ISSN (online): 2014-2242 / www.cac.cat

QUADERNS DEL CAC

The digital switchover in Mexico: opportunities and risks for public service communication policies in the transition to digital terrestrial television

César Bárcenas

Postdoctoral Researcher at the Social Sciences Doctoral Programme at Universidad Autónoma Metropolitana-Unidad Xochimilco

cesarbarcenascurtis@gmail.com

ORCID Code: orcid.org/0000-0001-6724-6492

Received on 13 March 2017, accepted on 8 June 2017

Abstract

The Mexican Telecommunications Reform involves changes in public service media policies that include the process of digital switchover, which has an impact on socio-cultural issues and on the broadcasting sector. This paper proposes an intersection between new media and its agencies to explore how the digital switchover in Mexico involves new and different forms of public service policies that reconfigure cultural production and social practices. Finally, it identifies the characteristics of the digital switchover its potential impact on public service media policies in Mexico that include a framework of political, social and cultural agencies.

Palabras Clave

Reforma de Telecomunicaciones, Apagón Analógico, Servicio Público de Radiodifusión, Agencias, México.

Resum

La Reforma de Telecomunicacions a Mèxic implica canvis en les polítiques de servei públic de comunicació que impacten en el sector de la radiodifusió. Aquest treball proposa una intersecció entre els nous mitjans i les seves agències, per tal d'explorar com la transició digital a Mèxic implica noves i diferents formes de servei públic que reconfiguren la producció cultural i les pràctiques socials. Finalment, aquesta proposta pretén identificar les característiques de l'apagada analògica i els possibles impactes en les polítiques de servei públic de mitjans de comunicació a Mèxic, la qual cosa inclou referències sobre les agències polítiques, socials i culturals.

Paraules clau

Reforma de Telecomunicacions, Apagada Analògica, Servei Públic de Radiodifusió, Agències, Mèxic.

1. Background

On 2 July 2004 the decision adopting the technological standard for digital terrestrial television and setting out the policy for the transition to digital terrestrial television in Mexico was published in the Official Gazette of the Federation. It specified "that communication through radio and television is a public interest activity which has the social function of helping to enhance national integration and improve forms of human cohabitation and these services need to be provided in the best technological conditions for the benefit of the population […]".[1]

The decision further specified that the experience of other countries in best use of the radio spectrum, better quality in digital transmissions and the improvements resulting from technological convergence make it appropriate to adopt the digital television broadcast standard and also promote the introduction of new technology. In general terms the aim was to achieve digital terrestrial television coverage in Mexico with the following specifications:[2]

1. Ability to achieve reliable HD transmissions.
2. Efficiency in the transmission of signals that would make it possible to maximise coverage of the population at a low cost.
3. Use of potential economies of scale in global production of receiving devices.
4. Availability of receiving devices with good quality, diversity and price.
5. Potential development of new mobile and portable applications and services.
6. Improvements in conditions for receiving signals originating in Mexico.

The primary intention was to kick off the process to put in place digital terrestrial television services to replace analogue signals, which for a long time in some countries had been administered by the national public broadcasting service. Prior to these changes satellite and cable companies in several parts of the world had begun to deliver their television services through

multichannel options which were consolidated with digital technologies. In the case of Mexico, since 1999 Televisa and Televisión Azteca had initiated a transition towards terrestrial digital signals, a measure that was adopted and outlined in the decision mentioned above.

Furthermore, factors such as technical rollout, interoperability between platforms, the features and size of the domestic market, intellectual property and considerations about mobile TV through mobile phones have influenced political and commercial decisions in the digital switchover. Likewise, another risk factor in terms of policy options for digital switchover adoption and development is pressure from external forces in the shape of transnational corporations. Indeed, digital switchover in several European countries has in most cases been led by pay television operators (García Leiva & Starks 2009).

In the United States the market is built on a complex structure consisting of telecommunications companies, cable and satellite programmers and television companies with ample room for manoeuvre such as the National Broadcasting Company (NBC), the Columbia Broadcasting System (CBS), the American Broadcasting Company (ABC) and the Public Broadcasting System (PBS). This corporate scenario might suggest that government involvement is limited, yet it was the authorities which chose the technological standard in conjunction with the industry and market forces (Segovia 2012: 132).

As Galperin (2004) notes in the case of the United States, the arguments for digital transition are based not only on technological issues but also on inherited communication policies and models. Hence a number of factors influenced this transition, including the need for growth in the electronics sector, the information society revolution and spectrum scarcity, which meant that the US government played an active role in remodelling the media market's structure.

In Latin America the transition in Brazil and Argentina can be taken as a reference point for examining these change processes, especially since as Cruz Brittos and Felkl Prevedello (2012: 174) point out, the introduction of DTT in Brazil was the outcome of a discussion about the possibilities of cultural and educational dissemination in a digital environment. A number of questions were also raised about the hegemonic maintenance of media oligopolies and the limited room for shifting towards an inclusive democratisation process in which public television channels had options and opportunities to get into digital production and transmission.

In Argentina, Krakowiak, Mastrini and Becerra (2012) set out a case study similar to Mexico and Brazil, especially given that the broadcasting sector's commercial structure is comparable and in particular due to business interests such as the Clarion group. The Argentine government had to rework its broadcasting policies to steer the transition around the obstacles presented by media corporations.

In Mexico digital terrestrial television was introduced in an environment lacking plural and democratic public discussion about the topic. As a result and as has historically been the case in Mexico, DTT's premises and possibilities in terms of universal access as an integral part of the construction of a public broadcasting service were not attained. Companies such as Televisa and Televisión Azteca have continued to defy laws and regulations, as was seen in 2010 when a presidential decree brought the date of the digital switchover in Mexico forward to 2015 instead of 2021 as had been planned at first. Consequently in this scenario of digital transition there are still situations and actions in Mexico defined by media oligopolies with the tolerance of the authorities that constitute the historical and structural reproduction of communication policies and power relations over time (Crovi 2012).

2. Initial approaches

Part of public service broadcasting's mission is to play a role in the digital switchover process, for example by upholding universal service as an integral component of public television as a fundamental principle and also extending its contents across the various platforms at an affordable price. Accordingly public service broadcasting faces fresh challenges when addressing a digital environment in which it has to develop interactive content and deliver on-demand and individualised services, which at some point may impact its fundamental obligation to provide a universal service (Iosifidis 2007: 18).

Public service broadcasting is in a digital setting where it has to use new interactive technologies, broadcast across a range of platforms and address changes in new consumer and/or user habits. The digital switchover may also alter the original conditions of public service broadcasting while also increasing the business options of pay television companies. Some of the functions of public service broadcasting, such as maintaining social cohesion, reporting impartially, being a forum for public discussion and contributing to audiovisual creation now in a context of digital convergence,[3] may restrict its ability to put across the general interest.

Digital convergence began when the telecommunications, computer and media industries developed concepts and technology that they could use and exchange for broadcasting content mainly to improve their technological and financial position. In general convergence is the outcome of several factors, but mainly it is a consequence of the political, economic and technological needs represented by re-regulation processes (Prado, 2002).

One of the features of the digital switchover is the progressive migration of television sets from analogue to digital reception. Here "switchover" refers to the ending of analogue transmissions that will be replaced by reception of digital signals through devices and sets that capture transmissions through terrestrial, cable and satellite networks (European Commission 2005: 4). A technological transition also takes place which alters viewers' practices and habits, and the latter in turn generate a series of debates about State policies for the digital switchover.

Hence this paper seeks to identify and analyse the features of the digital switchover process specifically in the Mexican case, and particularly with respect to the possible benefits or risks for public service broadcasting policies. This includes reviewing public interest factors, citizenship and the position of consumers, media and telecommunications companies and their implications for the national economy.

Following Iosifidis (2011: 4) there have been three key stages in the development of television, particularly in Europe:

1. The first stage was in the early 1980s, when some public service broadcasting monopolies were broken up and commercial television services developed that began terrestrial, cable and satellite broadcasts.
2. The second stage was in the early 1990s, when the first platforms for watching television contents by paying a subscription emerged, which also entailed new forms of financing through advertising.
3. And finally, the introduction of digital television in the late 1990s was the last major stage in the digital switchover process.

The purpose of this process was initially to benefit consumers and citizens as well as media companies, other partner companies and the government in general. However, it has also possibly changed the terms "citizen" and "consumer" which in essence also impacts the concept of "public interest"[4] as the market is open to a multi-channel environment where supply is increasing but there is also a consumer perspective that differs from the public service tradition.

Hence commercialisation in general terms does not benefit political and social discussion as it is based on free market mechanisms, which also means minimal incentives for diversity of content and puts minority interests at the mercy of majority ones. Accordingly the foundations of the public interest, based on and represented by the diversity and quality of bold and innovative programming, discussion of national and cultural identity, support for the interests of minorities, the provision of news and current affairs and universal coverage, are faced with the quandary of whether or not they will be fostered by new technology and market competition. Hence in the end this marketisation[5] may in turn also impact the principles of public service broadcasting (Iosifidis 2011: 5).

Here a joint approach has been taken to broadcasting, the spectrum and telecommunications which entails new convergence and diversification processes that in turn alter the conceptions of citizen-consumer and at the same time amend the regulatory conditions for telecommunications services (Livingstone, Lunt and Miller 2007: 614). Accordingly, the objective is to question and identify the alleged benefits of the digital switchover for public service broadcasting policies as well as for the citizen and/or the consumer in terms of choice and ways of distributing content and technology based on mobility and interactivity processes which are an integral part of the foundations of digital convergence.

The benefits for the consumer are not the same as for the citizen[6] and media and telecommunications companies, since the digital switchover involves the development of multi-channel operator strategies which reduce investment costs through digitalisation. In this case it would appear that technology companies, cable television retailers and wholesalers and mobile phone companies gain the greatest advantages from the digital switchover. Hence it is possible to question whether Mexican society benefits from the increase in broadband and the possibilities of participating in the development of a digital television culture since these services may not be available to all.

Consequently not all consumers have purchasing power and there may also be economic and technical restrictions on access to universal service. In fact, in the Mexican case universal service is understood and geared more towards the allocation of services such as health, education, water, electricity and telephones. Accordingly the conditions of universal service have to be assessed with respect to the information and communication services it provides. Hence the status of the universal communication service in Mexico is a factor that may make it possible to identify the conditions of the "public interest" in a digital scenario which is highly competitive in the media market.

In view of the above, and given a marketisation scenario in the media with traces of privatisation and concentration, the freedoms and rights of Mexican citizens in terms of access to and use of new technologies have to be reviewed. Now more than ever conflicts related to universal access, options for use and opportunities for expression of diversity with respect to political plurality are in all likelihood building up. These conflicts are therefore related to the regulation of media services and in particular to the public interest on which access to technological innovations and digital television is based (Iosifidis 2011: 7).

The digital switchover might restrict the possibilities and options of universal access which in turn may increase social inequalities. Indeed, the digital switchover is not socially acceptable until all citizens and/or consumers have migrated to digital television services. Hence putting digital services in place also depends on technological infrastructure conditions and public knowledge about the transition process.

Thus administration of the spectrum and its implications for the circulation of goods and services in international markets have to be looked at along with competitive features, television services, television technologies and in general the legal framework as well as the new business and service models. It also has to be decided whether the digital switchover brings benefits for both viewers and media companies and additionally stimulates the innovation and growth of the public broadcasting service. Public policies for the digital switchover may be called into question if they are seen as coercive by limiting the possibilities of the viewer and/or user.

In general terms the intention is to assess whether a policy strategy such as the digital switchover in the Mexican case

contributes to the public interest and civil involvement in a democratic society, which based on a proposal from the Council of Europe (2008) includes:

1. Access to information (creation of an online environment in which reliable and credible information can be disseminated).
2. Decentralisation and interaction with citizens (contribution to developing a civil society in local, regional, national and international terms which encompasses the needs, interests and concerns of the audiences).
3. Mobilisation (this category is based on services provided to citizens with interests in social movements).
4. Accessibility (ease of delivery and access to the contents of public service broadcasting through various channels and platforms with the intention that companies should learn about the tastes and preferences of the viewer).

The challenges posed by policies such as the digital switchover in Mexico concern universal access to and availability of digital services for citizens. Hence it has to questioned whether in this environment public service broadcasting will be able to remain a content provider, enable access, promote digital citizenship through expanding its activities across a greater number of platforms and introduce online services as a genuine public value for the whole population (Iosifidis 2011: 15).

3. Theoretical reference framework

Digital switchover can be viewed as a process that emerges from digital convergence, which in turn is a phenomenon that can be understood as a multidimensional process. Hence this process firstly impacts cultural practices and habits, in particular due to the introduction of new forms of production and distribution of content through innovative devices and platforms. It is also important to note that these innovations are produced and managed by media, telecommunications and software companies who form alliances to acquire greater competitive advantage in the market with the intention of increasing their economic benefits from the digital environment.

Murdock (2000: 36) argues that digital convergence can be defined at three levels:

1. Convergence of cultural forms.
2. Convergence of communication systems.
3. Convergence of corporate ownership.

Firstly, convergence of cultural forms becomes meaningful when users configure and reconfigure digital applications. Secondly, convergence of communication systems involves a series of transformations in the forms of media production, distribution and consumption. Finally, convergence of corporate ownership entails a series of business, technology and network integration processes and new services and markets which may affect public media services in Mexico.

Here convergence of corporate ownership not only involves the technological transformations conducted in the late 20th century but also deregulation, or rather re-regulation[7] (Mastrini and Mestman, 1996: 82), of public communication systems particularly in Europe and Latin America which embarked on a stage of increasing numbers of channels and development of devices featuring flexible, interactive technology with high reception capacity (Prado 2002). This breaking down of the boundaries between the media, information technology and telecommunications brought with it new business scenarios that impacted media regulation policies and especially in the telecommunications industry (Van Cuilenberg and McQuail 2003: 197).

For example, in the specific case of a public broadcaster such as the BBC in the United Kingdom, the development of corporate media conglomerates forced it to put in place a new organisational structure to address emerging companies in terms of businesses, formats and content. This means that in one way or another public service broadcasting policies may have begun to be influenced by competition with large corporations, although it should be said that there might also be "a special relationship" between corporations and government (Murdock 2005: 116-117).

These processes have involved a series of contradictions for public service media policies which may be geared towards marketisation. Hence corporate convergence in the media is not only the result of technological change but also of the new political and economic scenarios that involved the creation and development of a greater number of businesses and markets (Murdock and Golding 1999: 118).

As the theoretical underpinning for our analysis of the consolidation of convergence of corporate ownership in Mexico, which restricts the principles of public service broadcasting based on the general interest, we will use the five basic dimensions proposed by Murdock and Golding (1999), which can also be used to identify whether there is a process of marketisation in public service media and telecommunications policies in Mexico and what its features are:

1. Privatisation
2. Liberalisation
3. Corporatisation
4. Moving from licensing to auctions
5. Reorienting the regulatory system

Hence a hypothesis for this transition is that communication and telecommunication policies have been geared toward a "marketisation" process which includes liberalisation, privatisation, corporatisation and reorienting the regulatory system to give corporations greater room for manoeuvre (Murdock 2002: 19-20). Media and telecommunications policies today can be divided into:

a. The neoclassical liberal position which is based on four imperatives: free market, free competition, freedom in the circulation of ideas, a market for ideas.

b. The logic of the public interest, protection of inheritance, public realm and national sovereignty.

Finally, the rules of the public service tradition have objectives and values articulated under socio-cultural, political and economic aspects related to the welfare state. They guarantee freedom of expression, cultural diversity, universal access, building the public realm and citizenship, quality information, news with quality information, content with social responsibility and civil society participation in communication systems with socio-cultural, educational and economic purposes (Curran and Seaton 1997; McQuail 1998; Pasquali 2007).

4. Digital Terrestrial Television in Mexico

One way of gaining an understanding of the structure of the television market in Mexico during the analogue era prior to the digital transition is to look at the case of the "Televisa Law",[8] which to some extent reflects how laws and regulations have historically been politically skewed in Mexico to benefit groups of media owners and concessionaires as a strategy to gain mutual benefits between government and businesspeople. Against a background of transformations and modifications, in Mexico in 1997 two bills were presented to the Chamber of Deputies, one concerning the Federal Social Communication Act and the other about reform and addition of several articles to the Federal Radio and Television Act in force since 1960.

In this period it was proposed to establish an "open and transparent" legal framework between the government and the concessionaires by setting up a National Social Communication Commission which would promote independence when awarding concessions and where cultural, experimental and community stations would be facilitated and stimulated with priority for the development of cultural and educational work in indigenous, rural and urban communities around the country through programmes supported by advertising. Likewise, it was intended to transfer the authority for radio and television concessions and licences to an independent body called the Radio and Television Concessions Committee consisting of representatives of the public, private and academic sectors to avoid government interference or control (Cepeda in Solís Leree 2009: 39).

In response to this prospect a campaign was run in some media outlets, such as the newspaper *El Universal*, which argued that these reforms were intended to restrict freedom of speech. This campaign brought negotiations and discussions on the issue to a halt. Later on the Vicente Fox administration sought to revise the Federal Radio and Television Act in place since 1960 by setting up a National Radio and Television Council. However, the businesspeople in the National Chamber of the Radio and Television Industry rejected this possibility and instead set up their own Self-Regulation Council with the endorsement of the Executive (Solís Leree 2009: 43).

Thus in 2002 the National Chamber of the Radio and Television Industry itself presented a new regulation for the Federal Radio and Television Act which was called "the diktat" and did not amend the award of concessions which remained with the Ministry of Communications and Transport. Against this background discussions continued to draw up a new proposal for the Radio and Television Act with a draft version produced in 2005 which sought to take into account issues such as technological convergence which in turn impacts the Federal Telecommunications Act.

Some of the most important issues to be addressed were the establishment of three distinct categories to provide broadcasting services:

a. Concessions, for commercial use for profit.
b. Licences, for social use and meeting the needs of communities and operated on a non-profit basis.
c. State media, for the media operated by government agencies. During this process a counterproposal was presented that essentially represented the intentions of the "Televisa Law" and established bidding criteria for choosing radio and television concessions while also specifying 20 years as the term of the concessions.

In the case of digitalisation it was proposed that concessionaires who introduce technological innovations, such as releasing part of the radio spectrum of their signal, could recover this space without making it available to the State for better use in the interests of the country. Accordingly, it was proposed to amend paragraph 1 in Articles 2 and 28, section II of the Federal Radio and Television Act to provide concessionaires with the option of "providing telecommunications services in addition to broadcasting services through the frequency bands subject to concession".

Broadcasting was required to be legally constituted as a telecommunications service so that the concessionaires increased their possibilities of business development without having to pay the State for the provision of these services. Hence concentration could be increased by mixing interests in broadcasting and telecommunications, as expressed in Article 28 where it was specified that "a concession will be awarded to use, exploit or operate a band of frequencies in national territory as well as to install, operate or exploit public telecommunications networks".

Faced with this potential risk, in 2006 an appeal claiming this reform was unconstitutional was filed with the Supreme Court of Justice of the Nation by a group of senators on the grounds that it favoured a few entrepreneurs to the "detriment of plurality and competition in public airwaves, which is a good of the nation..." (Carranza 2009: 130). What was at stake was the State's ability to plan and manage the social and efficient use of public airwaves to benefit the "public interest", which ultimately resulted in the Supreme Court of Justice of the Nation ruling the "Televisa Law" to be unconstitutional.

Against this backdrop of polarisation, on 2 July 2004 the

Decision that adopts the technological standard of digital terrestrial television and establishes the policy for the transition to digital terrestrial television in Mexico was published in the Official Gazette of the Federation in Mexico, which basically proposed the following:

> "That communication through radio and television is a public interest activity which has the social function of helping to enhance national integration and improve ways of human cohabitation, and these services have to be provided in the best technological conditions for the benefit of the population".[9]

Later on in 2010 Felipe Calderón's administration set 2015 as the date for completion of the digital switchover. During the transition, government programmes coordinated by the Ministry of Communications and Transportation began to be implemented such as the National Programme for Integrated Management of Televisions Discarded due to the Transition to Digital Television, which swapped analogue TV sets for new digital-enabled ones in order to provide access to digital signals, and the Ministry of Social Development (Sedesol) put in place a strategy to subsidise digital TVs for social programme beneficiaries, especially ones living in poverty.

The leading private Mexican television consortiums represented by Televisa and Televisión Azteca said they were unhappy about bringing forward the date of the digital switchover, which had been originally scheduled for 2021, and lobbied the legislature in the hope of changing the decision. However, it was ratified in 2013 with the Constitutional Reform in Telecommunications, whose fifth transitional article specified "The digital terrestrial transition will be completed on 31 December 2015."[10]

Televisa and Televisión Azteca's caginess about the date set for the digital switchover was related to the fact that before the end of the period Televisa still had 314 stations that were in no condition to transition to the digital system and Televisión Azteca had five. The companies had failed to carry out the investment and the adjustments required to make the change in all their stations. Furthermore, some television stations owned by state governments, public universities and civil associations were also not able to transition to the digital system. Here it should be noted that a state policy which would economically and politically support the digitalisation of public and social media was not put in place since most of these media had to make special savings and negotiate separately with their governments to acquire resources, although there were also cases where the governors had no interest in allocating resources for this process and chose to spend resources on propaganda and publicising their image.[11]

In addition, the choice of the digital television standard was intended to promote the convergence of telecommunications from the start-up of digital television in Mexico. Consequently after reviewing the television standards available around the world, the ATSC's A/53 was selected for the digital terrestrial television broadcasts currently used by television station concessionaires and licensees. This standard was apparently chosen due to its high definition, although there was no discussion about this aspect since only a Consultative Committee on Digital Technologies for Broadcasting was set up in 1999, which chose the ATSC as the standard system for digital terrestrial television in Mexico. The committee had six members appointed by the Ministry of Communications and Transportation (SCT) and the National Chamber of the Radio and Television Industry (CIRT).

The choice of this standard which is also used in the United States makes it possible to coordinate frequencies for commercial and technological interests. In fact, the SCT insisted on "taking advantage of potential economies of scale" and "the best conditions for the reception of signals originating in national territory and which due to their location may be picked up abroad" (Chávez 2017: 89). In all likelihood the coordination of frequencies on the border between the United States and Mexico influenced this choice.

5. DTT policies in Mexico

Firstly it is questionable whether the political initiatives for introducing digital terrestrial television in Mexico were aimed at achieving the best use of the radio spectrum, particularly to increase the number of television channels. Secondly, it is also possible to ask whether liberalisation of public service broadcasting furnishes the conditions for a new model of television that reduces the digital divide and brings the population closer to the Information Society. Thirdly, it is also necessary to review the conditions of operators during the introduction of digital terrestrial television in terms of the increase in the number of channels and the possibilities of pluralism and balance in competition in addition to technical improvements in picture and sound clarity as well as the opportunities for mobile and portable reception. Finally, in fourth place the options for digital convergence, particularly with reference to user and/or consumer practices and habits, need to be examined.

The intention is to lay the methodological foundation for identifying the features of the television model developed for DTT in Mexico, especially since the technological variable is not the only one to be transformed.[12] Examination of the political regulations of public media service in Mexico involves looking at the variables in the introduction of the DTT services provided by the operators together with their possibilities and scope in the television market during the "digital switchover" process, in which one of the initial ambitions is that all channels should compete on equal terms.

Hence the idea that digital terrestrial television services have been introduced to benefit and encourage public service media policies is likely to be called into question, especially when it is found that these policies give priority to expanding services for financial purposes instead of human needs which include better communication (Faraone 2011: 202). Some of

the potential hazards of including digital terrestrial television in public service broadcasting policy are that it is designed to open up new markets and create goods and services to generate new communication needs in order to maintain market dynamics.

In general terms the adoption of digital terrestrial television services in Mexico triggered a discussion about possible market scenarios in terms of competitiveness, with supply and demand, quality of reception, establishment of business models, incentives for the broadcasting sector and new services as situations that may become a "promise of universal service and access" (Bustamante, 2008a: 5). Thus the analogue-to-digital migration called the "digital switchover" was initially an opportunity for public service broadcasting policies but at the same time perhaps increased the differences between DTT, cable and satellite service operators.

At first it was assumed that digital terrestrial television options were a way of improving the use of the radio spectrum, developing and stimulating the broadcasting sector, providing more chances for the entry of a greater number of channels and bringing in interactive services. Furthermore, DTT meant lower costs for installing distribution and reception networks unlike the outlay that may be involved in receiving satellite television services.

However, open and free digital terrestrial television services do not necessarily restrict satellite pay television services since the introduction of DTT does not guarantee greater interactivity (Bustamante , 2008b: 40). Here it is useful to review the opportunities afforded by digital terrestrial television to provide universal service for all citizens as well as its efficiency in terms of coverage. Thus in the Mexican case the performance of DTT in terms of competition, penetration, screen share and revenue based on its free service model has to be examined.

The conditions of the additional services that can be provided by DTT in Mexico also need to be looked at, especially in terms of the features of television programming and including the possibilities of a large number of channels and transmission via the Internet. Accordingly the options for interaction through digital sets which can be adapted to various navigation options for services such as video-on-demand and teleshopping should be identified.

DTT's possibilities should be assessed based on its features as public service broadcasting designed, as Prado (2007: 281) notes, "to provide a quality universal service available to all citizens on equal terms and supplied through direct management by a State agency and/or through indirect management by private companies". On this point it is important to identify the supposed global benefits of DTT for citizens and also the possible scenarios for policies implemented for the distribution of frequencies and telecommunications services, so in general it is about reviewing radio spectrum management.

The adoption of a digital system may enable better use of the spectrum as its signals take up less space; an analogue signal includes picture and sound while a digital signal is transmitted through bits. Thus a DTT signal is coded and compressed without worsening the quality of the picture while at the same time making possible an increase in the number of channels and other services. Here the importance of the radio spectrum is fundamental for a public service broadcasting policy, so possibly one of the risks facing DTT geared towards universal access is adopting and serving the interests of the market on the grounds that it can deliver greater flexibility and provide a balance between supply and demand (Richeri, 1994: 223).[13]

Accordingly, radio spectrum management is critical when it comes to devising policies for awarding television service provider licences to media and telecommunications groups. One of the public service policy challenges in this scenario lies in developing and encouraging pluralism, especially in the broadcasting range. However, one of the risks may also be meeting the needs of media corporations close to the government of the day. Hence in some cases the implementation of digital terrestrial television services is not only intended to provide universal access to citizens based on a public service broadcasting policy; resolution of technical issues and improvements in spectrum management to enable an increase in the number of channels may also be driven by the political need to meet demands from media corporations which failed to win any concessions during the analogue period (Martín Pérez, 2010: 49).[14]

Therefore in this context of corporate pressures and interests, it is important to examine DTT's potential technical, political and commercial advantages and their relation to social values and the possibilities of exercising citizenship. In particular, this will call for more in-depth analysis that goes beyond the mere existence of an improvement in the quality of television signals, greater access to multichannel services, free signals and low installation costs. Hence it is important to evaluate the risks and opportunities of emerging digital terrestrial television services in Mexico.[15]

At first it might be thought that access to DTT services is simple and easy for the user, which would also mean that it does not lead to variations in consumption habits. However, this assumption has to be questioned while also pointing out that there may well be some variables in terms of installation costs, such as purchase in some cases of a receiver and/or decoder (a set-top box) to pick up the signal.[16]

Furthermore, DTT's interactivity potential is another point for review and discussion, especially in terms of navigation opportunities, access to programming guides in a multichannel environment, viewing options, choice of language and subtitles, etc. Finally, the choice and operation of interactive public services (electronic government, tele-education) and commercial services (telebanking, TV shopping, pay-per-event, etc.) are other topics to be reviewed in the Mexican case.[17]

Evaluation of DTT's interactivity also needs to identify the options a user has to become a broadcaster through a television receiver when commenting, debating and at some point producing content.[18] Likewise technical limitations may reduce digital terrestrial television's interactivity possibilities, although

it should also be noted that its advantages are primarily due to its low installation cost and the fact it is a free service unlike cable and satellite television.

In the case of DTT services it is also important to look at the availability of applications and services provided by digital television operators to users, including the development of e-commerce models based on services for information management, games and administrative procedures. Moreover, these possibilities open up new business opportunities that are also sources of revenue in addition to existing ones (Martín Pérez 2010: 50).

However, it may also be that these interactivity opportunities face obstacles connected with the migration from analogue to digital including the availability of the signal in the receiving device and users' navigation possibilities.[19] Hence it is germane to identify the features of the digital terrestrial television viewer in Mexico where personalised services are developed and participation is feasible, especially in content creation.[20]

Some of the characteristics of digitally transmitted television signals entail better sound and picture quality. In general technical terms, noise, interference and dual images are eliminated. Likewise this system enables portable and mobile reception in a specific coverage area on different devices and is thus a chance for television services to get closer to viewers and/or users.[21] However, television ratings in Mexico today are very variable before the entrance of digital terrestrial television and online television services (PWC, 2015: 15).[22]

Furthermore, the decision specifying that stations and supplementary devices should continue to conduct analogue transmissions of broadcast television published in the Official Gazette of the Federation on 31 December 2015 also states that the Mexican State has the Constitutional duty to "plan, conduct, coordinate and guide national economic activity and carry out the regulation and promotion of activities that is required by the general interest". As the transition to DTT is part of these obligations, the recommendations of the International Telecommunication Union (ITU), a specialised United Nations agency for Telecommunications and Information Technology, are to be complied with.[23]

Based on this, the decision argues that the transition to DTT brings a series of direct and indirect benefits and opportunities for audiences and the public in general while it is also a chance to implement a policy whereby DTT becomes a regulatory legal instrument for establishing guidelines to be followed by broadcast television concessionaires and licensees as shown below and no later than 31 December 2015:[24]

a. The possibility of obtaining pictures and sound of greater fidelity and/or resolution than those currently allowed by analogue transmissions.
b. The possibility of accessing a greater variety of contents through multiprogramming.
c. Promoting rational and planned use of the radio spectrum to make more efficient use of it.
d. Better use of the radio spectrum, inter alia for the deployment of International Mobile Telecommunications (IMT) systems, which could lead to greater competition in the mobile telephony sector and better prices for end users of such services.

Prado (2003) argues that DTT "has the right features to become the technological basis for achieving a high degree of convergence through the traditional television set." However, as Bustamante and Álvarez (1999: 23) also note, "the process of blurring the boundaries between these traditionally separated sectors is not necessarily driven by technological innovation but rather by state communication policies and the strategies of large global groups." This would suggest that DTT's opportunities lie in the facilities to provide a range of interactive services, yet at the same time these facilities in a corporate environment pose the risk of being managed by telecommunications and media companies based on media policies set out in laws and regulations.

In addition interactivity levels may also be variable, so the "digital divide" may not disappear instantaneously with the introduction of DTT. In fact in the Mexican case the intention is to discuss the following aggregated values of DTT listed by Bustamante (2008a: 10):

1. Increase in and improvement of television programming.
2. Improving picture and sound reception quality.
3. Enhancing public service and updating its role in the digital age.
4. Improving transparency in concessions or licences together with increased competition.
5. Universal access to multichannel television.
6. Widespread access to interactive services.

Some fundamental issues have to be addressed in addition to meeting the official deadlines in each country for the digital switchover. What is the point of digital terrestrial television? What are its key contributions in terms of democracy, pluralism and diversity, authentic enrichment of the range of symbolic creations, redistribution and access? According to García Leiva (2008: 33), the importance of DTT is that "migration to the digital system is the fastest and most economical way to universalise access to the goods and services derived from digitalisation", especially because it is the cheapest and fastest medium to install.

DTT is believed to have the potential to provide a universal service for all citizens by using the same network as analogue television which makes it possible to broaden the deployment of more effective and economic coverage. Therefore DTT apparently affords a series of options to deliver an efficient universal service to the entire population through a converging cut-off platform where a TV set provides access to multimedia possibilities such as video-on-demand, email, shopping and banking online.

Finally, Sierra (2009) argues it is also important to address visions of interactivity as a factor for cultural democracy. Here

the viewer and/or user's supposed power options in terms of cultural production, especially in view of the "promised democratic aurora of communication in the digital age", need to be examined. Given the increase in the number of channels resulting from overcoming the problem of frequency scarcity by digital compression, the predominance of commercial rationality will most likely turn the local communication space into an arena for multimedia conglomerates. Hence national, community or even transnational platforms need to work together for the proper fulfilment of its public service mission.

Notes

1. Official Gazette of the Federation (2004), 2 July, Decision that adopts the technological standard for digital terrestrial television and establishes the policy for the transition to digital terrestrial television. [Accessed: April 2016].
2. Ibid.
3. "A process called the 'convergence of modes' is blurring the lines between media, even between point-to-point communications, such as the post, telephone and telegraph, and mass communications, such as the press, radio, and television. A single physical means – be it wires, cables or airwaves – may carry services that in the past were provided in separate ways. Conversely, a service that was provided in the past by any one medium – be it broadcasting, the press, or telephony – can now be provided in several different physical ways. So the one-to-one relationship that used to exist between a medium and its use is eroding" (Pool 1983: 23).
4. "The normative reasoning justifying the functions of PSB relies on its relation to the 'public interest' (PI), a presupposed 'common good' over and above the interests of particular individuals. The substance of the PI remains highly contested and subject to capture and reinterpretation, inasmuch as the values in question are inseparable from those involved in democracy and the good society." (Dahlgren in Chin 2012: 900). For McQuail (in Feintuck and Varney 2006: 75) the term 'public interest' in the media refers to "the complex of supposed informational, cultural and social benefits to the wider society which go beyond the immediate, particular and individual interests of those who communicate in public communication, whether as senders or receivers".
5. "By marketization we mean all those policy interventions designed to increase the freedom of action of private corporations and to institute corporate goals and organizational procedures as the yardstick against which the performances of all forms of cultural enterprise are judged" (Murdock and Golding 1999: 118).
6. Citizenship is "a form of political identity by which individuals are endowed with social rights and obligations within political communities. Needless to say, the meaning of citizenship changes according to the language-game and cultural contexts in which it is deployed. For example, the classical Liberal conception of citizenship focuses on the rights and duties of individuals and includes such issues as residency, freedom of movement, freedom of speech and voting rights. The social democratic usage of the term adds to this list those collective rights associated with the welfare state, including the rights to education, relief from poverty, medical services and so forth. Today one also hears of the cultural rights of identity groups that are said to flow from the claims of citizenship. Thus it is important to recognize that the scope of citizenship rights and the habits and routines that are attendant on it are progressively formed over time and are not universal givens. Indeed, the extension of the scope of citizenship to cover increasing numbers of persons and the enlargement of the rights with which it is concerned have commonly been the focus of social and political struggles". (Barker 2004: 23).
7. "Use of the concept of deregulation is an attempt to dress up the new direction in intervention faced by a large number of national governments. We argue that the use of the concept of deregulation constitutes a fallacy built on presenting States as retreating, whereas in fact these States are in the front line, generating a number of legal provisions, in many cases greater than previous ones, designed to set the rules of game in accordance with the interests of the oligopolistic groups. Thus while there is an alleged opening towards a hypothetical free market, they are actually laying the groundwork for regulating a new ownership structure increasingly dominated by concentrated capital" (Mastrini and Mestman 1996: 82).
8. "In short, the so-called *Televisa Law* was a regulatory measure that [...] opened the door for larger broadcasting consortia to the emerging convergence spaces by enabling their operation as public telecommunications networks." (Alva de la Selva 2015: 130).
9. [9]Decision that adopts the technological standard of digital terrestrial television and establishes the policy for the transition to digital terrestrial television, Official Gazette of the Federation, 2 July 2004 http://dof.gob.mx/nota_detalle.php?codigo=678631&fecha=02/07 [Accessed: 3 April 2016].
10. Decree amending and adding various provisions of articles 6, 7, 27, 28, 73, 78, 94 and 105 of the Political Constitution of the United Mexican States in the area of Telecommunications. Official Gazette of the Federation, 11 June 2013. [Accessed: 5 June 2017].
11. A few weeks after the deadline there were several attempts to delay the digital switchover. Emilio Azcárraga, owner of Televisa, appeared in the media sympathising with families which would not be able to receive the open television signal because they did not have a digital television or a decoder. Both lawmakers and Emilio Azcárraga and his spokespersons also cited the public media which were not in a position to make the transition to the digital terrestrial system as a pretext to get the fateful date put back, or at least not to be penalised for the stations that were not able to make the

technological switch.

12. "[…] DTT emphasises trends that already existed by opening up a range of possibilities in the traditional broadcasting system that until now have been prohibited in the analogue world" (Caballero, 2007: 171).
13. "[…] the radio spectrum is considered a national resource which is public property, a limited or finite but reusable resource, which does not wear out due to use and with significant economic and political strategic value" (Fernández Paniagua in Martín Pérez 2010: 48).
14. "[…] everybody is aware that political interests have been a factor when awarding digital licences, which in some cases could affect the proper development of DTT as stations fall into the hands of companies that are inexperienced or have no interest in investing in technology and content" (Martín Pérez 2010: 50).
15. "[…] not subject in principle to the State and with basically economic operational approaches, it is one of the most visible effects of the digital habitat of television" and with respect to the user is no more than "an advanced kind of zapping that gives them the illusion of infinite freedom" (Arnanz in Martín Pérez 2010: 52).
16. "Digital television does not simply mean the mere digitalisation of television, but the final assumption of intelligence by the television set." [...] "television must adapt to the public's leisure needs and adjust to the multimedia world" [...] "successfully joining the process of media convergence and opening the door to interactivity" (Urretavizcaya in Martín Pérez 2010: 67).
17. "An interactive application consists of a program that runs on the receiver and allows the user to interact with the TV. The graphic capacity of the interactive receivers and the possibility of using a return channel (a simple telephone modem connected to the conventional line or a port that connects to an external modem) for the exchange of information with the broadcaster open up a range of practical applications with new content" (Martín Pérez 2010: 68).
18. "[…] all television is interactive to some extent" [...] "and if interactivity is viewed as the viewer's relative capacity for choice, we should evaluate the impact of domestic video, the increase in the number of channels and zapping in all its forms as factors that have significantly changed the viewer's uses and habits" (Bustamante and Álvarez 1999: 22-23).
19. […] "the process of migration to digital television is still at too early a stage to get the maximum return on interactivity" (Arnanz in Martín Pérez 2010: 72).
20. Here it is advisable to question Henry Jenkins's position whereby audience activity is celebrated as they have access to digital tools to "annotate, appropriate and recirculate content", because at some point "they reproduce corporate ideology by presenting the public interest as synonymous with business interests and privileging consumer activity over citizen involvement" (Murdock 2011: 31).
21. "DTT channels offer PSBs a means of testing/trialing new content on a platform where ratings are less important and greater risk can be taken" (Debrett 2010: 191).
22. Entertainment and Media Outlook Mexico 2015-2019.
23. "Decision by which the plenary of the Federal Institute of Telecommunications establishes the stations and complementary equipment that will continue to carry out analogue transmissions of television broadcast in accordance with the normative cases contained in the seventh and eighth paragraphs of the nineteenth transitional article of the Decree issuing the Federal Law of Telecommunications and Broadcasting and the Law of the Public System of Broadcasting of the Mexican State; and reforming, adding and repealing various provisions in the field of telecommunications and broadcasting", *Official Gazette of the Federation*, 31 December 2015. Available here. [Accessed: 11 October 2016.
24. Ibid.

References

Alva de la Selva, A. R. *Telecomunicaciones y TIC en México*. Madrid: FCPyS-UNAM y Comunicación Social Ediciones y Publicaciones, 2015.

Barker, C. *The Sage Dictionary of Cultural Studies*. Gran Bretaña: Sage Publications, 2004.

Bustamante, E.; Álvarez, J. M. *Presente y futuro de la televisión digital*. Madrid: Edipo, 1999.

Bustamante, E. *La televisión digital terrestre en España. Por un sistema televisivo de futuro acorde con una democracia de calidad*. Madrid: Fundación Alternativas, 2008a.

Bustamante, E. *Alternativas en los medios de comunicación digitales: televisión, radio, prensa, revistas culturales y calidad de la democracia*. Barcelona: Gedisa, 2008b.

Caballero, L. *Tdt*. Valencia: Tirant lo Blanch, 2007.

Carranza, E. V. "Naturaleza y bases de la acción de inconstitucionalidad" a Esteinou, J.; Alva de la Selva, A. R. (Coord.) *La "Ley Televisa" y la lucha por el poder en México* (127-144). México: UAM-Xochimilco, 2009.

Chávez, I. *Análisis del Diseño de la Política Pública de la Televisión Digital Terrestre en México*. México: UAM, 2017.

European commission. *Communication on accelerating the transition from analogue to digital broadcasting*. Bruselas: Commission of the European Communities, 2005.

Council of Europe. *Strategies of Public Service Media as Regards Promoting a Wider Democratic Participation of Individuals – Compilation of Good Practices, 2008*.

Cruz Brittos, V.; Felkl, C. "Brasil entre la posibilidad del pluralismo y el mantenimiento del oligopolio" a Albornoz, L. A.; García Leiva, M. T. (Eds.) *La Televisión Digital Terrestre. Experiencias nacionales y diversidad en Europa, América y Asia* (173-194). Buenos Aires: La Crujía Ediciones, 2012.

Crovi, D. "México: estrategias, acciones y omisiones" a Albornoz, L. A.; García Leiva, M. T. (Eds.) *La Televisión Digital Terrestre. Experiencias nacionales y diversidad en Europa, América y Asia* (195-222). Buenos Aires: La Crujía Ediciones, 2012.

Curran, J.; Seaton, J. *Power without responsability*. Londres: Routledge, 1997.

Debrett, M. *Reinventing Public Service Television for the Digital Future*. Bristol: Intellect, 2010.

Diario Oficial de la Federación. Acuerdo por el que se adopta el estándar tecnológico de televisión digital terrestre y se establece la política para la transición a la televisión digital terrestre. 2 de julio de 2004. <http://dof.gob.mx/nota_detalle.php?codigo=678631&fecha=02/07> [Accessed: April 2016].

Diario Oficial de la Federación. Decreto por el que se reforman y adicionan diversas disposiciones de los artículos 6.º, 7.º, 27.º, 28.º, 73.º, 78.º, 94.º y 105.º de la Constitución Política de los Estados Unidos Mexicanos en materia de Telecomunicaciones. 11 de junio de 2013. <http://www.dof.gob.mx/nota_detalle.php?codigo=5301941&fecha=11/06/2013>. [Accessed: 5 June 2017].

Diario Oficial de la Federación. Acuerdo mediante el cual el pleno del Instituto Federal de Telecomunicaciones establece las estaciones y equipos complementarios que deberán continuar realizando transmisiones analógicas de televisión radiodifundida de acuerdo con los supuestos normativos contenidos en los párrafos séptimo y octavo del artículo décimo noveno transitorio del Decreto por el que se expiden la Ley Federal de Telecomunicaciones y Radiodifusión y la Ley del Sistema Público de Radiodifusión del Estado Mexicano; y se reforman, adicionan y derogan diversas disposiciones en materia de telecomunicaciones y radiodifusión. 31 de diciembre de 2015. <www.tdt.mx/pdf/DOF-Equipos_complementarios.pdf> [Accessed: 11 October 2016].

Chin, Y. Ch. "Public Service Broadcasting, public interest and individual Rights in China", *Media, Culture & Society*. Vol. 34 (2012), no. 7, 898-912.

Galperin, H. *New Television, Old Politics: The Transition to Digital TV in the United States and Britain*. New York: Cambridge University Press, 2004.

García Leiva, M. T. *Políticas Públicas y Televisión Digital. El caso de la TDT en España y el Reino Unido*. Madrid: Consejo Superior de Investigaciones Científicas, 2008.

García Leiva, M.T.; Starks, M. "Digital switchover across the globe: the emergente of complex regional patterns", *Media, Culture & Society*. Vol. 31 (2009), no. 5, 787-806.

Faraone, R. "Economy, Ideology and Advertising" in Wasko, J.; Murdock, G.; Sousa, H. (Eds.) *The Handbook of Political Economy of Communications* (187-205). Malasia: Blackwell Publishing, 2011.

Feintuck, M.; Varney, M. *Media Regulation, Public Interest and the Law*. Edinburgo: Edinburgh University Press, 2006.

Iosifidis, P. "Digital TV, Digital Switchover and Public Service Broadcasting in Europe", *Javnost-The Public.* Vol. 14 (2007), no. 1, 5-20.

Iosifidis, P. "Growing pains? The transition to digital television in Europe", *European Journal of Communication*. Vol. 26 (2011), no. 1, 3-17.

Krakowiak, F.; Mastrini, G.; Becerra, M. "Argentina: razones geopolíticas y perspectivas económicas" in Albornoz L. A.; García Leiva, M. T. (Eds.) *La Televisión Digital Terrestre. Experiencias nacionales y diversidad en Europa, América y Asia* (195-222). Buenos Aires: La Crujía Ediciones, 2012.

Livingstone, S., Lunt, P.; Miller, L. "Citizens and consumer: discursive debates Turing and after the Communications Act 2003", *Media, Culture & Society*. Vol. 29 (2007), no. 4, 613-638.

Martín Pérez, M. A. *Un modelo de desarrollo de TDT en España sin experiencia analógica: Veo Televisión*. Madrid: Universidad Complutense de Madrid, 2010.

Mastrini, G.; Mestman, M. "¿Desregulación o re-regulación?: De la derrota de las políticas a las políticas de la derrota" *CIC: Cuadernos de información y comunicación*. 1996, no. 2, 81-88.

McQuail, D. *La Acción de los Medios. Los Medios de Comunicación y el Interés Público.* Buenos Aires: Amorrortu, 1998.

Murdock, G.; Golding P. "Common Markets: Corporate Ambitions and Communication Trends in the UK and Europe", *The Journal*

of Media Economics. Vol. 12 (1999), no. 2, 117-132.
Murdock, G. "Back to work. Cultural labor in altered times" in Beck, A. (Ed.). *Cultural Work. Understanding* (15-36). Londres: Routledge, 2002.

Murdock, G. "Digital futures: European Television in the Age of Convergence" in Wieten, J.; Murdock, G.; Dahlgren, P. (Eds.), *Television across Europe* (35-57). Londres: Sage, 2000.

Murdock, G. "Large corporations and the control of the Communications industries", in Gurevitch, M.; Bennett, T.; Curran, J.; Woollacott, J. (Eds.), *Culture, society and the media* (114-147). Londres: Routledge, 2005.

Murdock, G. "Political Economies as Moral Economies. Commodities, Gifts and Public Goods" in Wasko, J.; Murdock, G.; Sousa, H. (Eds.) *The Handbook of Political Economy of Communications* (13-40). Malasia: Blackwell Publishing, 2011.

Pool, I. S. *Technologies of Freedom*. Estados Unidos: Harvard University Press, 1983.

Paquali, A. *Comprender la comunicación*. Barcelona: Gedisa, 2007.

Prado, E. "Televisión en la era digital: homogeneización versus diversidad". *Telos*. 2002, no. 51.

Prado, E. "introducción. Virtudes, funciones y futuro de la TDT en la Sociedad de la Información". *Telos*. 2003, no. 57, 38-40.

Prado, E. "La televisión local: entre el limbo regulatorio y la esperanza digital" in *Alternativas a la Televisión Actual* en Pérez Tornero, J. M.; Llaquet, P.; A. Moyano, M. A.; Serrano, M. G.; de la Cueva, C.; de Diego, I.; García Castillejo, A.; Prado, E. (249-299). Godisea, 2007.

PWC. *Entertainment and Media Outlook Mexico 2015-2019.* México: PricewaterhouseCoopers, 2015.

Richeri, G. *La transición de la televisión: análisis del audiovisual como empresa de comunicación*. Barcelona: Bosch, 1994.

Segovia, A. I. "Estados Unidos: una transición enmañarada en un complejo mercado televisivo" in Albornoz, L. A.; García Leiva, M. T. (Eds.) *La Televisión Digital Terrestre. Experiencias nacionales y diversidad en Europa, América y Asia* (127-150). Buenos Aires: La Crujía Ediciones, 2012.

Sierra, F. (2009). "Televisión digital terrestre y cultura audiovisual en España. Nuevos retos del servicio público", *Revista Mexicana de Ciencias Políticas y Sociales*. Vol. 51 (2009), no.206, 95-103.
Solís Leree, B. "De cómo llegamos hasta aquí… Los antecedentes de la Ley Televisa" in Esteinou, J.; Alva de la Selva A. R. (Coords.) *La "Ley Televisa" y la lucha por el poder en México* (27-53). México: UAM-Xochimilco, 2009.

Van Cuilenburg, J. & McQuail, D. "Media Policy Paradigm Shifts. Towards a New Communication Policy Paradigm", *European Journal of Communication*. Vol. 18 (2003), no. 2, 181-207.