MOBILE BROADBAND IN PORTUGAL

MEANS OF ACCESS, TYPES OF USAGE AND DIFFERENCES COMPARED TO FIXED BROADBAND

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1. EXECUTIVE SUMMARY

A “mobile revolution” is currently under way which can be described by three different and complementary pillars, which are: (1) the increasing development of mobile equipment enabling Internet access from anywhere (such as smartphones[1] or tablets[2], among other); (2) the growing amount of high speed offers connected to mobile broadband, provided by their service providers; (3) the growing number of applications associated with mobile Internet access; and (4) the rising demand for access everywhere and at any time.

It should be noted that in July 2011, according to IDATE (2011), mobile broadband penetration per inhabitant in Portugal (36.5 per 100 inhabitants) stood above the European Union (EU27) average (34.6 per 100 inhabitants). This favourable position results from the subscription rate of USB modems (sticks), with a penetration rate of about 11.1 per 100 inhabitants in Portugal, compared with a rate of 7.5 per 100 inhabitants for the EU27.

It is important to analyze how mobile Internet users currently value mobile broadband services in order to improve the supervision and regulation of this market’s development. This analysis also includes fixed Internet access, especially concerning its impact on the use of mobile Internet.

In this context, the present study analyzes the usage patterns of mobile broadband in Portugal, in terms of access frequency, manner of usage, and type of activities developed broken down by form of access, whether by the use of USB modem or mobile phone (Smartphone type).

The study was based on a survey carried out for ICP-ANACOM by a market research company between mid-June and mid-July of 2011, applied to Portuguese residents aged 15 and over, in a representative sample of 3076 respondents.

The more important conclusions are:

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[1] The Portuguese for *smartphone* is *“telemóvel inteligente”*. This document uses the English term since it is the most commonly used in the Portuguese market.

[2] The Portuguese for *tablet* is *“prancheta”, “mesa digitalizadora” or “tablet”*. This document uses the English term since it is the most commonly used in the Portuguese market.

- Fixed access is the access platform most used by users with only one means of Internet access. This suggests that this group of users values other factors such as speed and traffic over mobility when choosing their Internet access platform. Thus, about half of fixed Internet users only had this means of access, while in mobile accesses using a USB modem the proportion was 1/3, and in mobile phone accesses it was less than 10%.
- Regarding the usage of more than one Internet access platform, once again the most common is fixed access plus a type of mobile access, especially fixed access and USB modem. But only a small number of respondents have three means of Internet access. Analysys Mason (2010) says that in most Western European countries covered in that study mobile broadband is considered as a second access, complementary to fixed broadband, rather than being the primary access.
- Of the people who use fixed access and USB modem the use of USB modem access predominates, as expected, especially away from home. However, the activities most accessed in this manner are similar, with e-mail access, the search of information for various purposes (school, work or leisure), and online chatting being the main ones.
- About 18.3% of all users with USB modem acquired the service through a service package[3] and one in seven of these users usually exceed the traffic limit offered by the service provider. It was also found that about one third of the users who were offered a USB modem access do not use this service, and that the main reasons for this are not feeling the need for it (44.6%), the current access being enough (33.2%), and the traffic limit imposed in the USB modem package (13.4%).
- As for where the USB modem is used, 76.4% of the users that only have this type of access use it mainly or always at home, while for users who also have fixed access the usage of the USB modem under these conditions drops to 17.2%. Usage of the USB modem mainly or exclusively outside home, on the other hand, increases from 22.6% to 80.6% respectively when the user has no fixed access and has a fixed access. Opting for exclusive USB modem access solely for use outside the home could therefore be the result of overestimating the mobility that characterizes the service, even if it is not used, or due to commercial factors such as the existence of

[3] Most of the service package offers that include USB modem mobile Internet provide this service free of charge up to 100 Mbps of traffic. When the users exceed the defined transmission limit they have to pay for the extra.

prepaid plans without the need of obligatory top-ups, which in the case of fixed accesses seem to be available only for business customers.

- Regarding the motives for choosing the service provider, the option “no special reason” (20.0%) was mentioned most by USB modem users, followed by the price (18.2%). In the case of mobile phone Internet access the choice of service provider mainly resulted from the user already being that operator’s voice customer (67.0%).
- The main reason given by users with fixed access for choosing the current service provider was the subscription to a package of services (42.2%), followed by the price (28.9%). This is the result of the growing investment of service providers in service packages, mirrored in the increasing amount of broadband offers included in packages within the overall amount of broadband offers (this share rose from 63% to 80% between 2009 and 2010).
- The average satisfaction with fixed Internet access proved to be greater than with mobile accesses, thus confirming the findings of ANACOM (2011c), based on the data of ECSI 2010 regarding electronic communications. Furthermore, it was found that the usage of both a fixed access and a USB modem access by users has a negative influence on their satisfaction with the USB modem access, in terms of general satisfaction, satisfaction concerning the traffic limit, and satisfaction with the cost of the service[4]. But the usage of fixed access and mobile accesses, whether by USB modem or by mobile phone, by the same user has a positive influence on their satisfaction with the speed and the price paid for the fixed access.
- Analyzing the intention to change the type of access, fixed Internet seems to be more highly valued than mobile Internet, particularly where the user has a USB modem. This takes into account that: (1) among current Internet users there are more respondents who gave up the USB modem access than those who gave up fixed access[5]; (2) the proportion of users intending to give up their current Internet access is greater in the case of mobile accesses (12.7% in the case of USB modem access; 5.6% for mobile phone access, and 3.5% for fixed access), and (3) the intention to switch between fixed Internet access and USB modem access is much stronger among the respondents with USB modem – one third of the respondents with USB

[4] This is a valid result whether the user also has Internet access by mobile phone or not.

[5] 41.7% of all respondents with Internet access had already had a USB modem and gave up this form of access, in comparison with 27.6% in the case of fixed accesses, and 16.8% in the case of access by mobile phone.

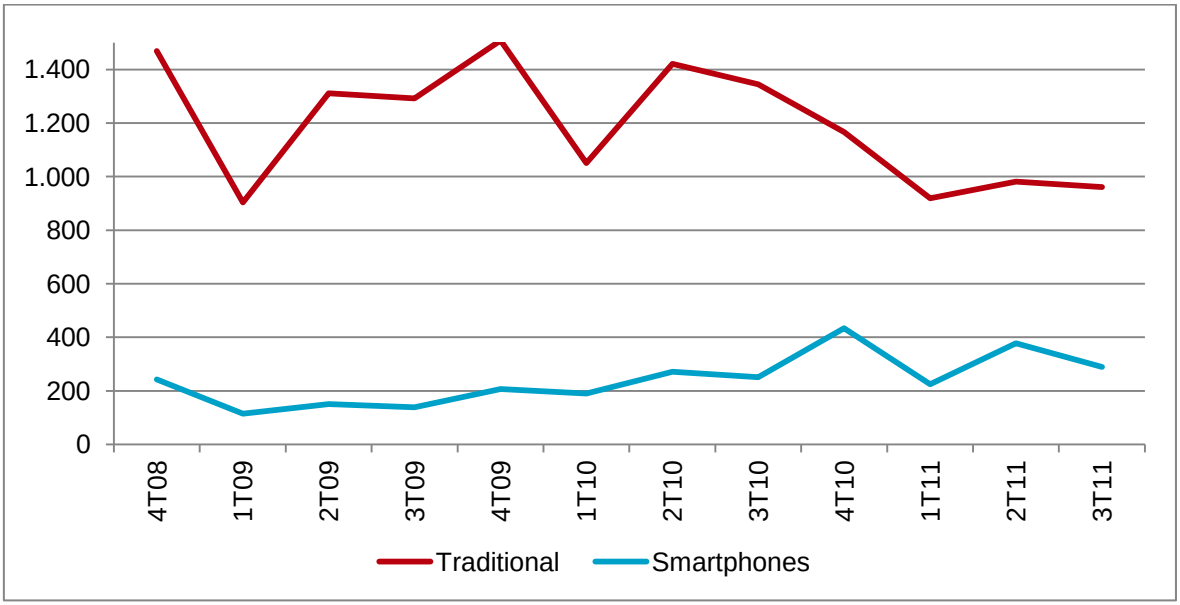
modem access, in comparison with one tenth with fixed access intends to give it up and replace it with a mobile access. It should also be noted that the respondents who are less satisfied with the service in general indicate a greater intention of giving up the current service, as expected.

- Although general satisfaction with the price of the current Internet access service is good, high prices were the main reason mentioned by the respondents (53.4% for mobile phone access, 42.4% for USB modem access, and 33.2% for fixed access) for considering giving up their means of Internet access.
- Users recognize that mobile broadband speed is slower and the price is higher than fixed broadband, but they also agree that the reliability of these two means of access is identical.
- Finally, based on the results of this study, it was found that, as might be expected, the usage pattern of fixed access and USB modem access is more similar than that between fixed access and mobile phone access – this is due both to the available retail offerings that are associated with each means of Internet access, and to the characteristics of the accesses themselves.

2. INTRODUCTION

The fast technological, economic and social development that we have observed has affected consumers' preferences and expectations with respect to services, especially Internet access service. So traditional phones and computers (both fixed and mobile), for example, are tending to become less attractive in comparison to new equipment or portable devices such as PDAs, smartphones or mp4 readers. One example is the increase in the relative weight of smartphones in the volume of mobile phone sales (see Figure 1).

Figure 1 – Selling of traditional mobile phones and smartphones, between the end of 2008 and the third quarter of 2011.



Volume of Equipment (Thousands). Source: IDC, Portugal.

These new trends are at the same time the cause and effect of the current convergence between fixed and mobile services, which enables the simultaneous use of several platforms and permits ubiquity between several types of access, i.e. makes it possible to make voice calls, watch television or videos, and access the Internet at the same time. The new retail offerings reflect this evolution.

Besides the new functionalities associated with the most recent and less traditional devices, other factors may be involved in the increased demand for them, such as:

a) The greater ease of access and simplicity carrying out certain activities compared with traditional devices. For example, some users may see a mobile phone (smartphone-type) that enables easier access to social networks as a better option than a traditional mobile phone;
b) The growing number of applications associated with mobile Internet access, especially access by mobile phones, which seem to promote mobile broadband usage at any time;
c) The ability and ease associated with device mobility – while in the past there was a tendency to replace desktop computers by laptops[6], currently their size and weight seem to be factors that are starting to gain more importance, so much so that sales of laptops has fallen, due not only to the current economic climate but also to the increasing demand for alternative, smaller, devices such as tablets, eBooks, and so forth;
d) The possibility of customizing the communication service and its access devices.

It is likely that, in the future, the electronic communications devices wanted by most users will be those that are easiest to use, with the possibility of customization, that provide a quick access to the functions and activities most often used by certain groups of users, and which are as small and lightweight as possible.

New mobile broadband offerings both via USB modem (stick) and by mobile phone reflect the advances in that service's access technologies. According to ICP-ANACOM (2011a), between 2009 and 2010 the number of mobile broadband offers for these two means increased from about 48 retail offers to over 70, and the maximum speed subscribed to increased from 21.6 Mbps to 41.3 Mbps. In ANACOM (2011a) there is a reference to the fact that mobile broadband offers via USB modem are differ considerably from mobile phone ones, especially in relation to the traffic offered.

Furthermore, in 2011 two[7] service providers offered a USB modem with the possibility of accessing 4G mobile broadband (LTE) and in 2012 one of these providers[8] now allows the pre-registration of 4G retail offers for private and business users.

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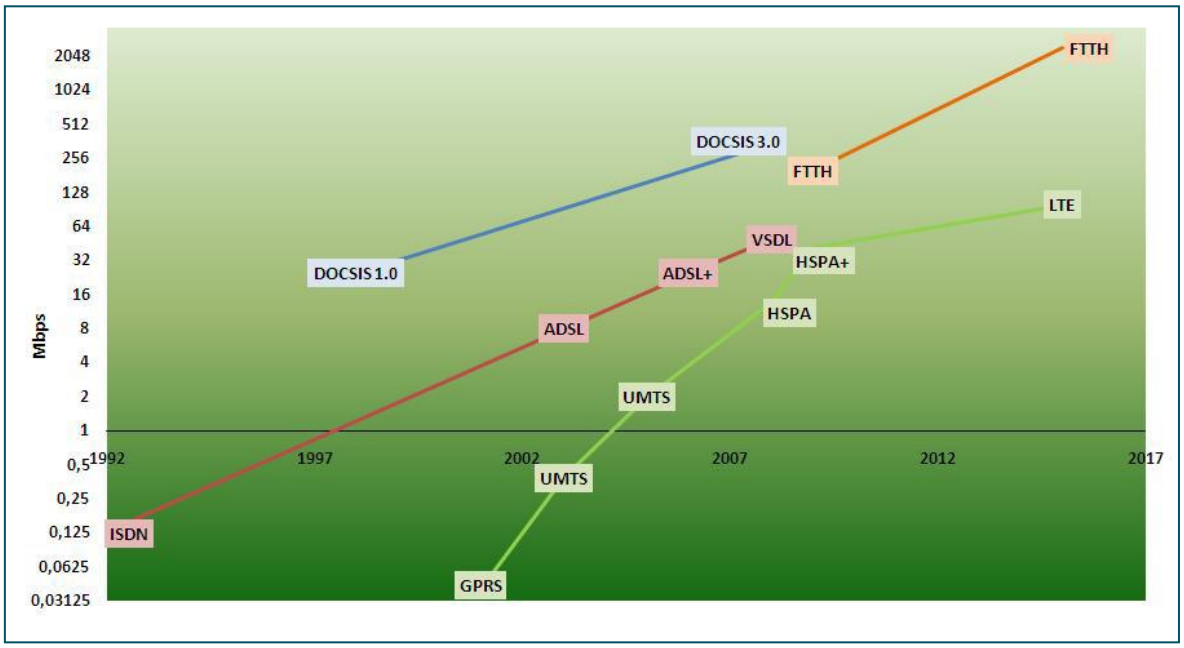
[6] In the second quarter of 2011, according to IDC Portugal figures, about 83% of all computers sold were laptops. Information available at http://www.idc.pt/press/pr_2011-08-25.jsp.

[7] The two service providers are TMN and Vodafone, and the price of the USB modem is about €159.9.

[8] The service provider mentioned is Vodafone.

These developments in mobile broadband, in terms of both platforms and speeds, have kept up with the development in fixed broadband. This technological evolution is shown in Figure 2, mentioned in ICP-ANACOM's study on the evolution of NGA (ICP-ANACOM, 2011b).

Figure 2 – Technological evolution of fixed and mobile access networks.



Source: ICP-ANACOM (2011b),

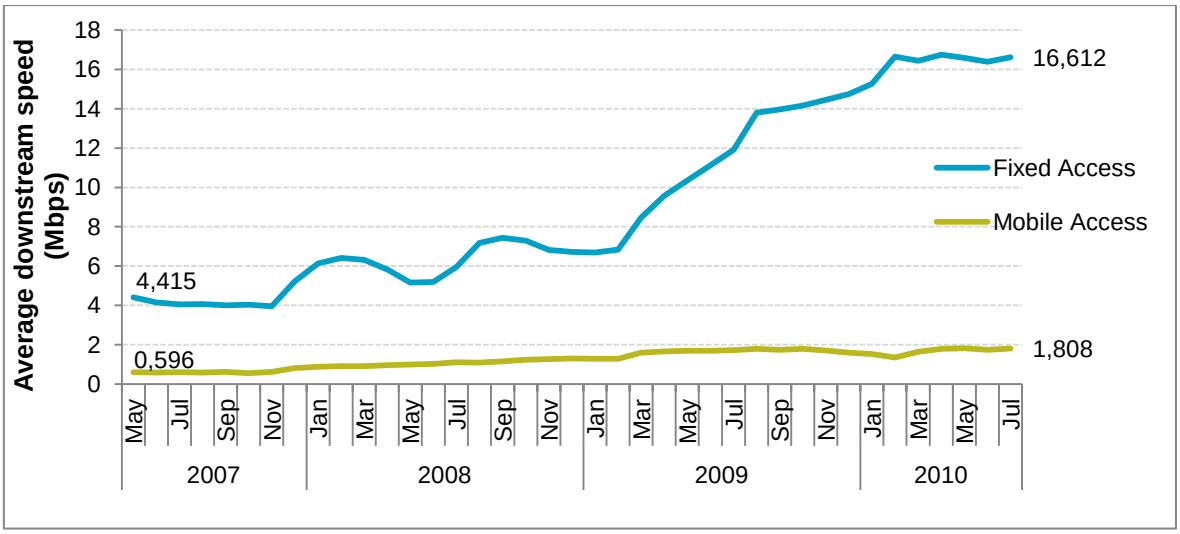
This development can also be seen in the results of tests carried out by Internet users on Speedtest's website[9]. According to the data obtained[10] by ICP-ANACOM from that company, between May 2007 and mid-July 2010 the average downstream speed of residential accesses to the Internet increased from 4.4 Mbps to 16.6 Mbps, and the average downstream speed for mobile accesses increased from 0.6 Mbps to 1.8 Mbps – see Figure 3.

[9] See http://www.speedtest.net/.

[10] Information was acquired from Ookla, the company owning the Speedtest service, on the results of the tests - about 7.5 million – taken between 2006 and mid-July 2010, by users with a Portuguese Internet Protocol (hereunder, IP) which tested the speeds and latency of their accesses on the servers (in Portugal or abroad) of Speedtest.

This improvement, which translates into generally faster speeds, was recorded in all regions[11] and municipalities of Portugal, albeit not evenly, with a higher incidence in the coastal areas where there are larger populations and more competition.

Figure 3 – Average downstream speed (in Mbps) of residential fixed accesses and mobile accesses (regardless of the means of access) to the internet



Source: ICP-ANACOM, based on Ookla / *Speedtest* data.

Considering the recent technological developments in supply and demand, this study tries to understand trends in the way individuals access mobile internet, both via USB modem and by mobile phone, as well and how this usage is influenced by the simultaneous use of fixed access. Current satisfaction regarding the usage of mobile accesses and the intention to keep or give them up are also analyzed.

To achieve this, ICP-ANACOM conducted a survey on Portuguese residents aged 15 and over to obtain information on Internet usage habits for the following means of access: a) mobile access using a USB modem (stick); b) mobile access using a mobile phone; and c) fixed access.

The survey was aimed to understand the type of usage of the several means of mobile Internet access by the respondents, both where there is exclusive access and when the user has other means of Internet access. When the respondent has more than one means of access, the survey was able to establish the characteristics of usage in both cases.

[11] The regions are the districts of Mainland Portugal and the Autonomous Regions of the Azores and Madeira.

Chapter 3 includes the factsheet of the survey that was designed and promoted by ICP-ANACOM and carried out by Spirituc – Investigação Aplicada, Lda. Chapter 4 presents the distribution of respondents by type of access(es) used for the Internet. Chapter 5 gives the results on Internet use, by means of access to it, and the reasons for choosing the service provider, the satisfaction with the means of access used, the intention to give up that access in the future, and the existence of other means of access in the past. Chapter 6 presents the findings when respondents were asked their opinion on mobile broadband using a USB modem, and how it compares to fixed broadband.

The main conclusions of the study are presented in chapter 7.

3. METHODOLOGY

The survey carried out aimed to understand how the different means of mobile Internet access are currently used in Portugal. Respondents were also asked about their usage of fixed Internet to assess if the usage of mobile Internet has any influence on its usage via mobile accesses.

The platforms or means for Internet access considered in this study were: a) USB modem (stick); b) smartphone-type mobile phone and; c) fixed access.

The survey was designed by ANACOM and the interviews were carried out by Spirituc – Investigação Aplicada, Lda. (hereunder, Spirituc), using the CATI (Computer-Assisted Telephone Interviewing) method for mobile and fixed phones, between 14 July and 20 July 2011, on Portuguese residents aged 15 and over.

In the case of contacts made to fixed phones, the respondents were chosen based on the person in the household who had the most recent birthday, so as to choose the respondent in the most random way possible. Since the respondent may not be the person responsible for paying for the access or have any power of decision with respect to its subscription, there may be biased answers to questions related to prices (such as the satisfaction with the price paid) or the reasons for choosing/replacing the provider, or for replacing one Internet access means for another. However, should this bias exist, it is probably not significant since the person responding to the survey used the access and was aware of its characteristics and why it is in the household.

In relation to each means of access questions were asked about how the respondent used that specific Internet access and not only about the most used access. This made it possible to ascertain how the usage of more than one Internet access influences the way the respondent uses each of them.

The aim was to obtain a minimum of 1067 valid answers to the survey for each Internet access group (fixed Internet, Internet via USB modem, and Internet by mobile phone).

When a respondent had more than one means of Internet access, each was accounted for in each group, and therefore the total sample was 3076 responses, with the following distribution:

a) 2377 respondents with fixed Internet;

b) 1368 respondents with Internet via USB modem;
c) 1068 respondents with Internet via mobile phone.

These results were weighted so as to obtain a representative sample of the Portuguese residents aged 15 and over with fixed Internet, Internet via USB modem, and Internet via mobile phone, considering the gender, age group, and region[12] of the country, according to the available information related to each of those means of access to the Internet.

Although it was planned to conduct the survey with a random selection of respondents for the three samples, the difficulty in obtaining users with Internet access via mobile phone prevented the sample from being random[13] after a certain stage. It should be noted that figures from the European Commission show that only 4 out of 100 Portuguese inhabitants use the mobile phone to access the Internet, against an average of 8 out of 100 inhabitants of the twenty-seven European Union countries.

Finally, recognizing that according to the latest analysis on relevant markets conducted by ICP-ANACOM (in 2009) the fixed broadband market is geographically different in terms of the existing competition[14], whenever it was appropriate the results of this survey were also analyzed on this basis. For this, the sample was broken down into municipalities with at least one competitive exchange area[15], these municipalities being designated 'C', and municipalities without any competitive exchange area, designated 'NC'.

Breaking down the sample by type of Internet access and competitive exchange area indicator shows that there are more fixed access and mobile phone users in the municipalities with competitive exchange areas, or 'C' municipalities, than UBS modem users – about 75% in the first case and about 66% by USB modem.

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[12] The country's regions were broken down as follows: Greater Lisbon, Greater Porto, North Coast, Centre Coast, North Interior, South, Madeira and Azores.

[13] Although it is not a random sample, this has no influence in the result obtained since the intention is to analyze the form of usage of Internet accesses and not to obtain the subscription rates for each means of access.

[14] See ANACOM's determination of 14 January 2009, "Definition of product and geographic markets, SMP assessments and imposition, maintenance, alteration or removal of regulatory obligations" available at "Markets for wholesale network infrastructure access at a fixed location and broadband access".

[15] Competitive exchange areas are "*areas covered by exchanges where there is at least one co-installed operator (LLU) and at least one cable network operator and where the percentage of households cabled by the main operators is greater than 60%*."

This result can have different interpretations. For example, it can partially result from the e.Iniciativas (e-Initiatives) programme having had a higher subscription rate in the inland municipalities, where competition is usually more limited – see the results of ICP-ANACOM's study on the impact and subscription of e.Iniciativas (ICP-ANACOM, 2010) [16]. It also suggests that when there is competition, it seems to be stronger in terms of fixed broadband than in terms of USB modem mobile broadband.

4. INTERNET USERS BY TYPE OF ACCESS

About 18.3% of all USB modem (stick) users acquired the service in a service package, 23.0% acquired it from public policy measures promoting access to the Information Society (such as e.Iniciativas), and 58.8% acquired the service independently of these conditions.

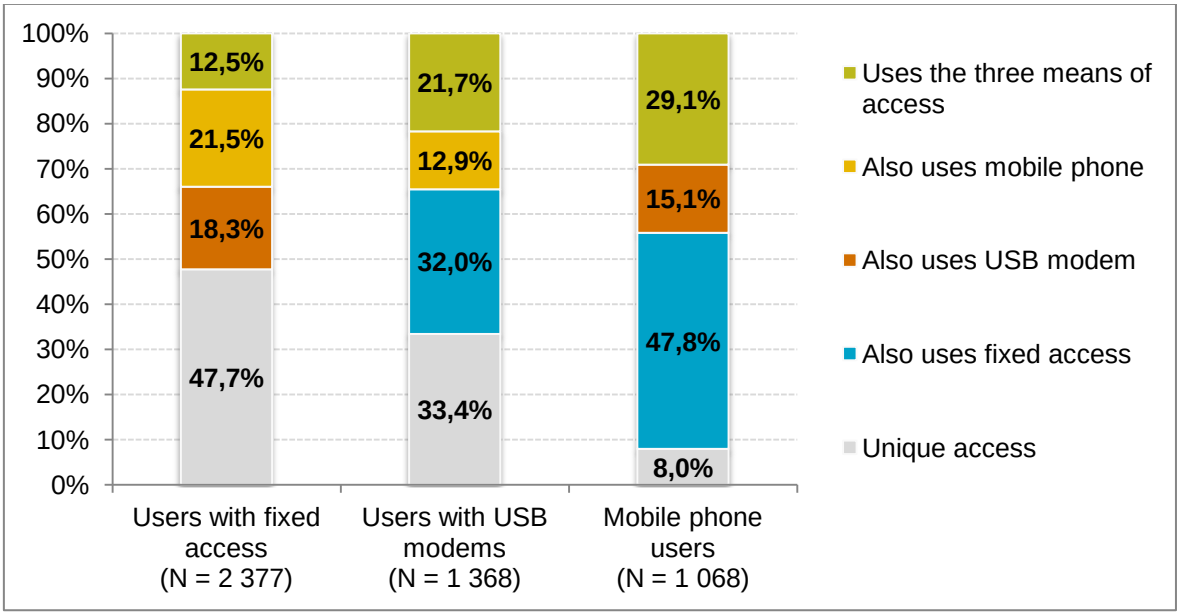
About 90% of users with fixed Internet access acquired the service in a service package. ICP-ANACOM's statistical data, provided by the service providers and relating to the first quarter of 2011, indicate that around 80%[17] of fixed Internet access users acquired the service in a service package. These figure are quite high, and result from the growing investment by service providers in service packages, since between 2009 and 2010 the amount of fixed broadband retail offers included in a service package rose from 63% to 80% (ANACOM, 2010a) of all broadband offerings.

The highest rate of respondents with only one means of Internet access occurs among fixed access users. About half (47.7%) of fixed access Internet users only have that type of access, while the figure is about one third in the case of USB modem users, and about 8.0% in the case of mobile phone accesses – suggesting that mobile phone access is mainly used to supplement other means of Internet access – see Figure 4.

Regarding the usage of more than one means of Internet access, in the case of mobile access users, whether via USB modem or by mobile phone, the main combination is achieved with only one fixed access (32.8% in the case of USB modem, and 47.8% in the case of mobile phone access), and there is a lower combination of different types of mobile accesses (12.9% of respondents with USB modem also access the Internet using a mobile phone, and 15.1% of respondents with mobile phone access also access the Internet using a USB modem) – see Figure 4.

[17] Information available at "Quarterly reports by service".

Figure 4 – Distribution of respondents by type of Internet access, and existence of other Internet accesses.



Estimate[18]: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

Among the users where the USB modem was acquired under public policy measures aimed at promoting the Information Society, the share of users that only use that means of access (42.0%) is higher than for USB modem users that acquired that service outside that programme (33.4%). This result suggests that for this group of users access mobility may not have been the main reason for choosing this type of Internet access, but rather the possibility of acquiring it under especial conditions, compared with acquiring Internet outside this programme.

Among the respondents with fixed access there were more users who in addition use a mobile phone access (21.5%) than those with a USB modem access (18.3%) or with the three means of Internet access (12.5%) – see Figure 4. The fact that respondents with fixed Internet prefer the mobile phone over the USB modem as a second access may emphasize the complementarity of this type of usage. The more so when, as previously

[18] Estimates were defined according to the corresponding sampling error. Thus, when the sampling error is below 10%, the estimate is considered to be reliable; when the sampling error is between 10% and 25%, it is considered an acceptable estimate, and when the sampling error is above 25%, the estimate is considered not reliable.

mentioned, about 90%[19] of respondents with fixed Internet have that service as part of a service package, and currently several providers offer[20] a USB modem with service packages that include fixed Internet.

According to the survey results, about 18.3% of users use the USB modem from a service package, and one in seven of these usually exceed the traffic limit offered by the service provider. It was also found that only about two thirds of the users who were offered a USB modem in a package use it for Internet access. The main reasons stated for not using this access platform were not feeling the need (44.6%), the current access being enough (33.2%), and the USB modem traffic limit (13.4%).

Although these figures are not totally comparable, given the different sample methods[21], the results obtained by Analysys Mason (2011) on the share of respondents who use both a USB modem and a fixed Internet access suggest that the number of respondents with a USB modem that use that access and a fixed Internet access is lower in Portugal than in the above-mentioned countries.

[19] According to the most recent data received by ICP-ANACOM for the third quarter of 2011, about 80% of customers of the fixed broadband Internet access service acquired the service in a service package.

[20] The term “offer” results from the fact that service providers offer the USB modem Internet access when the user has already acquired a fixed Internet service, in a package, from that provider. However, contrary to fixed Internet usage, USB modem usage is subject to traffic limits, usually 100 Mbps, the user having to pay for the traffic in excess of this limit.

[21] In Analysys Mason (2011) the collection method for the surveys was via Internet, while in the case of Spirituc the survey was carried out by fixed and mobile phone.

5. INTERNET USAGE IN PORTUGAL

5.1. TYPE OF INTERNET USAGE

LENGTH OF USAGE

The respondents were questioned about the length of usage of their Internet accesses, in months and years. As expected, longevity is related to the introduction of these technologies in the market. It was therefore observed that the average usage longevity is higher for Individuals with fixed Internet access (4.5 years), followed by USB modem users (2.4 years), and Internet users using mobile phone (1.5 years) – see Table 1. USB modem longevity is also higher when this service is not included in a service package (2 years).

No statistical differences were found between 'C' municipalities and 'NC' municipalities regarding the usage longevity, regardless of the means of access.

When the user has two mobile access platforms, USB modem (stick) and mobile phone internet, the usage longevity of those accesses is greater than when the user only has one, regardless of whether they also do or do not have a fixed Internet access. Whereas with fixed access, users with the three means of Internet access have the highest longevity in the usage of fixed Internet compared with other fixed access users – see Table 1.

Table 1 – Usage longevity (years) by means of Internet access.

	Fixed access usage	USB modem usage	Mobile phone usage
Exclusively fixed access	4.4 (514)	-	-
Exclusively USB modem access	-	2.3 (303)	-
Exclusively mobile phone access	-	-	1.4 (67)
Access by USB modem and mobile phone	-	2.6 (123)	1.7 (113)
Access by USB modem and fixed access	4.6 (224)	2.2 (269)	-
Access by mobile phone and fixed access	4.3 (298)	-	1.4 (355)
Access using the three equipment	5.2 (161)	2.5 (198)	1.7 (205)
Total respondents	4.5 (1 197)	2.4 (1 197)	1.5 (740)

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

Analyzing the distribution of respondents by usage longevity – see Table 2 – there are over 60% of respondents with mobile phone Internet access that have been using this service for less than a year, and about half of the respondents with fixed Internet have been using that access for at least three years. USB modem usage longevity is different, in that it is quite homogeneous in terms of the intervals considered, probably because the offers that have been introduced in the market, such as the programmes promoting participation in the Information Society, and the more recent provision of a USB modem in service packages, besides the usual USB modem offers.

Table 2 – Distribution of respondents by means of access and usage longevity.

	Fixed access	USN modem access	Mobile phone access
[1 month; 6 months]	8.8%	16.8%	34.1%
]6 months; 1 year]	14.8%	19.9%	29.3%
]1 year; 2 years]	15.5%	21.0%	19.0%
]2 years; 3 years]	10.9%	21.5%	6.3%
]3 year; +00]	50.0%	20.8%	11.4%
N	(1192)	(895)	(742)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

USAGE LOCATIONS

Users with mobile Internet access were asked about where they use it.

As expected, given the mobility that characterizes this means of Internet access, most mobile phone Internet users said they use this means of access mainly or exclusively outside their homes – about 61.8% only use it outside home, and about 24.3% use it mainly outside home. The proportion of users that only use this device outside home decreases substantially (28.6%) when this means of Internet access is the only one, maybe because this is when they have more time and because there is no other alternative means of Internet access.

In the case of Internet users that use a USB modem the results are different when the user also has a fixed access and when they only have access via a USB modem – see Table 3. When the respondent has two means of Internet access, more than half of the respondents only use the USB modem outside home (59.0%), presumably because they use the fixed access at home. When respondents have no fixed access, they use the USB modem mainly at home (49.6%), and the proportion of users that use it exclusively outside home drops dramatically, to about 5.4%.

Table 3 – Distribution of respondents with USB modem by location of usage.

	Total USB modem accesses	Exclusive USB modem	Access by USB modem and fixed access
Exclusively at home	14.5%	26.8%	7.5%
Mainly at home	28.1%	**49.6%**	9.7%
Mainly outside home	20.2%	17.2%	21.6%
Exclusively outside home	**35.5%**	5.4%	**59.0%**
Na/Nr	1.7%	1.1%	2.3%
N	(1368)	(457)	(735)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

Regarding the 26.8% of respondents with USB modem access that use this service exclusively at home, it may be asked if valuing the possibility of mobility, even if they do not use it, leads to the option for a USB modem, or if there are other factors associated with that decision. Of the 49.6% of respondents that only have a USB modem and use it mainly at home, maybe the number of times that they use it outside home justifies that choice – it should be mentioned that 82.7% of these respondents use that access on a daily basis, although there is no information about how often they use the access outside home.

The public policy measures promoting access to the Information Society, such as e.Iniciativas, may also have contributed to the use of the USB modem mainly or exclusively at home. According to the results of the present survey on the means of Internet access, USB modem users that benefited from that service because of one those public policy measures used that service more, exclusively or mainly from home (54.7% of respondents), than the users who did not benefit from those programmes (39.5%). These results were already indicated in ICP-ANACOM (2010) since, according to that study, subscribers continued to use Internet mainly at home after subscribing to e.Iniciativas.

The total or partial payment of mobile Internet accesses by the employers seems to explain part of the difference between USB modem usage at home and outside. Of all respondents who have their access paid by the employer, more than half always use that access outside home, dropping to one third when the payment is fully borne by the user.

FREQUENCY OF ACCESS

Information regarding the frequency of access to the Internet was collected based on a closed question with the seven response options listed in Table 4. These reply options made it possible to identify which type of users use the Internet access most often, but without indicating the duration of each connection or the average number of times a daily user accesses the Internet.

Overall, the distribution of respondents by frequency of access to the Internet (considering the possible answers) is similar for respondents with mobile accesses, whether via USB modem or mobile phone and different for respondents with fixed access – the second with a higher access frequency than the first. For example, according to Table 4, the proportion of users saying they were always connected or were connected several times a day is considerably higher when linked to fixed access, compared to mobile accesses.

Table 4 – Distribution of respondents by means of Internet access and frequency of access.

	Fixed access	USB modem access	Mobile phone access
Always connected	13.6%	2.3%	3.0%
Several times / day	41.2%	23.8%	18.7%
At least once / day	36.6%	36.9%	31.9%
At least once / week	6.4%	19.1%	22.9%
At least once / month	0.9%	10.3%	14.2%
Less than once / month	0.3%	5.8%	6.1%
Na/Nr	0.9%	1.7%	3.2%
N	(2377)	(1368)	(1068)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

The analysis of the apparent similarity between USB modem users and mobile phone users found in the above frequency of access is limited by the impossibility of evaluating the duration of each connection or the daily access frequency, based on this survey.

Furthermore, in the case of mobile phone Internet users, the concept of “always connected” may be somewhat ambiguous. This is because it is not known if individuals who are always connected, who receive Internet warnings, such as about new mail on their mail box, recognize that they are always connected, or if they think they are only connected when they in fact go to the Internet to check their mail.

It should be noted that the frequency of Internet access, by accessing it, shows no relevant statistical differences between the 'C' and the 'NC' municipalities, regardless of the means of access.

In the specific case of Internet users that use USB modem, a higher frequency of daily accesses was recorded by those who acquired the service outside one of the governmental programmes aimed at promoting the Information Society (such as e.Iniciativas) than by others. This result is not surprising since ICP-ANACOM's study on the subscription and impact of e.Iniciativas, in December 2009[22] (ICP-ANACOM, 2010), had already noticed that the *per capita* traffic volume of the subscribers to e.Iniciativas, was about half of the volume of those who did not subscribe those initiatives, even if there was some convergence between the groups, and even if the number of Internet connections may have no a direct relation with the traffic consumed.

It is not possible to ascertain from Table 4 how the usage of more than one Internet access platform by the same user influences the daily access that this user assigns to each of those accesses. An analysis of the frequency of access to the Internet for respondents with only one means of access showed that while daily access increases in USB modem and mobile phone accesses compared with when they are used together with other accesses, the opposite occurs for fixed Internet access. This result is confirmed by the information displayed in Table 5, which breaks down, by type of access, the share of daily users of that access (whether always connected, connected several times a day, or connected once a day), when that is the sole access, or when it is supplemented with (an)other means of access to the Internet.

According to the results of Table 5, when the user has both fixed Internet and mobile Internet, the mobile access (whether it is USB modem or mobile phone) is used less often to access the Internet. Therefore, among mobile access users, especially the USB modem access, daily access using this means drops considerably when it is supplemented with a fixed access. In the case of fixed access, daily access to the Internet seems to increase when this service is supplemented with mobile Internet accesses.

The frequency of Internet access from mobile phones is higher for the respondents that only use this device (7 out of 10 respondents use it on a daily basis) compared with those

[22] Study available at "Study on the take-up and impact of e-initiatives - Final Report".

that have more than one means of access to the Internet (about 5 out of 10 respondents use it on a daily basis).

Table 5 – Proportion of respondents accessing Internet daily, by means of access and the existence of alternative means.

	Fixed access usage	USB modem usage	Mobile phone usage
Exclusively fixed access	88.0% (1 135)	-	-
Exclusively USB modem access	-	79.8% (457)	-
Exclusively mobile phone access	-	-	69.4% (85)
USB modem and mobile phone access	-	90.4% (176)	54.0% (161)
USB modem and fixed access	93.3% (435)	44.3% (438)	-
Mobile phone access and fixed access	96.5% (511)	-	52.1% (511)
Access with the three devices	91.8% (296)	49.6% (297)	51.8% (311)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Note: The figures in brackets are the related sample size. The differences between columns are a result of the weighting used.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

It should also be mentioned that according to Analysys Mason (2010)[23], and with the exception of The Netherlands, in the Western European countries considered[24] in that study mobile broadband is regarded as a second access, complementary to fixed broadband, instead of being used as the first access. In the Eastern European countries, on the other hand, mobile broadband and fixed broadband are seen as competitors, and their prices are quite similar.

Analyzing the socio-economic characteristics of the respondents and their relation with the daily frequency of Internet access using different access platforms, only considering the users that use Internet exclusively via fixed access and USB modem (because, as

[23] Study available at http://www.analysysmason.com/Research/Content/Reports/RDMB0_Triple-play_pricing_study_Aug2010/.

[24] The Western European countries considered in Analysis Mason (2010) were: Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, The Netherlands, Ireland, Norway, Portugal, Sweden, Switzerland, and The United Kingdom.

observed, the use of these accesses together by the same user does influence their usage), it was found that:

a) There seems to be no gender difference regarding the frequency of Internet access, regardless of the respondent having a fixed access or a USB modem access. It should be noted however that frequency of access does not mean service subscription. Regarding service subscription, some studies mention that men have a higher subscription rate than women. This is confirmed by INE data obtained from their survey on the use of information and communication technologies by families – 2011 (INE, 2011), according to which 58.1% of men, among all respondents aged 16 to 74, used the Internet, while the rate was about 52.5% for women. According to ITU (2011) this is because women do not have the same opportunities as men in terms of employment and education, nor salary equality, even in developed countries;
b) Regarding the age group, the results show that among USB modem users the age group with the largest proportion of respondents using this access on a daily basis is the 25 to 44-year-olds. In the case of users exclusively using fixed access there is an inverse relationship between the daily Internet access and the user's age group. Thus, the older the person the less frequent the daily usage of the fixed access;
c) Concerning education level and income, as reported in other studies such as that by ITU(2011), in developed countries the subscription to the Internet service is higher for respondents with higher education levels, and mainly for higher income respondents. According to the results of the present survey this conclusion appears to be valid, both for USB modem users and for fixed access users;
d) Almost half of the respondents who live alone say they use their USB modem access more than once a day, contrary to respondents that live with (an)other person(s), who have a lower frequency of USB modem usage. In the case of fixed access the frequency of access to the Internet does not seem to be influenced by the fact that the user lives alone or with other people in the household;
e) The South region is notable for being the region of Portugal with the highest frequency of daily Internet access via USB modem, on average. In the case of fixed access, no region appears to stand out.

According to Analysys Mason (2011), by the end of 2010 USB modem daily access usage, regardless of whether this means of Internet access is supplemented by others, was about 48.1% in France, 32.5% in Spain, and 64.0% in the U.S.A. The results of this survey for Portugal (64.2%) are similar for those found for the U.S.A although, as previously mentioned, the Analysys Mason (2011) method differed from that used for the survey that gave rise to this study.

ACTIVITIES CARRIED OUT ON THE INTERNET

Several studies, such as Ofcom (2010) and ITU (2011), mention the activities that are most often carried out on the Internet by users. These studies, however, do not assess whether different means of access may be associated with different activities, or if the complementarity between different means of access has any influence on a higher or lower daily access to these activities from each means of access.

This type of analysis was even more relevant after it was found that frequency of access to the Internet using a certain means of access is influenced by its combined usage with other means of access, given the possibility that the effect of that combination of different means of access is also reflected in the activities carried out from different means of access.

The design of the survey carried out for this study makes this analysis possible.

It started by verifying the activities that are carried out on the Internet by users with just one means of Internet access. Figure 5 shows the results obtained.

Regardless of the means of Internet access, the activities with a higher rate of daily usage users are access to electronic mail[25], to social networks, to online chat services, and doing searches for leisure or for school and work purposes. These results agree with those of ITU (2011).

Among the activities with a lower rate of daily usage users are those related to home banking[26], e.Government, buying products or services, and making calls through the Internet.

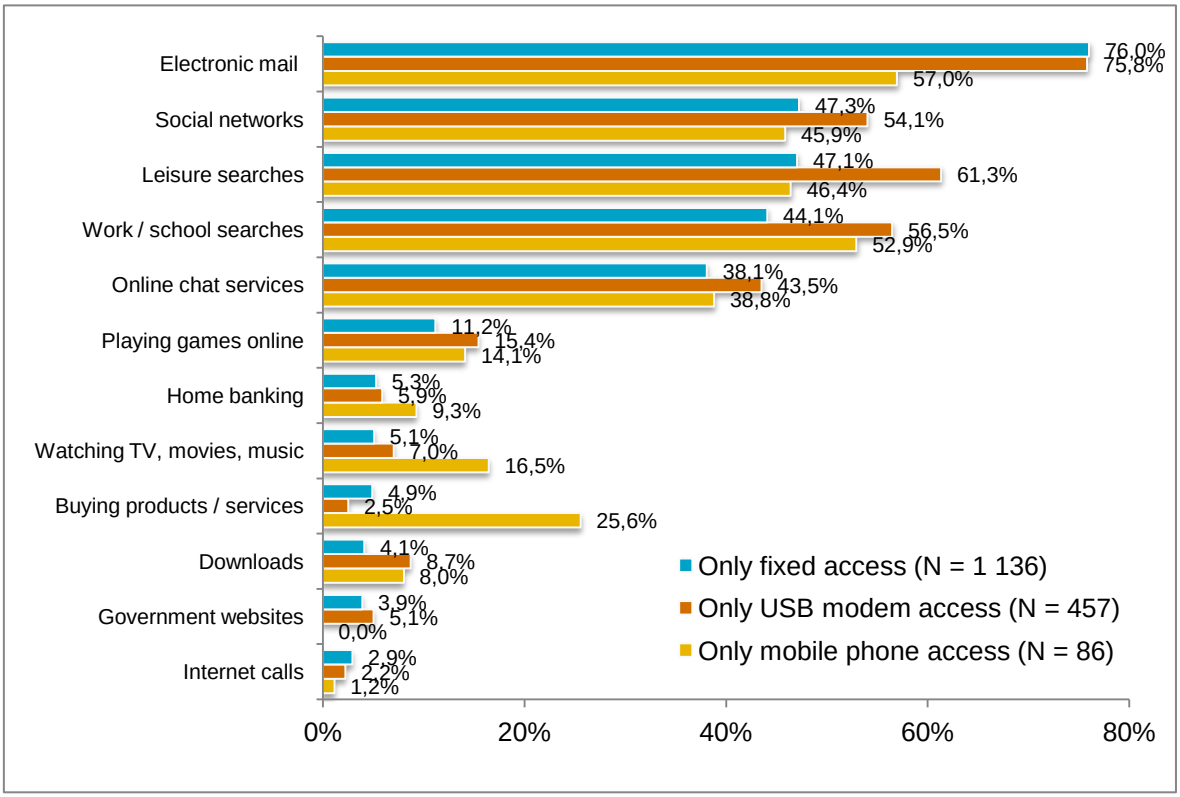
[25] "Correio eletrónico" (electronic mail) is the Portuguese term for the English *e-mail*.

[26] Home banking also known as e-banking or electronic bank, is the access and potential carrying out of financial operations from the secure web page of the bank of which the user is a customer.

It should be noted that regardless of the means in question, accessing electronic mail is the activity that users most commonly engage in on a daily basis. The activity with the lowest daily access is making voice calls through the Internet, in the case of fixed and USB modem access, and visiting Government websites, in the case of mobile phone access.

In comparison with other users, it is clear that: (a) a high proportion of users with exclusive USB modem access connect to the Internet on a daily basis to conduct leisure-related searches and; (b) a high proportion of users with only mobile phone access, visit the Internet every day to buy products and services, watch TV, movies, or to listen to music over the Internet.

Figure 5 – Rate of respondents who access the Internet on a daily basis, by means of access and type of activity carried out on the Internet, among respondents with an Internet connection.



Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

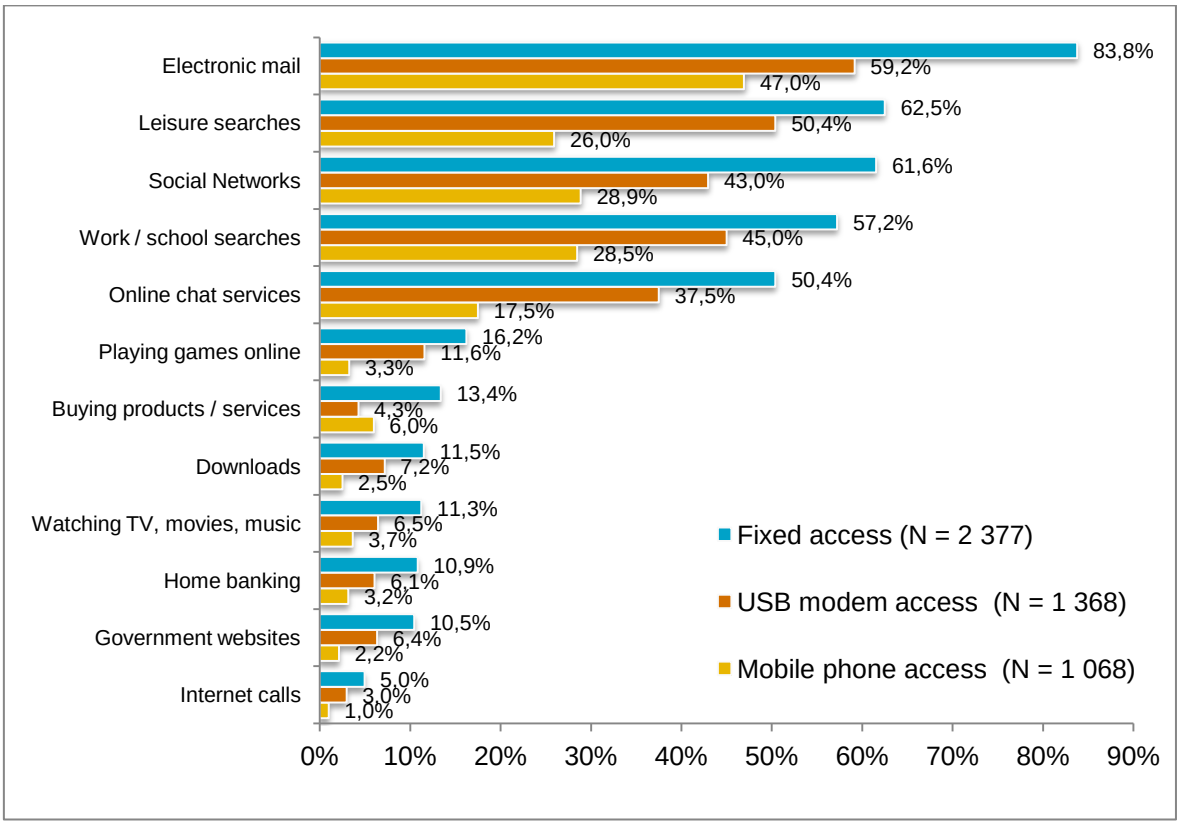
The frequency of access was compared according to the activities carried out between users in 'C' municipalities and those in 'NC' municipalities, for fixed access users and USB modem users. This analysis was not conducted for users with only mobile phone access because there were too few in the sample.

In the case of users with only USB modem access there was a higher number of accesses to watch movies, series or to listen to music in the 'C' municipalities than in 'NC' municipalities, while there were no differences regarding other activities carried out on the Internet.

In the case of users with only fixed access, there was no difference between those in 'C' or 'NC' municipalities with regard to the activities carried out on the Internet from those accesses.

When the respondents have one or more means of Internet access, fixed access users are those with a higher number of daily accesses, for all activities (see Figure 6), which reflects a higher usage of fixed accesses versus mobile accesses when the user has both options, as previously mentioned.

Figure 6 – Rate of respondents that access the Internet on a daily basis, by means of access and type of activity carried out on the Internet.



Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

The analysis of the activities carried out on the Internet based on respondents' characteristics, such as gender, age group or education level, makes it possible to see if the usage is similar for users with only USB modem access and those with only fixed

modem access. Users with only mobile phone access will not be taken into account due to their small significance in the sample[27].

The activities carried out on the Internet were divided into two groups and users were asked about them, regardless of their frequency of access to them.

Group I included the activities with a higher frequency of daily access by users with only one Internet access platform. These are access to electronic mail, to social networks, to online chat services, and leisure, work or school related searches. Relating the activities carried out with the characteristics of the respondents, the analysis is based on the proportion of respondents that carried out these activities on a daily basis, as shown below.

Group II includes the activities with a lower frequency of daily accesses, such as gaming, watching TV, movies and series over the Internet, downloading music, movies or other content, making calls, buying products or services, and accessing home banking and Government websites. Considering that fewer users perform these activities every day, it was decided to analyse the proportion of users who do not use these services on a daily basis, instead of those that do.

Thus, comparing men with women according to the exclusive possession of fixed access or USB modem access it was found that for USB modem access, men have a higher frequency than women of daily access to social networks, online chat services and leisure, work or school related searches. In the case of fixed access, the rate of male users accessing the Internet on a daily basis only seems to be higher than female's with regard to leisure related searches.

Regarding the group II activities, women showed a greater predisposition than men to not use the accesses, regardless of the activity and the type of Internet access available. The exceptions were access to home banking and making calls over the Internet, using a USB modem, where the rate of non-users does not seem to depend on the individual's gender.

The analysis by age group of users with fixed access alone suggests that the older the user the less likely they are to access the internet daily for group I activities, except for leisure related searches (where age does not seem to be a factor). In the case of USB modems, the inverse relationship between the age group and the proportion of daily users

[27] Given there was a sample of 80 respondents with only mobile phone Internet access, breaking it down into groups does not permit a valid analysis.

only occurs with the access to social networks and to online chat services. For access to electronic mail and for personal, leisure or work related searches using USB modem accesses, there are differences between the age groups, although there is not an inverse relationship (for example, the number of searches related to work or school tasks is higher for respondents age 25 to 44 and lower for respondents age 55 or over).

Regarding the activities in group II, for respondents with fixed Internet access alone, the higher the age group to which the respondent belongs the lower the tendency to perform daily activities such as gaming, watching TV, series or movies, and to download music or other content. It is also noticeable that regardless of the means of Internet access used, the proportion of users that buys products or services is higher among the 25 to 34 age group and lower in the older age groups; on the other hand, daily access to home banking and to Government websites is lower in the 15 to 24 age group.

No differences were identified in regard to the education level and the group I activities carried out on a daily basis by respondents on the Internet, for the different means of Internet access.

In group II activities, for users with fixed access alone, there is a direct relation between the daily frequency of access to home banking and the respondent's education level. But this is not true for Internet users with exclusive USB modem access (the third education level is the group with the lowest rate of users).

As with the education level, the relationship between the individual's social class (from A to E, A being the highest, and E the lowest) and the group I activities carried out by respondents does not vary with the type if Internet access used. With two exceptions. The first is the daily frequency of access to the Internet for leisure related searches, which increases along with the respondents social class, but only for users with fixed access alone, while among users with USB modem alone, only the highest social classes (A/B) are conspicuous for a higher frequency of daily performance of this activity, compared with lower social classes. The second exception is seen in the access to social networks and to online chat services, which is higher for respondents from social class E than for respondents from other social classes, but only for users with fixed access alone.

In the case of the group II activities, there are no differences between users exclusively using a USB modem and exclusively using fixed Internet access in terms of the daily frequency of the activities of buying products and services over the Internet, accessing Government websites, watching TV, series and movies, and downloading. There are

differences between these two user groups in regard to the daily frequency of access to home banking, with fixed Internet access users being more likely to access home banking daily, the higher their social class, while for users exclusively accessing via a USB modem only the highest class (A/B) is notable for a higher rate of users accessing that service compared with the other classes.

Finally, regarding country regions, in the case of users with exclusive fixed Internet access, the North Interior stands out, while in the case of users exclusively using a USB modem the South stands out, both for having a lower frequency of daily access in all group I activities except in work related searches, where there was no regional difference. Greater Lisbon also stands out since in the case of users with only USB modem it has a higher proportion of users accessing electronic mail on a daily basis, and in the case of fixed access, it has a higher proportion of users that access chats on a daily basis.

In the case of group II activities, no major differences were found for the relationship between the region of the country and the daily access to those activities, between the two user groups: with USB modem exclusively and fixed access exclusively.

In short, there are some differences in the daily usage of Internet access by users accessing with a USB modem exclusively and with fixed access exclusively, in regard to their personal characteristics.

The distribution of the destinations of calls made through the Internet is fairly similar for fixed access users and USB modem users, contrary to what happens with mobile phone users – see Table 6. Calls made using the Internet[28] were mainly to computers, regardless of the means of access used. The second largest destination of calls placed through the Internet is the international network, for the fixed access and the USB modem access, while for mobile phone access it is the mobile voice network.

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[28] The cost of calls placed from Skype are available at http://www.skype.com/intl/pt/prices/. The price of calls (per minute) varies according to the destination country and the type of contract established, calls being cheaper when there is a monthly fee. For example, in September 2011, in a tariff scheme without a monthly fee, a call placed via Skype to the national fixed network cost 22 cents, and to the mobile network it cost 28.6 cents (including Value Added Tax), while the cost is lower with a monthly fee, the “discount” being higher, the higher the monthly fee.

Table 6 – Destination network of the calls made through the Internet, by means of access.

	Fixed	USB modem	Mobile phone
To computers	63.6%	58.9%	50.8%*
To the international fixed network	31.7%	33.2%	16.5%*
To the national fixed network	17.5%	16.4%	18.1%*
To mobile phones	3.5%	6.0%	23.0%*
NA/NR	4.4%	4.2%	12.2%
N	(535)	(214)	(43)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

5.2. SERVICE PROVIDERS, ACCESS CHARACTERISTICS AND FORMS OF PAYMENT

REASONS FOR CHOOSING THE INTERNET ACCESS SERVICE PROVIDER

The reasons that lead the respondents to choose their Internet access service provider differ for each means of access.

For mobile phone Internet users, the main reason for choosing the operator was the fact that they were already their mobile voice customers (67.0%), followed by the fact that this provider was the one that best satisfied their needs (8.9%). For USB modem Internet access users, the main reason indicated for choosing the operator was “No special reason” (20.0%), closely followed by the price factor (18.2%). In the case of fixed access, the main reason was the subscription to a service package (almost half of the replies – 42.2%), followed by the price factor (28.9%).

Breaking down the reasons for choosing the Internet access service provider by ‘C’ and ‘NC’ municipalities, for users that access the Internet using a USB modem, in the ‘NC’ municipalities, the second commonest reply for choosing that service’s operator was the network coverage (19.1%), while in ‘C’ municipalities this reply came fourth (12.7%), after price (18.1%) and better satisfaction of needs (15.4%). This result supposes that 3G (UMTS) network coverage is more highly valued in ‘NC’ municipalities than in ‘C’

municipalities, perhaps because 3G coverage differences between them are more obvious.

It should be mentioned that according to IDATE (2011), although the 3G mobile broadband coverage of the population is 98%, in terms of the territory coverage it is about 67% (in the case of 3G+ mobile broadband, there is an 85% coverage of the population versus a 66% coverage of the territory.)

SUBSCRIBED DOWNLOAD SPEED

The proportion of individuals who were able to answer about the speed subscribed with the service provider was very low, regardless of the type of access – only 19.0% of fixed Internet access users, 31.9% of USB modem users, and 3.9% of mobile phone users knew the answer to the question about the speed subscribed with the service provider. These results suggest that USB modem users are more attentive than the others about the offers they purchased.

Only the results of the speeds contracted by USB modem and fixed access users are presented, since after obtaining the sampling errors associated with each of the three samples the sample size of mobile phone accesses was not considered acceptable. The sample size on the speed of fixed access was considered reliable, and the sample size for the USB modem accesses was considered acceptable.[29]

Regarding the respondents who knew the answer to the question about the subscribed speed associated with their access, in the case of USB modem mobile accesses there was a higher rate of responses from men than from women, and from respondents aged 15 to 29 than from the other age groups. Regarding fixed access, there was a higher rate of responses from men than from women, from individuals in the 24 to 44 age group than in the other age groups, from those with secondary education than those with other education levels, from those living alone than those who live with others, and from those who live in Greater Lisbon, Greater Porto and in the Centre Coastal regions versus those who live in other regions of the country.

[29] Estimates were defined by their sampling error. Thus, when the sampling error is below 10%, the estimate is considered to be reliable; when the sampling error is between 10% and 25%, it is considered an acceptable estimate, and when the sampling error is above 25%, the estimate is considered not reliable.

As mentioned in ICP-ANACOM (2011a), in 2010, the maximum subscribed speed of a USB modem mobile broadband retail offering was 43.2 Mbps, compared to 1 GB in the case of fixed access offers. The speeds most usually provided in the USB modem offerings were 1 Mbps, 4 Mbps and 7.2 Mbps, while in fixed access offerings they were 10 Mbps, 20 Mbps, 30 Mbps and 100 Mbps.

Based on the results of the survey, for the respondents who knew the answer to this question the contracted download speed most mentioned (mode) by users with USB modem access was 4 Mbps, also corresponding to the median[30], while the average was 8.2 Mbps.

Among users with fixed access, the mode of the contracted download speed was 12 Mbps, the median was 20 Mbps, and the average was 25.4 Mbps. However, it is important to note that since the respondents with fibre accesses were overestimated in the sample[31] and also have a higher response rate than the other respondents with fixed access[32], it is supposed that the statistics now mentioned, related to the fixed access, are overestimates. To minimize this issue, subscribed downstream speeds were analyzed by type of technology associated with the fixed access, which were compared with the contracted speeds reported by service providers in the information they provide every year to ICP-ANACOM (2010 data).

The average subscribed speed mentioned by respondents is, as would be expected considering the technical characteristics of the accesses, higher for users with fibre accesses (41.2 Mbps). Cable accesses follow, with the average subscribed speed mentioned by respondents being 21.2 Mbps, and then comes ADSL access, with an average speed of 14.3 Mbps. These results are close to the values indicated by the service providers.

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[30] After ordering the respondents' replies, the median represents the central value in the distribution table.

[31] The sample includes a proportion of fibre access users among all fixed access users (20.0%) that is higher than the proportion obtained based on the service providers' data (about 8.1%, in the second quarter of 2011). The data regarding the service providers is available at "Quarterly reports by service".

[32] The rate of replies to the question about the subscribed download speed associated with fixed access was 25.8% for fibre accesses, 20.1% for ADSL accesses, and 17.0% for cable accesses.

AVERAGE INTERNET ACCESS PRICE OBSERVED

When asked about who pays for the Internet access, most respondents said they pay the cost of the access in full, regardless of the means of Internet access. The proportion of Internet accesses that is paid, in full or partially, by the employer is higher for respondents with USB modem (11.1%), followed by mobile phone usage (9.1%). Fixed accesses, fully or partially paid by the employer, correspond to a share of 3.1% - see Table 7.

Table 7 – Distribution of respondents by agent paying the Internet access and means of access.

	Fixed	USB modem	Mobile phone
Fully paid by self or relative	96.8%	88.7%	91.0%
Partially paid by employer	0.9%	2.0%	1.2%
Fully paid by employer	2.2%	9.1%	7.9%
NA/NR	0.1%	0.2%	0.0%
N	(2 377)	(1 368)	(1 068)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

Internet access is mainly paid on a monthly basis – 96.4% in the case of fixed access, 69.6% in the case of USB modem, and 53.5% in the case of mobile phone access. For mobile accesses, pre-payment for a number of hours is also an option (13.0% in the case of USB modem, and 16.3% in the case of mobile phone access), followed by pre-payment for the amount of traffic consumed (3.2% and 10.8%, respectively, for USB modem Internet users and mobile phone users).

At this stage it is important to mention that the retail broadband offerings available on the market and associated with each means of access – fixed, by USB modem, and by mobile phone – are different, and therefore it is not possible to make direct comparisons between the average prices observed to be associated with each means of Internet access. However, the prices observed based on the current survey are presented by way of example.

When asked about the price paid every month, on average, for the Internet access, or in the case of fixed Internet, for the offering that includes the Internet access, 77.2% of respondents with USB modem accesses knew the cost, 49.5% of respondents with mobile phone accesses knew it, and 68.4% of respondents with fixed Internet access knew it.

The price most mentioned (mode) observed by USB modem access users was €15 and for mobile phone access it was €5 – see Table 8. However, when breaking down the results according to how the USB modem was acquired, i.e. if it was through an Information Society promotion measure or not, in the first case the observed mode is €15, and otherwise it is €30.

In the case of fixed Internet access, when it was acquired as part of a services package, the observed price most mentioned was €50, compared to €20 when this service was purchased separately. This result is explained by the fact that the price paid in a service package also corresponds to the other services.

On average, the observed prices mentioned by users were €21.7 for a USB modem (about €15.7 when acquired through a programme for promoting Information Society), and €14.6 for mobile phone Internet accesses. For fixed access, the average price observed was €47.1 when it was included in a package, and €23.0 when purchased on its own.

Table 8 – The observed price paid by the Internet access (in Euros), by means of access.

	Fixed (isolated)	Fixed (package)	USB modem	Mobile phone
Average	€23.0	€47.1	€21.7	€14.6
Median	€20.0	€45.0	€21.0	€10.0
Mode	€20.0	€50.0	€15.0	€5.0
N	(163)	(1463)	(863)	(529)

* Average – represents the average value from the replies given by respondents.

** Median – having ordered the respondents replies, the median represents the central value in that range/.

*** Mode – is the value most frequently mentioned in the replies given by respondents.

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

In the case of USB modem users, the average monthly price observed is higher for respondents who also have mobile phone Internet, regardless of whether they use fixed access or not, suggesting that here mobility is more valued than for the other respondents.

Breaking down the analysis by ‘C’ and ‘NC’ municipalities suggests that on average the average monthly price observed for USB modem mobile Internet access is about 16% higher in the ‘C’ municipalities (€22.7), compared to the ‘NC’ municipalities (€19.6). This situation may be explained by: a) the higher subscription to Government programmes

aimed at promoting broadband in 'NC' municipalities, and b) a possible subscription to higher speeds in 'C' municipalities than in 'NC' municipalities.

It should be mentioned that according to ICP-ANACOM (2011a), in 2010 the price of the USB modem Internet access retail offers stood at between €12.6[33] and €49.9[34] and, in the case of mobile phone access, between €0.91[35] and €15[36]. The price of the fixed Internet access could vary between €10[37] and €254[38].

According to OECD data for September 2010, the price of fixed broadband offerings per Mbps was in the range €0.25 (1 GB offerings) to €40.31. Although the minimum price in Portugal is one of the lowest compared with the minimum prices in the remaining EU27 countries, the maximum price per Mbps paid for fixed Internet in Portugal was one of the highest of the EU 27.

5.3. SATISFACTION WITH ACCESSES USED

Within a set of Internet access features, such as coverage and reliability, the subscribed speed, the price paid, traffic limit and time limit, and the customer service, general satisfaction is considered to be good (with an average satisfaction of about 3 points on a scale of 1 to 4, where 1 means "not at all satisfied" and 4 means "very satisfied") regarding the three means of access – see Figure 7.

As expected, price was the Internet access service feature that drew the lowest average satisfaction, regardless of the means of Internet access. Nonetheless, the average satisfaction with the price can also be considered good, since the proportion of individuals who said they were satisfied was 69% for USB modem access, 73% for mobile phone access, and 79% for fixed access.

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[33] Post-paid monthly fee anywhere, 1 Mbps subscribed speed and traffic up to 300 MB.

[34] Post-paid monthly fee anywhere, 43.2 Mbps subscribed speed and unlimited traffic.

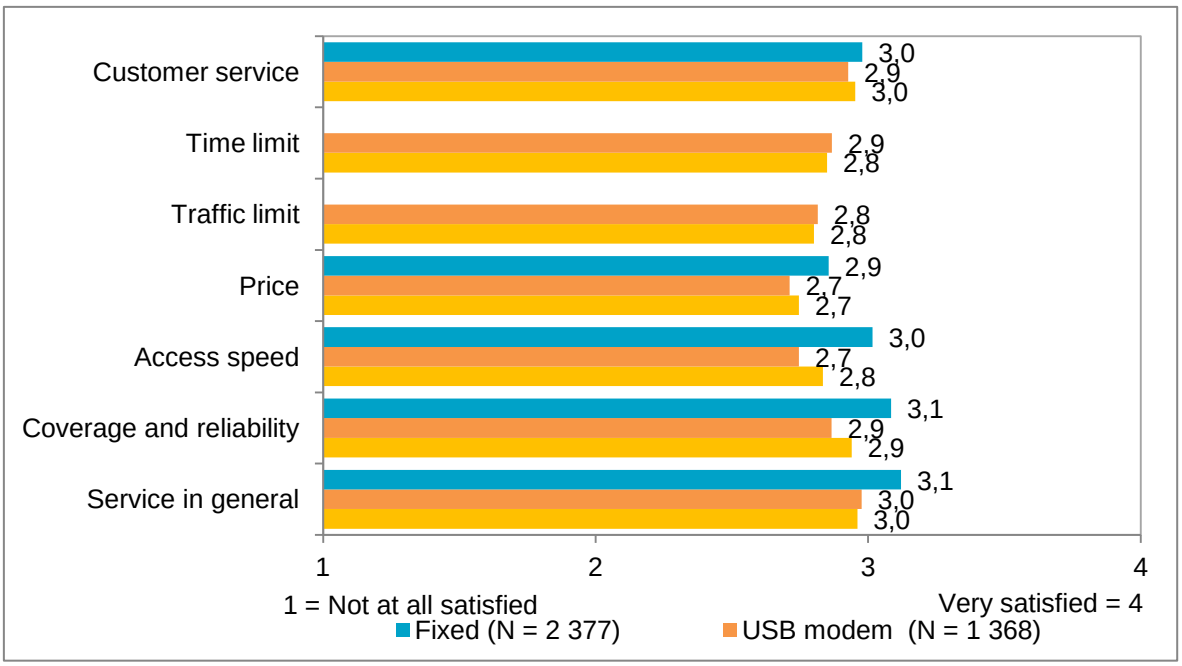
[35] Occasional usage for one day.

[36] Post-paid monthly fee anywhere, 7.2 Mbps subscribed speed and traffic up to 600 MB.

[37] Value that corresponds to the monthly average in the first year of service subscription.

[38] Monthly fee per fibre optic Internet access, included in a services package with fixed telephone service, subscription television, and fixed and mobile Internet (USB modem), with a speed of 300 Mbps or more and unlimited traffic.

Figure 7 – Respondents' satisfaction levels regarding access features, by means of Internet access.



Note: Only respondents with USB modem and mobile phone accesses were asked about the satisfaction level regarding the time limit and the traffic limit.

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

The results of the survey suggest there is a greater satisfaction with the Internet service in general in regard to the fixed Internet access, compared with mobile accesses (more than 8 out of 10 respondents said they were satisfied or very satisfied with their mobile Internet access, a share that rises to over 9 out of 10 respondents for fixed Internet), which is a significant statistical difference.

The results of ECSI 2010 (ICP-ANACOM, 2011c) regarding the national customer satisfaction indexes in the communications sector[39], had also established there was a greater satisfaction with fixed Internet in comparison to mobile Internet (7.17 and 6.88 for fixed accesses and mobile accesses, respectively, on a scale of 1 to 10, where 1 means "not at all satisfied" and 10 means "very satisfied").

[39] ANACOM (2011c) presents the results of the indexes for image, expectations, perceived quality, perceived value, satisfaction, complaints, and loyalty, for all communications sectors in Portugal. Furthermore, Internet sector results are broken down by fixed Internet and mobile Internet. Information available at "ECSI Portugal - publicados resultados de 2010".

It should be noted that no relevant statistical differences were established in the satisfaction with the USB modem service in general, whether it was acquired under a Government programme, in a service package, or otherwise.

Regarding the features of the means of Internet access, in general, the average satisfaction with the features of mobile accesses, whether USB modem or mobile phone, is also lower than the average satisfaction with fixed access. The sole exception is the average satisfaction with customer care, which is similar for the different Internet access platforms.

In the case of USB modems, there was a lower satisfaction level regarding the price paid, for users that acquired that service outside a service package or a Government programme. Regarding traffic limits, users with a USB modem from an Information Society promotion programme seem to be less satisfied than the other USB modem users. It should be noted that USB modem Internet users that subscribed the service from a service package do not seem to downplay that service, even with an associated traffic limit.

Correlating these variables, it was established that the factors that apparently most influence the satisfaction levels for mobile Internet access services, whether via USB modem or mobile phone, are coverage and reliability, and the subscribed speed associated with them. The factors the mostly justify the general satisfaction with the fixed Internet service were the same as for mobile accesses.

Nonetheless, as previously mentioned, a large share of Internet users could not specify the subscribed speed of their access (68.1% for USB modem accesses, 96.1% for mobile phone accesses, and 81.0% for fixed access), or the amount paid for it – 22.8% for USB modem accesses, 50.5% for mobile phone accesses, and 31.6% for fixed access.

Considering that, as mentioned, respondents seem to be less satisfied with USB modem Internet access than with fixed access, there was an attempt to assess if the perception regarding mobile Internet gains or loses when the individual also had a fixed access. Average satisfaction with the service in general and its features was thus obtained according to the respondent's type of Internet access.

Among USB modem users, it was found that the use of a fixed access, too, generally adversely affects the rating given by the user to the USB modem access. This is because respondents' perception of the USB modem service in general is lower when they also have a fixed platform, compared with when they have no fixed access. The same was

found for the average satisfaction with the price paid for the USB modem, and for the satisfaction with the traffic limit[40].

With mobile phone Internet users, only the average satisfaction with the price seems to be penalized when the user also has a fixed access.

These results seem to suggest that regarding the replacement between fixed and mobile accesses, USB modem Internet access is more readily considered a replacement for fixed Internet access than mobile phone access.

As would be expected given the above-mentioned results, in the case of fixed access, its use together with mobile accesses, regardless of the means of access, leads to the valuing of this means of access – this happens in respondents' perception of the price paid and the subscribed speed.

Furthermore, no differences were found in the satisfaction levels regarding the prices among the users with fixed Internet access within and outside a service package, and no valid statistical differences were established regarding users with a USB modem under a Government programme or outside a Government programme.

Regarding the satisfaction by service provider, while in the case of USB modems the average satisfaction, both with the service in general and with the service conditions, was statistically similar for the different providers of this type of access, in the case of fixed access and mobile phone access there were differences in the satisfaction levels for the different Internet access service providers.

Satisfaction levels of respondents in 'C' and 'NC' municipalities, for each of the three means of access and for each of the related characteristics were compared. The results suggest that there is a higher satisfaction regarding the time limit associated to mobile accesses, both via USB modem and mobile phone, among respondents in 'C' municipalities compared to those in 'NC' municipalities. Among respondents that use the mobile phone to access the Internet, satisfaction with the contracted speed and the traffic limit were also higher in 'C' municipalities.

[40] Regarding the traffic limits, this result may be partly due to the fact that in 2010, according to ICP-ANACOM (2011a), about 40% of mobile broadband offerings had no associated traffic limits, compared to a rate of 55% in the case of fixed broadband.

5.4. INTENTION OF GIVING UP INTERNET ACCESS AND ITS POTENTIONAL REPLACEMENT

INTENTION TO GIVE UP THE INTERNET ACCESS

Respondents were asked about their intention to give up their current means of Internet access during the next twelve months.

Even though respondents were questioned regardless of whether or not they were responsible for the option of keeping the access (which may underestimate the proportion of users intending to give it up, particularly in the case of fixed network, which is shared by the household), the difference found between the fixed access and mobile phone access is too high to be only the responsibility of the individual who answered the question.

The share of respondents who said they were considering giving up is higher for mobile accesses than fixed accesses, particularly USB modems – 12.7% for USB modem, 5.6% for mobile phone access, and 3.5% for fixed access (see Table 9). In addition, the intention to give up the USB modem is greater when the user uses mobile phone access as well, a situation that was also observed for mobile phone accesses (where the intention to give up is greater when they also have a USB modem).

Table 9 – Share of respondents considering giving up their Internet access, by means of access.

	Fixed	USB modem	Mobile Phone
Considering giving up	3.5%	12.7%	5.6%
Not considering giving up	93.8%	82.9%	90.4%
Na/Nr	2.7%	4.4%	4.0%
N	(2377)	(1368)	(1068)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

It was also observed that the greatest intention to give up the Internet access occurs in the group of respondents that are least satisfied; an expected result – see Table 10.

Table 10 – Share of respondents that are not very or not at all satisfied with the service, by means of access and intention to give up the access.

	Fixed	USB modem	Mobile phone
Intending to give up the access	28.2% (83)	37.3% (173)	36.7%* (60)
Not intending to give up the access	5.2% (2229)	9.7% (1135)	8.9% (965)

Note: The values in brackets represent the sample size associated to each sample.

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

In ANACOM (2011c), it was mentioned that in 2010 the lowest satisfaction and loyalty index was associated with mobile Internet (6.70, on a scale of 1 to 10, where 1 means "not at all satisfied" and 10 means "very satisfied"), in comparison with fixed Internet (6.97 in the same scale), even if loyalty regarding mobile Internet has increased (0.24 points) from 2009 to 2010. This study also mentions that in comparison with 2009, in 2010 there was a decline in the perceived value of mobile broadband, while fixed broadband registered improvements in all indexes between 2009 and 2010.

REASONS FOR GIVING UP INTERNET ACCESS

Among the reasons for considering giving up their access, the high price was the reason most indicated by respondents, regardless of the means of access at stake – see Table 11. It should be noted that this reason was mainly relevant in the case of mobile accesses (42.4% for USB modem, 53.4% for mobile phone access, and 33.2% for fixed access).

The second most frequent reply differed according to the means of access. Thus, the second reason most mentioned for USB modem was the service's slow speed (33.6%) together with the existence of other forms of Internet access (33.1%). In the case of mobile access, it was also the existence of other accesses (39.9%), and for fixed Internet access, it was its lack of mobility (30.1%).

Table 11 – Reasons for considering giving up the Internet in the next twelve months, by means of access.

	Fixed	USB modem	Mobile phone
High price	33.2%*	42.4%	53.4%*
Lack of mobility	30.1%	-	-
Other accesses	18.3%	33.1%	39.9%*
Slow speed	9.0%	33.6%	14.5%
Less reliable	15.5%	-	-
Bad coverage	-	21.7%	-
Limited traffic	-	11.4%	-
NA/NR	12.8%	3.4%	9.6%
N	(83)	(174)	(60)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

INTENTION TO REPLACE CURRENT INTERNET ACCESS BY ANOTHER ONE

Regarding replacement by another means of Internet access, respondents with USB modem recorded the highest intention of replacing it, with about 32.8% of them saying that they considered replacing that means of access, in comparison with about 13.2% for the case of fixed accesses, and 1.3% for mobile phone accesses – see Table 12.

Table 12 – Share of respondents that intend to replace their Internet access, by means of access.

	Fixed	USB modem	Mobile phone
Intending to replace	13.2%	32.8%	1.3%
Not intending to replace	70.6%	50.2%	77.8%
Na/Nr	16.2%	17.0%	20.9%
N	(83)	(174)	(60)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

Of the roughly 32.8% of respondents that intend to replace their USB modem access, fixed Internet access is the main alternative to replace it, while the proportion who are considering exchanging it for mobile phone access is merely residual. These results are

not contrary to the previous assumption, that there is a greater proximity, for Internet users, between fixed access and USB modem access than between fixed access and mobile phone access.

In the case of users with fixed Internet access or mobile phone access, the small number of respondents who say they intend to replace their access does not have the statistical significance to indicate to which access platform they intend to change.

5.5. NON-SUBSCRIPTION, AT PRESENT, TO OTHER MEANS OF INTERNET ACCESS, AND USAGE OF THOSE OTHER ACCESSES IN THE PAST

Current Internet users were asked about the reasons that would lead them not to subscribe to another means of access besides the one or those they had at the date of the survey.

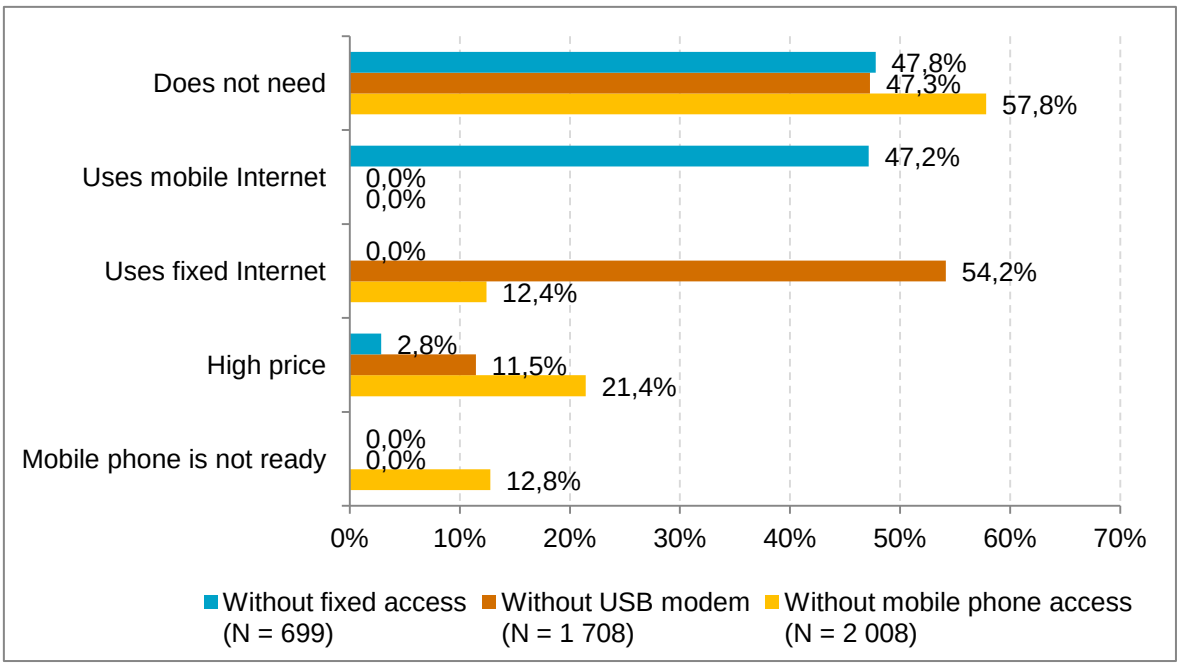
REASON FOR NOT USING ANOTHER MEANS OF INTERNET ACCESS

Figure 8 shows the reasons given by respondents for not using another means of Internet access beside the one(s) they had at the date of the survey:

a) Among respondents who did not have a USB modem mobile access to access the Internet, the main reasons given were the use of a fixed Internet access (54.2%), followed by no need to use a USB modem (47.3%);
b) Among respondents who did not have a mobile phone Internet access, more than half said they did not use this service because they felt no need for it (57.8%), and other reasons for not subscribing were the high price (21.4%) and the fact that the mobile phone was not ready to access the Internet (12.8%);
c) Among respondents who did not have a fixed access to access the Internet, the main reasons given were having no need (47.8%) and the use of mobile Internet (47.2%).

Once again, these results suggest that there is some degree of replacement possibility between USB modem and fixed access, but not between mobile phone access and other means, whether fixed or via USB modem.

Figure 8 – Reasons for not using the access, by means of Internet access.



Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

REPLACEMENT OF INTERNET ACCESS MEANS IN THE PAST AND REASONS FOR IT

About 41.7% of current Internet users had already had USB modem Internet in the past and gave it up, a proportion that was considerably higher than the proportion of respondents who had a fixed Internet access and gave it up (27.6%), and the proportion of respondents who had mobile Internet access using a mobile phone (16.8%) – see Table 13.

Table 13 – Proportion of respondents who had another means of Internet access in the past.

	Gave up fixed access	Gave up USB modem access	Gave up mobile phone access
Yes	27.6%	41.7%	16.8%
No	70.5%	58.0%	83.0%
NA/NR	1.9%	0.3%	0.2%
N	(699)	(1 708)	(2 008)

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

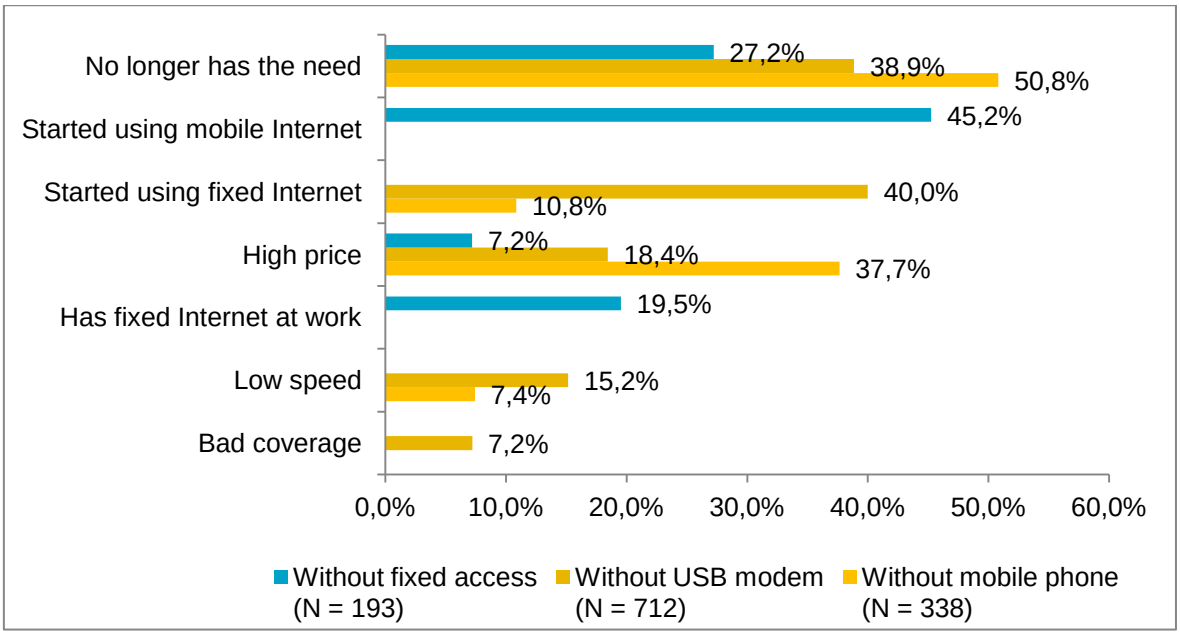
It should be noted that in the group of respondents who had had a USB modem in the past, one out of four subscribed to that service from a public policy programme aimed at promoting the access to Information Society (especially e.Iniciativas).

The reasons mentioned for giving up the former means of Internet access differ according to each means of access at stake[41] – see Figure 9.

The cost was only a relevant factor for giving up the access in the case of mobile phone Internet accesses (37.7%). Besides the price, another relevant factor to giving up mobile Internet access from mobile phones was having no need to use such access (50.8%).

In fixed access, the main reason for giving up was the usage of mobile Internet (45.2%), while in mobile accesses the main reason for giving up the former access was the usage of fixed Internet (40.0%). Again, these results lead to the existence of some degree of replacement possibility between the fixed access and the USB modem access. The lack of need to use Internet access was one of the main reasons indicated by users that gave up the USB modem access and the fixed access (38.9% for USB modem users, and 27.2% for fixed access users).

Figure 9 – Reasons for giving up the former access, by means of Internet access.



Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

[41] Even if the respondent who answered the question may not have been the person responsible for choosing between keeping or giving up the Internet access, it may be inferred that being an Internet user, the respondent also participates in that decision.

Finally, in order to assess if the reasons for giving up a means of Internet access in the past are similar to those for not adopting that type of access at present, the reasons for giving up in the past were cross-referenced with the current reasons for not subscribing, and it was ascertained that the reasons are identical in most cases – for over 60% of the sample of users without fixed Internet access and without mobile phone Internet access the values coincide, and in the case of users without USB modem the proportion of coinciding answers between the current reasons for not subscribing and the former decision to replace those accesses reaches over 80%.

6. RESPONDENTS OPINION: FIXED AND USB MODEM ACCESS

Considering the results obtained in this report (see chapters 4 and 5, regarding Internet users by means of access and type of usage assigned to those means of access), which point to the fact that some users consider that the USB modem (stick) mobile access and the fixed access have features in common, but that these Internet accesses and mobile phone accesses do not, efforts were made to understand how USB modem accesses and fixed Internet accesses are in fact compared.

6.1. COMPARATIVE OPINION: FIXED ACCESS AND USB MODEM

In order to assess how Internet users evaluate fixed access in comparison to USB modem access, all respondents with Internet access were asked about their degree of agreement with the following questions:

a. *USB modem mobile Internet is more expensive than fixed Internet*;
b. *USB modem mobile Internet is slower than fixed Internet*;
c. *USB modem mobile Internet is less reliable than fixed Internet*.

The response options were “totally disagree”, “disagree”, “agree”, and “totally agree”.

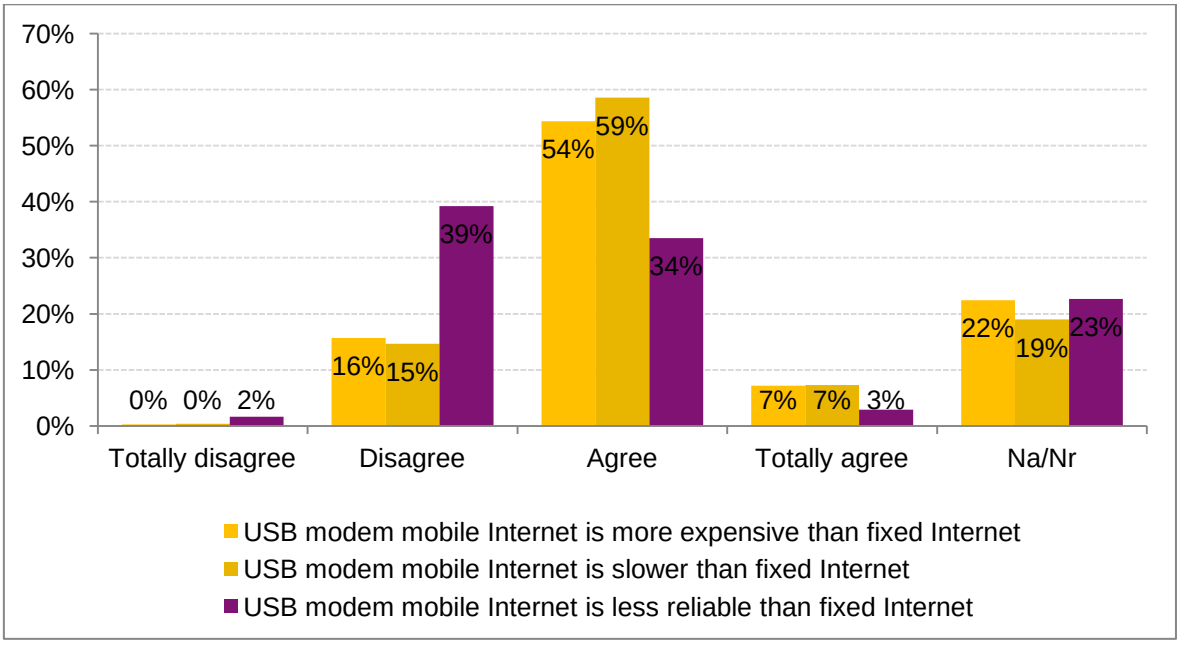
According to results there seems to be a consensus regarding the statement that USB modem mobile Internet is more expensive and has a lower subscribed speed than fixed access Internet – more than half of the respondents said that the price of the USB modem is higher than the price of fixed Internet, and that the USB modem’s subscribed speed is slower than fixed Internet’s (see Figure 10).

Concerning the reliability of fixed access and USB modem access, 40.9% of respondents agreed with the statement “USB modem mobile Internet is less reliable than fixed Internet”, a proportion that is 52.9% if the respondents who did not know how to or did not want to answer the question are ignored.

It should be noted that the proportion of respondents that do not agree with this statement is higher among respondents using USB modem exclusively and among those with both fixed access and mobile phone access to the Internet, regardless of whether the issue

was the price, speed or reliability of USB modem Internet in comparison to mobile Internet.

Figure 10 – Comparison of opinions on fixed Internet and USB modem Internet.



Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

In ANACOM (2011c), the quality and the perceived value of mobile Internet (7.45 and 6.30, respectively, on a scale of 1 to 10, where 1 means “not at all satisfied” and 10 means “very satisfied”) is lower than that found for fixed Internet (7.26 and 6.22, respectively, using the same scale).

6.2. POSSIBILITY OF SUBSCRIBING EXCLUSIVELY TO MOBILE INTERNET

When asked about the statement “*Mobile Internet is for me*” (with the following response options: “totally disagree”, “disagree”, “agree”, and “totally agree”, and not having specified whether the question concerned USB modem access or mobile Internet), 84.0% of USB modem Internet users and 81.4% of mobile phone access users agreed with the statement, a proportion that was lower for respondents with fixed Internet (63.0%), particularly when the fixed access is the only means of Internet access (47.5%).

No valid differences were established when results were broken down by ‘C’ and ‘NC’ municipalities.

Finally, regarding the possibility of having only mobile Internet in the future, more than half (64.7%) of the respondents using fixed Internet exclusively did not consider that option, a proportion that is lower in for users with fixed and mobile Internet (54.2% for users with USB modem Internet access and fixed access, and 49.3% for users with the three means of Internet access) – see Table 14.

Among the respondents that considered having mobile Internet exclusively in the future, this option was considered as long as the speed/price relation for mobile Internet was good. In this context, the acceptance of retail offerings on 4G platforms in the broadband market will, in part, be related to the speed/price relation determined by providers.

Table 14 – Distribution of respondents by responses to the question "Would you consider the option of having only mobile Internet?", by means of Internet access.

	Fixed exclusively	Fixed and USB modem	Fixed and mobile phone	Fixed, USB modem and mobile phone
Yes, if it was less expensive	11.7%	9.5%	6.6%	10.1%
Yes if the speed/price relation was good	14.7%	21.2%	28.8%	23.8%
Yes, if I need to access the Internet anywhere at any time	6.9%	5.6%	5.7%	6.9%
No	64.7%	54.2%	55.6%	49.3%
Na/Nr	2.1%	9.5%	3.3%	9.9%
N	1 059	410	563	294

Estimate: (#) Non-reliable estimate; (*) Reliable estimate; (unmarked) Reliable estimate.

Source: ICP-ANACOM, based on the results of the Survey on the means of access to the Internet.

7. CONCLUSIONS

This study set out to contribute to a better understanding of the current use of mobile Internet, whether by using a mobile phone or USB modem (stick). Fixed Internet access was also studied, since it was expected that its usage together with the use of a mobile access could affect the usage of the mobile access, compared to when the user has mobile access alone.

It was found that the exclusive use of one type of access is more frequent among users with fixed Internet access.

It was also established that when users have both fixed access and mobile access to the Internet (whether by USB modem and or by mobile phone) they tend to display a higher frequency of daily access from the fixed access than from the mobile access(es).

When satisfaction levels were considered, respondents with fixed access were found to be more satisfied with the service than mobile access users, whether by USB modem or by mobile phone.

Price was the characteristic drawing the lowest level of satisfaction, even though it can still be considered good (3 points on a growing scale of satisfaction, from 1 to 4). It was found that satisfaction with the price of mobile services decreased when the user also has a fixed access, while the satisfaction with fixed access increases when the user also has one or more mobile Internet accesses.

Within the set of users that had Internet when the survey was carried out, there was a higher withdrawal from USB modem accesses than from fixed accesses or mobile phone accesses. The intention to give up the current Internet access in the future or its potential replacement by other means of access is also higher in respondents with USB modem and lower in respondents whit fixed access, and a relation was found between the intention to give up the access and the satisfaction level related to it.

Offering mobility, USB modem mobile offerings, given their technical characteristics, have lesser downstream speeds and lower subscribed speeds than fixed access offers, a situation that users perceive. Furthermore, fixed access is more often included in a services package, under the same conditions, such as traffic and speed, than the USB modem access. Nonetheless, mobility seems to be a relevant factor for a fraction of users, even if it is not possible to quantify this share with precision.

It was found that network coverage is more relevant to choosing the provider of USB modem services in ‘NC’ municipalities than in ‘C’ municipalities. There are also differences between ‘C’ municipalities and ‘NC’ municipalities in regard to the activities carried out from fixed accesses and from USB modem ones – among users exclusively with USB modem access there is a higher frequency of daily access to movies, series or to listen to music in the ‘C’ municipalities than in ‘NC’ municipalities, while in users using fixed access exclusively no major differences were found between the frequency of access to the activities engaged in. No differences were found regarding the longevity and frequency of the Internet access using the different means of access in ‘C’ and ‘NC’ municipalities, either in users exclusively with USB modem or those exclusively with fixed Internet.

Having analyzed this study’s questions, others are raised, such as the fact that there is a higher daily usage of fixed access when the respondent also has mobile accesses, especially via USB modem, and the reasons for using a fixed access instead of a USB modem access. The analysis of the duration of the Internet connections is also opportune in order to distinguish the different mobile access usages by USB modem and mobile phone, as well as to understand the meaning of “always on” in the case of mobile phone Internet users. Another question is related to the reasons why some individuals choose the USB modem as a means of access when they only use this access at home, trying to find out, among other things, if there is a binding contract clause to explain this situation or if it is a result of the way mobility is valued.

Continuation of the study on these matters may contribute to a better understanding of the type of relationship between means of access, particularly the forms of complementarity and/or replaceability between fixed broadband and mobile broadband, especially, and in accordance with this survey’s results, from the perspective of fixed access by USB modem.

Finally it is important to follow-up the evolution in the usage of mobile broadband in Portugal given the expansion of smartphone-type terminals, and particularly considering future 4G offerings, whose provision at the level of retail offerings is fast approaching.

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LIST OF ACRONYMS

CATI – Computer-Assisted Telephone Interviewing.

ICP-ANACOM – *Autoridade Nacional de Comunicações* (national regulatory authority - Portugal).

INE – *Instituto Nacional de Estatística* (Statistics Portugal).

LTE – Long Term Evolution.

MDF – Main Distribution Frame.

NGA – Next Generation Access Networks.

OECD - Organisation for Economic Cooperation and Development.

OFCOM – Office of Communications (national regulatory authority – United Kingdom).

ULL – Co-installed operator (unbundled local loop).

FTS – Fixed telephone service.

STVS – Subscription television service.

EU27 – European Union in its current composition (27 countries).

ITU – International Telecommunication Union.

UMTS – Universal Mobile Telecommunications System.

USB – Universal Serial Bus.