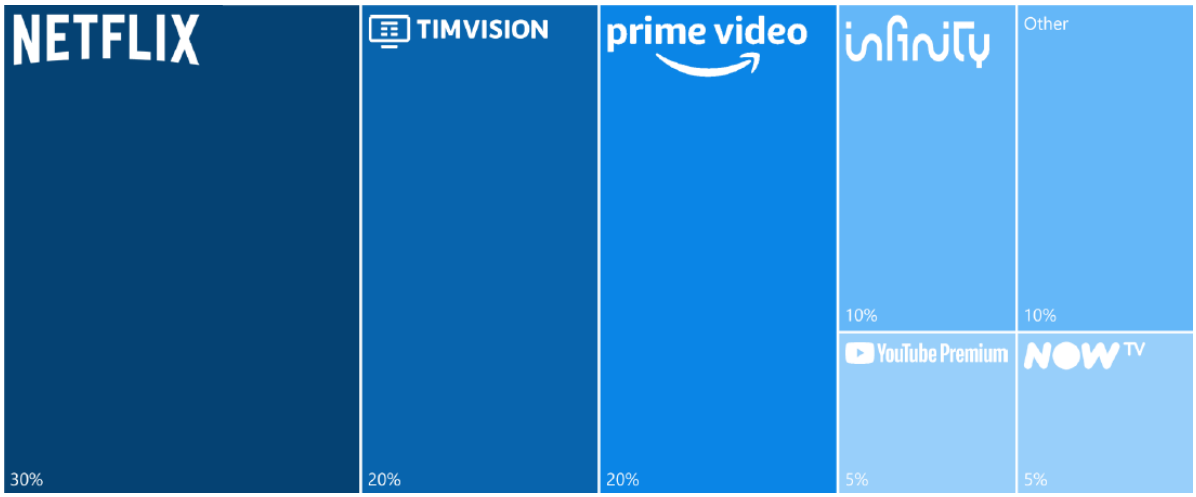

Figure 17 - Estimated usage share for Video Streaming brands in Italy in 2019 (Statista, 2020)

The latest available data shown an evolving landscape where newly arrived companies like Disney+ in Italy are increasing their user base. People is more and more interested in this kind of services, and the war for the customer attention has never been so open. As it can be seen in Table 5, Disney+ has almost reached 1 million customers in Italy, a number dangerously close to the one of Mediaset Infinity and DAZN[48].

[47] https://www.statista.com/study/44526/digital-media-report/
[48] https://www.calcioefinanza.it/2021/02/27/lo-streaming-italia-numeri-di-netflix-amazon-dazn-e-disney/

Streaming platform	N. of users (in million)
Netflix	3.78
Amazon Prime Video	2.30
TIM Vision	2.06
DAZN	1.60
Mediaset Infinity	1.28
Disney+	0.97

Table 5 - Adapted from "Streaming platform pay users in Italy in the 4th quarter of 2020" (Calcio e Finanza, 2021)

To better understand the latest trends and developments of the market shares is helpful to look at the chart made by Just Watch, with the data about the measured interest in streaming service in Italy in the third quarter of 2020. In the chart of Figure 18 it is possible to see a newly arrived company such as Disney+ gaining a lot of interest from the users[49].

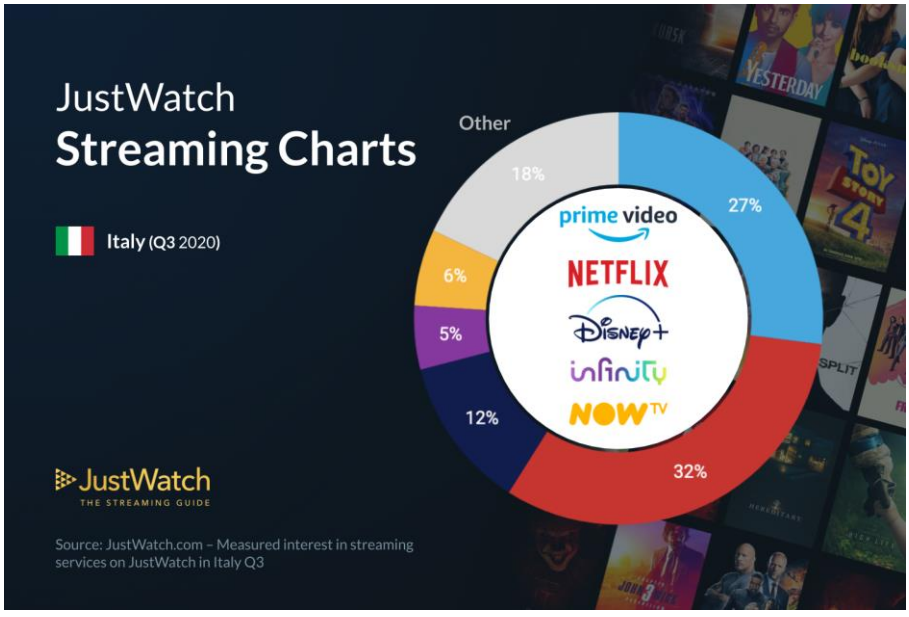

Figure 18 - Measured interest in streaming services on JustWatch in Italy Q3 (JustWatch, 2020)

[49] https://www.startmag.it/innovazione/come-se-la-cavano-now-tv-e-infinity-contro-i-big-netflix-prime-video-e-disney-plus-in-italia/

According to a study presented by Sensemakers, a digital marketing consulting company, the consumption of video streaming contents has grown by 52% between the first and the second lockdown in Italy[50]. Furthermore, Netflix and Disney+ are more and more competing on original contents for the Italian audience.

Revenues

As stated in the report "Entertainment & Media Outlook Italy 2020-2024" done by PricewaterhouseCoopers (PwC), the Italian OTT video market will grow at a 19.0% CAGR across the five-year forecast period from €533mn in 2019 to €1.3bn in 2024[51]. In particular, SVOD revenues will surge across the forecast period, from €427mn in 2019 to €1.1bn in 2024. Across the forecast period, TVOD revenues will grow at a 10.8% CAGR, from €107mn in 2019 to €178mn in 2024. Regarding AVOD platforms, it is more difficult to define precise data or estimations about their growth in terms of revenue, so no numbers or graphs are put here.

Talking about the demand side of the market, in 2019 the Italian consumers spent more than 388 million euros for watching digital Video Entertainment. This emerges from the report "La filiera e il mercato dei contenuti digitali in Italia" done by the members of the Osservatorio Digital Content of Politecnico di Milano in 2020. Video Entertainment market presents the highest growth rate of about 47% compared to 2018. Other markets like Music, Gaming, and Publishing have grown a lot, but no one reach the development rate of the Video one.

[50] https://www.sensemakers.it/news/boom-video-streaming-tra-crescita-delle-tv-connesse-e-rafforzamento-degli-svod
[51] https://www.pwc.com/it/it/publications/emoi-2020-2024.html

3. Definition of DVB-T2 standard and implications of the New TV in the Italian market

One of the aims of this research is to understand the new standard DVB-T2 that is coming into the television's market, and what are the implication that will bring this change in technology. In this part of the thesis, it will be analysed the distribution, the pros and some problem of implementation that the new transmission standard brings with its advent.

3.1. Standards of TV transmissions and compressions

With the aim to understand the future changes, it is fundamental to know which are the current and future technology that affect the transmission of signal that enable the correct reproduction of the television content.

3.1.1. Transmission's standards

Television has always been a huge market, both in terms of revenues and costs. Over time a lot of technology has been developed, which has enriched this market, enlarging, and empowering it. But with the implementation of some technology that could bring incredible benefits, like digital television, a huge problem emerged, the implementation. When it was time to project the implementation of networks of transmission, companies realized that it was impractical and costly to perform it.

So, in the world many companies have born with the aim of creating standards that could cut the average cost of implementation, scaling the market in each phase of the supply chain.

Nowadays there are a lot of standard developers in the world, among which DVB performing in Europe, major part of Africa Asia and Oceania. ATSC (Advanced Television Systems Committee) it is another standard working in the northern America and South Korea, ISDB (Integrated Services Digital Broadcasting) is used in Japan, Argentina, and Brazil, DTMB (Digital Terrestrial Multimedia Broadcasting) is used in China and Hong Kong.

Introduction to DVB

In 1991, the world's leading companies, in the field of broadcasting, consumer electronics manufacturing and regulation, have founded an industry-led consortium to design open technical specification for digital media delivery. They called it "DVB Project". DVB project has been officially founded in 1993 and now it can count on 200 companies from all over the world participating in the mission[52].

All the DVB Members collaborate to the project through forming groups aimed to develop specifications for digital television systems, which are turned into standards by European standard bodies, CENELEC or, in the majority of cases, ETSI. When the process of standardisation is ended and the specifications have become official, they are promoted for international adoption and utilization[53].

DVB is the European leading player in standard development for the field of broadcasters using the cable, terrestrial and satellite technology. Between the most famous and distributed standards it is possible to find DVB-T, DVB-S, DVB-C and DVB-H, used for the digital terrestrial, satellite, cable and handheld technology, respectively.

DVB-C and DVB-H are currently disused, substituted by LTE (Long Term Evolution) technology or by the other standards DVB-T and DVB-

[52] https://dvb.org/about/
[53] https://dvb.org/wp-content/uploads/2019/12/History-of-the-DVB-Project.pdf

S. These last two, are still present in the European panoramic even though they are getting disused too for letting the space to the next generation of standards: DVB-T2 and DVB-S2.

DVB-T

DVB-T is the transmission standard developed by DVB to perform the distribution and reception of the digital terrestrial signal for the television broadcasting.[54]

This standard has been used in Europe for replacing the DVB-C standard, the ones developer for transmitting analogic signal via cable. A fundamental characteristic that enabled the implementation of DVB-T is that the receiving antennas for this standard were the same as the ones used for the cable transmission.

DVB-T bring multiple benefits in the television broadcasting field respect to the analogic methodology of distribution.

The most relevant one is that it can enable to transmit multiple channels in a single band thanks to the implementation of compression technique standard MPEG2. Furthermore, with the digital terrestrial technology it is possible to transmit better video quality, reaching the HD definition. The possibility to have higher properties of transmission allows the television broadcasters to choose the number of channels to allocate in a single band, calibrating the number and the quality of video transmitted[55], with only capacity as constrains. For example, in Italy the capacity of a single band is enough to transport until 6 channels in Standard Definition or 3 channels in HD.[56]

[54] https://dvb.org/wp-content/uploads/2019/12/a012_dvb-t_june_2015.pdf
[55] https://web.archive.org/web/20090701105747/http://www.digitaleterrestre.it/digitale-terrestre.php
[56] https://www.digitaleterrestrefacile.it/2011/10/che-differenza-ce-tra-lo-standard-dvb-t-e-quello-dvb-t2-del-digitale-terrestre/

The DVB-T standard works with channel coding technique, that ensure a better resistance to interference when the power of the signal received is strong enough.

Moreover, the transmission of the channels can contain multiple audio track to choose.[57]

The DVB-T standard of transmission enabled the expansion of the television industries with the presence of new channels and enabled the release of the frequencies from 791MHz to 862MHz needed for the usage of LTE mobile technology of transmission. Indeed, DVB-T standard uses the bandwidth from 479MHz to 790MHz.

The transition from the analogical to the digital television has been called also "Switch-off". The first country that has accomplished the switch-off is Netherlands in 2006 and the last one is Algeria in 2020.

The switch-off has completely revolutionized the potentiality and, as already said, the number of channels available in the countries. For example, in Italy in 2008 there were 11 free channels available on analogue television[58], while nowadays there are 108 DTT free channels[59].

DVB-T2

DVB-T2 is the new standard of transmission for the digital terrestrial television. It is the new version of the DVB-T, offering significant benefits compared to the previous version. It has been developed even for the scope of releasing the frequencies that the European Union decided to assign to the 5G mobile data transmission technology

[57] https://web.archive.org/web/20090518100649/http://www.rai.it/dl/dtt/guida/ContentItem-388a4ef9-313e-4497-9fc8-1ee5b12253d4.html

[58] https://www.gazzettaufficiale.it/do/atto/serie_generale/caricaPdf?cdimg=11A02206000000101100 10&dgu=2011-02-19&art.dataPubblicazioneGazzetta=2011-02-19&art.codiceRedazionale=11A02206&art.num=1&art.tiposerie=SG

[59] https://confindustriaradiotv.it/canali-tv-in-italia-2020-2/

(frequencies from 703MHz to 788MHz, also called 700 band), without cutting the channel already present in the television market. The transmission subjected to the DVB-T2 standard will use the frequencies from 470MHz to 694MHz.

For the development of the T2 standard, the DVB organization have defined multiple commercial requirements that would act as a framework for this project.

First, a condition for the development of the project is that the new technology should be able to use the already existing receiving antenna available in the domestic installations and should be able to re-use existing transmitting infrastructure. In this way, the cost for the transition would not have been too high.

A second point is that T2 should provide at least 30% increase in the transmission capacity compared to the DVB-T standard used in the same planning constrains.

Furthermore, the new generation of DVB-T should target services to fixed and portable receivers and be able to perform a service-specific robustness for both typologies of devices.

T2 should provide for bandwidth and frequency flexibility and there should be a mechanism to reduce the peak to the average power ratio of the transmitted signal in order to reduce the transmission costs[60].

Comparison between DVB-T and DVB-T2

The result of the development of the DVB-T2 standard brought to results better than expected.

[60] https://www.etsi.org/deliver/etsi_ts/102800_102899/102831/01.02.01_60/ts_102831v010201p.pdf

The increase in performance was expected to be about 30% respect to the old generation of DVB for digital terrestrial television[61]. As it is possible to see in Table 6, taken from the ETSI report of DVB-T2 and showing results of an experiment held in UK, DVB-T2 performed more than 50% better than the previous standard, thus improving the expectation.

	Pre-switchover UK mode	T2
Modulation	64-QAM	256-QAM
FFt size	2K	32K
Guard Interval	1/32	1/128
FEC	2/3CC + RS	3/5LDPC + BCH
Scattered Pilots	8.3%	1.0%
Continual Pilots	2.0%	0.53%
L1 overhead	1.0%	0.53%
Carrier mode	Standard	Extended
Capacity	24.1 Mbit/s	36.1 Mbit/s

Table 6 - Adaptation from "Technical comparison between DVB-T and DVB-T2" (ETSI, 2012)

With this kind of result, especially the one concerning the capacity, it is possible to transmit more high-definition channels. Furthermore, the new standard foresees the usage of new compression standard MPEG4 and HEVC[62], afterwards explained, that permit an additional advantage in the potentiality of number and quality of transmission.

Even better were the achieved results for the transmission using Single Frequency Network (SFN) operations where the increase in capacity is about 67%, as it is possible to see in Table 7. In this way the same signal is irradiated using the same frequencies simultaneously, emitted by more transmitters.

[61] https://www.digitaleterrestrefacile.it/2011/10/che-differenza-ce-tra-lo-standard-dvb-t-e-quello-dvb-t2-del-digitale-terrestre/
[62] https://confindustriaradiotv.it/banda-700-tv-4-0/

	DVB-T mode	T2
Modulation	64-QAM	256-QAM
FFT size	8 K	32 K
Guard Interval	1/4	1/16
FEC	2/3CC + RS	3/5LDPC + BCH
Scattered Pilots	8,3 %	4,2 %
Continual Pilots (see note 1)	2,0 %	0,39 %
L1 overhead (see note 2)	1,0 %	0,65 %
Carrier mode	Standard	Extended
Capacity	19,9 Mbit/s	33,2 Mbit/s
NOTE 1: Includes only Continual Pilot cells which are not also Scattered Pilots. NOTE 2: TPS for DVB-T; L1-signalling, P1, and extra overhead in P2 and frame closing symbol for DVB-T2.		

Table 7 - Technical comparison between DVB-T and DVB-T2 using SFN (ETSI, 2012)

Data talk about better quality, capacity, interferences management, error management, and guard interval of transmission.

Furthermore, the new standard DVB-T2 should need less energy of transmission compared to the previous DVB-T.[63]

3.1.2. Compression standards

Data compression is one of the enabling technologies for the multimedia revolution, it the science of representing information in a compact form. Practically, data compression are algorithms that are used to reduce the number of bits required to represent an image, a video, or a sequence of sound.

In the world of television, data compression, also called video coding, uses CODEC, that are specific algorithms that permit to obtain a file (representative of the image/video) that will not take up too much capacity of transmission. It will be possible, thanks to a decoder, to re-convert the file obtained after the compression process into a video extremely similar to the original one.

The quality of a compression is given by a trade-off between the bit-rate and the fidelity of the obtained video compared to the original source. The ability of a source coding system to better perform is called

[63] https://www.etsi.org/deliver/etsi_ts/102800_102899/102831/01.02.01_60/ts_102831v010201p.pdf

"coding efficiency" or "rate-distortion performance". The result of a video coding process is a video of which the quality could be measured as the luminance and chrominance colour transformation peak signal to noise ratio YUV-PSNR [dB] (YUV is an acronym that stands for Luminance-Bandwidth-Chrominance, while PSNR means Peak Signal to Noise Ratio).[64] The higher the YUV-PSNR, the higher the quality of the video. If an A compression standard can reach the same YUV-PSNR with less amount of data transmitted (bit-rate) compared to a B compression standard, it means that the A one is the better performing coding method.

With the DVB-T and DVB-T2 standard of transmission, there are 3 compression standards that are used: MPEG2, MPEG4 and HEVC.

MPEG2 is used when the standard transmission is the DVB-T, while MPEG4 and HEVC are used with the new DVB-T2.

The most efficient compression standard is HEVC, followed by MPEG4 that is the newer version of MPEG2. Here reported the results of a research (Comparison of the Coding Efficiency of Video Coding Standards—Including High Efficiency Video Coding (HEVC)) conducted by Jens-Rainer Ohm, Gary J. Sullivan, Heiko Schwarz, Thiow Keng Tan, and Thomas Wiegand, regarding the differences in performance of the various data compression standards.

Figure 19 represents the effect of different compression standards on two videos, called "Johnny" and "Kristen and Sara". On the left-end figures the graphs represent the relation between YUV-PSNR, on y-axes, and bit-rate, on x-axis. On the right-end figures it is possible to see the bit-rate saving of HEVC compression respect to the other standards, on y-axis, depending on the YUV-PSNR values. In the case

64 https://books.google.it/books?hl=it&lr=&id=Lhrge2YVpBwC&oi=fnd&pg=PP1&dq=compression+standard&ots=iNPeAJoLEi&sig=Wh-mN5iMfMWUA86u2L1A0VqJsy8&redir_esc=y#v=onepage&q=compression%20standard&f=false

of a 60hz HD transmission compressed in HEVC, the actual savings in terms of bitrate for both same videos compress with MPEG4 is more than 36% for every video quality. In the first case the results reached a saving of almost 54% with a video quality of 44 YUV-PSNR.

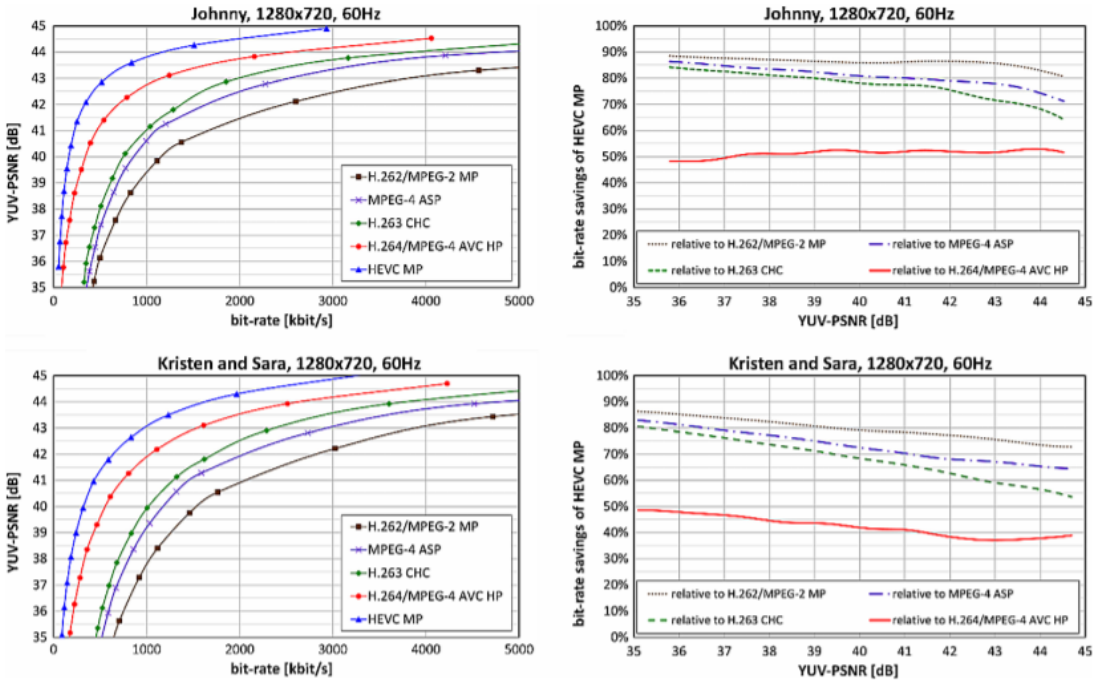

Figure 19 - Comparison of the compression standard's performances for a HD movie (IEEE, 2012)

Graphs in Figure 20 have the same axis of Figure 19, but the objects of study are in this case two videos in FULL-HD. Considering a FULL-HD video with 24hz, the range of savings given from HEVC compared to MPEG4 varies from 25% to 55%, decreasing its trends when the video quality increases. It is important to notice that when the percentages of improvement are at their lowest (25%), the absolute savings are more than 2000kbit/s, that correspond to a video in HD in its best quality.[65]

65

https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6317156&tag=1)(https://ieeexplore.ieee.org/abstract/document/1369695

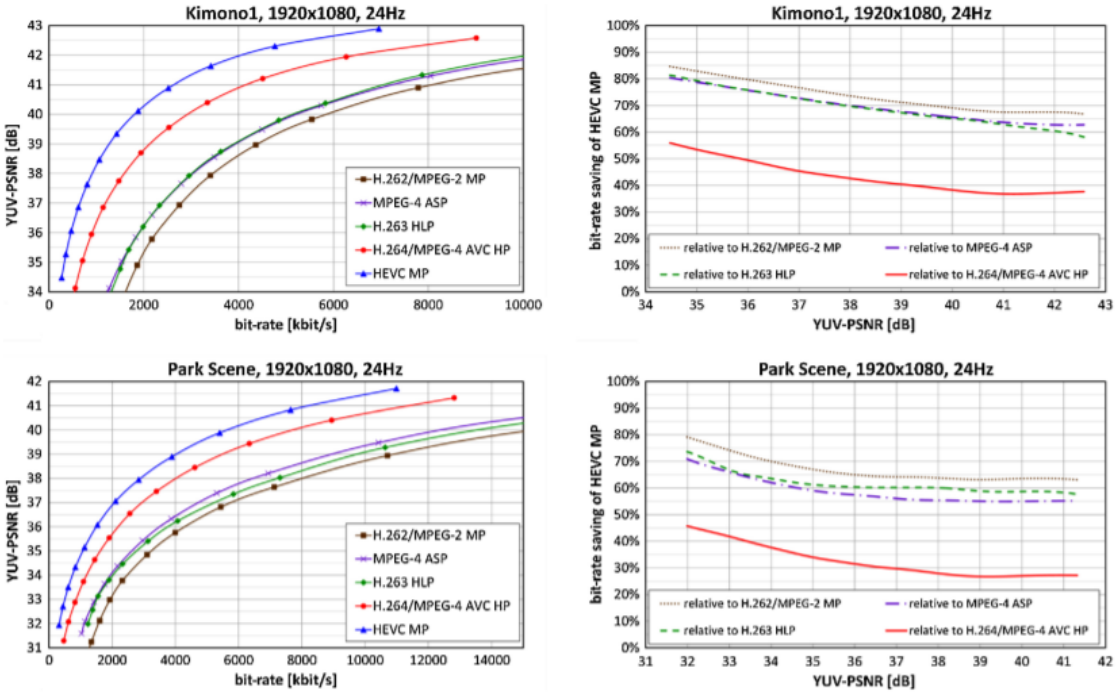

Figure 20 - Comparison of the compression standard's performances for a FULL-HD movie (IEEE, 2012)

3.2. DVB-T2 transition and successful implementation in other countries

The DVB-T2 standard is spreading in the European countries. As it is possible to see in Figure 21, in 2017, of the 46 states belonging to Europe, only 15 did not adopt yet the DVB-T2 standard of transmission, corresponding to 32,6% of the European countries.

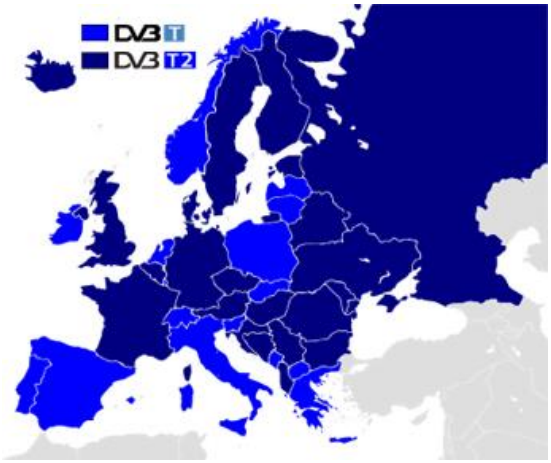

Figure 21 - Distribution of transmission standard in 2017 (FRAN GALETIC, 2020)

Nowadays all the states in this area have already accomplished or have in plan to do the transition to the next generation of digital terrestrial, for leaving to the Telco companies the 700 frequencies to implement the 5th generation of mobile transmission.

Most of the ones that are already adopting this technology are using the MPEG4 methodology of compression, while only a smaller number of states are already adopting the most efficient way to video coding HEVC. Among those countries there are Germany, Croatia and Czech Republic. Germany has been the first one to organize and realize the transition to DVB-T2 HEVC technology[66]. It started gradually from 2016 and, nowadays, it can count 44 DTT active channels from which 20 free and 24 as a pay-tv package. Croatia planned to convert its DVB-T standard into the new one in summer 2020, but due to the Covid-19 situation he could only reach its objective not before November 2020[67]. Almost one month before, at the end of October, Czech Republic has successfully implemented the transition.[68]

All the countries that have adopted the new DVB-T2 standard have reached excellent results in terms of transmission and reception of video quality, allowing them to vaunt services that offer channel in HD or UHD definition.

The same cannot be said for what concerned the rentability of the implementation in all countries.

Indeed, as reported in the report made by Fran Galetic called "Technological Progress in Terrestrial Television Transmitting – Efficiency and Rentability of Introducing DVB-T2 HEVC System in Germany and Croatia", between Germany and Croatia, only Germany was able to re-enter costs and create margin out of the implementation

[66] https://dvb.org/news/dvb-t2-transition-speeds-up-in-germany/
[67] https://www.broadbandtvnews.com/2020/10/30/chris-dziadul-reports-dvb-t2-in-cee-a-progress-report/
[68] https://broadcast-networks.eu/transition-to-dvb-t2-completed-in-the-czech-republic/

process. This happened because of the large number of channels (44) present into the DTT television. Croatia instead could only count on 4 public and 7 private national channels, that did not allow it to obtain a good return on investment from the transition. This can highlight the importance of economies of scale in this field for covering the cost of implementation.

Still, the new technologies of transmission and compression create new capacity in terms of bit rate and a better management of data emitted. These characteristics leave the floor to new channels to enter in those countries that have a small amount of national DTT services (Croatia as an example), cutting in this way average implementation's costs, and enabling the transition to DVB-T2 to be profitable.[69]

3.3. Introduction of DVB-T2 in Italy

DVB-T is still the standard of transmission in force in Italy at the time of writing of the thesis, but the switch-off to DVB-T2 is in progress.

During 2018 it took place the auction for the assignment of the bandwidths used as transmission frequencies for 5G. The available bandwidths were the 26GHz, the 3700MHz and the one currently used for the transmission of the digital terrestrial signal band 700MHz.[70]

As already anticipated, this last bandwidth will not be used with the introduction of the DVB-T2 standard in favour of the introduction of 5G. The 700MHz bandwidth has been assigned to Iliad, Telecom and Vodafone for an overall investment of almost 2'040 million Euro (Table 8).[71]

[69] https://www.scopus.com/record/display.uri?eid=2-s2.0-85091574585&origin=resultslist&sort=plf-f&src=s&st1=&st2=&sid=b484dd06620ad3e337597123cfb5b029&sot=b&sdt=b&sl=29&s=TITLE-ABS-KEY%28dvb+t2+germany%29&relpos=0&citeCnt=0&searchTerm=

[70] https://www.eurweb.it/frequenze-utilizzate-in-italia.html

[71] https://www.mise.gov.it/images/stories/documenti/Determina_Direttoriale_aggiudicazione-FIRMATA.pdf

Banda	Fastweb	Iliad	TIM	Vodafone	Wind Tre
700 MHz	X	2x10 MHz	2x10 MHz	2x10 MHz	X
3700 MHz	X	20 MHz	80 MHz	80 MHz	20 MHz
26 GHz	200 MHz	200 MHz	200 MHz	200 MHz	200 MHz

Table 8 - Adapted from "Frequencies of transmission 5G" (EURWEB, 2020)

The introduction of the DVB-T2 standard will be divided in two main phases. The first one will introduce the MPEG4 compression standard with the old standard of transmission DVB-T. The second one has been designed to introduce DVB-T2 standard with its best performing HEVC video data coding procedure. The first phase will officially start on November 15th 2021 and will end on June 30th 2022, confirming the transfer of the 700 MHz bandwidth to the 5G technology set on July 1st 2022. It will follow a precise schedule illustrated in Table 9. This roadmap is divided in four different time spans according to four main geographical areas of belonging.

Time spans	**Areas**
November 15th 2021 – December 18th 2021	Area 1A – Sardegna
January 3rd 2022 – March 15th 2022	Area 2 – Valle d'Aosta, Piemonte, Lombardia apart from the province of Mantova, of Piacenza, of Trento, of Bolzano; Area 3 - Veneto, province of Mantova, Friuli Venezia Giulia, Emilia Romagna apart from the province of Piacenza
March 1st 2022 – May 15th 2022	Area 4 – Sicilia, Calabria, Puglia, Basilicata; Abruzzo, Molise, Marche
May 1st 2022 – June 30th 2022	Area 1B - Liguria, Toscana, Umbria, Lazio, Campania

Table 9 - Time spans and areas of MPEG4 transition

Regarding the second phase, the switch-off date is still not official, but forecasted on January 1st 2023.

It is important to highlight that the transition has been delayed compared to the original timing. Indeed, the previous starting date was on September 1st 2021 and the final deadline was forecasted on June 30th 2022. This postponement has been decided to allow Italian population to have more time to update their devices to the new DTT standards. In fact, due to Covid-19 economic measures for the replacement of obsolete televisions have been subjected to delays, so only postponing the switch-off date the government could have allowed people to exploit the television bonus.[72]

3.4. The advent of New TV in Italy and the obsolescence of old TV sets

3.4.1. Definition of TV 4.0

DVB-T2 is not only a standard of transmission, but it also represents for the market a launch system of technologies and services that will enable to expose users to new offers and experiences. Television is not only becoming HD, but also interactive, customized, and so more able to retain customers, thanks to an increasing customer satisfaction. The transaction to DVB-T2 will bring the OTT player closer with the traditional broadcasters, creating competitiveness on the same field, and on the same devices.

In the following two chapters it will be possible to understand in which sense devices are becoming old and obsolete, and so why they are

[72] https://www.ilsoftware.it/articoli.asp?tag=DVB-T2-cos-e-e-cosa-cambia-con-la-nuova-tecnologia_19458

changing in favour of new ones, enabling in this way the advent of the 4th generation of television, Television 4.0.[73]

3.4.2. The obsolescence of the TV sets

The new DVB-T2 brings a lot of advantages for the DTT industries and enable to continue the business even when 5G takes a big percentage of the bandwidth available.

Unfortunately, this new standard doesn't bring only advantages. Indeed, a lot of television cannot support the new standards. Every television that can't see HD program will for sure not support DVB-T2 transmission and, after the second phase of the introduction of the DVB-T2, even the television that not support HEVC compression will not see any program.[74]

This problem has been partially reduced thanks to a law issued in 2012 and modified in 2015. This law imposed that every TV manufacturing company had to sell to distributors DVB-T2 compatible television from the 1st of July 2016, and that every distributor had to sell DVB-T2 compatible television to consumers from the 1st of 2017.

HEVC was approved the 22nd of December 2016 and has become mandatory for manufacturing companies and distributors from 18th and from 24th of January 2017, respectively.

The Italian government approved to allocate funding to help families that have an index of equivalent economic situation (ISEE) inferior to 20000 euros. The families in this situation can ask to the final seller for a discount of maximum 50 euros to buy a new device for watching DTT.[75]

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[73] https://www.today.it/blog/unione-nazionale-consumatori/verso-la-tv-4-0-ecco-quello-che-consumatori-devono-sapere.html

[74] (https://confindustriaradiotv.it/banda-700-tv-4-0/

[75] https://www.wired.it/economia/consumi/2020/11/24/nuovo-digitale-terrestre-dvb-t2-2021/

3.4.3. Quantity of obsolete tv sets and solutions to the problem

As anticipated before, not all the television are compatible with the DTT standards that are approaching the Italian field.

The problem is really spread across the Italian families. Looking at the data provided by Ipsos for Auditel, in the first trimester of 2020 the number of families that are actually able to watch television but that are lacking the present of a compatible DVB-T2 HEVC standard device are 12'764'160, the 57,6% of the total families (22.16M), corresponding to thirty million devices approximately (Table 10).

Furthermore, there are three million families are not even ready to the first introduction of DVB-T2 MPEG4, corresponding to an amount of nine million television, making understand that on average a family has three televisions at home.[76] [77]

Transmission reception DVB-T2	November 2018	February 2019	September 2019	February 2020
Yes (families with T2)	17.9%	21.5%	32.4%	42.4%
No (families without T2)	82.1%	79.5%	67.6%	57.6%
Total	100.0%	100.0%	100.0%	100.0%

Table 10 - Adapted from "People's reception availability" (Auditel, 2020)

The families not ready for the transition have two main possibilities: change the television or buy a new DVB-T2 HEVC compatible decoder to install with the old television.

[76] https://www.wired.it/economia/consumi/2020/11/24/nuovo-digitale-terrestre-dvb-t2-2021/
[77] https://www.auditel.it/wp-content/uploads/2020/10/Auditel-Censis-2020.pdf

A lot of people will opt for purchasing a new television, but others will consider the possibility to spend less acquiring a decoder. In the market there are many types of decoders to choose from, depending on the usage that the customer intends to do with the television, the type of available television and the amount of money willing to spend. The prices for a decoder vary from 25 to 140 euros. Generally speaking, the more it is spent, the more the decoder will be high-performance and will have more functionalities.

There are lots of characteristics to keep in consideration while buying a decoder. Some of them are discussed in the following lines.

- Compatibility with pay-tv services: this kind of decoder can read the card that enable the fruition of pay-tv services.
- Recording function and multimedia playback: the decoders that have this function integrate an internal memory or are compatible with external storages for recording the television while the television is switched on and the DTT program is running. There are only few decoders that can record a program while the user is watching a different one.
- Type of tv connector: certain decoders have the SCART connector, really common in the old television, while others have the most modern HDMI. In some cases, they have both. There is the possibility to find decoders that have other type of connector for speakers and other specific devices too.
- SAT compatibility: some decoders support the DVB-S2 standard too, enabling the fruition of the SAT services.
- Internet compatibility: this is a crucial characteristic that highlight the simple DVB-T2 decoders from the SMART DVB-T2 decoders. The devices that have this feature can connect to internet via LAN or Wi-fi, they can transform the television into

a smart one thanks to the presence of an OS installed into the microchip.

- OS: Operating System are present only on those decoders that have the chip for internet connectivity. There are different kind of OS, most of them are private OS directly developed by the seller of the devices, but the most advanced decoders are powered by Android and have the full potentiality as a tablet without a sim.

Most of these devices are produced and sold by TV manufacturing companies such as Samsung, Panasonic, and Philips. Other decoders are produced by Video Entertainment player like TIMVISION with its TIMVISION Box, aimed to bring DTT user to watch OTT services on the television.

There is another possibility to transform the television into a Smart TV, that is to install a device able to connect to the Internet, with an OS integrated, but that does not offer the DVB-T2 compatibility, making impossible to watch DTT but enabling to watch every OTT services. Most of the time they are super compact devices with HDMI connector only. Two of the most famous devices of this kind are Amazon Fire Stick and Google Chromecast.

4. Opportunities and threats for traditional broadcasters and OTT

The technological changes introduced by the new standards of transmission and compression are bringing new opportunities and threats for the player competing in the Video Entertainment industry. OTTs and traditional broadcasters are developing new strategies and new business models based on those innovations in order to strengthen their market position and increase their competitiveness. This chapter begins with a description of the options available to companies for implementing their business, beginning with those that could be implemented by OTTs and concluding with those that traditional players could implement. The chapter ends with a description of other technologies that will unlock the potential of internet distribution. These technologies will probably arrive after the actual transition, and they will further accelerate the business development of players working in the television field.

4.1. Potential acquirable market for OTT players in Italy

What does the transition of television standard represent for OTT players? What does it mean in economic terms that many people will have to change or upgrade their television sets? To answer to these questions, it is fundamental to make a connection with the last paragraph. As already said, by the June 30th, 2022, it has been estimated by Confindustria Radio Televisioni (CRTV) that more than 30 million tv sets need to be changed or combined with a decoder, as they are not compliant with the new DVB-T2 standard. This represents a huge issue for citizens, which are obliged to spend money to change their old tv sets, but it is a very good opportunity for both broadcaster's streaming platform, such as Rai Play and Mediaset Play, and OTT players to increase their market shares within the video content industry. In fact, these 30 million tv sets correspond to almost 10

million families[78], which could become groups of new potential customers for both categories of competitors. As it can be seen in Table 11, this number will progressively decrease month by month as many of these households will successfully complete the transition to DVB-T2. For this reason, it is extremely important that video streaming firms grasp such a potential market as soon as possible.

Scenario	Families DTT without MPEG-4			Families DTT without DVB-T2		
	June 2020	Dec 2020	Sept 2021	June 2020	Dec 2020	Sept 2021
Natural replacement	2.6M (11.7%)	1.8M (8.2%)	0.6M (2.9%)	11.4M (51.6%)	10.1M (45.6%)	8.1M (36.7%)
Supported replacement	2.3M (10.4%)	1.2M (5.5%)	0	11.0M (49.4%)	9.1M (41.1%)	6.0M (27.1%)

Table 11 - Adapted from "TV sets diffusion in DTT families" (FUB-Auditel, 2020)

For sure, OTT players can get the better of traditional broadcasters in seizing this opportunity. Indeed, unlike traditional ones, that just started their digitalization process, video streaming companies were born digital, so they already run their applications on many Connected TVs (Smart TVs, television connected to Internet with set-top-box, or gaming consoles)[79]. With the advent of the new digital terrestrial television, the number of connected devices can only increase, pushing a behavioural change in the viewers habits. In particular, that generational groups less accustomed to use Internet-driven technologies will probably have to change their television sets and could start to get used to interact with Smart Devices. These people have always watched linear television, with a precise palimpsest to be followed, and specific programmes on air at specific times of the day,

[78] https://www.mise.gov.it/images/stories/documenti/Report-scenari-diffusione-TV-marzo-2020.pdf
[79] https://www.ctvmedia.com/ott-vs-ctv

so it will be difficult to modify their viewing habits. However, this does not mean that they will never accept to switch to a newer technology that allows them to watch both their beloved programmes, films, and tv series, and to get the access to a broader catalogue of video contents.

4.2. Opportunities and threats for OTT players

As already said, the ones that could probably take the most value from the new digital terrestrial television transition are OTT players. In fact, they have many exploitable opportunities to win the competition war against traditional broadcasters and other antagonist streaming platforms that are entering the digital video market with their proprietary platforms. Those who will emerge will be the ones able to leverage on the available strategic models in the best way, understanding which of them are worth to be implemented. The opportunities can be distinguished in two types, according to the category of VOD players that is considered. At the same time, there are also some threats for OTT to be taken into consideration. A last consideration is about the fact that these opportunities and threats, and the respective strategies implemented to face them, were already thought, and implemented by companies and consultancies before the advent of DVB-T2. However, the new digital terrestrial television introduction is further increasing the players' need of differentiate their offers in a more and more competitive business arena.

4.2.1. Opportunities and threats for SVOD and TVOD

Analysing SVOD and TVOD players, it is clear that they have the possibility to seize the opportunities widely presents in their markets. In this regard, many strategies can be exploited, separately or together. Before starting to talk about these strategies, it is necessary

to make a premise: SVOD and TVOD are taken in consideration in the same analysis, because they are similar in their way to get money from the users offering them the right premium contents.

The first strategy that can be implemented is the one related to content production. More and more companies are investing a lot of money in creating original contents, in order to increase their brand image and to be able to better control the quality of their offering. For example, Netflix has increased its budget for content production in 2021, bringing it to 19 billion dollars, 10% more than the previous year[80].

The second strategy is still about contents, but from a geographical perspective. In fact, it is really valuable for SVOD and TVOD players to create films and tv series that reflect the culture of a particular country and, at the same time, contain aspects that appeal also to the global audience. For example, "La Casa de Papel" is a Spanish Netflix production that have been very successful also outside its country of origin[81].

Last but not least, there is the possibility for SVODs and TVODs to be not only streaming platforms, but also multisided streaming platforms. This strategic move is reported in a Harvard Business Review (HBR) article written by Andrei Hagiu in 2018, where is well described the example of Netflix and the supposed "best way to keep growing" for such a company. Hagiu says that "Netflix has a lot to gain by becoming a multisided platform"[82]. This because it can quite easily become a hybrid aggregator platform on which various content providers can sell directly, and at prices of their choosing, to users. The same goes for other SVODs and TVODs.

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[80] https://www.corrierecomunicazioni.it/over-the-top/netflix-alza-il-tiro-sui-contenuti-originali-spesa-2021-a-quota-19-miliardi-di-dollari/

[81] https://www.digital-i.com/blog/netflixs-international-strategy-global-vs-local/#:~:text=Global%20content%20is%20an%20integral,an%20incredibly%20cost%2Deffective%20strategy

[82] https://hbr.org/2018/08/the-best-way-for-netflix-to-keep-growing

Moving on to the threats, it is important to notice that also SVODs players have some risks to deal with. For example, Neil Begley, senior Vice President (VP), corporate finance group at credit ratings agency Moody's, has argued that longer term success will be difficult for smaller SVODs players and that they are probably going to need to partner up in some fashion or be acquired in order to survive[83].

4.2.2. Opportunities and threats for AVOD

For what concern AVOD players, they can compete on different levels. As they offer contents for free, they do not have the opportunity to invest in content production as SVOD and TVOD do. However, they have the possibility to exploit the so called "long tail approach", creating a wide catalogue of videos with different genres and formats. Thus, users can satisfy all their tastes and always find something new.

Furthermore, another possible strategy for AVOD companies is to increase the exploitation of User Generated Contents (UGC), aiming more at a mobile/tablet audience but also at a connected TV environment[84].

Many companies are starting to consider passing, at least partially, to the AVOD business model[85]. An example is Chili, a born TVOD company, that is now offering an additional section with AVOD contents[86].

Challenges for AVODs are represented by the fact that they generally need some years to become profitable, as they need to work on large scale to at least recover the bandwidth costs. They also have to propose customized ads, with an extensive technological effort. This

[83] https://www.digitaltveurope.com/2020/09/18/smaller-svods-risk-failure-if-they-dont-partner-up-says-moodys-analyst/
[84] https://www.iabuk.com/opinions/how-avod-set-change-current-connected-tv-market
[85] https://www.viaccess-orca.com/blog/avod-solutions-increasingly-attractive
[86] https://www.digital-news.it/news/internet-tv/47075/chili-lancia-il-servizio-advertising-based-video-on-demand-avod

put AVOD players in an initial disadvantage position compared to SVODs and TVODs, which can directly recover of the cost of bandwidth at small scale[87].

4.3. Opportunities and threats for traditional broadcasters

Talking about traditional broadcasters, the impact that DVB-T2 transition have on their business is twofold. From one side, they are threatened by the fact that an increasing number of people will have the possibility to access to streaming contents through their updated devices (Connected TVs). From the other side, they can exploit some opportunities that can help them to stay in the game.

Starting just from this chance to keep the traditional broadcasters relevant, the Philip Napoli's analytical framework has been adapted to this scenario by Alessandro D'Arma et al. in 2021 in the article "Public service media in the age of SVODs: a comparative study of PSM strategic responses in Flanders, Italy and the UK". In this article are included 5 strategic theoretical responses that legacy players, such as Public Service Media (PSM), can use in response to competitive threats from new media technologies[88].

The first response is complacency: do not react to the emergence of new players and keep doing your usual activities. For example, this happened in Italy and Flanders, as both do not see streaming as a strategic priority until the emergence of strong competitor such as Netflix in their respective countries.

The second strategy is resistance: preserve the status quo with legal (lobbies, lawsuits), rhetorical (advertising campaigns) and economic

[87] https://www.vdocipher.com/blog/2017/11/svod-vs-avod-video-on-demand/
[88] Public service media in the age of SVODs: a comparative study of PSM strategic responses in Flanders, Italy and the UK, Alessandro D'Arma et al. (2021)

(entry barriers) means. In UK this is particularly evident with BBC and its request to Ofcom to increase the time programming rights on the BBC iPlayer from 30 days to 1 year to have the space to adapt and innovate to meet new global challenges. In Flanders, on-demand players are obliged to contribute 2% of their Flemish turnover to local content production.

The third model leverage on differentiation: distinguish broadcasters from rivals, positioning them in fields that OTT do not touch at all. A key differentiator for the PSMs is to invest in domestic drama, strongly associated with local content, cultural identity, and diversity. Despite the advent of US SVOD players in their respective countries, BBC, RAI and VRT remain by far the largest investors in domestic fiction.

The fourth and final strategy included in the original analytical framework of Philip Napoli, is diversification or mimicry: expand the activities across new platforms or simulate key characteristics of the new players. Both aspects can be noticed in the relaunch of RAI portal as RaiPlay in 2016, which saw the adoption of graphical interface features typical of Netflix and other streaming services.

D'Arma et al. has added another possible response to this framework, the one of strategic collaborations: structure partnerships with OTT players in order to scale and increase production budgets[89]. This may happen in two different ways. The first one involves distribution where PSMs sell their content licenses to VOD players. The second one occurs when PSMs co-produce or co-finance video contents with streaming companies. In the case of RAI, both forms of collaboration are in evidence: the first is represented by a deal with Amazon in 2018 to license to the company a large catalogue of programming; the second one is a co-production of the crime drama "Suburra" with Netflix.

[89] Public service media in the age of SVODs: a comparative study of PSM strategic responses in Flanders, Italy and the UK, Alessandro D'Arma et al. (2021)

Another opportunity is the one related to the second generation of the European standard of convergence and integration between broadcast and broadband signals, called HbbTV2 (Hybrid Broadcast Broadband TV 2nd generation)[90] and represented in Figure 22. With this standard the television become really interactive, as, for example, the viewer can start over a programme or review episodes of his favourite fiction. Furthermore, even advertising is revolutionized by this new technology, as it becomes tailored on the viewer.

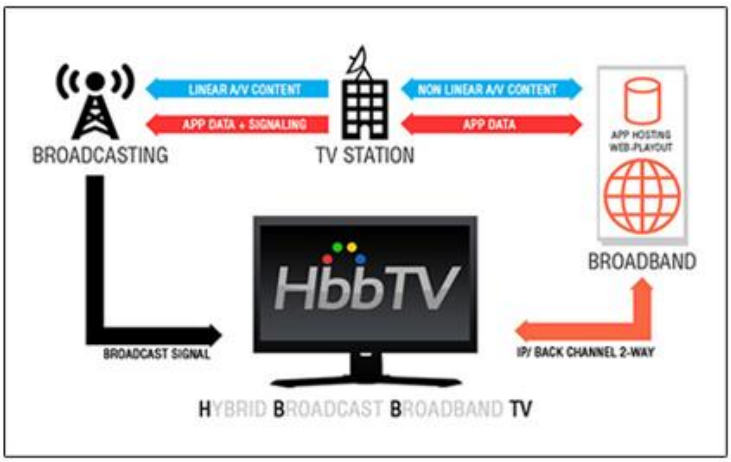

Figure 22 - HbbTV schema (Smart Building Italia, 2017)

Last but not least, the consolidation of the Video Entertainment industry, through mergers and acquisitions, and strategic alliances among Hollywood studios, telecommunication companies, and media players, favours the creation of data and contents bundle. These offers are sometimes called "quad play", as they provide broadband Internet access, television, telephone, and wireless service provisions, all in a single subscription[91]. This phenomenon represents another big

[90] https://www.smartbuildingitalia.it/senza-categoria/arriva-in-italia-hbbtv-2-lo-standard-per-la-nuova-era-della-televisione/
[91] https://www.lavoce.info/archives/59781/in-tv-il-dopo-netflix-e-gia-cominciato/

opportunity for traditional broadcasters that can join forces with other players to increase their competitiveness on the market.

The higher threat for broadcasters is that with the advent of 5G and newer technologies, the older one will be substituted and will probably disappear. This transition will take quite a long time, no one knows when it will be completed, but it will eventually happen. This is clearly stated in a 2019 ITMedia Consulting presentation, which places the end of DTT transmissions within a few years of 2022[92].

Table 12 shows a synthesis of some of the possible opportunities and threats reported above.

N°	Opportunity/Threats	Synthesis
1	Complacency	Do not react
2	Resistance	Preserve the status quo with barriers
3	Differentiation	Offer something unique and distinguishable
4	Diversification or mimicry	Expand activities across platforms or simulate characteristics of other players
5	Strategic collaborations	Structure partnerships with other players
6	HbbTV2 implementation	Make the television more interactive both in content fruition and advertisement
7	"Quad play" offers	Offer a bundle of Internet access, television, telephone, and wireless service
8	5G and new technologies exploitation	Exploit the new generation of mobile connectivity for distributing video contents

Table 12 - Synthesis of opportunities and threats for traditional broadcasters

[92] https://www.i-com.it/wp-content/uploads/2019/07/Presentazione-Preta_I-Com.pdf

4.4. New technology trends: the digital transformation

As it is possible to understand in the previous chapters, Internet distribution has enabled the advent of OTT players in a market governed by traditional broadcasters only. These new technologies have completely disrupted the business models adopted by every player in the media broadcasting industry. Nowadays, the market is still moving forward with an increasing implementation of the Internet Protocol as a way to distribute media contents, especially thanks to the new technology that are enabling people to be connected to the Internet in a faster, easier and more effective way. The technology trends that are impacting and transforming the video market are 5G, space economy, and the new standard DVB-I. These three technologies are about to lead the internet usage in the following years, giving a further possibility to reverse again the market situation of the media broadcasters that we know nowadays. In the following sub-chapters, it will be possible to understand why and how each of this internet distribution technology can take place and so how the market is preparing to a new revolution.

4.4.1. 5G

5G is the fifth-generation technology standard wireless for mobile cellular network, engineered to greatly increase the speed and responsiveness of wireless networks.

Compared to 4G, the previous generation of mobile connectivity, the one actually in use, 5G has increased exponentially the power of wireless connectivity network. In Table 13, taken from a document written by Accenture, it is possible to simply understand the capabilities of the two different generations.

Requirement	4G	5G
Bandwidth Speed (Downlink)	1 Gbps	10 Gbps
Ultra-Low-Latency	40-80 ms	<10ms
Connection Density (Massive IoT)	100000 devices/Km2	1000000 devices/Km2

Table 13 - Adapted from "5G performance, comparison with 4G" (Accenture, 2020)

The reported bandwidths are referring to the peak in capacity of transmission. The real capacity available to the people it is, most of the time, about ten time less than the peak. Said that, the 5G will have a capacity of transmission in term of bit rate ten time faster than the actual 4G. The latency - the lower the better - is the time needed to send the information once it is requested. With the new generation of transmission, the latency will be comparable with the ones that it is normally available with the optical fibre technology, that is less than 10 milliseconds. The last numbers reported in the table refers to the potentiality that the wireless connectivity have in term of devices that can connect in a specific area. Even in this case, 5G reaches performance comparable to ten time the one of 4G. Those kinds of results bring to an optimistic view of the evolution of the IoT (Internet of Things) and IIot (Industrial IoT) economies. Furthermore, those are not the only markets that could be affected with the implementation of 5G in the world. Thanks to the increased capacity of bandwidth and the decreasing latency it is possible to think that 5G will enable a change in the distribution in the media broadcasting economy. In a global survey of broadcasters conducted by Satellite Markets & Research, 82% of broadcasters believe that 5G cellular networks will replace completely the traditional broadcast's distribution, after a period of time where DTT, satellite and 5G will coexist.[93]

[93] http://satellitemarkets.com/82-percent-of-broadcasters-5G

Nowadays, some of the biggest national traditional broadcasters are testing this kind of mobile fruition, like Rai in Italy, but for the final outcomes it will be necessary to wait until all the 5G frequencies will be released. The objective of this experimentation is to lighten local networks during live events and empower the coverage and the integration with the streaming technology. In fact, 5G broadcasting would enable to cover the same area with a lower number of transmitters, as it allows to use bigger and more powerful antennas respect to the older way to transmit television signals.[94]

Furthermore, 5G will enable a boost in the performances of the already begun trend of immersive entertainment industry, that enable people to be actively participative during the fruition of a media service. For example, the power of 5G will be exploited to transform the theatrical experience joining and creating synergies with other technologies such as capture technology, extended reality, holograms, and real-time rendering. Capture technology aims at taking high-resolution video from various viewpoints around a subject to recreate a volumetric 3D digital capture of it; this requires a very fast connection and computational power that can be reached thanks to the usage of 5G together with edge computing. Extended reality (Augmented, Virtual, and Mixed Reality) and holograms are part of the immersive experiences and need 5G low latency to avoid motion sickness. Real-time rendering allows to extend the film narrative trying to connect the physical world of the audience with the digital content; for doing this it is fundamental to exploit 5G low latency and connection density.[95]

[94] https://www.wired.it/internet/tlc/2020/12/07/5g-tv-rai-broadcasting/#:~:text=Rai%20sta%20sperimentando%20la%20tv%20in%205G&text=I%20broadcaster%20tradizionali%20non%20hanno,Ciccotti%2C%20responsabile%20tecnologico%20di%20Rai

[95] https://www.accenture.com/_acnmedia/PDF-120/Accenture-Immersive-Entertainment.pdf#zoom=40

4.4.2. Satellite and space economy

Another technology that seems to have incredible potentiality of disrupting the actual transmission of home media broadcasting, is satellite internet distribution. Satellites are the hardware at the base of space economy, the branch of the economy that comprehends all kind of resources capable of adding value and effectiveness to human lives while exploring, understanding, managing, and exploiting space. Space economy is not only about GPS services, satellite television, global transportation, space exploration and space tourism, but today it is evolving towards Internet distribution services.

Contrary to 5G, that for sure will be fully implemented after the release of the 700 MHz bandwidth in 2022, satellite internet distribution is a technology that is still immature as it is a long-term project that could reach incredible results in the future. As a matter of fact, there are only few companies able to distribute internet using devices dedicated for space economy. As things stands now, internet satellite service providers are really rare, and when are available, they offer services with a quality-price rate too low compared to every other service that is available for connecting to internet. By the way, satellite could offer several benefits compared to the other internet distribution technologies. Thanks to satellites it will be possible to deliver content efficiently over a vast geographical area, covering sites where no other communication paths are possible. Launching a new satellite in the space is very expensive but, thinking of the number of people that it can serve, it is possible to say that it could be a cost-effective solution thanks to economies of scale. Compared with the actual technologies, satellite transmission of internet can increase the level of resolution and the bitrate of content. Last but not least, satellite can be used to offload congested terrestrial backbones that nowadays increase pressure on the ISP (Internet Service Providers).

Historically, satellite was not considered as a compatible option for OTT services, but today there is the need of sharing real-time events with the best image quality, low latency and buffering to a global audience over the Internet, so also OTT could benefit from space economy. Satellites help bypassing the problem of network congestion and ensure efficient use of bandwidth by feeding Content Delivery Network (CDN) with a multicast distribution instead of the traditional unicast one.[96]

In an article published in December of 2019, written by Sefer Darıcı and Ayşe Meriç Yazici, called "The new opportunities in space economy", it is reported that satellite internet market could reach a value of 300 billion US dollar by 2040, more than three time what it could be the value of the satellite television at that time.[97] This is reported in Figure 23, also compared with the value of the satellite market used in government, ground equipment, or other fields.

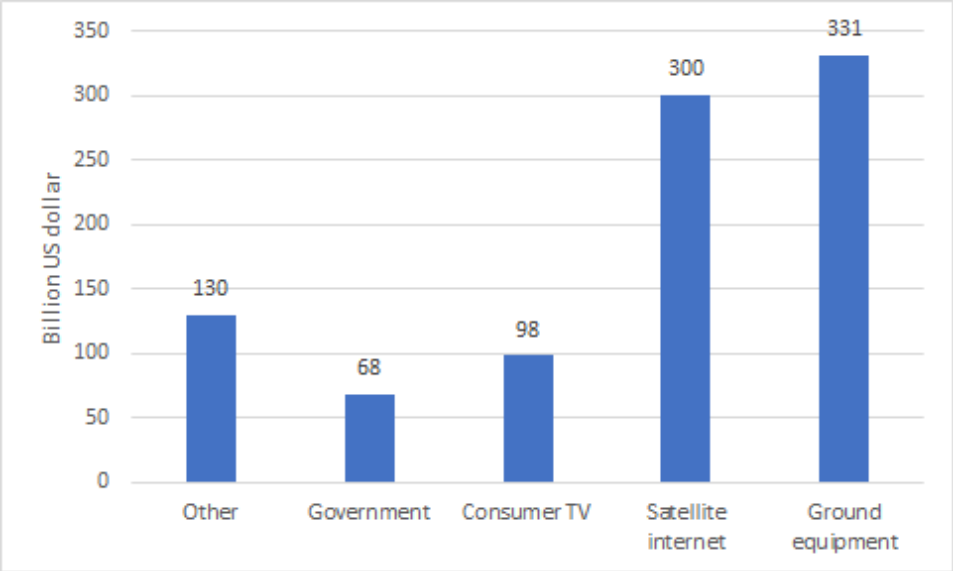

Figure 23 - Adapted from "Division of satellite value in 2040" (Hans Massart, 2020)

[96] https://www.idirect.net/wp-content/uploads/2020/05/Defining-Satellite%E2%80%99s-Role-In-An-OTT-World.pdf

[97] " The New Opportunities in Space Economy", Sefer Darıcı and Ayşe Meriç Yazıcı (2019)

4.4.3. DVB-I

Aware of the potential upcoming changing, and conscious about the usage of the new generations of television, DVB started in 2018 to design a new standard for defining commercial requirements for standalone linear tv services over broadband internet.

This standard has been called DVB-I (Digital Video Broadcasting - Internet) and it should enable to offer on smart TVs a list of programmes that includes both traditional broadcast services (DVB-T/T2, DVB-S/S2) and DVB-I services, with a harmonised channel numbering and a browsing still through remote control. With the same ease of usage of today's television, people will experience a modern IP-based delivery infrastructure, where linear and on demand television will be provided on every kind of device like TVs, PCs, tablets and smartphones. Television broadcasters are interested in making available their linear programmes also on the Internet as in this way they are able to broaden their traditional offers, reaching new users and providing an out-of-home access. Furthermore, the new DVB-I standard would enable the companies to offer even niche or temporary programmes (for example at sport events), opening a new kind of market for the television.

However, the actual internet distribution technology combined with the huge demand of linear television during live events, could bring DVB-I to suffer of network congestion. Different should be the situation where 5G, optical fibre and satellite internet distribution would be available. With those kinds of technologies that unlock new capacity of data transmission, DVB-I could be a non-too-far future from us.[98] [99]

[98] https://dvb.org/news/dvb-i-initiative-launched/
[99] http://www.crit.rai.it/CritPortal/progetti/?p=2294&lang=en

5. Identification of future competitive scenarios

Consultancy firms are trying to forecast and design future scenarios in view of the upcoming changes reported above, for being ready to help external companies to face transformations in the best way possible.

Deloitte have released in 2018 a report called "Future scenarios for the TV and video industry by 2030" where are illustrated four potential competitive scenarios. The predictions of these multiple possible situations are based on the identification of a group of relevant influencing factors that expert think will evolve and will generate a huge impact inside the media broadcaster market. The factors are following described:

- Television and media broadcasting will adopt Internet Protocol standard, everything will be connected to internet. This digitalization process will bring to a stronger AI insertion for analytics and recommendation.
- Linear and on-demand content will still coexist.
- Advertisement will increasingly become personalized, still depending on regulations and consumer willingness to share data.
- Regulation of the media industry will be more moderate and the market will be freer to cooperate and to concentrate media ownership.
- The main streams of revenue will remain advertisement and direct revenues, while data-driven revenue streams will still be too weak to be considered a main entrance.
- New and existing players will reposition along the value chain in a partly consolidated market.

In the following sub-chapters, it will be explained all the four scenarios, "Universal supermarket" where only digital platforms will have the control of the market, "Content endgame" where only producers will have the power, "Revenge of broadcasters" where national player will manage the market and "Lost in diversity" where the Video Entrainment industry will remain really complex, almost as we know it now. All scenarios will be implemented with facts that are happening in the world of TV and video, enhancing the accuracy of the forecast.[100]

5.1. Universal supermarket

This is an oligopoly scenario, where only few digital platform companies have taken the control of the market, managing aggregation and distribution of on demand and linear content. There will be only some differences between the various digital platform in terms of content, exclusive production, and sports rights. This scenario happens when traditional broadcasters cannot stay aligned with the changes and evolution of technology, offering their services through internet.

In this scenario the OTT players expand their control through the whole supply chain, from production to reception, controlling content production houses, aggregation platforms, distribution firms, and manufacturers of receiving devices too. Thanks to their superior offer in terms of quality and interest, OTTs gain purchasing power, converting the traditional broadcasters as producer of national contents. The main revenue stream is the direct payment from people, and advertisement undergo a big transformation, disrupting adv agencies and implementing new, personalized, and interactive forms of advertising.

[100] https://www2.deloitte.com/ng/en/pages/technology-media-and-telecommunications/articles/gx-future-of-tv-video.html

A really similar situation is occurring in the case of Amazon. Indeed, Amazon has started its media broadcasting experience creating Amazon Web Services, that offers on-demand cloud computing services, enabling the distribution of on-demand videos through internet. Next, it launched Amazon Prime Video service, entering the market as an OTT aggregator player, increasing its power in the supply chain. In 2018 Amazon won the deal for showing the Premier League from 2019 until 2022, starting in this way to offer live sport on its platform. Furthermore, Amazon launched smart devices, tablets for being precise, inside its "Fire" product family, where it is possible to watch its media services, covering the last portion of the supply chain, the reception.[101]

5.2. Content endgame

In this second scenario, content producers are the winner of the market transition. They have integrated vertically the value chain creating their own platform bypassing digital platform companies and arriving directly to the customers. The digital platforms have become purely distribution channels focusing on technical delivering, but the technology for video broadcasting is become a commodity, so its value is decreased a lot. The only things that create value for the users are content designed and distributed by media companies. Big brands are the leader of the market, having pushed away small players, scaling with strong program brands for creating global contents. These so called "program brands" are strategies and tactics for increasing content traffic, brand awareness and engagement of people.

Even in this scenario, traditional broadcasters have survived by shifting their focus on local content, created for the content producer platforms. The biggest forms of revenue are sponsorships and product placement

[101] https://insightsunboxed.com/amazon-business-model-re-examined-ziv-baida/

because content is the king of this scenario, so producers are directly in contact with advertisers.

BCG published in 2018 an article called "Television's $30 billion battlefield" written by Sushmita Banerjee, Val Elbert, and John Rose, where it is presented a study on the predicted changes in profits for studios, aggregators, traditional aggregators, and distributors.

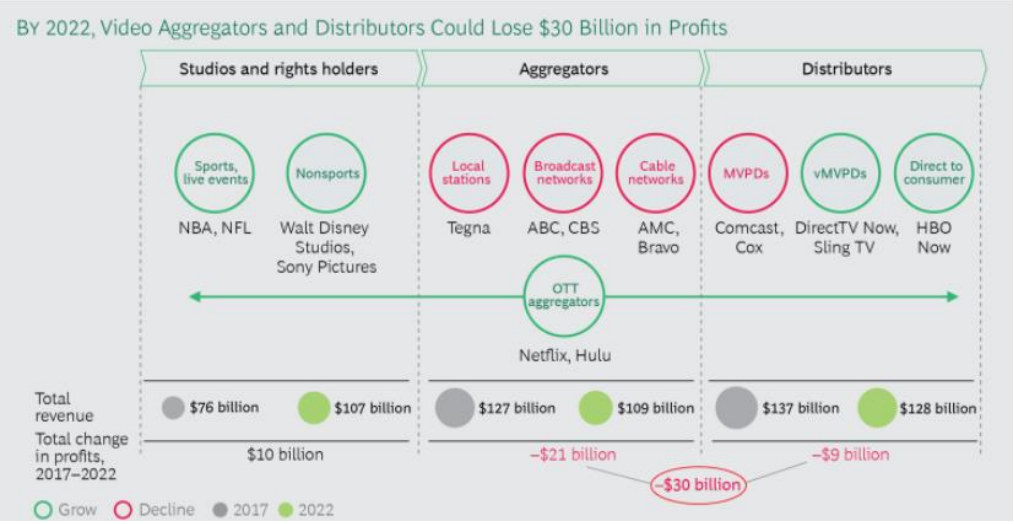

Figure 24 - The possible loss of Distributor and Aggregator (BCG, 2018)

In 2017 OTTs have invested about 17 billion dollars in programming, acquiring more than half the 500 scripted series produced in that year by studios. This fact put solid base for thinking of the increasing power of the producers, that could also rise prices over time seeing the increasing demand. This wave could disrupt the media industry economics, and content creator could succeed in stealing the attention of people from traditional aggregator and cutting the profit of distributors. In this way, while for studios is predicted an increase in profit about 10 billion, the sum of the forecasted loss of traditional aggregators and distributors is about 30 billion (Figure 24).[102]

[102] https://www.bcg.com/publications/2018/television-30-billion-dollars-battlefield

5.3. Revenge of the broadcasters

This scenario is completely different from the ones descripted above. Indeed, the international players have slowed down their growth rate and works only as content providers for traditional broadcasters, that have accomplished their digital transformation and secured strong position in the TV and video ecosystem.

Traditional broadcasters are completely digital and can offer on demand and live content. Furthermore, they entered into different services which previously were dominated by digital platform companies, increasing the audience, and assuring a superior market position.

The key to traditional broadcaster's success is the digitalization process and distribution. All the networks are IP-based, and, thanks to this way of working, it is possible to offer customized services and advertisement to people, increasing customer satisfaction and economic margins.

The Italian traditional broadcaster Rai is trying to implement 5G technology for increasing the performance of its digital platform Rai Play, for offering in the best way both lineal and on-demand services, at home and on mobiles. Ciccotti, the Rai's CTO (Chief Technology Officer), is convinced that with the future internet technology will be possible to re-gain attention from the youngest part of the population, offering targeted and immersive content and advertisement.[103]

5.4. Lost in the diversity

In the last scenario, the traditional broadcasters and the OTTs have evolved into a diverse ecosystem with no dominant players.

[103] https://www.wired.it/internet/tlc/2020/12/07/5g-tv-rai-broadcasting/#:~:text=Rai%20sta%20sperimentando%20la%20tv%20in%205G&text=I%20broadcaster%20tradizionali%20non%20hanno,Ciccotti%2C%20responsabile%20tecnologico%20di%20Rai

Costumers are served by many distribution platforms, with a steady turnover of the players in the market. The demand of local and global content remains strong, so partnerships between global and local players are widespread. In other words, this scenario is really similar to the one that it is happening now, where there is a clear distinction between content production and distribution, where local broadcaster offers mainly linear programmes, and OTTs propose on demand contents.

Digital platforms, telco companies, and local media broadcasters have all their own platform for arriving directly to the customers. Network operators act as super-aggregators, offering content provided by different platforms and producers. Thanks to collaborations with different players that works in different supply chain areas, network operator can also integrate vertically but also horizontally, offering premium services.

According to expert, this is the most likely scenario it will be possible to see in the future, because there are more cases that reflect this vision.

For example, in the US, the OTTs started to collaborate vertically with the most relevant Telco companies, as it is reported in the document called "QoE-Aware OTT-ISP Collaboration in Service Management: Architecture and Approaches" produced by Alessandro Floris, Arslan Ahmad, and Luigi Atzori (Table 14).

OTT	AT&T	Comcast	Verizon	CenturyLink	Sprint
Google	X	X	X	X	X
Amazon	X	X		X	
Facebook	X	X	X		X
Microsoft	X	X	X	X	
Netflix		X	X	X	
Apple	X		X		

Table 14 - Collaboration between OTTs and ISP in USA (ALESSANDRO FLORIS, ARSLAN AHMAD, and LUIGI ATZORI, 2018)

These collaborations are a win-win situation, because for the side of OTTs there is the spreading of content distribution that enable to decrease latency, decentralize servers, and increase the quality of the service offered, while for the side of ISP there is an increase in demand of data, from both people and OTTs, rising their relevance in the market.

Another type of collaboration that is possible to notice, is the horizontal collaboration between the OTTs and the new digital platform that are taking a part of the market. For example, in Italy Tim with its TIMVision service has created a partnership with Disney+, Netflix, DAZN and NOW, offering boxes of bundle services.[104]

[104] https://dl.acm.org/doi/pdf/10.1145/3183517

6. Detailed analysis of the offer in Italy

In this chapter the empirical research is structured to give a contribute to the scientific literature about Video Entertainment, trying to fill some of the lacunae present within it. In particular, the focus of this thesis is to understand how strategic alliances and competition work within this industry. To do this, a census of the players populating this market has been completed and, among them, the main ones have been interviewed directly asking questions to their reference managers.

6.1. Aim of the research

The aim of the research is to have a clearer picture of the state and the evolution of the Video Entertainment industry in Italy, as many technological trends are reshaping its boundaries and increasing the complexity of its competitive landscape. In order to reach this goal, it has been fundamental to classify and describe in depth the firms populating it, and to catalogue the main strategic alliances, partnerships, agreements among them, understanding how they work now for each side of the contract and how they will change in the future. In fact, the advent of the new digital terrestrial television, together with the other digital waves, will increasingly push the transformation of the Video Entertainment toward the streaming technology, and the incumbents of this industry must adapt to this external influence. For this reason, to complete the picture is necessary to collect and elaborate information directly from the players and their governance. In fact, they are the only ones that can have accessible and fresh data, models, reports to properly understand opportunities and threats of new technologies and business models, and to try to identify the possible evolution of the competitive scenario. Subjecting managers to interviews, it is possible to understand if technologies, and business models, presented in the previous chapters, have been used or are going to be adopted within a precise strategic process, and

which is the competitive scenarios that they imagine in the future for the Video Entertainment industry.

Table 15 represents the research questions starting from the main one and continuing with the lacks founded in the existing literature, the two specific research questions, and the empirical methodologies used to answer to them.

Main research question	What is the current state of the Video Entertainment industry in Italy and what are the effects of the introduction of DVB-T2 on it?
Lacks in the analysis of the literature	• Lack of information about the strategic alliances between Video Entertainment players. • Lack of information about the economic impact of the transition to DVB-T2 on Italian traditional broadcasters. • Lack of information about the evolution of consumers behaviour after the advent of new digital terrestrial television.
Specific research questions	1. What are the current players of the Italian Video Entertainment industry and how strategic alliances among them work and will change in the future, due to the advent of DVB-T2? a. How do the strategic alliances work? Are they worth doing? When? Are they actually win-win? Is content cannibalization an issue or not? Which types of data and calculus are used to understand the feasibility of these strategies? 2. How is DVB-T2 transition changing the competitive landscape in Italy? a. How do the companies' business model, strategies, and profitability change with the advent of DVB-T2? What changes do they expect from the final consumers due to this transition?
Empirical methodology	Census, interviews.

Table 15 - Research questions

6.2. Methodology

The empirical research has been made through two main methods: census and interview. The census allows to catalogue all the players of the Italian television and OTT sectors according to a selected set of variables (such as classification, distribution, revenue model, and so on), and to classify the strategic alliances established among them till today. Instead, the interviews were made to give answer to more specific and practical questions about the strategic position of each single player, and their moves after the introduction of DVB-T2 in Italy. For this reason, some of the main players in the Italian context have been interviewed, directly asking question to their most suitable managers. The structure and the results of both methods are reported below.

6.2.1. Methodology of the census

The census has been divided in two main parts: the first one is a census of the main traditional and OTT broadcasters in Italy, while the second one is a census of the strategic agreement between the biggest players in the Italian market.

For the main traditional and OTT broadcasters that populate the market in Italy, which are described in the first part of the census, it has been decided to analyse different characteristics, among which there are:

- Classification: it describes if the analysed player is a traditional or an OTT one.
- Distribution: it describes which kind of technology the player uses for the distribution among DTT, SAT, or internet.
- Revenue model: it explains if the traditional broadcaster uses a pay-tv or FTA model, or if the OTT broadcaster uses a SVOD, TVOD, or AVOD model.

- Fruition: describe if the organization of the distribution of content consists in a palimpsest, a VOD offer, or a Live offer.
- Geographical location of the company: it describes if the player is only Italian or it is present in other country, making itself a multinational company.
- Content genre: it describes the genre of the content that the player offers among entertainment, sport, news or multi genre if it offers more than one.
- Customer target: it tells if the player refers to a niche or a mass, becoming generalists.
- Type of company: if the company is independent, a division, or a subsidiary of the parent company
- # Channels: for the traditional broadcasters tells how many channels the company offer to the market
- Other characteristics: like price of subscription if any, year of start of distribution, location of the Italian head quarter, website, parent company typology and name.

Table 16 contains all the characteristics and the possible options used to describe the companies in the census. These variables were chosen in order to describe in depth each company and to be able to recognize similarities and differences among them.

Characteristics	Options
Classification	Traditional, OTT
Distribution	DTT, SAT, Internet
Revenue model	Pay TV, FTA, SVOD, TVOD, AVOD
Price of subscription	Fee per month, included in other bundles, absent
Number of channels	N. of channels
Fruition	Palimpsest, VOD, Live

Starting year of distribution in Italy	Year
Headquarter	Place
Geographical location	Italy only, multinational
Content genre	Multi, entertainment, sport, news
Customer target	Niche, generalist
Website	Link
Type of company	Division, independent, subsidiary
Parent company typology	Telco, traditional broadcaster, publisher, finance, football club, jewellery, art gallery, radio, gaming and betting, OTT, holding, e-commerce, Internet technology, media company, computer company, beverages
Parent company name	Name

Table 16 - Characteristics of the companies present in the census

For the second part of the census, the one that refers to the strategic alliances among biggest players, it has been decided to classify the agreements in eight typologies that will be further described in chapter 6.3.: content reproduction right, channel transmission, platform distribution, technology distribution, co-production, advertising, other commercial, and multivariable.

6.2.2. Methodology of the interviews

The interviews have been conducted following a precise structure and divided in six phases.

The first phase was the questionnaire drafting, in which the most suitable questions have been thought for each player, considering its specific characteristics, and trying to fill the lacks founded in the literature.

In the second phase the questionnaires have been submitted to the reference managers of the selected players. In this way, each manager has had the possibility to check the questions and prepare the answers to them.

Sometimes managers could not answer to all the questions for internal policy issues. For this reason, the third phase was needed to obtain feedbacks about the questionnaire and modify it accordingly.

The fourth phase was the interview, structured in two main parts. The first part was aimed to introduce the scope of the thesis, the second one was about asking directly questions to the managers interviewed. The interviews aimed at gathering further information regarding the current situation of the Video Entertainment industry and its evolution due to the transition to DVB-T2. In particular, the questions were asked for deepen the comprehension of strategic alliances and the competitive landscape regarding the broadcasting players and how they are evolving in this period of change of the transmission standard.

The last phases were the recording transcription and the case study drafting. The first one has been done to avoid that some information could be lost, the second one exploited the recording transcription to get insights from each interview.

Structure of the questionnaire for the interviews

In order to manage the interview in a proper way, a survey has been created dividing the questions in two macro sections in turn split in subtopics.

The first section has focused on the video content market in Italy and the strategic alliances organized within it. In particular, it has investigated the reason why these agreements are established among

players in this sector, which are their pros and cons, and so the value that they can bring to each single company. Still in this section, it has been deepened the perspective of each player regarding the competitive landscape and its evolution in the future, also due to the advent of the new digital terrestrial television in Italy.

The second section has aimed at understanding the implications of DVB-T2 transition on the players in the industry of reference, on the contents that they offer, and on the behaviour of the end users. Indeed, it has been asked about the approaches that the companies are using and the problems that they are facing in this period of transition, comparing it with the previous switch-off. A particular attention has been given to the content management, investigating how the video contents, their fruition, and their distribution platforms will change in the future, accordingly to the features that each company wants to prioritize.

Questionnaire texts

The introductory speech to explain our work and the scope of the thesis has been scripted with the following words: "Our thesis concerns the Video Entertainment market and the new ways of using television due to the introduction of the new digital terrestrial. We thought about interviewing players of your reach to collect further
information regarding the current situation of this sector and its evolution following the transition to DVB-T2. We would be particularly interested in investigating strategic alliances and competitive environment that affect you and how these are evolving in concomitance with the technological evolution of television. The strategic alliances we intend to analyse are both horizontal and vertical and involve all stages of the Video Entertainment supply chain, production, aggregation, and distribution. Among the strategic alliances we are analysing there are those concerning co-productions,

rights of content distribution, sharing of distribution infrastructures and platforms.”

Here reported the base on which the questionnaire for each player has been further customized:

- How do strategic alliances currently work in your company? What strategic alliances do you have in place? How do you establish them?
- What value do these alliances bring to your business? How do you determine their feasibility?
- Do you believe that the dissemination of your content on third-party platforms can bring sufficient benefits to cover the risk of cannibalization of them?
- How do you think these strategic alliances are changing and will change as a result of the advent of the new digital terrestrial television?
- How did you experience the previous digital transition? Which similarities and differences with the current transition to DVB-T2 did you find? Did you consider useful to analyse the transitions that have already taken place in other countries?
- Following the advent of DVB-T2, how do the business model, strategies and profitability of your company change? Do you expect to get a positive return on investment to make this transition, or is it just a cost to you?
- How do you think the competition in your industry will change as a result of the transition to DVB-T2?
- What changes do you expect in the behaviour of the final consumer, who will have to adapt to the introduction of TV 4.0?

Structure of the cases

Each single case was divided into seven macro sections:

1. Introduction of the company, explaining the typology of player, its position along the Video Entertainment supply chain, some of its financial results, its distribution, fruition, and revenue model typologies.
2. Presentation of the interviewed manager, describing the role, the business unit to which he belongs, and the relationships with the other business units and the C-level.
3. Introduction of themes and key messages
4. Information and opinions about the transition to the new digital terrestrial television standard, comparing it with the previous switch-off and with other countries, understanding its impact on business model and consumer behaviour changes.
5. Information about strategic alliances in the Video Entertainment industry, involving both vertical and horizontal agreements covering all the phases of the supply chain such as video production, aggregation, and distribution. Being more specific, this research is focused on co-production, content distribution rights, and distribution platform and infrastructure sharing.
6. Vision of the future and new technologies.
7. Conclusions

6.3. Census of Italian video players

In this paragraph it is possible to analyse the results that have been achieved with the census activity.

For the first part of the census, it has been found that there are 87 players competing in the Video Entertainment industry in the Italian market, of which 52 are traditional broadcasters and 35 are OTTs. An

interesting fact is that of the 87 players, 53% (46 players) are the wholeness or a partiality of multinational companies competing in other countries as well. Indeed, only 26 players are independent, while 31 are division and 30 subsidiary of bigger mother companies.

Each player can have one or more channels. Indeed, it has been reported the number of channels that traditional broadcaster has in the Italian market. As it is possible to watch from the Figure 25, the player who has the most of channels is Sky with 74, followed by Mediaset (30) and Rai (24), while there are a lot of players that have only one channel.

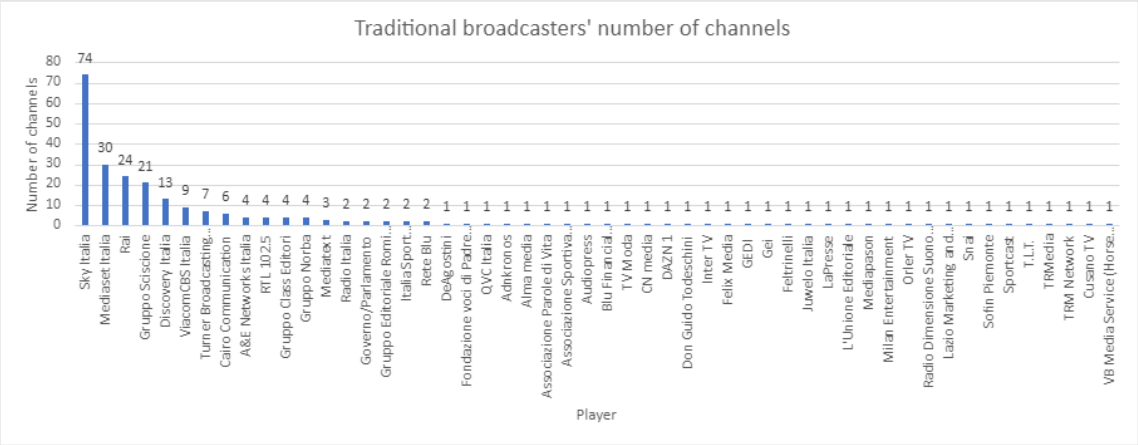

Figure 25 - Traditional broadcasters' number of channels

Referring to the OTTs, the channels that are distributed by them are, as coherence with the definition of OTT, accessible via internet only. For what concerns the traditional broadcasters, as already explained in the chapter 2.1.1 "Classification of the industry's players: traditional broadcasters", the distribution process can be made via DTT, SAT or cable. In Italy there is no player using cable technology, while 25 players use SAT, 11 use DTT and 16 use both of the distribution technology for reaching the audience.

The revenue models for traditional broadcasters are FTA or pay tv. 35 players have decided to distribute their service for free, 12 as payment service and 5 players (Sky, Mediaset, Discovery, Viacom CBS Italia, and Cairo communication) offer some contents for free while offering others as pay tv. More complicated is the revenue model strategy adoption for the OTTs players. For this reason, it has been decided to illustrate it with a graph reported in Figure 26. 22 players adopt a single revenue model for distributing contents of which 11 use a SVOD model, 7 AVOD model, and 4 TVOD model only. The other 13 players adopt hybrid forms of revenue models, that are total or partial combination of SVOD, AVOD and TVOD. 21 out of 35 of total type of revenue model comprehend the SVOD model. This revenue model it is used by the biggest OTT too, like Netflix, Amazon, and Disney+, making evident that this is the model more in use, that is more liked by the people, and for this reasons that brings more success. SVOD is preferred for the simplicity of usage and for its value per quantity for money.

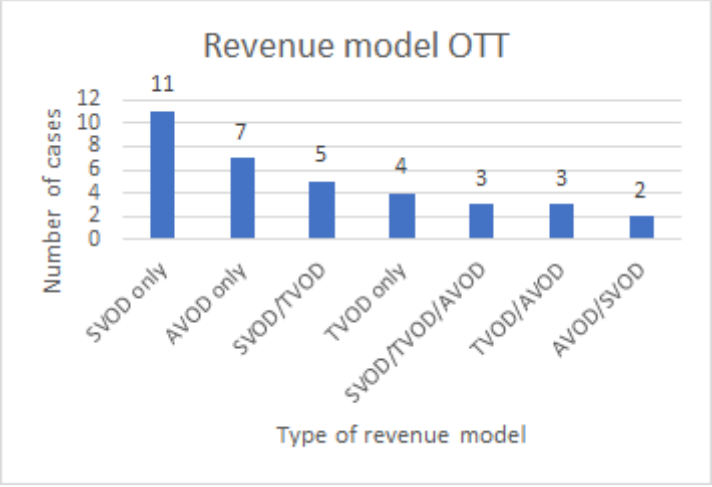

Figure 26 - OTT revenue model

The fruition modality proposed by traditional broadcasters is inevitably a palimpsest, while for OTTs could be Live or VOD. 21 OTT player offer

both VOD and live content, 14 only VOD, so there is no OTT that offers only live content.

A further interesting analysis can be done looking at Figure 27 and 28. In fact, considering the overall number of traditional broadcasters, only 11.54% of them have launched an actual OTT platform. However, considering only the biggest traditional players (in this thesis as the ones that have more than 5 channels), the percentage of them that are differentiating their offer is much higher, reaching 75.00%. This suggest that only big corporations have enough resources to create an OTT platform and try to compete with pure OTTs, while smaller firms best strategic moves may be to remain in their "calm pond" and use their funds to increase their uniqueness in serving their niches.

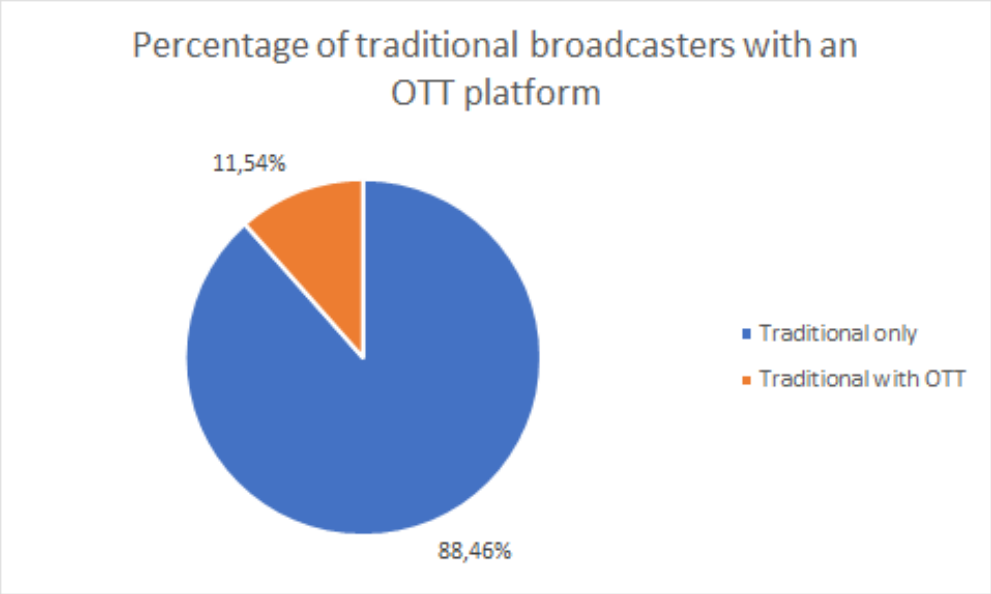

Figure 27 - Percentage of traditional broadcasters with an OTT platform

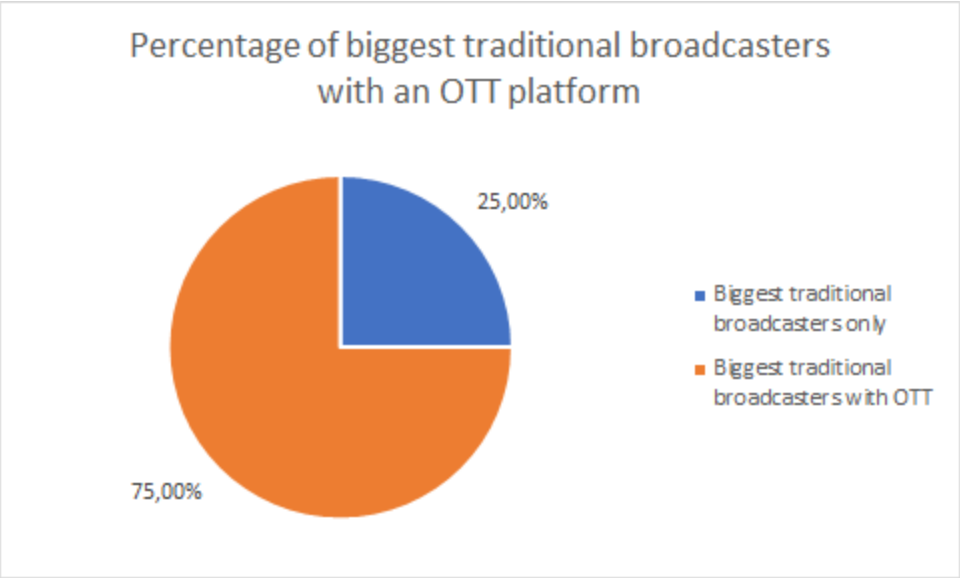

Figure 28 - Percentage of biggest traditional broadcasters with an OTT platform

Figure 29 represents a timeline with the foundation years of the biggest traditional broadcasters and their OTT platforms in Italy, if any. First of all, it is evident that Rai is the oldest one, but was the first one to introduce an online portal, Rai.tv, a predecessor of the modern OTT. Gruppo Sciscione and Turner Broadcasting System are old too, but they decided not to create their OTT platforms. The other companies were born after 1990 and most of them differentiate their offer adding their proprietary digital platform only after 2010. Today, it is possible to see an increasing attention to the online presence from all the players that are trying to optimize their services. For instance, Mediaset has just put together their applications Mediaset Infinity and Mediaset Play in a comprehensive platform called Mediaset Play Infinity.

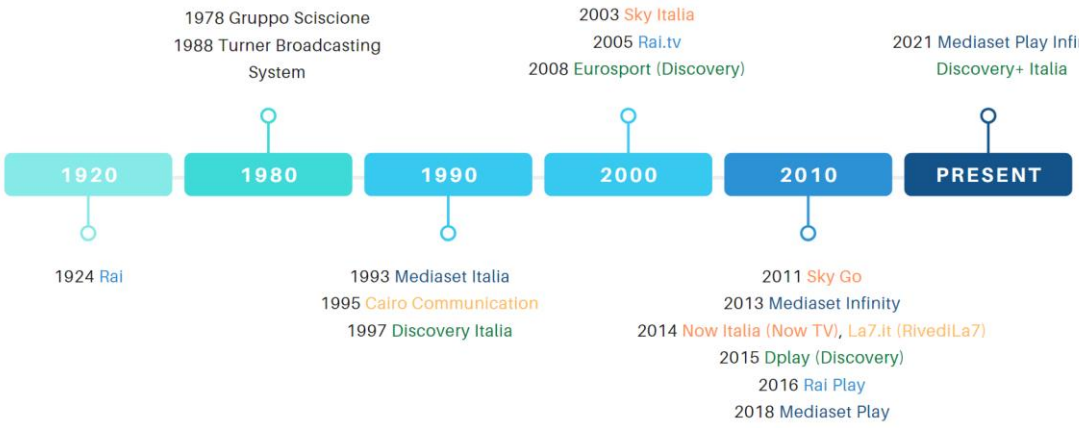

Figure 29 – Timeline with the foundation years of traditional broadcasters and their OTT platforms

Looking at Figure 30, it is interesting to see the most frequent parent company typologies among the overall players that own OTT initiatives. In particular, 12 out of 35 OTTs come from traditional broadcasters' parent companies. This shows that probably it is easier to start an OTT initiative when you are already in the Video Entertainment industry for several years. Other relevant frequencies are the ones related to media companies and pure OTTs.

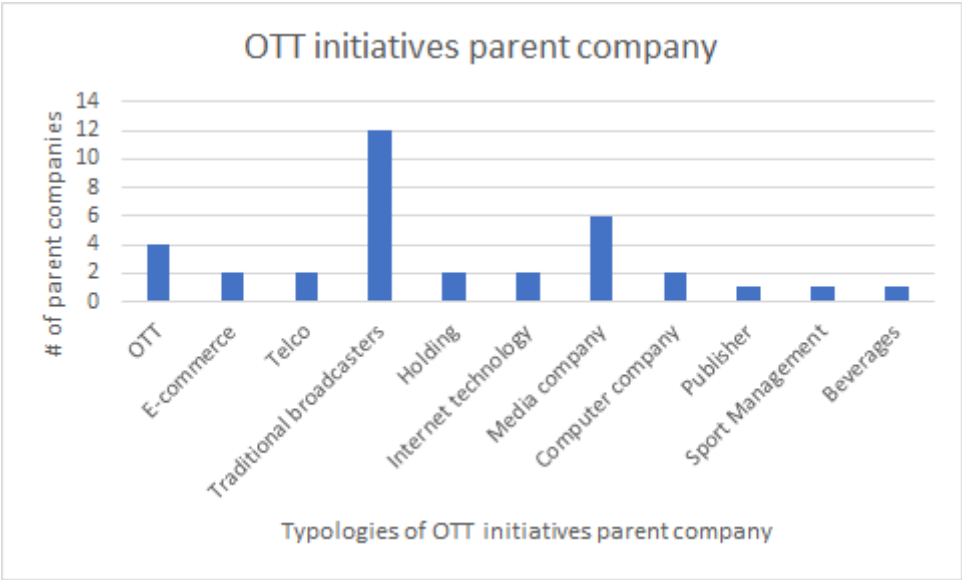

Figure 30 - OTT initiatives parent company

For the second part of the census, as already explained in the paragraph 6.2.1., various strategic alliances between the biggest player competing in the Italian market have been analysed.

The following cases have been selected: Rai/Rai Play, Mediaset/Mediaset Play Infinity, Discovery/Discovery+/Eurosport, ViacomCBS (Paramount Network), Cairo Communication (La7, RCS), Netflix, Amazon/Amazon Prime Video/Twitch, TIMvision, Disney/Disney+, Google Play Film, Chili, Apple tv/Apple tv+/iTunes, Rakuten tv, Starzplay, DAZN, Microsoft movies and tv, and Vodafone TV.

54 alliances have been found through news, interviews of managers founded on the Internet, companies' websites containing their bundle offers.

Here below in Table 17, the agreements are classified and described by four characteristics: the type of agreement or strategic alliance, the descriptions of the agreement, the pros and cons that they bring to companies, and an example for each typology of strategic alliance.

Type of agreement/ strategic alliance	Description	Pros and cons	Example
Content reproduction right	A company acquire the rights to reproduce on its platform/channels one or more contents originally produced by a third party.	Pros: The buyer's channel/platform benefits from the visibility and success of the content, while the seller monetizes its production effort. Cons: the content may not have the same success when	Disney cartoons on Rai channels

		reproduced by a different player	
Channel transmission	A player obtains the rights to transmit on its platform one or more channels normally broadcasted by another company.	Pros: The relationship is win-win as both parties can benefit from the brand visibility of the business partner. Cons: the channels may lose their uniqueness	Mediaset channels on TIMvision
Platform distribution	An entire platform/application of one player is distributed on another platform or on a device belonging to another player.	Pros: Both parties enlarge their audiences accessing to part of the market of the business partner. Cons: cannibalization of contents may happen	Netflix application on Amazon Fire TV Stick
Technology distribution	A company uses the technological infrastructure owned by another player to distribute its own contents.	Pros: The company obtains enough distributing power to support the peak traffic, while the provider monetizes its excess capacity. Cons: the partner may become a competitor	DAZN backup channels on Cairo Communication multiplex for Serie A 2021-2024
Co-production	Two players join forces to produce a content together	Pros: the sharing of costs, the opportunity to learn from the partner, the possibility to ease the access to	"Suburra" Italian tv series co-produced by Rai and Netflix

		the partner's market. Cons: the strongest brand may shadow the other one	
Advertising	A firm distributes its advertisement on third-party platforms too.	Pros: The firm benefit from the huge traffic present on its partner's platform. Cons: The platform control the algorithm	Cairo Advertising sells adv related to La7 videos post on YouTube
Other commercial	A product/service is offered on a player's platform by a third-party.	Pros: Synergies between the two brands. Possibility of entering a new market. Cons: the host player may benefit more from the success of the content, but then it may have a new competitor in the market	"House of Cards" launched on Sky Italia
Multivariable	When two or more agreements mentioned before are stipulated between the same two companies.	Pros: the alliance is really strategic and structured Cons: if a part of the deal does not work, this can compromise the success of the entire alliance	Mediaset Premium channels on Sky; Sky on DTT using Mediaset EI Towers

Table 17 - Punctual description of all the type of strategic alliances

In Figure 31, all the 54 alliances (found by summing all the blue columns) have been divided depending on their typology. Each column

of the histogram shows the number of agreements divided per type. In this way it is possible to perceive that the most performed agreement is the one stipulated for sharing the distribution platform. In fact, it can be assumed that the most popular trend for the majority of the player is the one of aggregation. This kind of agreement is fundamental to perform economy of scale, because allows the player to be seen by people on more platforms, on more devices. Indeed, the objective of stipulating this kind of agreement is to reach visibility through which it is possible to distribute the brand image of the company while ensuring the availability of the services on the best platforms. In this way costumers have the possibility to use a single platform to comfortably watch different contents provided by different players, still continuing to distinguish the offers of each player.

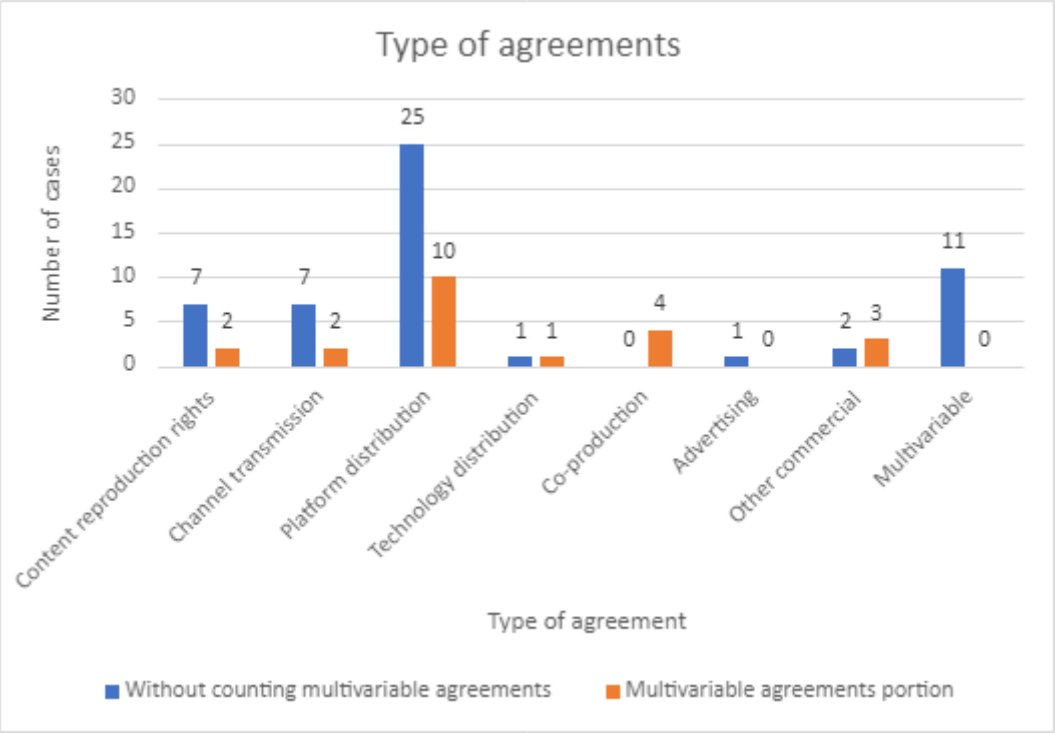

Figure 31 - Type of agreements

Even though, looking at the blue column, the co-production seems to be absent, 4 out of 11 cases of multivariable agreement comprehend co-production of movies or tv-series.

It is evident, looking at the census, that this kind of multiple agreement is more frequent between the biggest players, both on traditional and OTT side. As a matter of fact, it is possible to find hybrid deals between Amazon, Netflix, Mediaset, Rai, and Sky. Most of the time there are platform distribution agreements between OTTs, or between OTTs and the new OTT branch of traditional player, combined with co-production of traditional player for the OTTs. For example, the Italian Tv series "Suburra" has been co-produced by Rai and Netflix, "Made in Italy" series of Mediaset is distributed through Amazon Prime Video, while the applications of Rai Play, Mediaset Play Infinity, and Netflix are available on Amazon Fire TV Stick. The co-production agreements are fundamental for OTTs, because, due to their size and their international target, they cannot concentrate on producing local content for each country where they operate. Through this kind of deals, they can aspire to enter into the local markets, reaching people that, without the type of content produced by local traditional player, would not be interested in purchasing OTT's video services.

6.4. Interviews

Case 1 – Mediaset

Company profile

Mediaset Italia S.p.A. is the second Italian television broadcaster and the biggest Italian Media Company. Its FTA offer is currently composed of 18 channels, including the 3 traditional generalist networks Canale 5, Italia 1, and Retequattro, and a rich portfolio of thematic semi-generalist such as Boing, Iris, and Italia 2, for a total of other 9

thematic channels, 3 channels for kids, and 3 radio/musical channels. Furthermore, other 6 pay TV channels are offered, reaching the total of 24 linear broadcast channels distributed by Mediaset. Other 6 additional channels are distributed only on IP for sports events. The overall offer of Mediaset networks aims to target an audience aged between 15 and 64 years. The production and the distribution of its original audio-visual contents are done through 2 subsidiaries: Medusa and Taodue. It also has its commercial radio division called "RadioMediaset group" owning brands such as R101, Radio 105, Virgin Radio Italy, Radio Subasio, and RMC. About the digital environment, Mediaset's offer is based on a video area and an information area. About the first one, the company distributes its content through the Internet with an OTT service called Mediaset Play Infinity, which is a hybrid AVOD-SVOD platform created by joining the AVOD Mediaset Play with the SVOD Infinity in April 2021. About the information area, it exploits the brands TGCOM24, Sportmediaset, and Meteo.it. The main revenue channel is the one related to the advertisement, managed mostly by Publitalia '80, an advertising sales company owned by the Group. The second revenue stream comes from customers' payments to access pay-tv channels and to premium contents available on the Mediaset Play Infinity platform. Mediaset Italy had 3433 employees in 2019, while it totalized 2.636 billion euro of revenues and 139.3 million euros of margin in 2020[105].

In the last years, Mediaset has experienced strong changes that focus on the disposal of non-strategic assets (e.g., the sale of Mediashopping company to Ortigia Investimenti) and the reinforcement of the international development of the Group. Indeed, on June 23 2021 the shareholders meeting, after voting for the renewal of the expiring

[105] https://corporate.mediaset.it/binary/documentRepository/49/Gruppo%20Mediaset%20-%20Bilancio%202020.pdf

board of directors, approved the transfer of the registered office of Mediaset to the Netherlands. Another effort by the Group refers to the acquisition of premium contents distribution rights of sports events such as the Coppa Italia, the Supercoppa, and some matches of the Champions League.

Interviewed manager profile

The interviewed person is Alberto Bruno, the Deputy Director of the Corporate Strategic Marketing of Mediaset Italia. This division is in charge of coordinating marketing activities of every business unit (radio, television, digital) in terms of objectives, developing lines, and positioning, reporting directly to the CEO. Furthermore, it provides many services to each business unit, such as market researches and forecasted evolutionary scenarios for creating together with those units the best offers possible. Corporate Strategic Marketing in Mediaset is also responsible for making decisions about acquisitions of businesses and channels.

The decision to interview this person stems from the fact that the study questions are geared toward understanding the Video Entertainment landscape primarily from a strategic standpoint, while also considering short-term movements and changes. The manager has helped to paint a clear picture of the current state of television broadcasting in Italy highlighting the impact of technological innovations on the market and strategic alliances among players. Furthermore, he also contributed to the description of future scenarios and new technological implementations for video content delivery, based on his previous experience.

Introduction

The main topics discussed during the interview were: the DVB-T2 transition impact on the Video Entertainment industry; the strategic alliances evolution caused by technological developments; the vision of the future and the new technologies that will influence the video environment.

The situation of delay in the transition to digital terrestrial television that the Italian people are experiencing in this period will be explained in the following paragraphs. Besides, the competitive landscape related to the television environment has changed and Mediaset is establishing deals with those who were once its most bitter competitors and with the newcomers OTTs. Mediaset will be rigorous in identifying changes in the structure of the television industry and, if they occur, will try to adapt in a way that ensures the consolidation and the strengthening of its market position. The key is to stay ahead of the curve of technology and digitalization, while making the best agreements with the right player, selling at a fair price content that cannot cannibalize the group's offer.

DVB-T2 transition impact

The DVB-T2 switch-off is more complicated than its predecessor, which brought the transition from analogue to digital transmissions. Indeed, even though the analogical-digital transition involved more television sets, its implementation logistics was put in place region by region, while the current switch-off will happen all at once for broader groups of regions. Furthermore, in the initial phase of the DVB-T conversion the two technologies analogical and digital coexisted, while in the new switch-off there will be a complete substitution and interruption of the previous standard. For this very reason, in Italy there is an open debate about the realization of the first phase of the standard transition, the

ones involving the compression standard MPEG4 (also called H264), because there are millions of televisions that are still not able to receive signals in HD, so they cannot participate to the technological evolution. Even worse is the condition for the second transition, the one involving HEVC (also called H265), because there are still tens of millions of devices non-compatible with that compression standard. It is not helpful to look at the transitions that occurred in the other European countries, as the size of their digital terrestrial television market is much smaller compared to the Italian one, so it is easier and faster for those countries to perform the DVB-T switch-off. Spain and Greece are the only countries that could be compared with the Italian television market, but they did not implement the technological change yet. According to Mediaset, The DVB-T2 transition is merely a means of reducing television's frequency usage without jeopardizing overall transmission capacity. This means that probably the new standards will not have a direct impact on the competition in the market and on the business models and strategies of each player.

Strategic alliances evolution

Mediaset understanding of who its rivals and allies are, is changing. Until five years ago, the competition was clear, and Rai and Sky Italy were the competitors in a known landscape, while now the attention is focused on what is called co-opetition, a cooperative competition. The entry of new competitors into the industry, such as Amazon and Netflix, has totally altered the variables that make up the competitive landscape. Now Mediaset is establishing a lot of agreements with these players and with Sky too. For example, Mediaset Premium channels are now exclusively transmitted by Sky, Infinity app can be downloaded on Amazon Fire TV Stick, and there is an ongoing co-production deal between Mediaset and Netflix. In the case of Amazon, Mediaset has already collaborated with it, but still considers the big

tech company one of the most dangerous competitors for the future scenario. These are not always definable as pure strategic alliances, but rather as commercial deals that do not strictly imply long-term relationships. These deals are about co-production, distribution, and content rights. The consideration of the risk of contents cannibalization is perceived as marginal compared to the risk of being disrupted by the big tech players. In such a dynamic competitive scenario, Mediaset selects which player to make agreements with looking at the foreseeable midterm scenario with the key objective to reinforce its role of independent media company by balancing content distribution agreements, content packaging agreements and platform agreements of 3 to 5 years maximum duration. The aim is to grant to the company enough strategic flexibility to adapt and react fast when the market conditions change.

Talking about contents, Mediaset shares its distribution rights with other players only when its contents are not fundamental for its long-term strategy and are paid enough to justify the choice of selling them. This suggests that Mediaset is trying to obtain the best value possible from its intellectual properties but being careful to sell strategic content to potential rivals. Furthermore, it is exploiting co-opetition strategies and trying to create an ecosystem of open and common policy standards shared by most of the players in the market.

Vision of the future and new technologies

The actual variables that are disrupting the television sector are related to the convergence of the Internet service and the media industries into the television one. Some examples are DAZN, a sports media company, that has acquired the transmission rights of Serie A in Italy

from 2021 to 2024[106], and Amazon, an Internet service player, that will distribute Wednesday's matches of the Champions League 2021/2022[107]. There are also early signs of hybridization between Internet companies and the television world, as demonstrated by the advent of set-top-box like Apple TV, Amazon Fire TV Stick, Google Chromecast. These big tech companies could be able in the future to offer a completely integrated platform and to intermediate and index contents potentially provided by all the other players present in the market, both OTT and traditional broadcasters. This revolutionizes the structure of the classical channels of the television as the control of the user interface and the visibility of each app and content could be exclusively decided by the aggregator, while the channel owner could act just as a content provider.

Conclusions

Finally, the real issue that companies like Mediaset are concerned about is the disruptive entry of big tech companies like Amazon and Google into the television broadcasting market, that will probably be able in the long term to intermediate any access to video contents, included the ones used to be watched on television. To be ready for reacting to this potential threat, the key move of traditional companies could be to understand from time to time which of these OTTs is the real competitor and who the potential ally, and, according to the goal pre-established for each specific area of business, establish deals with them in order to be placed in a better position in their aggregation platforms. Instead, the DVB-T2 transition could probably be seen as a technology transition that will be managed with the necessary caution

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106 https://www.repubblica.it/economia/2021/08/12/news/serie_a_come_vedere_le_partite_quest_anno_le_offerte_di_dazn_e_sky-313686835/

107 https://www.ilsole24ore.com/art/amazon-alza-velo-sua-parte-champions-league-in-esclusiva-AEPLlQb

in order to avoid as much as possible any loss in audience ratings due to the obsolescence of devices currently owned by the Italian population. Not surprisingly, the transition roadmap was modified in July after broadcasters rose warnings to the relevant national authorities on numbers of TV sets not compliant with the new standards being still too high and thus needing a more progressive and smooth transition path. In any case, broadcasters are making their content offering and programming available online not just to minimize the risk of audience loss because of the DVB T2 transition, but mainly in order to maintain relevance toward some of their younger or more active target audiences. Indeed, established players must be aware that, if they do not want to be forgotten by the audience, their programmes and contents have to be available online.

Case 2 - Rai

Company profile

Radiotelevisione Italiana S.p.a. (Rai) is the Italian Public Service Media. It is the fifth biggest television broadcaster in Europe and the biggest in Italy. It serves the public in many areas of the communication market: Tv (Digital Terrestrial Television, Satellite Television), Radio (Radio1, Radio2, Radio3), Digital, Cinema, Home Entertainment, and Publishing. The Digital offer of the Group is composed by RaiPlay, RaiPlayRadio, RaiPlaySound and the portals Rai, RaiNews, Raisport.rai, Raicultura. RaiPlay is the AVOD OTT service of Rai, and it gives the possibility to access to a wide catalogue of video contents in live streaming and on demand. Rai Group is present on every platform with complete Free To Air (FTA) channels offer differentiated by genres and targets[108].

[108] https://it.wikipedia.org/wiki/Rai

The main revenue channel is the Italian television license fee called "Canone Rai", that has to be paid by Italian citizen with the electricity bill. Furthermore, Rai has other revenue streams as advertising investment and ad hoc financing from the public sphere. In 2020 more than 11450 people were working in this company, the revenues of Rai reached 2.361 billion euro[109].

Since the last 20 years Rai is trying to renew itself, exploiting the power of the digital terrestrial television and in particular of the Internet. The role of RaiPlay is increasingly central to the future of Rai, having also revolutionized the audience interaction with traditional events such as Sanremo Music Festival. Indeed, in the 2021 edition the festival has been followed on RaiPlay by many people reaching a new record of 19 million live streaming and on social networks obtaining almost 30 million interactions in five days.

Interviewed manager profile

The interviewed person is Roberto Nepote, the Marketing Director of Rai Group and member of the board of directors of Tavolo Editori Radio and Auditel. The marketing division of Rai is historically focused on the product, on the audience analysis, on the positioning, and on market researches, but in the last 2 years it has emerged the need of dedicating attention to the strategic part of the marketing. Upstream, this division reports directly to the CEO, while for the downstream communication the organization is still trying to find the best solution to work the most effective way. In fact, before the advent of the Covid-19 pandemic, this division was becoming in charge of a set of downstream and horizontally integrated business units. However, the board of directors and other top management positions in the Group

[109] https://www.rai.it/dl/doc/1626714896621_Rai%20RFA%202020%20Ita.pdf

were changed[110], and it is still a question mark if the marketing division will continue to follow the process of integrating companies under its responsibilities or it will return to a more vertical disposition.

The choice of interviewing the manager has been made considering his role in Rai Group. As the marketing director, he has a high-level view on the strategic moves of the company and can share his experiences in the Video Entertainment industry with a particular focus on the present state of the television market, and the impact of technological advancements on consumers behaviours.

Introduction

The main topics discussed during the interview were: the DVB-T2 transition impact on the Video Entertainment industry; the strategic alliances evolution caused by technological developments; the vision of the future and the new technologies that will influence the video environment.

In the following paragraph it will be possible to read about the issues that are affecting people and Rai caused by the transition to the new standard of transmission. This last is further triggering the introduction of the smart tv and set-top-box that, being connected to internet, will change the competitive scenario of television broadcasting, accosting the world of traditional broadcasters with the one of the OTTs. Rai is gradually responding to the changing climate by strengthening partnership with other PSM (Public Service Media) from other countries and focusing its resources on producing Italian national programming that is less likely to be disrupted by new online companies. Furthermore, Rai is moving in a way which allow the reinforcement of RaiPlay too, the digital channel belonging to the company.

[110] https://www.ilsole24ore.com/art/rai-senato-elegge-de-biasio-e-majo-membri-cda-AE3pu1W

DVB-T2 transition impact

As emerged from the interview, the transition to the new digital terrestrial television standard could be a huge problem for Rai both from a logistic and market size point of view. Indeed, many television sets are still not ready for the switch off. Furthermore, people are less willing to buy a new TV set because of the global crisis caused by the pandemic, and the government incentives are not enough to cover the high cost of new devices. Another issue is that a lot of people already own or will buy a Smart TV/set-top-box, that allows the direct access to video contents through applications without passing through the classical channels of the traditional broadcasters. Comparing the current switch-off with the previous one, it is evident that the transition in 2011 was on another level as it involved a huge change in the number of channels available, so the people were enthusiast about this innovation. Now, instead, people could not get anything more than what they had in the past apart from an increase in the quality of the videos and maybe some new thematic channels. With the new transition, the Italian television broadcasters cannot imitate other countries for a hypothetical evolution of the contents of the videos transmitted via DTT. The transition process in other European countries is completely different from the Italian one, as they have a smaller share of digital terrestrial television in their territories. Thus, the Italian case cannot be compared to the one of other countries, therefore, according to what emerged from the interview, it is of little use to prepare for the switch off following the model of change of other foreign countries.

Strategic alliances evolution

Regarding the strategic alliances, Rai has collaborations with other European PSM (Public Service Media) such as BBC, and the German public television service. This kind of deals are established to share

video contents of different types, like fictions and crime movies, among broadcasters with a similar national strategy. Moreover, talking about OTTs, two of the possible future scenarios that the new board of directors could choose are: exploiting exclusive proprietary contents on RaiPlay, or selling them to third parties at a worth price that can ensure interesting margins. In both cases, the most appreciated Rai contents by the audience remains films and fictions because they reflect the Italian customs and traditions. International OTTs will never be able to compete in these fields due to the lack of knowledge in the production of this type of contents.

Vision of the future and new technologies.

Talking about future changes of the customer behaviour, Rai is mainly considering OTT players as a threat in this field, as they are progressively taking bigger part of the attention of the audience and, even though Rai market shares are still dominant in Italy, the trend is moving toward on demand contents. Rai Group instead, will still remain strong on offering live events contents like Sanremo Music Festival, and on producing cinema and fictions. These contents are still leading television products for older generations but can be successfully exploited also on RaiPlay, the online side of the company. This side will increasingly be the perfect environment for new generations, used to watch television both live and on demand on every connected device.

Conclusions

In conclusion, this case represents yet another demonstration of the change in the television world, that has been disrupted by the advent of Internet companies. It is no longer enough for a company to be part of a population's tradition, culture, or history. Today, even large and well-established firms like Rai must evolve and adapt to new

technologies and market rivals. For doing this, they need to structure agreements with national and international television companies in order to increase the market size or consolidate the positioning. As regards Rai contents, their value is well recognized in Europe and many companies would pay for acquiring their distribution rights. However, the logic of selling proprietary Rai products to third parties just to get a return on the investment or to obtain a further profit is questionable. In fact, Rai offer is wide and precious, so much to be meticulously stored in the structure called "Rai Teche" since the nineties of last century[111]. Its value goes beyond the pure economic value. It is the documentation of decades of Italian history through television and must be protected. Of course, Rai cannot remain anchored to the past and must accept and react to the digital revolution, but it must not forget that its uniqueness comes from its origins.

Case 3 – Company X

Company profile

Company X is an advertising agency recently born in January 2021 from a merger of two previous Italian advertising agencies. This new company works for many TVs, newspapers, websites, and social media accounts, and organizes lots of events per year. In doing so, it can target and plan advertisement in an efficient and personalized manner, for reaching every different kind of target.

Interviewed manager profile

The interviewed person is the General Manager and member of the board of directors of Company X. He reports directly to the CEO of the parent company for organizing people and manage commercial and

[111] https://it.wikipedia.org/wiki/Rai_Teche

special project agreements. His advertising agency collaborates with the publishing companies of the parent company in order to reach the right synergies.

He has a profound knowledge of the dynamics of the television advertising industry, having pursued a brilliant career gaining experience in many important commercial companies such as Publitalia, MTV Pubblicità, Condè Nast, Viacom, and Discovery Media.

Introduction

The main topics discussed during the interview were: the DVB-T2 transition impact on the Video Entertainment industry; the strategic alliances evolution caused by technological developments; the vision of the future and the new technologies that will influence the video environment.

As it will better emerge in the following paragraphs, video contents are more and more relevant for companies both for entertainment and advertisement activities. DVB-T2 will improve television transmissions but will not be the real disruptor of the video industry. Internet is the real gamechanger of this sector, as companies exploiting its technology are entering the video market forcing the industry convergence trend and fostering strategic alliances that were not convenient until few years ago. The only companies that will survive to the digital revolution will be the ones able to reinvent themselves becoming in turn digital companies.

DVB-T2 transition impact

The current transition to the new digital terrestrial television standard will allow to enhance the engagement rate of the audience thanks to the new technology that goes along with this innovation. Television today is becoming the convergence point of the old linear television

and the new digital services, putting together their authority and modernity respectively. This new advanced television will assimilate some characteristics that were only present in the digital world, like the offer of non-linear contents in the publishing side and of customized commercials in the advertising one. The life of the end customers will be dominated by easiness and portability, without any boundary in terms of time, contents, platforms, and devices choice. They will have the possibility to choose whether to watch linear contents, such as news and live events, or scripted contents, such as films or TV series.

Strategic alliances evolution

Regarding strategic alliances and the competitive landscape, it is evident that the Video Entertainment industry is converging. National television companies as Mediaset and Rai are creating mergers and alliances to generate economies of scale and are shifting towards online services to compete or at least coexist with big players. Discovery has launched its subscription non-linear platform Discovery+, that will be also delivered in Italy[112]. It has recently merged with Warner Media in order to create a player of international relevance able to challenge companies like Netflix and Disney[113], exploiting the non-scripted expertise of Discovery (light entertainment, documentary, and sport) and the scripted of Warner. Sky Italia has recently lost its leadership in sport events and film transmission, but, even if it has not defined its current positioning in a clear way yet, it is trying to become an aggregator of video platforms and contents provided also by third parties. The parent company of Company X has taken part in the convergence as it has joined forces with another big media firm in order to empower their publishing and advertising capabilities. Currently the

[112] https://www.ansa.it/sito/notizie/cultura/tv/2020/12/02/nasce-discovery-streaming-da-gennaio-anche-in-italia_fcc93763-87fe-4450-a43e-579bfe69a55b.html
[113] https://forbes.it/2021/05/17/warner-discovery-gigante-media-per-sfidare-netflix-e-disney/

Group is also trying to internally exploit the strength of some of the most relevant holding's brands to further gain authority, reputation, and awareness, extremely rare characteristics to be found in its competitive landscape. Those attributes are fundamental for ensuring the company to have a distinctive positioning in the market, which has completely changed compared to the past. Now, in fact, the set of competitors is broader and is involving players apparently belonging to different entertainment sectors, like Amazon, Google, and Facebook.

Vision of the future and new technologies.

It is a common belief that the video contents will be dominant in the future as their usage is increasing year by year. For this reason, it is considered more and more fundamental for the companies in this industry to create cross-platform and cross-device video contents that are able to target different groups of people in every time of day. All media contents will be available in places and situations in which now they are not provided yet. For instance, in the mobility field, with the introduction and optimization of technologies as infotainment, car sharing, and self-driving cars, there will not be any limit or barrier in making every place and every situation a new potential touchpoint with companies and brands. It will be possible to offer to people every kind of interactive media content they want whenever they want, making them free of seeing a linear television only. The successful company in the future will probably be the one able to deliver a hybrid catalogue of contents both linear and on-demand, accessible wherever it is possible to capture the attention of people.

Conclusions

The case has provided an overview of the Video Entertainment industry, even from an advertising perspective. Advertisement has

deeply changed in the last years, in terms of implementation strategies and distribution channels. It has become closer to the customer, less intrusive, and more engaging. Nowadays every place is potentially exploitable to deliver brand commercials to customers and to get their attention in a more natural way and without interrupting the activities they are carrying out. Today advertisement is omnichannel: every device, every platform become a possible touchpoint with potential buyers. This has been possible thanks to the recent developments of video distribution that has allowed companies to communicate their messages gaining and consolidating more and more authority, reputation, and awareness. The combination of these characteristics with the high quality of video, allowed also by the evolution of the DTT standards, is the key for television broadcasting companies to maintain their presence in the market and be able to exploit in the most successful way the future technologies with the business opportunities that they will bring.

Synthesis of the results

As it is possible to understand from the interviews, there are some common thoughts shared by all the interviewed managers about the state and the evolution of the Video Entertainment industry. All three interviews have been done following a similar structure and being based on the same themes, but each of them has highlighted a peculiar point of view different from the others. Altogether these perspectives have been able to create a common red thread and to depict a comprehensive and clear big picture of the video market.

Firstly, the industry is following a trend of convergence that is generating a competitive landscape never seen before, characterized by blurred boundaries and more short-term alliances. Big players are entering this market coming from other sectors, like Internet technology company and pure media company, and are disrupting the

scene pushing the smaller or national broadcasters to evolve. These companies can react joining forces together with mergers, acquisitions, and alliances, or even establishing agreements with big players. They are also trying to find their unique selling proposition (USP) in terms of content production, reliability, and brand identity. In this way, also the small or local firm, concentrating its efforts on leveraging its proprietary assets and on offering services to precise targets, will defend its market shares against big OTTs. Anyway, the convergence trend will continue to grow in the future, as video contents require more and more quality and resources to be created and distributed, and so smaller broadcasters may need to join forces with each other to improve their video services.

Secondly, all managers agreed with the fact that the old switch-off was completely different compared to the ones that is going to be applied in the next future. In fact, it was put in place region by region and without a complete interruption with the previous technology, so the logistics activities were easier in the past. Today's standard change will be more difficult and will require a more rigorous organization both from the company and the customer sides. Indeed, the audience must be ready to this change, as many television sets need to be substituted, otherwise they may not be able to see DTT programs on their old TV anymore.

Moreover, people were more willing to participate to the change in the past as the benefits that they could get, passing from analogical to digital transmissions, were broader and more tangible respect to the only increase in video quality given by the current transition. Another result is that the Italian case is one of a kind in terms of percentage of DTT usage as transmission technology, so it is not possible to compare its transition process with the other European countries that have already implemented DVB-T2. In fact, their usage of DTT transmissions

is limited as the preferred and most used transmissions are cable and satellite television.

Finally, it is important to highlight which is the actual disruptor of the market according to the players belonging to it. DVB-T2 transition is clearly important for the increase of quality in the DTT transmissions, but it is particularly important to free up frequencies that will be used for the implementation of the 5G technology, without compromising the distribution performances. Having said that, it is impossible to consider the new DTT standard as a gamechanger, but rather as a sort of enabling technology for the real disruptive innovations in the Video Entertainment industry that are the Internet services. As confirmed in the interviews, Internet and its related services are indeed transforming content production, aggregation, distribution, and fruition, generating a totally new kind of television. Some of the players consider this evolution as an opportunity to reinvent their contents and revenue models, while others see the change as a threat to their market shares due to the fact that the audience will have the possibility to bypass the classical linear television.

Conclusion

The Italian Video Entertainment industry is facing a period of profound changes characterized by the market introduction of new technologies and players that are disrupting business models and strategies that have worked so far. Until a decade ago, the market was based on a strong and clear competition between DTT and SAT players, but now things have changed. Nowadays, the industries are converging, and the competition is broader and less defined. Traditional television broadcasters struggle to react to OTT strategic movements facilitated by the exploitation of Internet and its potentiality. Nevertheless, historical players have in turn the opportunity to take advantage of the new technologies to evolve and become a hybrid company able to offer both past successful contents and modern non-linear programmes.

One of the biggest technological changes that traditional broadcasters are facing in these years is the transition to the new digital terrestrial television standard, the so-called DVB-T2. This upgrade has been pushed by the need of having free bandwidth for the introduction of 5G, but it also represents an advancement in the video quality and user experience of televisions. DVB-T2 cannot itself being a disruptive technology for traditional player, as it cannot bring to them any deep change in the structure of revenues, costs, and other part of the business models. Nevertheless, this technology will push customers to purchase smart TVs and set-top-boxes on which it will be possible to access both classical TV channels and OTT services. Indeed, the real disruptive innovation is the usage of Internet for distributing television transmissions. For this reason, the most reactive traditional players are trying to distribute their programmes also on online applications, in order to coexist with digital native companies.

The vision of the firms regarding this transformation is quite confident as, even though OTTs are gaining more and more visibility and market share, they are essential to produce and distribute contents dedicated

to specific geographical areas. In fact, the knowledge and experience of these players in fields like events, fictions, and news, allow them to remain in the market and are very valuable even for OTTs, which cannot produce such contents with the same effectiveness.

Even strategic alliances among video players are changing in this historical period, as the perception of competition is different from the past. Companies that used to be bitter enemies in the past, are now part of an environment characterized by co-opetition. In fact, the players that are now present in the Video Entertainment industry, despite being competitors, establish alliances of all kinds. The most frequent deals are based on co-production, content reproduction rights, and platform distribution. These alliances are concluded in order to maintain and reinforce the brand positioning and to increase the brand awareness, appearing in this way on as many touchpoints as possible.

Video contents will be increasingly created for being versatile, watchable cross-device and both live and on-demand. These features will ensure an increase of user experience, being more interactive and engaging. At the same time, people are and will keep changing their behaviours towards the usage of media devices for accessing to such contents. Users will be more and more used to dedicate their free time to entertainment or information activities, without worrying about the kind of device that are interacting with, the location in which they are in that moment, and the time of the day in which they want to watch media contents.

This is the current description of the Video Entertainment industry, but the situation and the opinions of relevant managers working in this market suggests that the digital revolution has just begun.

Appendixes

4G	Fourth Generation
5G	Fifth Generation
ATSC	Advanced Television Systems Committee
AVOD	Advertising Video On Demand
AWS	Amazon Web Services
CAGR	Compound Annual Growth Rate
CDN	Content Delivery Network
CENELEC	Comité européen de normalisation en électronique et en électrotechnique
CMO	Content Management Organization
CTV	Connected Television
DTMB	Digital Terrestrial Multimedia Broadcasting
DTT	Digital Terrestrial Television
DVB	Digital Video Broadcasting
DVB-C	Digital Video Broadcasting - Cable
DVB-H	Digital Video Broadcasting - Handheld
DVB-I	Digital Video Broadcasting - Internet
DVB-S	Digital Video Broadcasting - Satellite
DVB-S2	Digital Video Broadcasting - Second Generation Satellite
DVB-T	Digital Video Broadcasting - Terrestrial
DVB-T2	Digital Video Broadcasting - Second Generation Terrestrial
DVD	Digital Video/Versatile Disc
DVR	Digital Video Recorder
E&M	Entertainment and Media (industry)
ETSI	European Telecommunications Standards Institute
FTA	Free To Air
GVC	Global Value Chain
HbbTV	Hybrid Broadcast Broadband Television
HbbTV2	Hybrid Broadcast Broadband Television 2nd Generation
HD	High Definition
HDMI	High Definition Multimedia Interface
HDTV	High Definition Television
HEVC	High Efficiency Video Coding
IIoT	Industrial Internet of Things
IoT	Internet of Things
IP	Internet Protocol
ISDB	Integrated Services Digital Broadcasting
ISEE	Indicatore della Situazione Economica Equivalente
ISP	Internet Service Provider
LAN	Local Area Network
LTE	Long Term Evolution
MAM	Media Asset Management

MPEG	Moving Picture Experts Group
MPEG2	Moving Picture Experts Group Second Generation
MPEG4	Moving Picture Experts Group Fourth Generation
OB	Outside Broadcast
OCA	Open Connect Appliance
OS	Operating System
OTT	Over The Top
PC	Personal Computer
PPV	Pay Per View
PSM	Public Service Media
RCD	Remote Control Device
RF	Radio Frequency
SAT	Satellite Television
SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs
SD	Standard Definition
SDTV	Standard Definition Television
SFN	Single Frequency Network
SVOD	Subscription Video On Demand
TV	Television
TVOD	Transaction Video On Demand
UGC	User Generated Content
UHD	Ultra-High Definition
VCR	Video Cassette Recorder
vMVPD	virtual Multichannel Video Programming Distributors
VOD	Video On Demand
WAN	Wide Area Network
Wi-Fi	Wireless Fidelity
WIPO	World Intellectual Property Organization
YUV-PSNR	

Table 18 - Acronyms

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