

## The Development of Broadband in Kosovo and its Importance for the Economy

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### Abstract

The better functioning of economy depends on the availability and quality of public services such as: outstanding education system, well-functioning health system, very good transportation system and other public services as well. The 21th century is seen as the century of information and communication technology. In this way the local and central governments have seen that the broadband is important like other public services. The purpose of this paper is the identification of the importance and the impacts of broadband on the development of the economy and the society. For this purpose we have surveyed in depth-different theoretical and empirical literature. The literature shows that government intervention is necessary not only in the regulation of the market but also in providing broadband services and increasing the demand for these services, which in turn would enable the development of the broadband market at the same pace like other EU member states. In the last part of this paper we will show that the development of the broadband market requires a more active role of the government in the development of broadband by increasing the demand and the supply for broadband services. Regardless the fact that ARKEP is working on increasing the development level of the broadband, we will show that the existence of a well-designed

governmental plan would make it possible to achieve the goal of an information society.

**Keywords:** Broadband, Economic Development, Information and Communication Technology.

## 1. Introduction

Different university and non-university institutes rank the impact of broadband in the development of economy very high. OECD (2008) identifies broadband as the enabler of interconnections between different information and communication technologies. It was not possible to include all the benefits of broadband in this paper, therefore we have chosen subjectively the most relevant researches on the impact of broadband in the development of the economy and society and the creation of necessary conditions for its development.

The impacts of broadband have been analyzed, based on the micro- and macroeconomic point of view. In this way we will summarize the different researches based on the micro- and macroeconomic point of view without any structural division of the paper. Broadband is also identified as the tool that increases competition between businesses by making pressure for further price decreases, which in turn leads to higher consumer surplus at least in the short-run. Getting easy and fast information access enabled by broadband makes the market work more efficiently, while increasing the revenues of the manufacturers, as well. Broadband has become the key mechanism for achieving the information (Kelly, et al., 2009). The use of broadband by businesses has helped them in increasing productivity and efficiency. However, broadband increases opportunities for new businesses and innovations, reduces the costs for making business, increases productivity and the level of regional and global competition, increases trade level, generates new jobs and encourages foreign investments (Intel, 2009). Based on macroeconomic point of view, the impacts of broadband on national economy are not the same in different countries. For this Kolko (2010) shows the positive impact of broadband penetration on the economic growth. He emphasizes the fact that the relationship between the development of broadband and the economic growth is more emphasized in the societies that rely more on the information technologies. Theoretical and empirical researches have shown that it is very difficult to identify and

estimate the specific impacts of broadband in the economy (see subsection 1.1.). The very high importance of broadband for the economic development has urged many governments to make plans for the development of broadband. Kosovo also has worked on the development of broadband. But we have noticed a negligence of the Government of Kosovo in absorbing the benefits of broadband. Although the Telecommunication Regulation Authority (ART), now Regulatory Authority of Electronic and Postal Communication (ARKEP)<sup>1</sup> has decided that one of their targets is the creation of an information society, the lack of well-designed governmental plan for the development of broadband may prevent Kosovo from gaining the benefits of it. In this way, Kosovo lacks a well-designed governmental plan, which would enable the development of the demand and supply for the broadband services. The published statistics by ART shows that Kosovo is far behind in the penetration of broadband. Therefore, we conclude that the Government of Kosovo has to play an active role in order to increase the level of broadband penetration and to increase the citizens and businesses confidence when they use broadband. In this way the government shall provide programs and applications that help increasing the knowledge for the usage of information and communication technologies, and therefore increasing the demand for the usage of broadband. A serious study of the Korean plan for development of broadband would help the Government of Kosovo in the creation of a plan for developing the broadband in Kosovo.

Our paper has the following structure. The first section describes the impacts of broadband in the development of the economy. The subsections of the first section show the results of empirical researches and the US government and European Commission opinions about the importance of broadband on their economies. The second section describes the role and the importance of the Government in the development of broadband. In the subsection 2.1 we have described the development of broadband market in the Republic of Korea, which is the country that has the highest speed and penetration of broadband. Then in the third section the development of broadband market in Kosovo is explained. Throughout the subsections of the third section the efforts of Government of Kosovo are shown in the

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<sup>1</sup> In this paper will be used the name ART instead of ARKEP, since all publications used in this paper are published under this name.

development of broadband and information society. The conclusions are shown in the fourth section.

## **2. Broadband and economic growth**

The OECD (2008) report examines the way how an increase on the broadband network would impact the national economy and its role in the creation of proper condition for economic growth. In this report the broadband network is seen as the enabler of interconnections between different information and communication technologies. This, in turn, increases the importance of broadband by having direct and indirect impact on productivity, economic growth and the quality of life. The usage of broadband enables the opportunity to work from home, attending different trainings online, online banking, online shopping, etc. The very high speed broadband enables consumers to have access instantly to the information about market changes with very low costs. The broadband enables the consumers to make an easy comparison between different product prices not only in a single region but in different regions as well. On the one side, the broadband enables the consumers to save time, do material savings (by choosing the best price and buying online) and being comfortable as well. On the other hand, the comparison of product prices of different businesses increases the competition between the businesses of the same region and of different regions as well. As the result the market would be characterized by lower prices which means that consumer surplus will be increased (OECD, 2008).

We are living in a time where the presence of broadband is increasing in every sector and activity. Due to the fact that broadband has direct and indirect impacts in different sectors of the economy, the estimation of the broadband impacts in economy is not a simple task. By taking into account that broadband impacts the variables that are key to the economic growth, such estimation becomes even more complex. Many authors consider broadband as a bridge between information and communication technologies (OECD, 2008) (Kolko, 2010) (Fornfeld, et al., 2008). Nowadays almost all new electronic devices have internet access, all this for the purpose of increasing functionality when using them. In the meantime this fact shows the importance of broadband in current days where people want to have broadband access everywhere, every time with

any device in order to be instantly updated for the daily news (OECD, 2008).

Fornefeld, et al. (2008, p.5) has cited some parts of the strategy of Lisbon: "Make EU the most dynamic and competitive knowledge-based economy in the world by 2010" was the aim of the Lisbon strategy. They have estimated the possible contribution of broadband in the development of this strategy by estimating the impacts of broadband on the economic growth and productivity. In this study, Fornefeld, et al. (2008) has used three indicators for the description of the broadband penetration in Europe: (1) the development of broadband infrastructure, (2) willingness of the population to use the broadband based technologies and (3) the integration of broadband based services for the execution of business processes. Fornefeld, et al. (2008) came to the conclusion that businesses in the service sector that have adopted broadband based services have improved the productivity of their employees in an average of 10% and in the manufacturing sector in an average of 5%. In this way, different businesses use broadband in order to improve their productivity and increase the efficiency of business processes (easy and fast distant monitoring, distant logistic management, marketing, inventory optimization etc.) (ITU, 2012). The development of broadband enables fast information exchange and in this way, broadband has become the primary mechanism for getting information. According to Kelly, et al. (2009), easy and fast access in the information makes the markets perform more efficiently and to grow the revenues of the producers. They also emphasize that by having easy access to the information regarding the performance of the government and the politicians would help on improving the government responsibility and the quality of the governmental services. Next, we will summarize the importance of broadband on the national economy, since it enables: the expansion of the opportunities for new businesses and innovations, the increase of the trade level, the increase of the productivity, generating new jobs, reduction of the costs of doing business, the increase of the regional and global competition level and encouraging foreign investments (Intel, 2009). Intel (2009) also shows some specific characteristics of the developing countries that, in turn, enable them to gain some special benefits from using broadband, such as: most of the population and businesses in these countries are distributed in the distant and rural regions. The provision of broadband services in these regions can increase the efficiency, success and the income of these businesses by supporting the employment in the

agrarian and non-agrarian activities. One advantage, from which Kosovo can benefit the most, enabled by broadband, is the formalization of economic activities. The interconnection of the distant regions and rural ones through broadband enables the businesses and people of these regions to be connected to e<sup>2</sup>-Governance. Moreover, broadband offers better opportunities for the students of these regions whereby they could do all school administration tasks and have access into the libraries of the different national and international schools and universities.

According to Fornefeld, et al. (2008) broadband has led toward more economic structural changes e.g.: they have estimated that around 725.000 jobs in the EU will be relocated from traditional economic sector toward other services sectors. These changes have mostly affected the so called "knowledge-intensive business services"<sup>3</sup> sectors. Fornefeld, et al. (2008) concludes that changes that have happened as the result of broadband development are essential for the development of the new markets and economic growth in the developed countries. Kolko (2010) has pointed out the positive impact of the broadband penetration into the economic growth, where he underlined the fact that this relation is more emphasized on the societies which rely more on information and communication technologies. It is worth mentioning that broadband is characterized by positive network effects which mean that the more users are connected the higher the benefit of its usage is. Hence, we can conclude that the economic impacts of broadband may exponentially increase with the usage of the information and communication technologies (ITU, 2012).

## **2.1. Empirical evidence**

Theoretical and empirical researches have shown that it is very difficult to identify the specific impacts of broadband on the economy (OECD, 2008 and ITU, 2012). This comes as the result of the complex relations between broadband and other information and communication technologies. However, there are many empirical researches that assess the broadband impacts on the economic growth. But, different authors come with different results. This may be a result of the scarce of proper data to conduct proper researches. Crandall, et al. (2007) includes 48 U.S. locations in their

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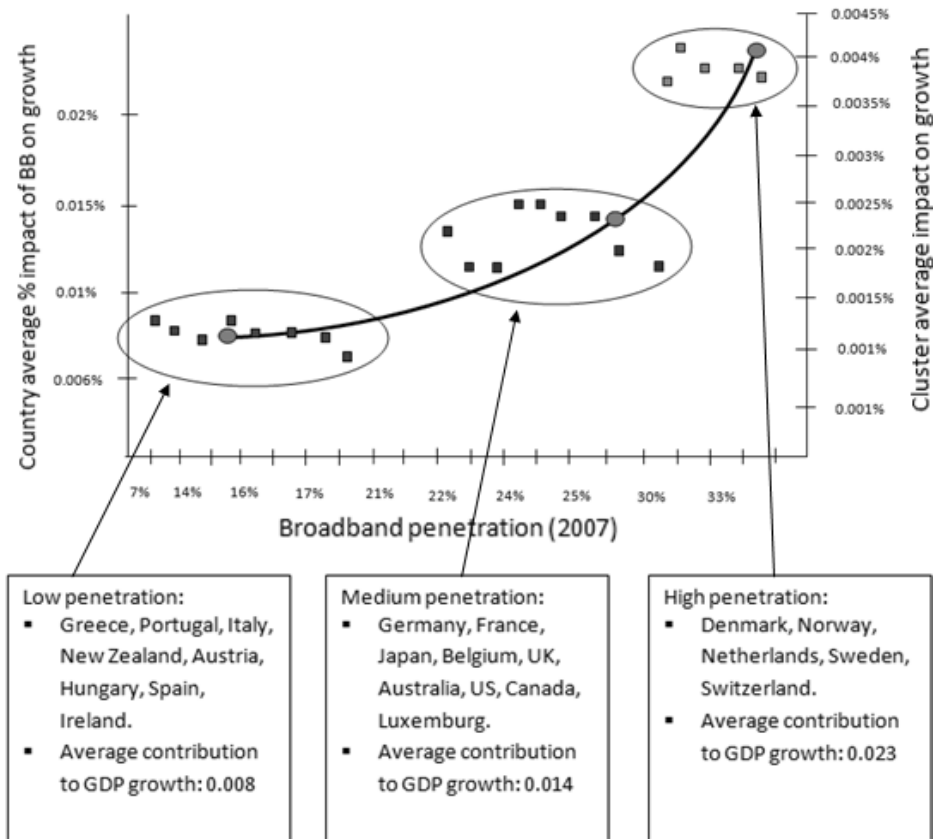
<sup>2</sup> Electronic Governance

<sup>3</sup> These activities mostly include IT services, engineering, accounting, and finance and research activities.

research. By analyzing the data of these countries from 2003 to 2005, they could not find any evidence for positive or negative impacts of broadband on economic growth. Here it is worth mentioning that the observed period of time may be the main reason for the lack of evidence of the impacts of broadband on economic growth. Thompson & Garbacz (2008) have analyzed the data for 46 U.S. from 2001 to 2005. They have shown that an increase of 10% on the broadband penetration will be accompanied by an efficiency increase of 3.6%. On the other hand, Czernich, et al. (2011) has evaluated the data from OECD countries from 1996 to 2007. They have shown that an increase of 10% of the broadband penetration will be associated with an increase on the growth of the GDP per capita by 0.9 to 1.5 percentage points. Qiang & Rossotto (2009) based on a World Bank data have analyzed 66 countries which have the highest income for the period 1980-2002. They have shown that an increase of the broadband penetration by 10% would result in an increase of the GDP growth by 1.21 percentage points. On the other hand, Qiang & Rossotto (2009) did the same analysis by only including 120 middle- and low-income countries for the same period of time, where they have shown that the 10% growth on the broadband penetration will boost the GDP growth for these countries to 1.38 percentage points. This study shows a higher impact of the broadband penetration on the low- and middle-income economies. However, Figure 1 published by the OECD (2008) shows a different relation. Figure 1 gives a relation between the rate of broadband penetration and economic growth, while differentiating these impacts in the countries that have low-, medium- and high- broadband penetration. OECD (2008) makes clear in this figure that the higher the level of broadband penetration the higher the impact on the economic growth is. By observing Figure 1 and by quoting the words of Joseph Stiglitz given in network journalism "Project Syndicate" on the 3<sup>rd</sup> September 2012: "Conservative politicians in the US underestimate the importance of publicly provided education, technology and infrastructure. Economies in which government provides these public goods perform far better than those in which it does not". Therefore we can see that Greece, Portugal, Italy, Hungary, Spain and Ireland not coincidentally have problems with their economies. Meanwhile, countries that have a middle penetration of broadband nowadays find no peace in their economies (France, Japan, and USA). On the other hand, countries such as Switzerland, Sweden, Denmark and Norway, have a higher penetration of broadband. These countries have a much greater composure

during the current global economic movements. Not accidentally Switzerland was appointed a few days ago in the top three most competitive countries in the world (IMD Business School, 2012).

**Figure 1.** OECD: Broadband impacts on GDP growth.



**Source:** OECD (2008): Broadband and the Economy: Ministerial Background Report.

## 2.2. American and European official opinions on the importance of broadband

The head of the Federal Communications Commission (FCC), Julius Genachowski (2010, p. 2), stated: “electricity reshaped the world extending day into night, kicking the Industrial Revolution into overdrive”, and describes the importance of broadband by these words: “now in the 21st



century, it is high-speed internet that is reshaping our economy and our lives more profoundly than any technology since electricity, and with at least as much potential for advancing prosperity and opportunity, creating jobs, and improving our lives". If we go back to developments in the European Union (EU), it is important to show a statement that is mentioned in the Spring European Council in 2005: "... knowledge and innovation are the engines of sustainable growth and thus it is essential to build a fully inclusive information society, based on the widespread use of ICT<sup>4</sup> in public services, SMEs<sup>5</sup> and households "(Commission of the European Communities, 2005, p. 3). By the two world economic powers there is a special emphasis on the importance of broadband in developing and reforming their economies.

### **3. The role of the government in developing broadband**

Businesses have to use information and communication technologies (ICT) in order to increase their efficiency, productivity and output. So, they need to change some processes and make some administrative changes, while not forgetting different trainings and changes in the culture of doing business. However, businesses themselves will not be able to undertake these changes without the help or advice of the Government. So, the government remains the provider of various training and consulting services e.g. for small and medium businesses, so that they will be able to understand the importance and benefits derived from the integration of ICT in doing business (ITU, 2012).

Most of the governments have recognized the importance of broadband development. Therefore, they are oriented in designing regulatory policies in a way that will support the development of this vital part of the economy. It is important to note that most of the countries are not only concentrated in extending the broadband penetration (supply side). Therefore, they make the plans and programs throughout which they tend to support the demand for broadband. Therefore, it is important for Kosovo to build initially a development plan, which will be followed by a cooperation of governmental and non-governmental institutions which will implement this plan through various policies and the regulator. An

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<sup>4</sup> Information and Communication Technologies

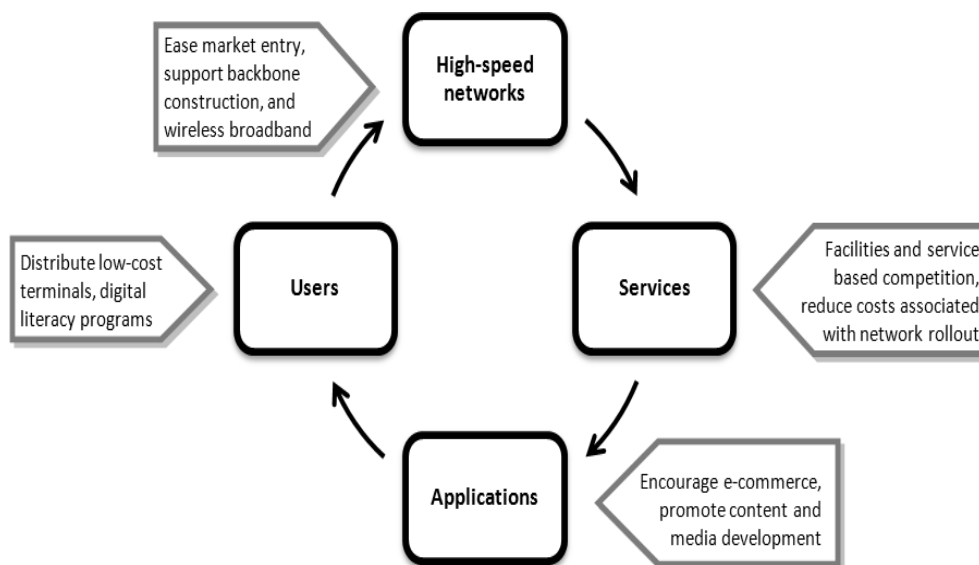
<sup>5</sup> Small and Medium Enterprises

example for such a plan is followed by the Republic of Korea, known as the world leader in ICT market (Kim, et al., 2010).

### **3.1. The development of broadband in the Republic of Korea**

Republic of Korea, which was stuck in deep poverty during the 50s of the last century, made a boom in economic development. In the 70's and 80's their development was based on heavy industry and manufacturing, while in the early 90's they have made large investments in ICT. Here is how Kim, et al. (2010) describe the extraordinary development of broadband in the Republic of Korea: Republic of Korea presents a unique case of a mixed market led by private businesses, government support and regulation. They emphasize that the Republic of Korea represents a unique case of cooperation and governance, while they do not forget to mention the cultural, political and institutional features of this country.

Republic of Korea, as one of the leading countries in developing and applying ICT, has a clear strategy for the development of broadband by considering the broadband as an ecosystem. Korean government developed a strategy for an information society by increasing the awareness of the people and business using ICT. They built a system by putting their political goals to create the conditions for providing broadband services (supply side policies) and using of broadband services (demand side policies). It is important to mention their institutional efforts ranging from public investment in the expansion of broadband penetration and increasing private investment initiatives, initiatives to increase the usage of broadband, the development of policies to promote universal access to broadband and support of industrial and competition policies (Kim, et al., 2010).

**Figure 2.** The development of the broadband ecosystem

**Source:** ITU (2012): *The Impact of the Broadband on the Economy: Research to Date and Policy Issues*.

Figure 2 shows the developing-system of the broadband ecosystem used by the Republic of Korea. Korean Government offered strategies, policies and programs for the development of these four components of this ecosystem, namely: high-speed networks, services, applications and users. In order to increase the expansion of broadband penetration the Korean Government has facilitated market entry and assisted in building the broadband network. They also made efforts to strengthen the service based competitiveness (service-based competition) as well as in equipment (facilities-based competition) by reducing the cost of entry into the market and network development. They also offered to the users of ICT different trainings for various ICT. They did not hesitate to develop educational software which helped to increase the demand for broadband services (Kim, et al., 2010).

#### **4. The development of broadband market in Kosovo**

In this section we will present the state of the broadband market in Kosovo. What steps did Kosovo take to develop ICT sector? In the following section we will learn more about the institutions, which are formed with the purpose of organizing a well-designed ICT market, and their activities. Also, a special emphasis will be placed on the charts, which show the level of broadband penetration in Kosovo and used technology as well.

In 2003 the Assembly adopted the Law 2003/16 (UNMIK, 2003). This law provides the need of building a special and independent regulatory authority that will be responsible for licensing and supervising telecommunications activities. This authority should lay emphasis on an increased participation of private actors in order to increase competition in the telecommunications market. Under this law, this authority shall be responsible for setting the standards for service providers, as well as assigning consumer protection provisions (ART, 2012).

The ART put into the center the interests of consumers, while offering favorable operating conditions for licensed operators is the focus of the ART. However, the main task of the ART is to create a favorable environment for new investments associated with high quality of services and affordable prices for the citizens of Kosovo. So, from the ART is required to build a competitive market, which is based on the principles of objectivity, transparency and non-discrimination (ART, 2012).

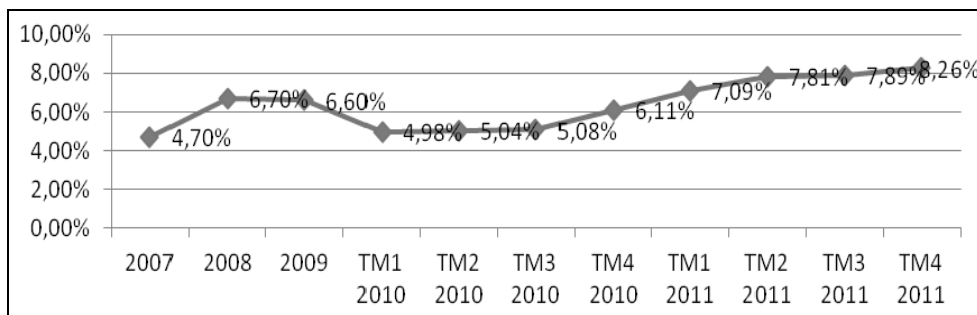
In order to develop the best possible telecommunications market ART has appointed its objectives (1) development of a free and open market, where all participants are treated equally, (2) coordinate the activities of all participants in this market in order to create conditions for the development of an information society, (3) placing the interests of users in the first place, (4) making more rational and efficient use of limited resources (frequencies and numbering), (5) harmonize all regulations, standards, technical and practical provisions with current regulations of the EU (ART, 2012).

##### **4.1. Broadband market in Kosovo and its characteristics**

In this sub-section we will present the number of internet users in Kosovo and will do a comparison with EU countries in 2011. Figure 3 shows broadband penetration per 100 inhabitants in Kosovo. From here we can see an increased internet penetration from 4.7% in 2007 to 8.26% at the

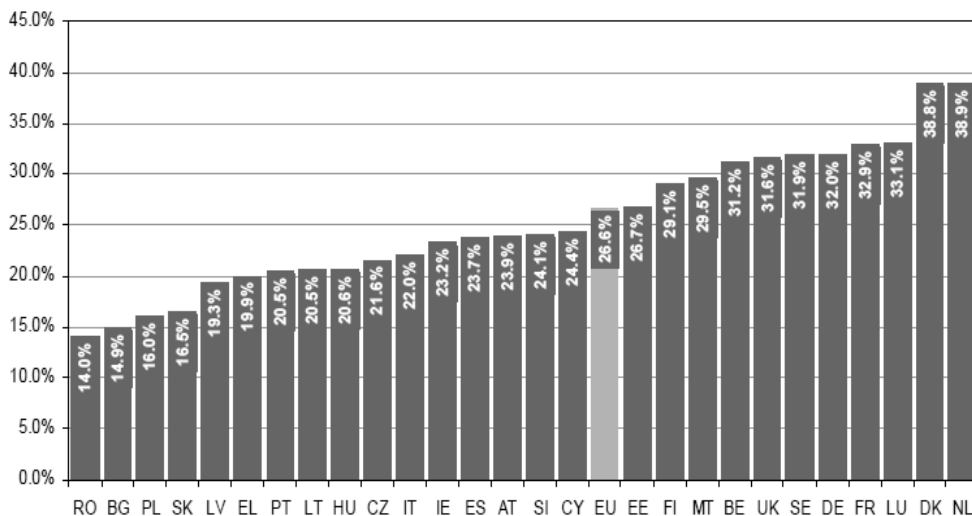
end of 2011. On the other hand, Figure 4 shows the penetration of internet services per 100 inhabitants in the EU countries. The green column shows the average penetration of broadband in the EU, which is 26.6%. It is obvious that the old EU countries are close to or above the EU average. However, Kosovo is located below Bulgaria, which has the lowest level of penetration in the EU, namely 14%. Moreover, Kosovo is far from the average value of penetration in the EU, 8.26% compared to 26.6%.

**Figure 3.** Broadband penetration (per 100 inhabitants in Kosovo)



**Source:** ART (2012): Annual Report 2011.

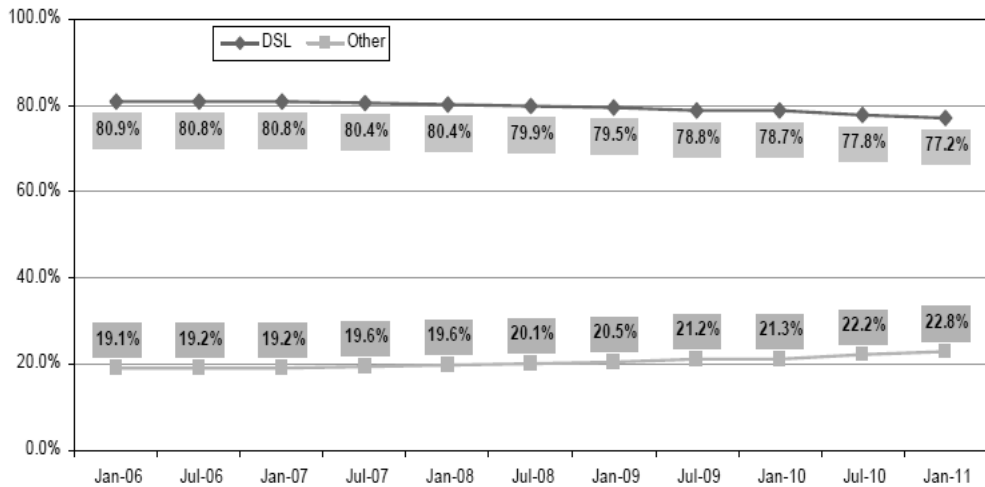
**Figure 4.** Broadband penetration (per 100 inhabitants in the EU)



**Source:** Communications Committee (2011): Broadband access in the EU: situation at 1 July 2011.

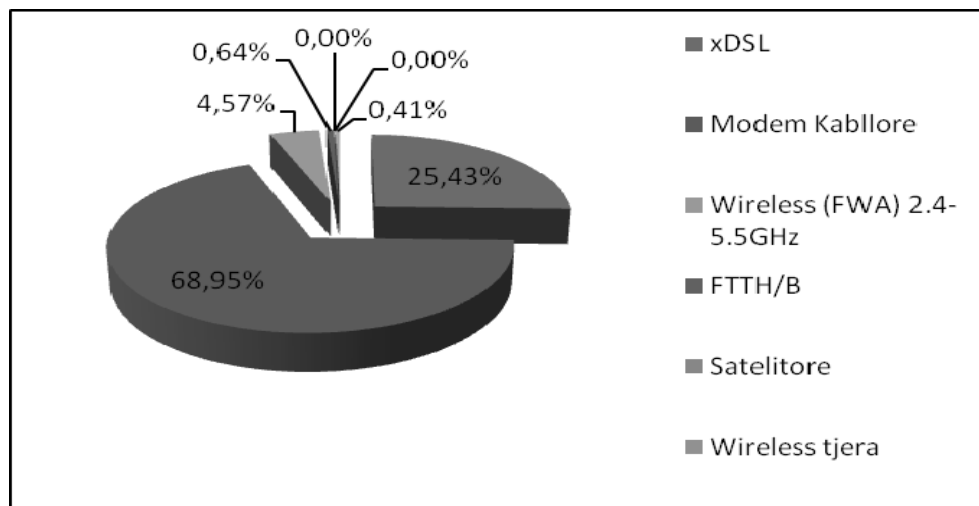
Another important aspect is the technology used in providing broadband services. In the EU countries Digital Subscriber Line (DSL) technology is the most used, which gradually loses its attractiveness over the European telecommunications market, while new technologies such as FTTH/B/C<sup>6</sup> and cable (presented by "other" in Figure 5) took off. In Kosovo cable modem has the highest percentage, 68.9%, followed by DSL, 25.43%. Wireless technology has 4.5% of the market and is used in remote areas, but also in cities (ART, 2012) (see Figure 6).

**Figure 5.** Technology market shares at EU level.



**Source:** Communications Committee (2011): Broadband access in the EU: situation at 1 July 2011.

<sup>6</sup> FTTH – Fiber To The Home.  
FTTB – Fiber To The Building.  
FTTC – Fiber To The Curbe.

**Figure 6.** Technology market shares in Kosovo

**Source:** ART (2012): Annual Report 2011.

It is important to note, that unlike the EU countries where traditional operator (known as incumbent) shares over 50% of the broadband market (Communications Committee, 2011), in Kosovo there are new operators, such as IPKO, Kujtesa and other small operators that control most of the broadband market<sup>7</sup>. This namely explains why DSL has such a small penetration rate in Kosovo in comparison with EU countries. Generally, new operators in the EU countries as well in Kosovo do not prefer DSL technology for providing telecommunications services (Communications Committee, 2011).

#### 4.2. ART activities on the development of broadband market

ART did not lag behind national regulatory agencies of the EU countries in drafting the regulation on access provision (Reg. no. 6. - Ref. Nr. Prot. 011/B/11), known as "Access Regulation". Access regulation ensures all operators a non-discriminatory, objective and transparent access to the network of certain operators with significant market power. Access regulation is a major step in the development of competition in services

<sup>7</sup> For more information on the broadband market, we recommend you to see TRA's report of 2012 (all reports are available and free for download at: <http://www.art-ks.org/?cid=1.32>).

(service-based competition), but is criticized by many theoretical and empirical researches on its impacts on dynamic efficiency, while it strengthens static dynamics by offering lower prices in the short term. The impacts of access regulation in telecommunications markets, namely broadband, have been analyzed by many authors, starting from ERG (2005), DeBijl & Peitz (2005), Ford & Spiwak (2004), Friederiszick, et al. (2008), Grajek & Roller (2009), Hausman & Sidak (2005), Kotakorpi (2006), Pindyck (2004, 2007), Haxhimusa (2012) and many other authors. All these authors give their arguments for positive and negative impacts of access regulation to the development of broadband in the U.S. as well as in European telecommunications market.

The well known "ladder of investment model"<sup>8</sup> promoted by Cave (2006) and supported by ERG (2005 and 2006) is criticized by the above mentioned authors. Moreover, the ERG (2005) shows that the development of the broadband market in the EU is fully consistent with this model.

The ART has adopted a regulation for "Operation of the Internet Exchange Node" (Reg. no. 10 - Ref. Nr. prot. 046/B/11) with the aim to create more favorable conditions for new investors as well as providing quality of services with affordable prices, while at the same time raising the level of privacy and security of communications. This has made possible the connection of all Internet Service Providers (ISPs) by enabling easier exchange between them without causing any overload to third networks. This enables an increased security and privacy of communications by keeping the national traffic as local traffic within international borders. Creating connections between ISPs allows faster connection with different network users, thus increasing the quality of services. These connections have enabled the reduction of the costs per Bit, what therefore enables the reduction of the consumer prices (ART, 2012).

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<sup>8</sup> The ladder of investment model is a model proposed by Martin Cave (2006), which entitles operators to have varying degrees of access to the network operators with significant market power. By offering different prices for different levels of access but also providing dynamic access prices, Cave (2006) tends to raise the level of investment in the telecommunications market.



## 5. Conclusions

Kosovo, in order to get the benefits derived from the development of broadband, has to develop two dimensions of this sector, namely the use of broadband services (demand side) and the provision of these services (supply side), due to high lags in both dimensions. In this study we have seen that Kosovo through ART has made necessary (delayed) actions for the development of competition and further market liberalization, such as rules for access regulation and the regulation of operation of the internet exchange node.

Looking at the objectives of the ART as an agency responsible for the development of the telecommunications market, and the data derived from the ART, we can see that the broadband market in Kosovo is converging toward European's market with a relatively low intensity. On the other hand we see a lack of commitment of other government agencies (e.g. various ministries) or even ART coordination with other stakeholders in the field in order to further develop the conditions for an information society. Based on the objectives of ART, Kosovo is focused on building an information society. Achieving this goal should be followed by a plan for its implementation, but we cannot find any proof of its existence. Since there is no such plan, we suggest that when the development of such a plan takes place, there should be involved many stakeholders, ranging from ART as the leader of the development of this market, to the majority of ministries, public and private universities, primary and high schools, community and business as well. So, in order to get the benefits of broadband as described in the above studies we have to build an even more information society.

It is required from the Government to play a more active role in the development of broadband in Kosovo, both in developing the demand and the supply for broadband. In this way the Government of Kosovo should be aware of the fact that its intervention is necessary in increasing the penetration of broadband network. Meanwhile, it should also take into account the long term impacts of access regulation on the investment incentives of the market operators. So, the Government should focus initially on the policies for promoting the expansion of the broadband network. It is also reasonable to invest in the providing broadband network in schools, universities and different governmental agencies.

The increasing demand for internet services is essential for the development of an information society. In this regard we have to try to increase awareness about the benefits that come from using internet. Therefore, we should develop programs that increase the level of knowledge on different ICT. Funding the development of various applications is one good way to increase the usage of ICT. The Republic of Korea has provided computer equipments at low prices for every user. Financing access to different global electronic libraries for students of the public universities will directly increase the demand for broadband, but at the same time will contribute to an increase on the quality of studies.

Given that in Kosovo there are still many (small and medium) businesses that did not install even a single computer, whether this is due to lack of information on the benefits arising from using ICT, or it is the lack of knowledge using the ICT, the business community should be informed about the economic benefits that can be derived by using ICT. Therefore, we have to build a program that aims to inform businesses about the benefits arising from the usage of ICT, as well as increasing knowledge how to use ICT.

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