PRICING POLICIES FOR HIGH DEMAND DATA COMMUNICATIONS, THE CASE OF ALBANIA

Irena Malolli¹

Abstract: Mobile data traffic has dramatically increased during the recent years. The high demand for data communication increased the challenges for network operators. Communication Network operators are investing to provide more capacities and they are looking for innovative ways to cope with increased market demand for broadband data communication.

The liberalization of the telecommunication market and the competition put the operators under pressure to keep high quality services with low cost. New pricing policies are introduced in order to maintain market share and keep their users in a competitive market. The battle with OTT makes the situation more critical.

This article will analyze the situation in the field of data communication, compare different instruments which are used or are under development in different countries and in Albania. The article will analyze the pricing policies used for data communication as a solution to cope with the high demand of data traffic. The article will identify some critical issues on these practices, draw conclusions and give some recommendations on the proper ways to keep the right balance between technical and commercial solutions and user experience/satisfaction.

JEL Classification Number: E64; **DOI:** <http://dx.doi.org/10.12955/cbup.v5.942>

Keywords: data communication, pricing policies, broadband, data traffic

Introduction

The penetration of mobile service subscribers by the end of 2015 achieved a level of 96.8%, the Internet penetration is estimated at 43.5%, and mobile broadband penetration at 47.2% (Ponder, 2016). The mobile broadband penetration is grown fast. This trend is related to a high demand for data traffic. The global mobile data traffic grew 63% in 2016 (Cisco, VNI 2016), while it has experienced an 18-fold growth over the last five years. They forecast that 20% of total IP traffic by 2021 will be mobile and that global mobile traffic will increase sevenfold between 2016 and 2021.

The increased penetration of mobile, internet users, and growth of broadband is closely related with higher demand for data services and traffic, thanks to a great number of applications and online service already in place and under development, due to easy accessibility in any part of the world through the internet.

The growth of smart devices is also a key driver for this phenomenon. On the other hand, different applications ask for a certain threshold of data rate, which means that the networks/service providers need to invest in order to offer these new applications.

Besides all of these factors, competition is one of the strongest drivers of this development and growth, which brings along the need for further investments in order to ensure better QoS / QoE. On the other hand, competition leads to lower prices as well as need for the renovation of tariff plans. New pricing policies are introduced in order to maintain market share, keep the level of profitability, as well as avoid the subscribers churn.

Traffic growth and ARPU in Europe countries

The data usage per SIM user per month in European countries has increased fast during the period 2011-2015 (Tefficient, 2016). The highest consumption is in Finland with an average of 5GB/month per user as is shown in Figure 1.

The same trend of data usage is in Albania. The figures published by the Albanian regulatory body (AKEP, 2016), for electronic communication gives that the average use of data in a month per user has increased 9 times during the period 2011-2016. It was on average 926MB/month at the end of 2015 which is comparable with some European countries, if we refer to Figure 1 above. But which are the drivers of data traffic? The key drivers of mobile traffic growth are related with four pillars as is shown in the figure below (Capgemini, 2012).

¹ University of Tirana/Computer Science & Applied Mathematics, Albania imalolli@hotmail.com

Figure 1. Development of mobile data usage per any SIM per country

Figure 2. Key drivers of mobile traffic growth

Other studies on this topic have linked the growth of mobile broadband with the advancement of mobile technology to provide ubiquitous services and mobility. In the case of Albania and in other countries with low fixed penetration, it is also related to the effect of mobile-fixed substitution due to the low coverage of fixed broadband infrastructure. High data growth is also related to two other factors, the price reduction over the years, due to higher competition, and regulatory intervention. Looking onto data traffic growth it is normal to consider it as the “the cream” of the telecom revenues or, at least, it should be the core of future revenues. But the figures, on different cases, tell this is not the real case.

The growth of data is not associated with the same trend in revenue growth for mobile data. According to (ETNO, 2016), the Average Revenue per User (ARPU) evolution considering fixed broadband, mobile voice and mobile data shows that the total ARPU in mobile combining voice and data is lower during 2008-2016 in ETNO perimeter, but the ARPU mobile data is increased slightly (fig. 3)

Figure 3: ARPU evolution

If we observe what is happening in our local market, in a specific region, or wider, we can easily notice that while the volumes of traffic or consumption have increased year by year, the revenues or ARPU has reduced. It is noticed that while the fixed and mobile broadband penetration continues to increase, this is not necessarily associated with increasing average revenues (BEREC, 2016). First of all, competition is the main driver leading to lower prices. On the other hand, lower prices lead to more consumption, and yet, new applications and online services are the main drivers for increased demand.

Traffic data and ARPU in Albania

The telecommunication market in Albania is fully liberalized since 2008. There are four mobile market players and a great number of alternative operators providing fixed telephony, internet access and some of them are offering triple services. The main telecom figures show very low fixed telephony penetration and also low fixed broadband penetration, even though, this figure has increased year by year. Mobile broadband has increased fast after its launch in 2010 as it is shown in the figure below.

Figure 4: The number of mobile broadband users during 2014-2016

The mobile market is well developed with good coverage with 3G/4G which is offered from all mobile market players. Mobile broadband based on the HSPA/HSPA+ technology was introduced in late 2010 in Albania, while 4G/LTE technology was introduced in September 2015.

The growth of broadband access based on UMTS/LTE technology, especially during last year, is related to data traffic increase. In 2014 the annual data growth in mobile networks was 148%. This trend continued during 2015 with a 103% growth compared to 2014.

But what is happening with ARPU in this market? Figure 5 shows the change of ARPU, versus consumption of voice calls and data per user in a month.

Figure 5: ARPU evolution in Albania

Source: Author based on data of AKEP

It is clear that the data traffic has increased while ARPU has decreased over the years. The graph above is limited in two indicators of user consumptions: voice calls and data. But, in the trend of IoT and M2M communication, the consumption is a sophisticated calculation *“it will take time, education, and tools for consumers to feel comfortable estimating consumption”* (CISCO, 2012). In this paper, we focus on data consumption per user and pricing policies related to it.

The explosive growth of data communication asks for more investments in the CAPEX infrastructure and other aspects related to it. In parallel with technical issues, such as the need for endless capacities as well as signaling storms, pricing policies are critical in order to identify the appropriate strategy of pricing in a new era of IoT communications. CEOs of telecom operators have emphasized the importance of *developing innovative pricing models in order to ensure that revenues keep pace with growing mobile data consumption will be the top challenge, and is seen as the most critical challenge* (Capgemini, 2012).

Data pricing policies developments

Data Pricing policies have changed over the years. Different studies on data pricing tell us that different methodologies are used during the years such as: a simple metering price model, flat rate, usage based pricing, data caps, Ramsey pricing, price discrimination in broadband services, tiered services etc.

At the beginning of the internet, during the 1990s early 2000s the data charging was metered based. This experience before broadband development was mainly related with the dial up connection. During the 2000s to early 2010s there were new ways of charging such as a flat rate and after that usage based charging.

The metered method for dial up connections was closely related to the service provision, the technology used, the limited demand for service and applications. For that time dial up connection was considered a value added service compared to basic phone services mainly used for voice.

Flat rate was related to broadband development. It was imposed from the competition and customers need for volume. It gave some positive effects for end users. But even though it was good at the very first stage of broadband, the higher demand for data traffic lead to the necessity of more network capacity and more investment. Higher consumption or heavy users lead to look for other alternative charging ways to monetize the investment. Usage based charging is now often combined with flat rate or other techniques for traffic management.

Usage based pricing policy is combined with different traffic management techniques. Some of the traffic management tools/methods are: throttling, additional charging, policy control, prioritizing etc. Each of these techniques of traffic management has advantages and disadvantages from the user side or provider side. It is difficult to say which will be the best method of traffic management as pricing policy. In theory, it is easier to say the method which avoids any kind of user damage, which keeps the QoS at the required level, which leads to more profit for company etc. In practice, it is quite complex due to the great number of factors that traffic management includes: users, demand, network configurations, capacities, critical point of failures, congestion management, revenues, quality of services, better services than competitor, provider brand name, etc.

All these make network providers to consider the development of policy charge controls seriously. A summary of different techniques used by operators to manage traffic (ITU, 2013) are summarized below:

- Best efforts: No traffic management by provider, no change for tiered QoS;
- Traffic management only applied during periods of high congestion;
- Priority always given to most vulnerable types of services e.g. voice, video, streaming, games;
- Throttling/degrading of some types of traffic e.g. P2P;
- Priority given to some service providers content or applications over other;
- Blocking rival's content or applications e.g. rival IPTV service;

Recent developments on policy charge control and techniques used for traffic management raised a number of critiques from different institutions such as regulatory bodies and academic studies and also from the users. Filtering of some traffic or applications, prioritization of traffic and also throttling or slow down raise a number of issues regarding the freedom of the internet, consumer protection, guaranteeing the objectivity and non-discrimination between different applications and users etc. As it is given in the report of (ITU, 2013) "Concerns arise because these same tools can also be used to threat competing services and providers. In particular, the use of traffic management by an operator for anti-competitive purposes by using its control over Internet access (e.g., to discriminate against any competitors that rely on its network) has been the subject of greatest concern."

The impact of changes of data pricing policies in Europe

The main objective of any kind of business is to increase revenues, market share and to make more profit. In a competitive market, to achieve this the business's aim is more difficult especially today with OTT competition. The telecom service providers are offering a great number of service packages, bundle services, different tiered tariff packages to attract different target group of users. The renovation of pricing policies for data is widely used in the European market.

The impact of new data pricing policies and especially the great number of tariff packages is positive from the competition's and the user's perspective. The users have more flexibility to choose the best package between different providers based on prices, variety of services, QoS etc. On the other hand, the complexity of packages offered and the combination of different services in packages, combination of flat rate with limited data usage with extra charge for traffic over the cap often is associated with end user confusion. The complex tariff packages are not easily understood by end users.

The changes and renovation of pricing policies in European countries seem to have a positive impact on the market players. It is noticed (GSMA, 2017), that in 2016 key European markets such as Germany, Italy and Spain returned to growth. The principal driver of this turnaround is tariff readjustments, which specifically offer greater data allowances at higher cost, and have been implemented in a number of European markets. Further analysis is needed in order to see the relationship with user impacts in those countries. Considering the continuous growth of data traffic and the forecasted traffic in IoT and M2M, research is also needed to study what might be the best way to address the problem regarding pricing policy, providing a "win-win" situation for both service providers and users.

Data tariff packages in Albania

With the focus on data traffic growth, also conducted in a previous research (Malolli, Sevrani, 2013), on the tariff packages in the local market during in the year 2013 and then repeating the same research in 2016.

The 2013's research for the Albanian market noticed that an enormous number of tariff packages was offered from different providers. The total number of packages in the market offered from mobile and fixed operators was around 100. These packages often combined voice and data traffic. Almost all operators have adopted similar pricing policies such as flat rate, combination of flat rate with usage based, and application of additional charges after data cap consumed or the reduction of speed after the consumption of data predefined in the package. The tariff packages offered in the market were different for prepaid and the post-paid users. Some tariff packages included 1-3GB, while the extra data traffic was charged with 12 ALL/MB, based on a 10KB step in one operator and 40 ALL/MB based on a 10Kb step in another operator. The speed reduction varies from 256kbit/s to 128kbit/s or lower in upload. Almost all operators offer unlimited data packages, but there is still present the limitation in lowering the speed after the data cap. The combination of packages consists on voice calls on net/off net, voice calls national/international, SMS on net/off net, data caps. In some cases there are offers with unlimited data traffic.

From the research done in 2016, it was noticed that the situation regarding the data pricing policies is similar with the situation in 2013. There is again a great number of tariff packages offered in the market and these tariff packages consist on a combination of voice calls (on net/off net), SMS and data. There are some packages named "standard package" with a monthly base, and also others named "offers," with a limited weekly/daily time of expiration. The packages generally include on net calls, some of them off net calls or national calls, SMS, and a data tariff of 1-3 GB. Some packages offer unlimited Internet with a noticeable speed reduction after 1GB/2GB consumption. It is noticed that the packages include a high volume of net calls per month such as 2000, 3000 or 6000 minutes (based on the package). Also, the on net SMS included vary from 100 up to 3000 SMS. In some flat rate packages for postpaid users with 4800 ALL/month or 7800 ALL/month the on net voice calls is unlimited or 4000/6000 minutes are included. The same situation with on net SMS is unlimited with additional SMS off net 300 to 500 etc.

The statistical data provided from AKEP (AKEP, 2016), shows that the average consumption per user in a month for voice calls (outgoing) was up to 128 minutes in 2015, while the average consumption of SMS outgoing/month is about 30 SMS/month. The high volume of on net communication (voice and SMS) being sold seems not possible to be consumed in a month. Therefore, the investment needed to cope with such tariff packages with high volume of voice and SMS offered, seems to be unreasonable.

The readjustment of tariff packages in order to be closer with real user demand is a necessity. It is important to build a pricing structure based on the demand of different customer profiles, based on their own usage by using information systems and data analytics. This will offer more value to a specific customer, by providing a balance between the quality of service required, the user satisfaction and network capacity usage, while minimizing the sunk investments.

Conclusions and recommendations

Following the impressive development of the ICT during the recent years, data traffic demand has exponentially increased. This growth in mobile data traffic is a result of many factors, including the rise of internet and mobile penetration, the increase in applications and online services and the technological development of a new area of connected devices. This high demand needs to be addressed from the network operators through adequate optimization techniques for traffic management. Pricing policies need to consider keeping the balance between consumer and provider interests carefully. A detailed analysis is needed to find the technical solutions to pricing issues and their impact on the market. The network operators need to carefully follow the current trends of data traffic and proactively react by assuring demanded capacities. On the other hand, the regulatory bodies need to carefully check the transparency of the tariff plans offered in the market. Their role in ensuring customer protection and non-discrimination is crucial for the normal functionality of a liberalized communications market. The future communications will encompass many new types of online services and connectivity under the framework of the Internet of Things. This imposes the challenge of designing new traffic models and their corresponding charging policies. Future work on this field should be focused on traffic management and charging policies for this new era of communications. Optimizing charging policies is a continuous process that needs to be further studied in order to

identify critical aspects related to traffic management, and helping the innovation of designing tariff policies.

References

- AKEP (2016, March). Treguesit statistikorë të tregut të komunikimeve elektronike Viti 2015, 1. Retrieved from https://akep.al/images/stories/AKEP/statistika/2016/raporti_Y_2015.pdf
- AKEP (2016, December). Analize e tregut të shërbimeve celulare, 2016, p. 31. Retrieved from https://akep.al/images/stories/AKEP/publikime/2016/Analiza_e_Tregut_Celular_Keshillim_Publik_7_12_2016.pdf
- BEREC (2016). Report Regulatory Accounting in Practice 2016, 62. Retrieved from http://berec.europa.eu/eng/document_register/subject_matter/berec/download/0/6479-berec-report-regulatory-accounting-in-pr_0.pdf
- Capgemini (2012). The price is right, pricing strategies for mobile broadband services, 4. Retrieved from https://www.capgemini.com/resource-file-access/resource/pdf/The_Price_is_Right_Pricing_Strategies_for_Mobile_Broadband_Services.pdf
- Cisco, (2012) Moving toward Usage Based Pricing, Cisco Internet Business Solutions Group, p. 13. Retrieved from https://www.cisco.com/c/dam/en_us/about/ac79/docs/clmw/Usage-Based-Pricing-Strategies.pdf
- Cisco, (2017, February). VNI Mobile Forecast 2016-2021. Retrieved from <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.pdf>
- ETNO (2016). Economic Report I 2016, p. 21. Retrieved from <https://etno.eu/datas/publications/economic-reports/ETNO%20Annual%20Economic%20Report%202016.pdf>
- GSMA, (2017, February). On Mobile Economy p.18. Retrieved from <https://www.gsmainelligence.com/research/?file=9e927fd6896724e7b26f33f61db5b9d5&download>
- ITU report (2013). Trends in Telecommunication Reform 2013, p 6. Retrieved from https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-TTR.14-2013-SUM-PDF-E.pdf
- Malolli, I. Sevrani, K. (2013, June). Technical mechanisms vs. commercial ones to cope with high speed data communication demand. http://conference.ijssint.org/sites/default/files/Agenda_ISTI2013.pdf
- Ponder, J. K. (2016, September). Trends in Telecommunication Reform 2016. Retrieved from http://www.itu.int/en/ITU-D/Regional%20presence/Europe/Documents/Events/2016/Regulatory%20Conference/ITU_RegulatoryTrends%20Sept%202016_J_Ponder.pdf
- Tefficient (2016, June). Industry Analysis#32016 final version, p.2. Retrieved from <http://media.tefficient.com/2016/06/tefficient-industry-analysis-3-2016-mobile-data-usage-and-pricing-FY-2015-final2.pdf>