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The Telecommunications Industry and Its Impact on the Albanian Economy

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Abstract: This paper aims to show the importance of the telecommunications industry in the economic growth of Albania. The earliest studies developed in different countries show us that the connection between these factors exists. According to the early studies of Norton (1992), telecommunication helps to reduce the transaction costs, promoting efficiency in different sectors of the economy. According to Leff (1984), telecommunication also influences the economy through the positive effects of network externalities, reduction in information costs, and facilitating the effective and timely coordination among agents. This positive relationship between these factors, on one hand, affects the increase in demand for new services in the telecommunications on the other hand, encouraging the growth of investments in this industry. The latest studies show that a 1% increase in Fixed Broadband Penetration brings a 0.08% increase in GDP and an increase of 1% in mobile Broadband Penetration, brings an increase of 0.15% in GDP. Said that, the purpose of this study is to statistically identify the relationship between these two factors in Albania, highlighting some conclusions on the telecommunications industry and development prospects, which may be the subject of future publications. In the present study, a regression analysis reveals that the relationship between telecommunications and economic growth is highly significant for regions in Albania. Telecommunications development measured in number of broadband lines per hundred inhabitants are found to significantly affect GDP. Many countries in the world are recognizing the role of telecommunications in economic growth, but with all the initiatives to modernize the telecommunications infrastructure, less developed countries like Albania are behind in their efforts because investments are needed for other infrastructures such as: education, energy, roads and bridges, and other physical infrastructures which are also vital for economic growth. How does the situation in Albania stand in relation to developed and less developed countries?

Keywords: Telecommunication industry; broadband; economic growth; lesser developed countries

Introduction

Telecommunication is a sector that has developed in recent years also due to major technological developments and, this sector occupies an important place in the economy of a country as well. Much research has been published in the past addressing the relationship between telecommunication development and economic growth. As the global economy is shifting from an industrial economy to an information-based economy, there is growing awareness of the importance of telecommunications globally.

Broadband networks are telecommunication networks, or networks electronic communications, which enable high-speed data communication and very high. Broadband Penetration shows the diffusion of

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internet penetration to the residents and businesses of a country. This research paper will study precisely the relationship between broadband penetration and GDP growth in our country. The purpose of this study is to show the importance of this sector in the Albanian economy.

The latest report of the United Nations Commission on Broadband, “State of Broadband Report 2019”, emphasizes that the role of Broadband, and the benefits of Broadband connection, in promoting progress of a country, have never been bigger, clearer and measurable, than in today's digital age. As well as have evaluated numerous studies, such as documents of UN Broadband Commission, from a recent study “Broadband and Digital Transformation”, fixed and mobile broadband has a contribution to the growth of a country's economy, transformation digital and the interaction of ICT rules in national economies. ITU Publications 2018 “The economic contribution of broadband, digitization and ICT regulation” show that a 1% increase in Fixed Broadband penetration brings a 0.08% increase in GDP and an increase of 1% in mobile Broadband penetration, brings an increase of 0.15% in GDP.

2. Literature Review: Telecommunications and Economic Growth

According to Frontier Economics (2011), channels through which telecommunications influence economic growth are numerous and can be classified into two groups:

- a) Direct channels: output (product / service), employment and productivity expansion within the sector
- b) Indirect channels: speed and quality of information flow, business efficiency, access to real and virtual markets, people and process management, and innovation dissemination.

We are aware that the telecommunications sector has a direct impact on our economy, especially in terms of employment. What is important to address next is the impact this sector has on the economy indirectly. In this way we give a clear picture of its importance.

2.1. Transaction Costs and Telecommunications

Referring to Norton's (1992) studies, if transaction costs are too high, some product / service markets may not exist, the benefits of specialization will be lost and, consequently, the aggregate product in the economy will clearly be lower than in economies with lower transaction costs. According to this study, the link between transaction costs, telecommunications and macroeconomic growth lies in two facts. First, in less developed economies there is a lack of information, which is costly. Decisions are not made or slowed because decision makers do not know the alternatives. It is therefore emphasized that information markets are relatively inefficient compared to those in developed countries. Second, besides the effects on market information, telecommunications is very important in the functioning of market products and factors. Telecommunications infrastructure reduces transaction costs in many markets and results in higher aggregate output (Parker, 1992).

According to Leff (1984), telecommunications reduces transaction costs as follows:

- (1) Communication costs are lower and therefore communications are especially useful for reducing the costs of sharing resources between different sectors of the economy
- (2) As communication costs decrease, the optimum amount of search increases, and thus the quantity and quality of information used increases, and therefore slightly better decisions will be made
- (3) Lower communication costs, increase the likelihood of arbitration and make financial markets more efficient, which in turn reduce capital costs;

(4) Lower communication costs lead to more information on price distribution and allow for the transformation of uncertainty into risk.

It is worth noting that telecommunications improves the speed and quantity of information. Basically, this is because communication costs time and in many cases, money. Therefore, any improvement in the pace and quality of the flow of information will ultimately feed a country's GDP. The value of communication more generally for businesses has been demonstrated in the results of a study for the British Chambers of Commerce (2003), which found that companies of all sizes and sectors consider communication to be the most effective as the biggest benefit of broadband connectivity to their businesses.

However, empirical research on transaction costs and telecommunications is not abundant. To summarize, there are several theoretical foundations that suggest that transaction costs are decreased through telecommunications.

2.2. Telecommunications and Externalities

Leff (1984) noted the benefits of expansion and modernization the telecommunications network.

1) Network expansion leads to the benefits of lowering the average cost of services for both existing and new users. The reduction in average ecosystem expansion of the network can be attributed to economies of scale and scope.

2) The benefits of investing in telecommunications increase exponentially as the expansion allows new entrants to join the system. The wellbeing of each participant increases with the number of other people who have access to the network with whom communication can take place.

3) Expanding the network reduces the cost of information and makes it easily available. Large-scale availability of information improves efficiency in organizational and economic decision making.

4) More information makes the user aware of contingencies previously, of which he was ignorant. Parker (1992) argued that there is substantial evidence that, when used effectively, the availability of telecommunications enhances the efficiency and accessibility of social services, including health and education, in addition to its essential contribution to business efficiency.

2.3. Improving market access (expanding competition)

Telecommunications is considered as facilitating access to markets from these perspectives:

Consumer access: improved communications allow for a far greater reach of consumer markets than it would otherwise be. Web-based sales are a special example of this work in practice. A study by Ofcom (2010) emphasized the value that businesses give to online marketing and implies that businesses recognize the value of being able to access increasingly global markets at relatively low cost. The OECD (2000) found that the Internet offers opportunities to reduce barriers to entry and make markets more contentious.

Brynjolfsson and Smith (2000) examined the prices of books and CDs sold online and through physical stores in 1998-1999 and found that prices of these goods were 9-16 percent lower when sold online. This would be a direct benefit to the consumer, as it would free up the money they could use to buy other goods and services in the economy.

Access to suppliers: being able to access a wider range of suppliers - and ensuring that they compete with each other in a way that they probably would not otherwise - makes it possible to reduce costs for buyers. A study by Goldman Sachs (2000) found that e-commerce efficiency gains in business-to-business transactions ranged from 2 to 40 percent of total input cost, depending on the industry.

Access to the job market: the development of broadband has made it easier for many companies to adopt online recruitment processes, allowing candidates to submit applications globally, and even teleconferencing interviewing. Access to a broader labor market and reduced search costs for both workers and employers is a productivity benefit, as work can be more effectively matched with their job skills.

2.4. Telecommunications Contribution to Economic Growth - Using Broadband

We mentioned earlier that telecommunications generally reduces costs and affects the efficiency of a business. Broadband usage in particular is the latest trend, where according to a British Chamber of Commerce (BCC) study, 46.4 per cent of businesses cited an improvement in business productivity associated with Broadband use; as well as 45.3 percent said broadband has contributed to cost savings. Recently, Ofcom published the results of a study of customer experience related to communications services. This study found that businesses prioritize communication because they are seen as ways to reduce costs and enable more effective competition. Examples include: increasing sales and marketing through the presence of the Internet, better customer response via smartphones, greater workforce flexibility and efficiency through facilities such as remote access and video conferencing.

A key benefit associated with the use of Broadband by companies and individuals is the improvement of information flows within organizations. Shanks and Barnes (2008) point out that better information flows within a company enable better and timely decision making. Citing Nadiri and Nandi (2001), it was emphasized that modernizing the communication network has increased the communication efficiency of managers, helped to coordinate independent units and increased information and knowledge transfer. More broadly, the development of communication systems has increased the application of knowledge management practices by companies.

The use of telecommunications in general and Broadband in particular, as mentioned above, have helped businesses reduce their costs and yet expand the markets they serve (efficient communications allow them to do so). For example, large online retailers have simplified their operations to reduce inventory dependence (which entails high storage costs) and instead operate efficient distribution channels. Efficient logistics systems often rely on the use of Broadband. The "Just in Time" delivery, for example, involves every stage of the production chain that communicates with the other. Here too, the goal is to ensure a seamless flow of parts and materials through the process, without the need to invest in large inventories.

Another important benefit offered to businesses by using Broadband is flexibility in terms of work practices. According to Ofcom's (2010) survey, in 2010 over a third of companies (36 percent) worked from a home office. High levels of work mobility were also found, with almost four in five (78 percent) of those interviewed working out of the office in other fixed locations and / or traveling.

Although most of above mentioned studies have been undertaken looking at telecommunications related to the economy or the impacts on business, there are also potential impacts on consumers - both in the communications sector and beyond. Telecommunication improvements send both business and consumers in a Win-Win situation. Greater consumer welfare is achieved through impact on prices,

product variety, etc. Improving the information available and reducing search costs allows individuals to make better and more informed decisions. For example, the internet is increasingly providing the opportunity to compare prices and services, such as when booking a vacation. Access to a wider range of goods and services than before, some of which may not be available in physically accessible markets and at potentially lower prices, may increase well-being.

Focusing on broadband, ITU / UNESCO (2011) emphasized that there is also evidence on productivity gains and cost savings as a result of improved access for citizens and businesses to public information and services (such as health and education provided by local and central government). By reducing the time individuals have to devote to government services (through e-government such as online access to different certifications), can be translated into cost savings while potentially saved can be put to other productive uses.

3. Broadband – Analysis of the Current Situation

The definition of Broadband across countries continues to evolve and, while technologies improves, new generations of wired and wireless technology are emerging, making expectations higher for quality (those that constitute the minimum download speed for the optimal experience of end users). Broadband networks are telecommunication networks, or networks electronic communications, which enable high-speed data communication and very high. However, as defined by the European Commission, the term "Broadband" does not refer to it of a particular technology used for Internet access, but represents a term for digital infrastructure, which allows fast Internet access that is always online, as well as it is faster than traditional dial-up access.

Broadband networks are becoming an increasingly integral part of the economy. OECD, in the final report in 2015, "Addressing the Tax Challenge in the Digital Economy", states that this digital economy no longer has limitations. Broadband networks are the basis that can facilitate the development of new challenges, new and improved goods and services, new processes, new business models, and that brings an increase in competitiveness and flexibility in economy.

Albania has undertaken a number of structural reforms in the information technology sector and communication. Albanian Government has continued the promotion of ICT, in various sectors, introducing and implemented different strategies and policies, which have ICT in their focus, development of the information society, the digital agenda and the development of Broadband. Moreover in the recently years, the Albanian government has invested heavily in the digitalization of public infrastructure and the development of electronic government systems and services.

The Broadband market is one of the most vibrant markets in the Telecommunications sector in Albania, with 240 ISPs authorized by AKEP and two mobile network operators, offering

mobile services and Mobile Broadband. It is worth noting the fact that fixed network operators, during 2018-2020, are investing mostly in fiber optic networks. The main fixed Broadband operators are Albtelcom, with 36% of the market, and ABCOM with 18%, ASC/TRING with 14%, as well as Abissnet with 10%. Penetration of Fixed Broadband both per population and per household, as shown in the following figure and, in the period 2013-2020 it has increased more than twice. However, the penetration of fixed Broadband networks remains well below the EU average level and other levels of penetration of neighboring countries, although there is steady growth every year with 10%-15%.

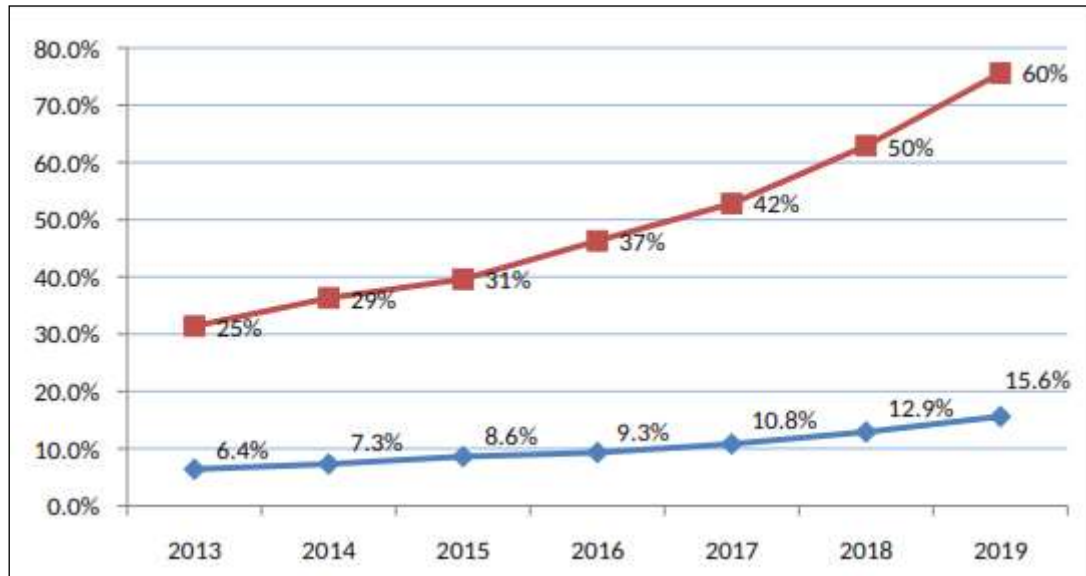


Figure 1. Penetration of Fixed Broadband (per population and per household)

Source: Akep Activity Annual Report 2019

ICT infrastructure in urban centers is relatively well developed. However, according to Albania 2018 Report of European Commission on EU Enlargement Policy, exists a gap between urban and rural areas: while rural areas represent 39.7% of population, only 3.4% of the population living in these areas is connected to the Internet, although in some areas, this figure is higher. Particularly there is a big gap between urban-rural division for fixed internet penetration. While 12% of the urban population has Broadband access to fixed internet, in rural areas this figure is only 2%.

ICT Centric Innovation Ecosystem Country Review Albania (Report 2016) has identified the lack of rural connectivity as “one of the biggest gaps” which hinders development in the country.

4. Methodology

Data for this work were collected using a dual approach that includes:

- Materials published from a wide range of sources including, inter alia: academic literature, sector regulators, industry specialists, international organizations such as the OECD and governments abroad.
- To complement the existing conclusions, SPSS analysis was undertaken to explore the quantitative relationship between Urban Broadband Penetration and Economic Growth (GDP per capita), constructing a regression model to analyze the relationship of the two factors as quoted above in Albania.

It should be noted that the analysis may have deficiencies. Choosing a communication component such as penetration of broadband instead of other components such as investments in infrastructure or industry equipment may limit research results. Also, choosing fixed broadband penetration instead of mobile broadband penetration may limit research results. The collected data limited to 3 years may be another limitation of the study.

5. Findings- Telecommunications - Economic Growth

The importance of telecommunications in economic growth has also been discussed in the previous sections. In this section, an attempt is made to analyze by means of a regression model the relationship between telecommunication and economic growth. In general, GDP per capita is used as a measure of national economic activity. Such a data parameter, converting it to per capita, rather than using total or aggregate values, eliminates the effects of large variances on absolute magnitudes between countries. Various measures can be used to quantify development in telecommunications; the number of telephone lines, investment in telecommunications, level of network modernization, types of value added services. Although new studies show that mobile broadband penetration is a stronger influencer on economic growth, according to ITU/UNESCO (2011), the impact of broadband on growth is more significant than mobile, fixed telecoms and other forms of communications. Since the data on broadband penetration in Albania date from 2016, the data are up to 2019 and referring to the fact that the biggest investments up to this year belong mostly to fixed broadband penetration, this is reason why fixed broadband penetration was chosen as an indicator.

In this section, an investigation between these two variables focuses on the statistical significance of their relationships. To analyze this relationship is thought of as the best way, the data coming at the district level for both indicators.

Table 1. Penetration of Urban Fixed Broadband and GDP by Regions

Years	2017		2018		2019	
Cities	Penetration of urban fixed broadband	GDP per capita (ALL)	Penetration of urban fixed broadband	GDP per capita (ALL)	Penetration of urban fixed broadband	GDP per capita (ALL)
Dibër	10.50%	399,559	11.00%	434,333	12.70%	435,332
Durrës	13.90%	546,110	16.00%	560,172	17.60%	590,809
Kukës	8.50%	337,339	10.50%	362,850	14.50%	359,970
Lezhë	14.00%	395,254	14.70%	404,529	16.90%	429,699
Shkodër	16.80%	387,478	17.90%	410,005	19.70%	426,986
Elbasan	8.90%	375,543	11.00%	398,818	18.60%	410,346
Tiranë	28.00%	745,590	32.00%	783,474	36.30%	803,070
Berat	12.50%	453,650	13.50%	463,561	15.50%	468,395
Fier	12.00%	552,702	14.00%	601,683	16.50%	644,650
Gjirokastër	15.50%	535,122	18.00%	571,991	20.00%	614,081
Korçë	18.40%	399,124	21.00%	420,198	23.20%	439,636
Vlorë	15.00%	459,474	19.00%	486,367	21.30%	493,411

Source: Akep, Annual Report 2017- 2019; Instat, Gross Domestic Product by Regions, 2017 -2019

The simple linear regression model is used:

$$\text{GDP per capita} = f(\text{urban fixed broadband penetration rate})$$

SPSS analyses

Year 2017

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.691 ^a	.477	.425	.16923
a. Predictors: (Constant), bburban17				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.261	1	.261	9.117	.013 ^b
	Residual	.286	10	.029		
	Total	.547	11			
a. Dependent Variable: loggdp17						
b. Predictors: (Constant), bburban17						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.598	.150		83.841	.000
	bburban17	.030	.010	.691	3.019	.013
a. Dependent Variable: loggdp17						

$$(\exp(0.03) - 1) * 100 = 3.05\% \approx 3.1\%$$

For every one-unit increase in the independent variable, our dependent variable increases by about 3.1%.

Year 2018

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.698 ^a	.487	.435	.16671	
a. Predictors: (Constant), bburban18					

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.264	1	.264	9.484	.012 ^b
	Residual	.278	10	.028		
	Total	.542	11			
a. Dependent Variable: loggdp18						
b. Predictors: (Constant), bburban18						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.649	.148		85.223	.000
	bburban18	.026	.008	.698	3.080	.012
a. Dependent Variable: loggdp18						

$$(\exp(0.026) - 1) * 100 = 2.63\%$$

For every one-unit increase in the independent variable, our dependent variable increases by about 2.63%.

Year 2019

Model Summary					
Model	R	R Square	Adjusted R Square	R	Std. Error of the Estimate
1	.635 ^a	.403	.343		.18831
a. Predictors: (Constant), bburban19					

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.239	1	.239	6.743	.027 ^b
	Residual	.355	10	.035		
	Total	.594	11			
a. Dependent Variable: loggdp19						
b. Predictors: (Constant), bburban19						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.645	.189		66.866	.000
	bburban19	.024	.009	.635	2.597	.027
a. Dependent Variable: loggdp19						

$$(\exp(0.024) - 1) * 100 = 2.43\%$$

For every one-unit increase in the independent variable, our dependent variable increases by about 2.43%.

6. Conclusions and Recommendations

As the above analysis shows, broadband penetration is an important factor in the economic growth of regions in Albania. Referring to Albania's economy, we can say that telecommunications and especially broadband penetration can be an important priority for the country's development and economic growth.

Despite its significant impact on economic growth, telecommunications in developing countries such as Albania is characterized by low density, outdated technology, poor and low standards of service quality, and overall a low level of infrastructure investment compared to other countries. As we mentioned earlier, the level of broadband penetration is much lower than neighboring countries or wider and, consequently a lower level of GDP per capita compared to its potential. One possible reason may be attributed to policy makers' failures to recognize earlier the significant impact of telecommunications on economic growth. In most developing countries, where telecommunications is a monopoly or oligopoly as in the case of Albania (for this the governance of country has been responsible for years), investments in this industry are not at the potential level. Low competition, low product differentiation and low investment interest by companies lead to low utilization of telecommunications potential in economic growth. Telecommunication companies often find unreasonable investment in some regions of Albania and also in rural areas. It would be appropriate for the governance to intervene through facilitating and motivating mechanisms for investment in these regions, paving the way for a higher level of Broadband Penetration, especially in rural areas where the level of broadband penetration is very low and, creating the conditions for greater economic growth in these regions or rural areas. Most importantly, the governance must ensure that this sector has full competition, to be as efficient as possible by investing and providing the latest developments in this sector.

The limitations mentioned in the methodology session and the incomplete information on the telecommunications industry may lead us to incomplete conclusions on the challenges of the development of the industry with a focus on the potential of economic growth in Albania. In the following publications, the focus will be on better knowledge of the industry and the stakeholders who influence or are influenced by the industry. What could be the problems and challenges that need to be

addressed in order to achieve the maximum potential of economic growth influenced by broadband penetration.

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