Digital terrestrial TV switchover process in Portugal: viewers between a rock and a hard place

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INTRODUCTION

To understand what are the most significant factors for the Portuguese population to either adopt or reject digital TV, was the main goal of the project "ADOPT-DTV: Barriers to digital television adoption in the context of the digital switchover (PTDC/CCI-COM/102576/2008)", conducted by Universidade Lusófona de Humanidades e Tecnologias. This project focused on the people who receive free-to-air analogue terrestrial TV exclusively, particularly those who have no intention of or are doubtful about adopting digital TV.

The ADOPT-DTV research project began in April 2010, and lasted for 18 months, being formally concluded in October 2011. The project combined quantitative and qualitative methods, in accordance with the good practices of projects of a similar scope – more details about methodology and theoretical framework on Quico & Damásio (2010):

1) Ethnographic study, with a sample of 30 Portuguese families from the 3 pilot-areas for the switch-off (Alenquer, Cacém, Nazaré), with the objective of exploring in their respective natural context their attitudes and level of knowledge regarding digital TV;

2) Interviews with stakeholders, aiming to understand all the different perspectives of the main interested parties in this specific field;

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3) Quantitative survey, administered to a representative sample of the Portuguese population of approximately 1.200 respondents, with the main goal of determining the main adoption and rejection factors associated with digital TV;

4) Usability study, with a sample of 20 users, aiming to conduct a comparative analysis of digital terrestrial TV set-top boxes in the Portuguese market, considering their ease of use and general satisfaction.

The research team, thus, aimed to contribute to a better understanding of the challenges faced in Portugal during the process of transition from analogue terrestrial to digital terrestrial TV – also known as switchover – and in practical terms, to contribute to the development of a more inclusive digital TV, both in Portugal and in other countries in a similar situation. In Portugal, the first phase of the analogue terrestrial TV switch-off is planned to occur on January 12, 2012 and the third and last phase is planned for April 26th, 2012.

It should be noted that. in late 2011, digital terrestrial television (DTT) viewers have exactly the same number of channels offered by analogue terrestrial broadcast – and no plans are known to increase the number of free-to-air channels available to the Portuguese population before (or after) the switch-off via the DTT network. A 5th free-to-air channel can be launched in the future, but its concession has been adjourned *sine die*, due to the exclusion of the only two contestants in a public tender promoted by the national media regulator Entidade Reguladora para a Comunicação Social – ERC (2009). The pay-TV DTT operation is also adjourned *sine die,* after the winner of the public tender for this operation, Portugal Telecom (PT), decided to give up on this license.

Also significantly, the national communication campaign about the analogue TV switch-off only began in mid-March 2011, merely 10 months before the first phase for switching off the analogue terrestrial signal, and just 13 months before the planned dead-line for the switchover process.

Also in March 2011, the telecommunications regulator (Anacom) and the company responsible for the DTT free-to-air operation (PT) announced that the maximum value for reimbursement for the DTT set-top by was up to 50% of the total cost of the equipment, with a maximum of 22 euros per device and per household. The groups who could benefit of this subsidy were people with special needs of at least

60% of disability degree, beneficiaries of "rendimento social de inserção" (social insertion subsidy) and retired people earning less than 500 euros per month. Yet, until recently the average price of a DTT set-top box was about 40 to 50 euros - and it might be necessary for a technician to go to the household to redirect the antenna, which is also an extra cost. More expenses are awaited in the case of 13% of the Portuguese population who live in areas not covered by the DTT network, who will have to install a satellite dish if they want to continue to have free-to-air TV, receiving nonetheless the same 22 euros of subsidy for the equipment and installation of the satellite dish and set-top box.

Therefore, with almost no tangible benefits for changing from analogue terrestrial TV to digital terrestrial TV, having to support in most cases all the costs and trouble to continue to have access to free-to-air TV and, also, being warned with short notice about the mandatory TV switchover, it seems like Portuguese TV viewers are between a rock and a hard place. This way, the question is to choose from the lesser of two evils: to pay for a decoder device or TV subscription to continue to have something that is now for free or, in alternative, to be left without television signal after the switch-off.

Next, we will present a selection of the main results of the ADOPT-DTV research project, focusing on the rates and profiles of pay-TV subscribers versus free-to-air TV viewers, as well as their awareness and knowledge about the digital TV switchover process in Portugal, and intention to adopt digital TV on the case of free-to-air TV viewers. The full final report and the partial reports of each empirical study are available at the project public web site: http://adoptdtv.ulusofona.pt/

1. Ownership of free-to-air TV and pay-TV: rates and profiles

The population in mainland Portugal which receives exclusively free-to-air TV should come close to 38%, as in September 2011. In the latest survey on digital TV conducted by Universidade Lusófona in September 2011[7], **61.7% claimed to have pay-**

[7] Survey conducted within the scope of the research project entitled "iDTV-Health: Inclusive services to promote health and wellness via digital interactive television" (UTA-Est/MAI/0012/2009); the fieldwork took place from September 16th to 27th 2011, with a representative sample of the Portuguese population over 18 years of age, constituted by 1.207 respondents, 1.202 of which claimed to have TV at home.

TV at home (n=742), which implies that **38.3% of those surveyed do not have pay-TV** (n=460). These data coincide with the figures of the Telecommunications Barometer by Marktest, which estimated in 61.9% the penetration of pay-TV in mainland Portugal, in June 2011 (Anacom, 2011). On the other hand, the figures put forward by Anacom vary, depending on the denominator being considered: 49.5 subscribers per 100 homes, should one be considering the total amount of classic family homes (which includes homes of usual dwelling and seasonal use or secondary homes), while when considering the total number of classical families, Anacom (2011) estimated that 72.2% are subscribers of pay-TV in the second trimester of 2011.

As regarded in the results obtained in the first quantitative survey conducted within the scope of the ADOPT-DTV project, **54.7% had a pay-TV service at home** (n=655), which means that **45.3% of the total participants received only free-to-air television** (n=543). The fieldwork of this survey took place in November 2010, with a sample of 1,205 participants, 99.4% of which had at least one TV set at home (n=1198).

Table 1: Possession of pay-TV (ADOPT-DTV and IDTV Health - ULHT, 2011)

	November 2010 (n=1198) %	**January 2011** (n=1198) %	**September 2011** (n=1202) %
Yes	54.7	59.5	61.7
No	45.3	40.5	38.3

So as to better understand **the profiles of viewers with subscription TV and without subscription TV**, we now present the descriptive and inferential statistical analysis of some variables, based on the main survey of ADOPT-DTV, the fieldwork of which took place in November 2010. The analyses conducted concern a confidence level of 95% ($\alpha = 0.05$) and the Chi-Square test was used since it proved to be the stronger and more adequate. When the premises of the Chi-Square were not verified, we resorted to the use of Fisher's exact test.

Regarding the socio-economic profile of subscribers of pay-TV, the data indicate that the variables gender and subscription TV are not independent, there being statistically significant differences between the male and the female gender as

regards possession of pay-TV ($\chi 2$ (1) =0.185, p = 0.667, n = 1,198; α = 0.05). Data indicate that there is **a higher percentage of participants of the female gender that have pay-TV at home**, when compared to the participants of the male gender. We also detect a statistically significant difference between age and pay-TV, indicating that older participants are less likely to have pay-TV in their own homes ($\chi 2$ (5) = 73.879, p <0.001, n = 1,198; α = 0.05). We also observed a **reasonable and significant negative correlation between age and possession of subscription TV** (P =- 0.25, p <0.001).

Table 2: pay-TV and free-to-air TV vs. age (ADOPT-DTV, November 2010)			
	Total sample %	**Pay-TV %**	**Free-to-air TV %**
18-24 years old	12	14.2	7.2
25-34 years old	21	24	17.5
35-44 years old	19.1	20.8	17
45-54 years old	18.2	19.2	16.6
55-64 years old	13.3	11.3	15.8
> 65 years old	16.4	8.2	23

Regarding **the status of participants with pay-TV, a positive correlation was found** (V = 0.244; p <0.001) **and also statistically significant differences**. These data indicate that participants with a higher status level (A, B) have a higher probability of having pay-TV at home than individuals in less privileged groups (D, E), which are considerably below average in rates of subscription to pay-TV ($\chi 2(4)$ = 71.093; p <0.001; n = 1,198; α = 0.05).

Table 3: pay-TV and free-to-air TV vs. Status (ADOPT-DTV, November 2010)			
	Total sample %	**Pay-TV %**	**Free-to-air TV %**
A	2.7	4	0.7
B	13.9	19	8.5
C	19.6	24	14.9
D	48.8	40	59.1
E	15	13	16.8

Regarding people with special needs, namely individuals with visual, hearing and motor disabilities, once again we find a **positive correlation between disability and possession of free-to-air TV**. Results also indicate that there are significant differences between these variables, revealing that participants with hearing, visual or motor disabilities are more likely to have free-to-air TV in their homes (visual disability $\chi 2$ (4) = 21.422, p <0.001, n = 1,198; α = 0.05; V = 0.134, p <0.001; hearing disability $\chi 2$ (4) = 42.303, p <0.001, n = 1,198; α = 0.05; V = 0.188, p <0.001; motor disability $\chi 2$ (4) = 66.131; p <0.001, n = 1,198; V = 0.235, p <0.001; α = 0.05).

Table 4: Pay-TV and free-to-air TV vs. visual disability (ADOPT-DTV, 2011)

Visual impairment	Total sample %	Pay-TV %	Free-to-air TV %
None	62.3	68.8	56
Slight	13.9	12.7	15.5
Some	18	14.8	22.1
Severe	5.1	4.1	6.4
I cannot see	0.1	0.2	0

Table 5: Pay-TV and free-to-air TV vs. hearing disability (ADOPT-DTV, 2011)

Hearing impairment	Total sample %	Pay-TV %	Free-to-air TV %
None	80	86.7	71.8
Slight	9.4	6.4	13
Some	8.5	5.8	11.8
Severe	1.9	0.9	3.1
I cannot hear	0.2	0.3	0.2

Table 6: Pay-TV and free-to-air TV vs. motor disability (ADOPT-DTV, 2011)

Motor impairment	Total sample %	Pay-TV %	Free-to-air TV %
None	77.1	85.5	67
Slight	10	7.6	12.9
Some	8.8	5.6	12.7
Severe	3.7	1.1	6.8
I cannot walk	0.3	0.2	0.6

In short, based on the results of the first quantitative survey administered to a representative sample of the Portuguese population within the scope of the ADOPT-DTV project, we can state that **individuals with pay-TV in Portugal are more likely to be young and middle-aged adults**, **more likely to have higher levels of education and to belong to higher status groups** (A / B / C)[8] and **less likely to have some type of disability** (visual, hearing or motor). On the other hand, **individuals without pay-TV in Portugal are more likely to be elderly people, over 55 years old, more likely to possess lower levels of education and low status (D / E) and, finally, to possess some level of disability** (hearing, visual or motor).

More details about these profiles can be found on Quico, Damásio, Henriques & Veríssimo, Iolanda (2011a) and, also, on the final report of the ADOPT-DTV project (Quico, Damásio, Henriques & Veríssimo, Iolanda; 2011b).

2. Type of access to free-to-air TV

The reception of analogue terrestrial TV is largely dominant with Portuguese who do not have pay-TV, meaning that access to DTT is not expressive. It is estimated that 35% of the population of mainland Portugal may be affected by the analogue terrestrial TV switch-off.

In the latest survey on digital TV conducted in September 2011, out of the 460 respondents who answered negatively to the question "do you have pay-TV" (total of respondents with TV =1,202), **92.4% claimed to receive analogue TV through the traditional antenna** (n=425) and **3% indicated they have DTT** (n=14), while 2.6% said they received TV free of charge through satellite dish, while 2.6% do not know or did not reply to this question.

It should be noted that in the previous survey, conducted in November 2010, from those polled who indicated they did not subscribe to a pay-TV service, 96.7% claimed to have analogue terrestrial TV, whereas 1.8% said they received TV signal through satellite dish and 1.1% said they received DTT, with 0.7% choosing not to reply and 0.2% of those surveyed identifying another kind of access. Therefore, there was a slight increase in the percentage of those who said they had DTT, which went from

[8] Status is determined by the GfK market research company, based on the education level and occupation of the respondent.

1.1% to 3% of those polled who did not have pay-TV.

Table 7: Type of access to free-to-air TV in the family (ADOPT-DTV and IDTV Health, 2011)		
	November 2010 (n=543) %	September 2011 (n=460) %
Traditional antenna (analogue, with subscription TV)	96.7	92.4
Digital Terrestrial Television (DTT)	1.1	3
Satellite/ satellite dish (free)	1.8	2.6
Other type of access	0.2	0.2
Don't know/ don't reply	0.7	2.6

NB: there was the possibility of selecting more than one option

In the ethnographic study, conducted among 30 families of the 3 pilot zones of the analogue terrestrial TV switch-off, 5 of these interviewed families did not subscribe to television services (families 5, 8, 9, 17 and 23). Regarding the usability case study, 4 out of the 20 participants who collaborated in the assessment of DTT equipment were not subscribers of a pay-TV service.

3. Knowledge on digital TV and DTT

It is estimated that the majority of the Portuguese people has already heard of digital TV and DTT, but for the most part they find it hard to define or to characterize these technologies. Regarding familiarity with the terms and key expressions associated with digital TV, **78.2% of the participants in the survey conducted in September 2011 know or have already heard of digital TV**. In a second survey, within the scope of the ADOPT-DTV project, conducted in January 2011 and published in March, 75.5% answered affirmatively to the same question, which shows a slight increase in this indicator.

As regards to the expression "Digital Terrestrial Television", in January 2011, 46.1% of respondents said they had already heard of this distribution platform of

digital TV signal, whereas in the September 2011 survey, **72% of the respondents replied they had already heard of DTT**, which represents a considerable increase in an 8-month time difference. We should also mention that **14.3% of respondents replied they knew the term "digital switchover"** in this latter study, whereas in January 2011, 11% replied they had already heard the expression.

Table 8: Knowledge of vocabulary associated with digital TV (ADOPT-DTV and IDTV Health, 2011)

	January 2011 (n=1198) %	September 2011 (n=1202) %
	Yes, I have already heard of...	Yes, I have already heard of...
Digital TV	75.5	78.2
High Definition TV (HD)	69.4	69.8
Digital Switchover	11	14.3
Digital Terrestrial Television (DTT)	46.1	72
BOX/Decoding Box (STB)	61.8	70.6

The ethnographic study is enlightening, as it regards the difference between having already heard of digital TV and knowing how to define or characterize digital TV. Thus, we observe a **general lack of knowledge of the features of digital TV:** out of the 30 families which participated in the study, at least one of the elements in 26 families claimed he/she had already heard of the subject, but only 3 participants from the total of 63 interviewed in the study were able to explain what this type of transmission of television signal and data is, and what are its features.

In these families where at least one of the members claimed to have heard about digital television, this information came from the national or local media, from relatives or friends, from specialized technicians, or from the television providers, via the telephone. *«I heard it on television, it seems that it's going to be from January or something, I'm not really sure...»*, says Sofia, 37, from Alenquer. *«I've heard about it, by the television man, our technician. He had already said that any day... And he said that Alenquer was one of the areas of the pilot experiment»*, states Carla, 65, after

explaining that, when she bought her latest TV set, she was told that it was already equipped with «*I don't know what for the digital age*».

Although people are apparently familiar with the terms, the ideas on digital television seem to be vague in 21 of the 26 families who claim to have heard about the subject; some individuals even relate digital television with aspects that are still far from reality. «*What I understood as digital TV is that it's those television sets for which we don't need to have for instance a remote to turn on and off*», suggests Adelaide, 37. «*Now there are no more remote controls, there is nothing. It is all done on the screen, which is very thin*», explains Luísa, banking on the same idea, that digital is synonymous with "touch". Actually, although over 40 individuals in 26 families have claimed they knew the term "digital television", very few knew how to define it, and the more recurrent expressions were: «*I have heard of digital television, but to be honest I do not have a clear idea of what it is…*» (Sónia, 35); «*I have indeed heard about it, but I am not quite in the know…*» (Isabel, 73); «*I have heard of it. But deep down I really don't know what's going on*» (Adelaide, 37); «*I have heard of it, but I didn't pay any attention*» (Américo, 77).

On the other hand, hardly any precise definitions of digital television were heard. We highlight only three more concrete replies*: «The idea that I have is that it is a different format, which can transmit much more information, which enables a series of functionalities. In the short run, better image and sound quality. And then a series of functionalities that common TV does not allow*», explains Carlos, 37; «*It is different, it's going to be a higher quality television… That's what they say… Higher broadcast quality*», defined Jorge, 64; «*There's a lot of talk about digital television. That it's a different television broadcasting system from the one currently in use. I don't know about technical details. The idea that I have is that it's a new thing which is going to be implemented in Portugal, but not only regarding television. In other communication systems too»,* considered Manuel, 71 years old.

4. Advantages and disadvantages associated with digital TV

The limited perception of the advantages and disadvantages associated to digital TV is the most commonly observed situation; cost is identified as the main disadvantage, whereas higher image and sound quality is perceived as the main

advantage. In the ethnographic study conducted with 30 families of the pilot-zones of the switch-off, we became aware of the **hesitation of the individuals involved when they were to talk about the advantages and disadvantages of digital television**. Even so, the most commonly mentioned advantage was the higher image and sound quality, followed by high definition and 3D. The most commonly mentioned disadvantage was the cost involved in acquiring digital TV.

Among the 26 families in which at least one of the members admitted to have heard about digital TV, one or more members of 15 families stated they did not know what the benefits were, and in 11 families at least one of their members said they did not know the disadvantages. Next to the majority of ***"Don't know"*** (for 15 families), the most commonly mentioned advantage was the **improvement in image and sound quality** (by 6 families). Then, in 2 families, the possibility of bringing high definition or 3D into the living-rooms are acknowledged advantages, as is the possibility of having more channels (2 families), more services and features (2 families). Diversification of contents, decrease in technical malfunctions and the technological evolution were other advantages mentioned by the interviewees.

Although 11 families say they do not know enough about digital TV to indicate its disadvantages, **costs are the first con of those who suggest the inconvenient of this type of broadcasting system**. *«The disadvantages fall on the wallet!»,* says Jacinto, 32. *«It's one more thing for us to spend money on»*, adds Sandra, aged 34. *«It depends on its cost…»*, points out Laura, 70, turning to her brother who says he does not know the disadvantages of digital TV because he does not have enough information on the subject.

Then comes the compulsory subscription, the need to adapt the equipment and the need to have two remote controls as the disadvantages mentioned by families. Clara, 67, who lives in Alenquer, considers that the fact is there is no evident advantage to the change, but merely the obligation to switch, to be the greatest disadvantage: *«There's no motivation…».*

We should point out that **the advantages of digital TV most commonly mentioned by the interviewees do not match the main reasons they say it will make them subscribe to digital TV**. In this case, the increase in the range of channels and the

existence of favourable packages are the most commonly mentioned reasons, rather than improvement in image quality, high definition and 3D.

5. Knowledge about the switch-off of the terrestrial analogue TV broadcast

It is estimated that the majority of the Portuguese population does not know the scheduled date for the terrestrial analogue TV broadcast to terminate, 3 months from the first phase of switch-off. In the latest survey on digital TV conducted in September 2011, **59% of participants indicated they did not know the year when terrestrial analogue TV would be switched off**, with 41% of respondents identifying 2012 correctly, 5.2% indicating 2011, 0.7% a saying it would take place in 2013 and 0.2% stating another year, while 52.7% of all respondents said they did not know the year of the switch-off. [9]

We should highlight that, out of the 460 respondents who do not have pay-TV, **62% are unaware that in 2012 the terrestrial analogue TV broadcast is scheduled to be switched off**. Thus, 56.5% of these respondents stated they did not know the year scheduled for the switch-off of terrestrial analogue TV, 4.3% indicated the year 2011, 38% correctly identified 2012, 0.9% said it would happen in 2013, while 0.2% indicated another year.

Table 9: Knowledge of the switchover year (ADOPT-DTV and IDTV Health, 2011)

	January 2011 (n=1198; all the respondents with TV) %	September 2011 (n=1202; all the respondents with TV) %	September 2011 (n=460; respondents without pay-TV) %
Don't know	85.4	52.7	56.5
Yes, for 2011	6.1	5.2	4.3
Yes, for 2012	7.8	41	38
Yes, for 2013	0.7	0.7	0.9
Yes, another year	0	0.2	0.2

[9] NB: in the introduction to this question, respondents were informed by the interviewers that "digital switchover" is the name given to the process in which the analogue television transmission is converted to digital transmission and, should people not adapt the television set and should they not have subscription TV, they will cease receiving RTP, SIC and TVI channels.

Regarding the results obtained in the survey of November 2010, there is a considerable increase in the percentage of respondents who correctly indicated 2012 as the year when the television analogue broadcast would be switched off: in the previous survey only 7.8% of participants correctly identified 2012 as the year of the switch-off, while 85.4% of respondents said they did not know when it would occur, 6.1% indicated 2011 as the year for the switch-off and 0.7% said 2013. In this survey, respondents between the ages of 35 and 44 were those who proved to have more information about the year of the switch-off, with 13.1% answering correctly that it would take place in 2012. It should be pointed out that the group of individuals over 65 years of age was the one who proved to be the least aware of this date: indeed, 95.5% of these respondents said they did not know when this switchover process would occur, while merely 1.1% correctly identified the year of the switch-off, a percentage that falls well below the 7.8% average of the global sample. In total, 98.9% of individuals aged 65 or over did not know when the switch-off of terrestrial analogue TV will take place.

That same question was asked to participants in the ethnographic study, and among the 30 families interviewed, **within 15 families there was the knowledge that the analogue broadcast of terrestrial television would be switched off, and in the other 15 families this was not known**. In fact, among the 15 families aware of the switch-off, there were 3 cases in which some members knew about it, whereas others were not informed. At the Rosários family, for instance, it was apparent that Carlos, the father, aged 37, was much more aware of the technological innovations than any other member of the family. Although his wife and his in-laws also said they knew about the switch-off, Carlos was the only one who immediately used the term *"switch-off"* to reply, and demonstrated that he knew of the deadline. In the same way, in the Matos family, Manuel, 70, already knew that the switch-off of the analogue TV broadcast would occur, whereas his wife said the situation «*passed her by*».

Also in this subject, it was observed that **those individuals that had already heard of the *switch-off* find it difficult to explain the process and to indicate a deadline for the switch-off of the terrestrial analogue TV broadcast**. Although some of those interviewed had already heard of the analogue switch-off, 14 families did not

know the deadline for the process. Therefore, when it was time to ask the date when the analogue broadcast would be over, we heard such replies as: *«no»; «I have no idea»; «I know nothing of what awaits us».* Regarding procedures to have at that time, as it was mentioned above, some families stated they knew about the need to purchase *«a device»* (6 families). Some even knew the average price of this equipment (2 families), but in most homes (18 families) there were still doubts about who would be affected and how to act.

By way of example, there is the case of 73-year-old Catarina, retired, who was not aware of the switch-off and had no idea of the deadline, but who, after she was enlightened, suggested this would be a change *«for the better».* Still, she considered that this is a change *«for those who can afford it».* Questioned on the amount she would be willing to pay to go on having TV at home, Catarina replied it could not be *«very high».* Over and over, the old lady repeated the thought: *«But am I really going to be left without television? Oh my God… This is what keeps me company!».*

Although they do not know the technical terms to express the end of the analogue broadcast system, Sara and Maria do not receive the information regarding the switch-off as news and, facing the possibility of acquiring digital TV in the following 12 months, Sara says: «*If in May this happens (the switch-off), then we have to do it, if we are to watch television*». However, neither Sara nor Maria know what they have to do to go on having the four free-to-air TV channels at home. *«My son only told me that. But until then, we have time…»,* says Sara. After an explanation about the costs of switching to DTT and when questioned if they would be able to afford the cost of the decoder to continue having TV, Sara e Maria stated*: «We have to! We are not going to lose the television broadcast».*

Although they need not worry about adapting their television set to receive Digital TV – since they already subscribe to a service – both Manuel and Júlia fear the situation of their closest relatives, who do not have digital TV in all their sets. Manuel thinks that his mother will not want to buy a decoder or another set. *«My mother is already 78 years old, she gets a pension of a hundred and something euros. How can she afford it?».*

6. Knowledge of what must be done to continue to have free-to-air TV

It was found a low level of knowledge regarding the issues related with DTT reception, especially in the case of Portuguese people without pay-TV at home. In the latest survey conducted by Universidade Lusófona on digital TV in September 2011, 38.6% of all participants said their current television set is compatible with DTT broadcast, 28.4% replied it is not compatible and 33% do not know or did not reply to the question. It should be remarked in the case of respondents **without pay-TV, 43.9% claimed that their set is not compatible with DTT** and **41.5% replied they do not know**, while 14.6% stated that it is compatible. In the survey conducted in Janeiro 2011, 30.1% said their current TV set was compatible with DTT broadcast, 14.2% said it was not compatible and 55.8% did not know or did not reply to the question.

Table 10: Do you know if your current TV set is compatible, that is, if it can receive Digital Terrestrial Television (DTT) broadcast? (ADOPT-DTV and IDTV Health, 2011)

	January 2011 (n=1198; all respondents with TV)	September 2011 (n=1202; all respondents with TV)	September 2011 (n=460; respondents without pay-TV)
Yes, it is compatible	30.1%	38.6%	14.6%
No, it is not compatible	14.2%	28.4%	43.9%
I don't know if it is compatible	55.8%	33%	41.5%

Still, these 460 participants without pay-TV were asked if they know what they have to do to keep receiving TV signal in their homes (Q.12): **55.4% replied they do not know what to do to have DTT**, against 44.6% of affirmative replies. As regards the data collected in January 2011 and published in March, 84.1% of respondents without pay-TV said they did not know what they should do to receive DTT. Therefore, we observe a significant decrease in the percentage of people who do not know what to do to get DTT; nonetheless, 55.4% is still a figure that can be considered troubling, given that the fieldwork survey was conducted merely three months before the first stage of the switch-off of the analogue terrestrial TV – which will affect most of the Portuguese population.

Table 11: Do you know what you have to do to receive DTT in your home? (ADOPT-DTV and IDTV Health, 2011)			
	January 2011 (n=1198; all respondents with TV) %	September 2011 (n=1202; all respondents with TV) %	September 2011 (n=460; respondents without pay-TV) %
Yes	23.8	53.3	44.6
No	76.2	46.6	55.4

In what concerns knowing if their respective area of residence is covered by DTT, **70.4% of those participating in the survey that do not have pay-TV, replied they do not know if they can receive DTT**, 18.7% stated that their area of residence is not covered and 10.9% replied that they are covered by this broadcast technology.

Table 12: Does your residence area have DTT coverage? (ADOPT-DTV and IDTV Health, 2011)			
	January 2011 (n=1198; all respondents with TV) %	September 2011 (n=1202; all respondents with TV) %	September 2011 (n=460; respondents without pay-TV) %
Yes, it has coverage	20.3	23.5	10.9
No, it does not have coverage	10.9	18.5%	18.7
I don't know if it has coverage	68.9	58.1	70.4

More specifically, in the September 2011 survey, the participants without pay-TV were questioned about the procedures they considered to be necessary to receive DTT at home; **44.6% replied did they not know if it was necessary to adapt the antenna** and 17.8% said this was a necessary procedure, **38.9% indicated they did not**

know if it was necessary to have a decoding box, 55.2% replied that this was necessary and **37.2% of respondents stated they did not know if it was necessary to buy a new television set**, whereas 38.5% said it was necessary to do so.

In the ethnographic study, several of the participants proved to know that families will have to invest in the purchase of a device, although the rule was that they do not know the costs and whether they will be affected or not. By way of example, Sónia – mother of two children, aged 5 and 7 – said that her family will not know how to act should it be faced with the need to adapt both television sets to receive digital TV. Conversely, Verónica, a 22-year-old dance teacher, told us she found out about the switch-off in a conversation with her sister-in-law, who lives in Spain, and who explained to her that the country had already switched over. Although Verónica was not quite clear on the subject, she did understand that a change was about to happen: «*In the conversation with my sister-in-law I realized what was going on, but quite honestly I didn't pay much attention. I found it odd… I thought "So now there's digital TV, they do everything now. Don't tell me they are going to take the remote away from me". That was the first thing I said (laughs)».*

For Ana, 34, the switch-off of the analogue terrestrial TV transmission is not news either. Indeed, this young mother was one of the interviewees who showed more knowledge of the switch-off, since her job involves keeping abreast of news on television. *«I already knew that. 12th April... No, April 2012. I think the day hasn't been set yet (…) You either buy a box, which converts the signal for the old television set, or you have to buy a new television set. I even know the price of that box: it ranges from 50 to 250 euros»,* she adds. In the café of the Simões family, in Alenquer, another Ana, 33, also said she vaguely knew the process of transition from analogue to digital television, explaining that, through the conversations in the café, she realized that a change was coming.

Still, we can observe that the sources that are most commonly mentioned by the interviewees, when asked how they found out about the switch-off, are **word-of-mouth, national and local media, as well as telecommunication service providers**, via the telephone. In the ethnographic study it also became clear that, **when families do not know how to solve a problem with a particular technological piece of equipment, they mostly resort to friends or relatives**. People with over 50 years of age tend to ask

"the young ones" for help to deal with devices, since mobile phones, computers to a television set. Still, as a rule, **matters related with television are sorted by specialized technicians**.

7. Intention to purchase equipment or services to access digital TV and DTT

It is estimated that nearly half the Portuguese population without pay-TV is undecided about obtaining digital TV equipment or services, 3 months before the scheduled beginning of the analogue terrestrial TV switch-off. Starting with the latest data collected, concerning the survey conducted in September 2011, all the 425 participants who said they did not have pay-TV and received traditional analogue TV (35.3% of the total sample of participants with TV at home), were asked if they are considering buying or subscribing to equipments and services in order to receive digital TV in the following 12 months[10]. Thus, **16.2% of respondents without pay-TV consider buying a new set with integrated DTT, 24.2% consider buying a DTT decoding box**, 6.8% intend to subscribe to a cable TV service, 0.2% consider subscribing to an optic-fibre TV service, 0.5% plan to subscribe to a satellite TV service and none of the respondents identified the option "IPTV or ADSL". Still, **11.3% said they had no intention of purchasing** equipment and services to receive digital TV (they represent 4% of the total sample of the survey) and **46.4% did not know or did not reply to this question**.

Comparatively to the data collected in November 2010, the 525 respondents without pay-TV who received analogue TV transmission via traditional antenna replied as follows: 7.8% predicted they would choose to buy a television set with integrated DTT, 8% said they were keen to buy a DTT decoding box, 5.8% considered subscribing cable TV, 1.3% considered the possibility of having optic-fibre TV, 0.4% considered the option satellite TV, none of the respondents identified the option "IPTV or ADSL", 34.1% of respondents said they had no intention of buying any of the main pieces of equipment or services for digital TV, 45.5% did not know or did not reply if they have any intention to purchase the equipment and/or services required for digital TV in the following 12 months.

[10] NB: during the survey it was explained to all participants what digital TV and DTT are, and also that DTT will replace the current analogue broadcast, and that in order to have DTT it is necessary to buy a decoding box or purchase a television set that is prepared to receive DTT.

Table 13: Intention of buying equipment or services for digital TV in the following 12 months (ADOPT-DTV and IDTV Health, 2011) (respondents without pay-TV and receiving analogue terrestrial TV)		
	November 2010 (n=525) %	September 2011 (n=425) %
Buy new TV set, with integrated DTT	7.8	16.2
Buy DTT decoding box	8	24.2
Subscribe to cable TV service	5.9	6.8
Subscribe to satellite TV service (satellite dish)	0.4	0.5
Subscribe IPTV / ADSL service	0	0
Subscribe to optic-fibre TV service	1.3	0.2
None	34.1	11.3
Don't know / Don't reply	45.4	46.4

NB: the respondents had the possibility of choosing several options

Thus, we observe **a substantial increase in the intention of buying decoding boxes and television sets with integrated DTT by the respondents without pay-TV and who receive analogue terrestrial TV transmission**, that is, from 8% to 24.2% in the case of decoders and from 7.8% to 16.2% in the case of TV sets with integrated DTT receiver. Still, **the percentage of these respondents who do not know or won't reply to this question has remained practically the same in this 10-month period: 45.5% in November 2010 and 46.4% in September 2011**. Moreover, the percentage of respondents who indicated their intention to subscribe to pay-TV service (cable, satellite, fiber-optic TV, IPTV) remained unchanged: 7.5% in November 2010 and 7.5% in September 2011.

These 425 participants of the September 2011 survey were also asked to indicate **when they are considering buying a television set or a decoding box to have DTT**; 1.9% of these respondents claimed they would do it in a 3 months' time, 2.8% within 6 months, 1.2% within a year, **37.2% only when it became compulsory, 6.3% said never,** 0.7% have already bought the equipment, 0.2% gave another answer and

49.6% do not know or will not reply to the question. In the survey conducted in November 2010, out of the respondents without pay-TV who receive analogue terrestrial TV, 53.1% did not know or would not reply when they considered buying a television set or a DTT decoding box, which implies there is a slight decrease in this indicator. Conversely, 30.5% of these respondents claimed they would only do it when it became compulsory, a figure which increased to 37.2% in the September 2011 survey.

Table 14: Intention of buying equipment that is compatible with DTT transmission (ADOPT-DTV e IDTV Health, 2011) **(respondents without pay-TV and receiving analogue terrestrial TV)**

	November2010 (n=525) %	September 2011 n=425) %
In 1 month	0.4	0
In 3 months	0.2	1.9
In 6 months	0.6	2.8
In 1 year	2.1	1.2
Only when it becomes compulsory	30.5	37.2
Never	12.4	6.3
Already bought/already have	-	0.7
Other	0.8	0.2
Don't know/won't reply	53.1	49.6

Also, in the November 2010 study, 12.4% claimed they would never buy a television set of a DTT decoding box, whereas in September 2011 this percentage fell to 6.3%, which is a considerable decrease.

CONCLUSION

Briefly reviewing this selection of the ADOPT-DTV project main results, first it was estimated that about 38% of mainland Portugal population receives exclusively free-to-air, as in September 2011. About the profiles of pay-TV viewers versus free-to-

air TV viewers, individuals with pay-TV in Portugal are more likely to be young and middle-aged adults, more likely to have higher education levels and to belong to higher status groups (A/ B/ C) and less likely to have any kind of disability (visual, hearing or motor). On the other hand, individuals without pay-TV in Portugal are more likely to be over 55 years old, more likely to have lower education levels and lower *status* (D/ E) and, finally, to possess some sort of disability (hearing, visual or motor).

The reception of analogue terrestrial TV remains largely dominant on Portuguese people without pay-TV, and access to DTT has little expression: in September 2011 it is estimated that 35% of the population in mainland Portugal may be affected by the switch-off of the terrestrial analogue TV transmission system.

Also, it is estimated that the majority of Portuguese people have already heard of digital TV and DTT, but in most cases they find it difficult to define or characterize these technologies. The limited perception of the advantages and disadvantages associated with digital TV and DTT is the most commonly observed situation. Free-to-air TV viewers identified cost as the main disadvantage concerning the adoption of digital TV, and the most commonly named advantage was the improvement in image and sound quality.

It is estimated that the majority of Portuguese population is unaware of the set date for the switch-off of analogue terrestrial TV, merely 3 months from the beginning of the switch-off. It was observed that there is a low level of knowledge regarding the practical issues connected to DTT reception, especially in the case of Portuguese people without pay-TV in their homes. Finally, it is estimated that nearly half the Portuguese people without pay-TV are undecided as to obtaining equipment or services for digital TV, just 3 months before the scheduled beginning of the analogue terrestrial TV switch-off.

In short, considering the profiles of TV viewers without pay-TV at home and considering the responses to questions related with awareness and knowledge about the switchover process, as well as the intention of obtaining digital TV, **the elderly, people with low educational levels and with some degree of disability have a higher probability of rejecting digital TV and, therefore, have a higher risk of being left without TV after the free-to-air analogue TV switch-off.**

As part of the final report delivered and published on October 2011, the research team recommended that postponing the switch-off date should be considered by those with responsibility on this matter, particularly considering the profile of the free-to-air TV viewers with access to analogue terrestrial TV, since it is estimated that there is a high risk of a substantial part of this population no longer being able to watch TV after the switch-off - if current deadlines are maintained.

To backup this recommendation, it was also mentioned that, in the USA, the switch-off was postponed three times: from 2006 to December 31st, 2008, then to February 17th, 2009 and, finally, to June 12th, 2009 (Hart, 2009). In January 2009, about one month before the switch-off deadline, the market research company Nielsen estimated that almost 7% of all the American households were not prepared for the end of the analogue terrestrial TV (7,8 million homes), since they did not have a TV set with an integrated DTT decoder or a DTT set-top box (InformiTV, 2008). This way, the recently elected president of the USA Barack Obama launched the proposal to postpone the switch-off, declaring that "millions of Americans, including those in our most vulnerable communities, would have been left in the dark if the conversion had gone on as planned" (cit. in Hart, 2011). Less than two weeks before the deadline for the switch-off – set to February 17th, 2009 – the House of Representatives approved Obama's proposal to delay this date, which was a proposal previously approved by the Senate (Stelter, 2009). In the perspective of the north-American researcher Jeffrey Hart (2011), this decision to delay the switch-off from February to June 2009 helped to avoid serious disruptions on the daily lives of many citizens.

Up until now, it is not publicly known if the lessons learned in countries such as the USA - and other countries that already completed the switchover process - are being taken into consideration by the responsible institutions in Portugal. After April 26th, 2012 - in case this deadline does not change - it will be clearer how successful was the switchover in Portugal, particularly considering the impact on the most vulnerable populations in this process. As Jeffrey Hall observed (2011), in the case of wealthy democratic countries "there will generally be a combination of governmental mandates and reliance on the market and consumer choices". On the other hand, in poorer countries, "authority may be more centralized on the government and consumer interests may be ignored" (Hall, 2011), so consumers may have to deal with

the burden of transition, being forced to pay for services that they had for free, whether or not they can afford it. It remains uncertain whether any of these issues will occur in Portugal or not: the outcome of this process will surely shed some light about the quality of democracy in this country in the early XXI century, for the better or for the worse...

Acknowledgements

To Ágata Sequeira, André Baptista, Carla Ales, Diogo Morais, Inês Martins, Peter Olaf Looms, Rui Henriques and the Gabinete de Tradução do Grupo Lusófona.

The ADOPT-DTV project was funded by Fundação para a Ciência e Tecnologia – FCT (PTDC/CCI-COM/102576/2008), in partnership with ANACOM and OBERCOM.

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