

# **Conclusions**

## **Study on content and application services (Over - The -Top - OTT)**

This chapter makes a summary of the topics discussed over the length of this report, focusing on the different perspectives obtained from the literature review, from the supply side and the demand side.

### **1. Literature review**

OTT services cover a wide range of services, applications and content in the sphere that is made up of electronic communications, entertainment, distribution and information storage, with two essential characteristics: they are available to IUs via the "open" Internet, but often through undertakings other than the access network operators. The growing importance of these services calls for a reassessment of the market forces shaping the electronic communications industry. A rethink is needed in terms of the definition of markets and the methods used to assess market power, to understand the changes in business models and, ultimately, to evaluate the need for regulation of these markets in order to protect IUs.

In line with other countries and organisations (EU, USA, Switzerland, Norway, etc.), where revenues from voice and SMS services have been falling steadily (a trend that, in some of these countries, is expected to continue until 2020), in Portugal, the three largest providers of communication services (MEO, NOS and Vodafone) have seen total revenues declining. In fact, in the Portuguese case, SMS volumes have been shrinking. Meanwhile, the introduction of offers with "unlimited" calls and the disappearance of tariffs which differentiate between communications made within the same network and communications made to other networks (intra-network/ inter-network), have, with other factors, led to an increase in the volume of conversation minutes originating on mobile networks. In parallel, an increase has been seen in the use of typical mobile Internet services, associated with OTT services; this is not unconnected to the expanding penetration of mobile phone Internet access and the increasing penetration of smartphones. The existence of substitutability between the services offered by providers of communication service and certain OTT services may explain these changes, coupled with the fact that, to a large extent, the prices charged for OTT services are considerably lower or even nil (as a result of flat tariffs charged by operators). As such, based on data obtained through this study, it appears that Portugal has been following the global trend with regard to the use of OTT services in a work context.

On the other hand, Internet access, which is guaranteed by the operators of electronic communications networks, is necessary for the use of OTT services; additionally, the benefit that IUs derive from Internet access largely stems from the availability of OTT services through that access. As such, a complementary relationship has also been identified between OTT services and the services supplied by providers of communications services. However, it is clearly not simple to distinguish the individual contribution of the network and of OTT services to the overall social value created. Accordingly, additional investments in the network entail

considerable risk for operators of electronic communications networks, due to the likelihood that they may fail to recover such investments. This risk, coupled with the observed trend in revenues earned by these electronic communications network operators, seems to be putting a brake on these investments.

In the Portuguese case, analysing the investments made by the three operators (MEO, NOS and Vodafone) between 2010 and 2013, a reduction can be seen in the volume of infrastructure investments made by MEO and NOS, while Vodafone's investment levels lack any definite trend. It is, however, worth noting that this reduction must be somewhat related to the fact that Portugal already enjoys high levels of network coverage by next generation access and by Long Term Evolution (LTE), as a result of high levels of investment in previous years.

In addition to the issues of substitutability and complementarity between electronic communications services and OTT services on the supply side, other economic issues arise in these markets. The strength of network externalities, whether direct or indirect, is a feature of these markets. Indirect network externalities characterise both (i) markets formed by IUs and providers of electronic communications services, mediated by network operators, which play the role of a platform in a two-sided market, and (ii) markets comprising specialty content providers or advertisers and IUs, mediated by certain suppliers of OTT services, with the latter also playing the role of a platform in a two-sided market. This type of market structure, and the consequent substitutability levels, cannot be ignored when defining the relevant market and in assessing market power.

In view of the profound changes occurring in the electronic communications market, there are several strategies which can be adopted by network operators and providers of electronic communications services: a change in pricing strategy, aimed at establishing pricing which reflects the volume of consumed data; the offer of product bundles, adding SMS services to other services such as data and/or voice; creating specific applications for IP communication; accounting for the consumption of certain types of data separately (so as, for example, to apply different costs to VoIP calls, IP messages, browsing)<sup>1</sup>; enter partnerships with OTT service providers, such as by grouping OTT services into subscription bundles, and other strategies.

However, some of these strategies may undermine net neutrality, which stems from the principle of data being carried on a premise of best effort, whereby, data is carried without discrimination, regardless of its origin, destination or nature. For example, zero-pricing, entailing the creation of specific bundles that include unlimited traffic for certain OTT services, is considered a practice that may violate the principle of neutrality in its most stringent definition, because it results in a differentiation between different types of traffic: where IUs have used up all permitted data under the terms of their subscription, they can continue to access data traffic associated with the OTT services included under the partnership, while all other data traffic may be subject to additional charges, or even blocked - this has been seen as an anti-competitive practice. While it might appear that this practice of zero-pricing is not targeted by the Regulation of the European Parliament and of the EU Council establishing measures concerning access to the "open" Internet, nevertheless, recital 11) of this Regulation reads "Any traffic management practices which go beyond such reasonable traffic management measures, by blocking, slowing down, altering, restricting, interfering with, degrading or discriminating between specific content, applications or services, or specific categories of content, applications or services, should be prohibited". As

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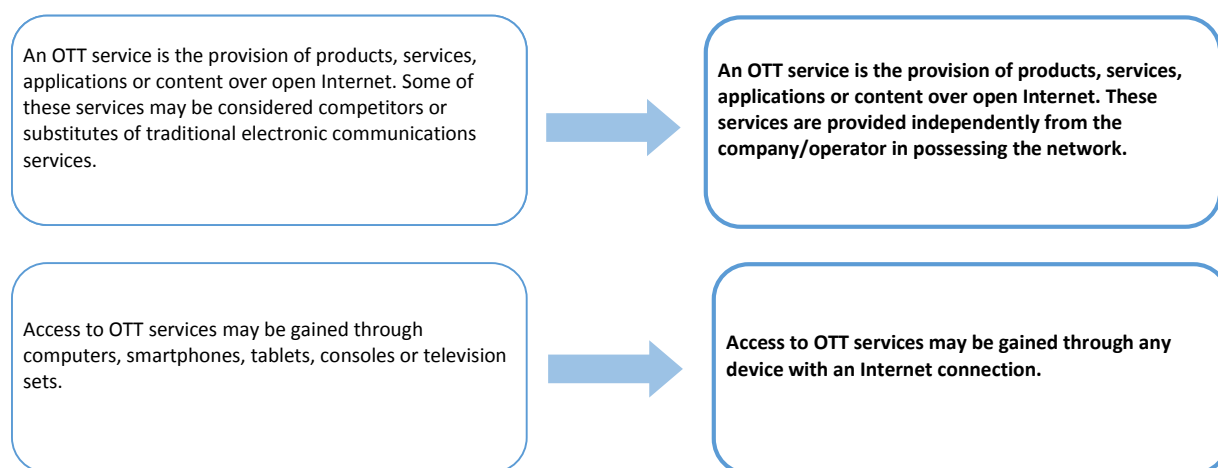
<sup>1</sup> However, this strategy may violate Internet neutrality and may also jeopardise the transparency of information.

such, in this document, traffic blocking and prioritisation are clearly considered violations of the principle of net neutrality.

In summary, the electronic communications market is undergoing profound changes, which involves the growing role of OTT services, whose providers use different business models which are in constant evolution. Network operators and providers of electronic communications services seeing their traditional business models being undermined have several possible reactions, some of which may undermine the principle of net neutrality. Interventions in the electronic communications market to prevent such violations and ensure good competitive practices must take into account the nature of the market, not forgetting the coexistence of various levels of substitutability between products and the evident complementarity between the network and OTT services and the strong presence of network externalities.

## **2. Supply side**

Although the majority of respondents agree with the definition of OTT, given the entire set of opinions, the following explanation may make more sense:



In terms of the different types of OTT services, some undertakings do not agree that certain content/applications should be considered as OTT services – for example Dropbox, iCloud, Twitter, Pinterest and BitTorrent - since, within the electronic communications sector they do not provide the same type of service as OTT instant messaging, VoIP and video streaming. In this respect, and in terms of analysis, it appears to make sense to adopt the taxonomy proposed by BEREC (*in the draft BEREC Report on OTT services*)<sup>2</sup> as a complement to the definition.

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<sup>2</sup> Taxonomy set out in *Draft BEREC Report on OTT Services* - " OTT-0 services, which are OTT services that qualify as electronic communications services, (b) OTT-1 services, which are OTT services that do not qualify as electronic communications services but do potentially compete with electronic communications services and (c) OTT-2 services, which are the remaining category consisting of OTT services that are not an electronic communications services and do not potentially compete with electronic communications services"

## The OTT market - percentage map

According to the overall sample, the electronic communications sector appears to be undergoing a paradigm shift. More OTT services are being consumed at the expense of traditional services, mainly as a result of the following factors:



- Most OTT services have no cost to the end-user;
- The constant innovation inherent to this type of service generates new factors of appeal for consumption;
- The availability of next-generation networks which guarantee the quality of any OTT platform (boosting consumption);
- The increased penetration of smartphones and easier access to the technology (for example, through tablets) increases the base of contact with OTT;
- The number of Internet access points induces take-up of OTT;
- The larger number of technology-literate users means increasing take-up of alternative means of communication.

As such, the ecosystem of the telecoms industry has changed



The network operator has evolved from being a simple supplier to a channel which ensures the provision of third-party services to the end-user.



As a result of this change, the place of the provider of electronic communications services in the communications value chain has changed.

Within the space of approximately one year, it is estimated that the supply and demand for OTT services will increase. In Portugal, in particular, this increase (whose perceived average is about 37%<sup>3</sup>) may stem from the market entry of a new provider - Netflix.

In the international markets analysed, their regulators also estimate increased consumption of data traffic by end-users of OTT services (perceived average of 23%<sup>4</sup>).

Against a backdrop of increased demand, the majority of respondents consider that Portugal is well equipped with respect to next generation networks and that, currently, there are no problems with quality of service.

Network operators and service providers report that they conduct ongoing analysis of network load and carry out continuous bandwidth upgrades. However, these market participants maintain an important reservation as to the future, given that increased demand for content generating lower revenues may jeopardise investment in network capacity (increasing the likelihood of congestion).

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<sup>3</sup> Traffic volume estimates compiled from respondents who were able to quantify the variation (11 undertakings)

<sup>4</sup> Traffic volume estimates compiled from NRAs able to quantify the variation (3 authorities)

This view is not shared by the regulators of the countries analysed, since they either have a large-capacity network (Germany, the United Kingdom and the Netherlands) or the end-user pays according to the number gigabytes contracted. so preventing such network congestion from occurring (Brazil). On the other hand, interviewed providers of applications and content delivery platforms reported that upgrade costs are decreasing, due to the investment that they are making in terms of traffic optimisation, where the use of technology means that data occupies less and less bandwidth.

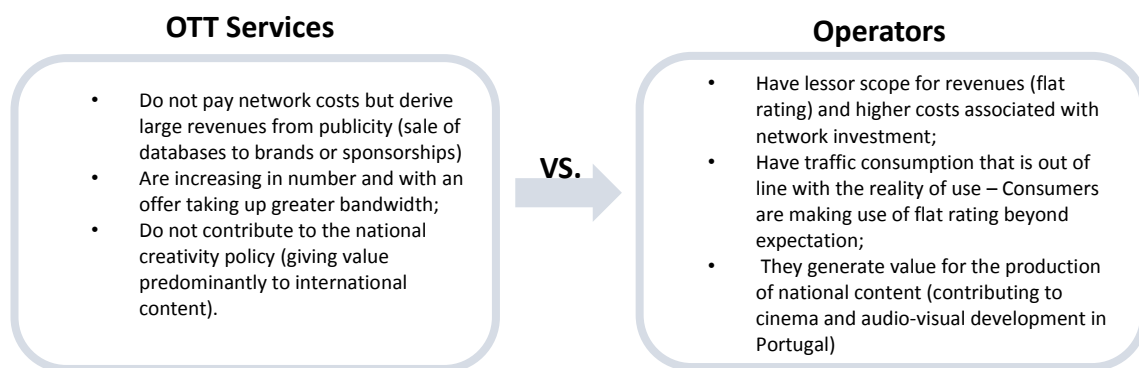
For all respondents the positive aspect of OTT stems from:

Increased innovation and technology in the electronic communication industry which is providing end-consumers with a range of services (without further payment) and enhanced user experience.

However, the perceived impact is negative in terms demand for services which are seen as more traditional:

- Decline/ cannibalisation of SMS, MMS and Voice services;
- Decline in the use of international communications;
- Decline in linear television viewing with the introduction of video streaming.

Given this scenario, network operators and electronic communications service providers (as well as some television operators, content producers and public national entities) view the market in two ways.



In view of this framework, electronic communications network operators tend to invest in new services (mostly OTT) to respond to the needs of their customers and to create an identity that is set apart from the direct competition.

On the other hand, they are trying to dialogue with OTT providers in order to reach an agreement on business model sustainability.

Currently, the partnerships that exist (Cabovisão with Google and Facebook, NOS with WhatsApp, Skype and Snapchat, MEO with WhatsApp, Skype and Snapchat and Vodafone with Spotify service) are aimed at delivering a better service to the end-user without any commercial agreement.

In general, and in order to restore balance to the electronic communications ecosystem, the strategy reported by most regulatory bodies and by Providers of applications, software and content delivery platforms entails increasing end-user prices.

However, for electronic communications operators, increased tariffs do not figure as a strategic solution:

- An increase in pricing would represent a step backwards in the market that the consumer would view very poorly,
- If the position is adopted by one operator, its customers will migrate to the competition;
- If all electronic communications network operators choose to raise prices, the regulator might view the initiative as a concerted action and act accordingly.

Throughout this context, the operators of electronic communications networks that were interviewed advocate regulatory intervention that entails differentiating the scope of activity of each OTT, without classifying them all as information society services.

Under this assumption, all the services considered as substitutes (or possible substitutes) of traditional electronic communication services should observe a normative framework where:

- There is a commitment between those who distribute and what is distributed, with a view to maintaining the sustainability of the business model;
- The requirements in terms of privacy and data protection, and in some cases, in terms of intellectual property rights, are the same;
- There is equal onus in terms of support systems and as regards the obligations of each country (including at the cinema and audio-visual level).

On the other hand, undertakings whose sphere of activity is more focused on the consumer advocate ongoing oversight over the arrangements made between operators and OTT services to ensure that these partnerships do not harm the end-user.

### **3. Demand side**

Increased use of Internet is reported in the younger age group, up to 34 years, with the vast majority subscribed to telecommunications bundles, primarily from MEO and NOS. Vodafone has the 3rd largest market share, and has greater presence among users of smartphones/tablets.

Use of OTT services is a definitive trend, with rates of use exceeding 50% in all analysed groups of services, especially search engines, social networks and audio-visual services, which report

market shares of 98%, 94% and 91% respectively. In the specific case of smartphones/tablets, third place is taken by instant messaging.

The following OTT services are noted as the most commonly used in each group, for all studied devices:

- VoIP - Skype, Facebook Messenger and WhatsApp.
- Instant Messaging - Facebook Messenger, Skype and WhatsApp.
- Audio-visual services - YouTube, Spotify and Vimeo.
- Social networks - Facebook, Instagram and LinkedIn.
- File sharing and storage - Dropbox, Google Drive and OneDrive.
- Search engines - Google, OLX and Wikipedia.

The main reasons given for this growing take-up include ease of access, functionality, quality of service, pricing (given that most have no initial cost) and the number of people who are connected. Following this interest in the use of OTT, Netflix appears to be the service that is most desired and its availability is generating the most interest in Portugal.

It also concluded that the majority of traffic to OTT services is "not free" - this ratio is more significant in the case of traffic from smartphones/tablets than computer traffic. Nevertheless, the observed results pose the question of whether the concept of "free traffic" is clear and easy for users to understand.

Overall, most minutes are spent on the use of these services, on a personal level, at weekends and during the period from 7pm to 7am - this is true across all these groups of OTT services and devices.

Levels of satisfaction, both as regards fixed and mobile Internet operators and in terms of different OTT services, is highly positive, with average valuations always exceeding 7 points (on a scale of 1 to 10). In terms of operators, this customer satisfaction is mainly derived from good network coverage and speed (Vodafone is the operator with the highest levels of satisfaction). Nevertheless, there are some users who claim to have reasons for dissatisfaction, particularly, in the case of the fixed network, poor quality of service/technical failures and, in the mobile network, pricing/monthly subscription charges/promotions.

Among the different groups of OTT services, there are substantial differences in satisfaction according to the type of device used, with search engines, instant messaging, and file-sharing and storage services leading, with satisfaction levels of 8.8, 8.3 and 8.3; respectively. Meanwhile, for the least satisfied users, connectivity breaks (interruptions, outages, blocking and connection instability) are advanced as the main reason for discontent with most OTT services. Exceptions include social networks, with significant concerns about privacy policies, and search engines with concerns about quality of service/quality of search results.

Although quality is cited as a reason for dissatisfaction, overall, perception of quality is very positive, with average valuations above 7 points, and the quality of free services is perceived as superior, which is understandable given the lower level of expectation naturally associated with unpaid services.

The occurrence of failures in the use of OTT services is a reality that is most prevalent in the use of VoIP services, in audio-visual services and social networks, affecting almost half of users, with higher incidence where smartphones/tablets are used. The causes of these failures

are mainly associated with the operator of electronic communications networks, regardless of the device or OTT service concerned.

As discussed several times in this report, demand for OTT services and their use has been increasing, as substantiated by the results of this study, and in most cases there is a visible increase in consumption of OTT from the past up to the present and an increase in the number of users intending to use these services in the future. Overall, growth in these services, over a one-year period and measured in terms of the number of minutes spent on these services, is estimated to be around 8%, broken down between the different OTT services as follows:

- VoIP - 13%.
- Instant Messaging - 7%.
- Audio-visual services - 10%.
- Social networks - 3%.
- File sharing and storage - 15%.
- Search Engines - 8%.

The highest growth is seen among smartphones/tablets, which may be directly related to the increasing market penetration of these devices.

Use of OTT services is mainly accomplished via fixed Internet, regardless of the device used.

Given the high level of quality perceived by OTT users and the high levels of satisfaction, there is, for now, no cause for alarm in terms of congestion resulting from demand for these services. However, with this demand growing, it is natural that a greater number of users will report slow access, outages and interruptions, which are currently cited as causes for dissatisfaction among those who are least content.

Providers of OTT services offer services which rely on the infrastructure provided by telecom companies, and based simply on this premise, there exists a complementary relationship. Furthermore, traditional services continue to retain leadership over OTT services and if it happens, in the near future, that the majority of OTT services become paid services, take-up will tend to diminish, given that it is their low or zero cost that appears as the main factor associated with the use of these services.

It is reported that over 70% of users are unwilling to pay for OTT services and those who are, cite a maximum of around 9 euros per month, specifically in the case of VoIP.

The study also suggests that, in 5 years' time, if the conditions of each of the OTT services and the corresponding traditional services have retained the same characteristics, the main reason leading to a complete substitution of traditional services by OTT services will be an improvement in quality, in VoIP calls (in the VoIP service), in mobile Internet (in instant messaging) or in the content of audio-visual services.