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ICT adoption in SMEs for alleviation of poverty

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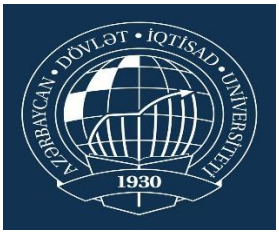

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Contents

1. Acknowledgements

In order to be modern and knowledgeable skilled workforce, it is crucial to identify the trends of economy in this way I am very thankful to my teacher Aysel Guliyeva who helped me a lot. Also, she motivated and encouraged me to choose this topic for my diploma work. The recommendations and advices of my teacher helped me enough to finish my project. My family have enough impact to working with this project. They showed me how to get essential information about the statistics of Azerbaijan Republic. As, my mother works in Central Bank of Azerbaijan as specialist, she gave good information related to my topic.

Overall, Firstly I want to give special thanks to my teacher who helped my project. And I say good luck to her in life. In addition, I thank to my family to establishing good working environment and supporting me with technical devices. (computer, internet and etc.) Thanks to our Dean Aida Guliyeva for supporting and interested in economic trends of world that helped me to finish my project.

2. Introduction

My diploma work is about the ICT adoption in small and medium enterprises and the role of those technologies in decreasing poverty level of developing countries. This topic was first introduced by UN as current millennium's main challenges that if applying information technologies to business sectors of developing countries can get a positive impact. There are several works that were done by international organizations (United Nations, World Bank and etc.) to see its impact on economy of country.

In my work, I started writing with small and briefly identifying what is ICT and its role in the world. On this park variety of definitions were mentioned which were made by global organizations. And after that there is the identification criteria for companies to be known as small or medium firm. Different countries examples are also available there. Moreover, in first part of work, there are mentioned the relation between ICT and businesses, their usage areal and some related statistical data can be seen there.

Going further to second part, there are relevant information about poverty and human development situation of the world, where was made statistical and proved research about the current and past environment of both developed and developing countries. These materials were taken from human development report which was shown on yearly basis. And there are some essential ideas that were made by World Bank. The multidimensional poverty index was also viewed in this work in order to show the actuality of work. The African region was the main target in there. Because this region is well-know for its poverty level and there are several countries which reduced those higher income gaps among its population. The reason for being poor and not interested in advanced ICTs and IT services were also mentioned. And what benefits do the ICT opens for the poor and SMEs of low and medium income countries was clearly pointed. The main source of mine in this part was the report of EU named as ICT In Developing World.

Our country- Azerbaijan was also considered in this project. The current electron and online environment, its popularity and usage by local SMEs were stated.

In conclusion part, the overall information about the writing was collected and structured. In addition, the results of the several works made by developing and developed countries in order to make ICT adoption in local areas and after processes were shown in there. When it comes to suggestion part, I mentioned the most relevant factors that is urgent for our country (and to the world) and local SMEs in order to be adopted by ICTs and reduce the poverty level of country.

3. The fundamental information

3.1 ICT as an integral part of modern life, the scope of it and modern trend, poverty analyses and the current situation of SMEs.

ICT- Information Communication Technologies

Nowadays you can hear this word everywhere. This term was coming out by innovation especially computer technologies and invention of internet (network). Today people use ICT a lot. There are many reasons why it's so popular among people. First of all, there are enough programs that you can use in order to keep in touch with your friends even between two continents. Second in work place the usage of computer technologies helps workers to do their job more efficient, effective and in reduced time rather than old forms of work. With the help of ICT technologies human being can research urgent information among network pool which require only network connected laptop.

Many organizations define ICT in different ways. Some of them was given below.

According to UNESCO ICT is the scientific, engineering and technological disciplines, management techniques that helps to transmit information between men and machines.

Digital video technical Glossary defines ICT as, it is the communication, computing, calculating facilities that support learning, teaching and variety of activities about education.

The UK National Curriculum document made in 2000 identifies ICT as, some kind of technologies that used to access, transfer information and help communication.

Information

Information is some data that is valuable for people. It can be obtained by research, reading, learning and contacting with others. Information is important to fulfill our daily tasks. Information can be transferred by technologies such as computer, mobile phone, television and etc.

Communication

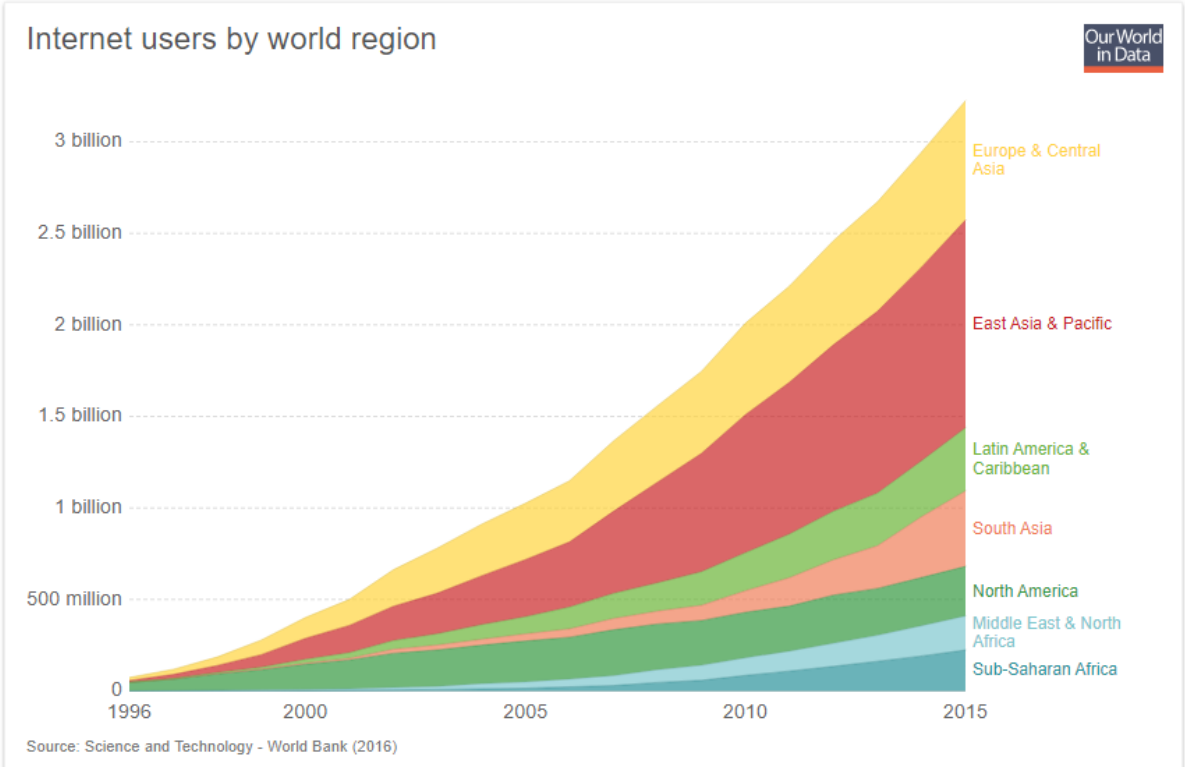
Communication is mainly about changing information between two or more persons. It's important in order to gain relevant information. Modern world communication can be take place by using devices that have internet connection and you can contact with your peers by writing some symbols or letters. There is also some social programs that made communication more efficient.

Technology

It is the product that helps users to get crucial information and communicate with other ones. Technology has vital role in nowadays life.

In total the term ICT defines some type of technologies that are used for getting information, exchanging that information with others or just for communication. The ICT has the major role in everyday life environment of modern person. Such as it has significant part in education, banking, industry and e-commerce. For example, such technologies boost the economy. In e-commerce it gathers online buyer and seller in one site. E-bay, Amazon, AliExpress can be example of it.

Modern trend of ICTs



According to the statistics obtained from World Bank obviously states that the total number of World's population by internet usage is increasing. From the diagram we clearly see that in East Asia and Pacific region the number of internet users is increasing more faster than other regions.

3.2 The usage of ICTs and IT services by SMEs

3.2.1. SMEs stands for what

The definition for SMEs can be defined differenly in different countries. Such as, the size of company can be identified by the quantaty of employees in work place, the range of market share, production, produced goods types, cashflows, revenue , equipments and etc. Also, the standard for the size of the business some times can vary from industry to industry.

SMEs are the most popular form of enterprises in most of the countries. And this type of firms took the largest part in tax payment to local budget. For this

function some countries give more attention to such type of companies rather than large ones. They can give some incetives to SMEs in order to boost the economy.

From the data collected by U.S. Census Bureau Data, in 2014 small and medium enterprises that have no more than 20 workers estimated 97.9 percent of all the businesses in the U.S. They took more than 46 percent of country's GDP between the companies that are privatly owned during this year, making SMEs very relevant for growing economy, developement and innovation. Because of their role to the national economy, their fixed cost of taxation and also their huge compliance, SMEs can take advantage of some tax deduction, tax holidays and subsidiaries. It depends from country to country which type of incentives are best suitable to enchourage them.

In the U.S., The term SME defines various from industry to industry, and there are standard for companies in order to identify the size of company that was made by NAICS (North American Industry Classification System). This system was made by U.S., Canada, and Mexico under the NAFTA (North Atlantic Free Trade Agreement) agreement. NAICS main purpose is gathering and analysing business statistics or datas. To be considered as small or medium business and to get permision for appling goverment contracts and funding, under the NAICS the company have to represent the number of employees or income to the goverment. For instance, in manufacturing sector a company having 500 or less work force can be considered as SME, however in wholesale sector a company with 100 employees is SME. In mining area this limit could increase to the 1500 workers to be accepted as SME.

In addition there are micro-businesses. Which is defined as the firm operating with 5 or less people.

In the EU, similar clasifiaction is used to identify the range of Businesses. Such as, firms operating with fewer than 250 workforce are called as medium enterprises, firms functioning with lower than 50 persons are named like small businesses and

manufactures working with no more than 10 workers are micro businesses. Moreover, the EU system also considers the turnover rate of the companies and their balance sheet accaunts in order to meintain the size of business.

Company category	Staff headcount	Turnover or Balance sheet total	
Medium-sized	< 250	≤ € 50 m	≤ € 43 m
Small	< 50	≤ € 10 m	≤ € 10 m
Micro	< 10	≤ € 2 m	≤ € 2 m

**From the European Commission Definition*

China's definition of SMEs is different for the area of their operating.

Industry	Staff headcount	Revenue (RMB)	Assets
Heavy Industry	< 1000	≤ 400 m	
Wholesale Trade	< 200	≤ 400 m	
Retail	< 300	≤ 200 m	
Transportation	< 1000	≤ 300 m	
Warehousing	< 200	≤ 300 m	
Accommodation	< 300	≤ 100 m	
Restaurant/Catering	< 300	≤ 100 m	
Software/IT	< 300	≤ 100 m	
Real Estate Development		≤ 2 b	≤ 100 m
Information Transmission	< 2000	≤ 1 b	

**From the Ministry of Industry and Information Technology, the National Bureau of Statistics, the National Development and Reform Commission, and the Ministry of Commerce (July 7, 2011)*

3.2.2. The impact of modern technologies to enterprises

ICTs have the major role in modern commerce world. E-business is the using devices that provided to the network (laptops, smart phones and etc.) with the purpose of facilitating to do business. (Like purchasing and selling good online). The main benefits of such type of business are improving efficiency and effectiveness in business world, profitability and competitiveness through technologies. E-business is

helpful to the small and medium firms and it's not costly or complex as seen from outside, in further parts I will mention about it.

Changes in nowadays world affects e-business too. From the cause of innovation and technological development, the way e-business operates varies quickly and SMEs have to focus on new technological trends in order to maintain or improve their market shares or competitiveness compared with rivals. An example of today's trend can be given as underline. (and some benefits of ICT to e-business):

- They can benefit from social networks to identify consumers
- There are wide variety of applications to reach costumers
- Using video creating programs they could make e-marketing (promotion) or training
- Cloud systems also important to advance productivity and performance of work, to save money or reach relevant information in everywhere.

E-business is about the use of ICTs with the purpose of supporting business operations. It also benefits firms to connect some business processes or simplifying relations between companies (mainly about international firms or partners), suppliers and customers.

The term e-commerce is a sub meaning of e-business which is about changing goods in online such as, selling, purchasing, transferring and etc. Web shops or retailers that are operating can be a good example for e-commerce.

E-business is more than owning website or applications. The main principle of e-business is increase competitiveness, enlarge market share and of course, to increase the size of customer for company. It's the new type of modern business, it gathers technology, operation process, organizing and new way of doing business. There are some examples for the role of e-business to firms: (Mainly those are the benefits of it)

- To master communication inside the company by applying company websites, creating personal accounts for workers inside that system and creating control mechanisms.
- To use inexpensive form of marketing or promotion. Such as, by the help of social networks companies can promote their goods to their clients.
- To research important information through the internet or reaching some relevant statistics data or government regulations.
- Companies can easily trade their products in the established and well-known e-commerce websites. (It's the Business to Customer or Business to Business form of e-commerce, about that forms I'll mention in next paragraphs). An example of these types of e-shops can be eBay, Amazon, AliExpress and etc.
- To follow the shipment of goods
- Online form of workforce recruitment

In addition, E-business allows you to compare your products and the price of your products with your rivals. And it can deduct a lot of production and transaction costs, as in online market you can find out most of the suppliers and among them you can choose the best offer. E-business lets company to operate the company even when out of the office. It makes easier to communicate with banks or government and etc.

Growth of e-commerce

It is the fact that e-commerce is growing very rapidly from the lunch day of worldwide web. In nowadays, the internet sales takes the significant part of the whole trading and commercial sales. The internet users was less than 3 million persons in 1991 in worldwide area and applications or tools for e-commerce and e-business was not existed. After 10 years later, in 1999 it was calculated that internet users was reached 300 million persons and they started to use and purchase goods and services from online markets. During this time the total online

sales was estimated as more than 110 billion dollars. According to World Bank in 2014 total business to consumer online sales was worth nearly 1.25 trillion dollars.

3.2.3. E-commerce and its types

The advantages of e-business can be given as below:

- Flexible and efficient type of business: The ability to control complex information and customers.
- 24/7 form of business. It means that 24 hours in a day your business can be online and if you have the network connection you can get the information about the operation of company in everywhere.
- Decreased costs and time: Little time for paper, labour, data entry, product preparation lead time and delivering time.
- Advanced relation with clients, banks, government, sales by the help of online form of marketing techniques
- The modern form of cooperation with other firms.
- Easier forecasting of business.
- Internationalization of Business can be occurred. Such as, googling relevant information about other countries and researching their needs company can operate besides from domestic country, like in foreign country too. The significant information for such type of firms could be about the economic situation of country, inflation rate, bank percentages, political situation, providness of resources (raw materials, labour and technology) and etc.
- Reduced communication costs: there are some programs that can benefit companies. For instance, VoIP (Voice over Internet Protocol) technologies can be used. Skype, WhatsApp, Viber are one of them.

When it comes to writing about the disadvantages of e-commerce there are plenty of them and some of disadvantages are given below:

- The personal data that saved in online account can be robbed, copied or hacked. In e-business world that personal data is relating to the things as, company secret, trade secret, information about customers, suppliers and etc.
- Online world is totally about technology and like other devices network has to be repaired. During the time of maintance and upgrade of such type of stuff there is brake of online network. It creates more problems to business when e-business activity is necessary to be happen on time.
- In online trading there is no guarantee for the quality of purchased product.
- In some developing countries the time for delivery of bought product to customer takes quite a long time.

Types of e-commerce

Based on the relation and kind of parties participated in e-commerce activity as, the form of buyer and seller it can be divided in types mentioned above:

1.Business-to-business (B2B)

B2B describes the trade transactions made among businesses, such as from producer to wholesaler or wholesaler to retailer and etc. B2C (business-to-customer) and B2G (business to government) are the contrasting terms that made from B2B. The size of B2B commerce is much more higher than B2C transactions. The reason for that can be explained as there is huge amount need for raw materials in order to create the output (final product), and in the case of B2C market the selling of that output is only one transaction. For example, the automobile industry uses variety of materials to make a car. Such as, buying tires, glass, rubber, metal parts and etc. The final part related to finished goods sold to customer is a single example of B2C transaction.

B2B is also used strongly in communication and collaboration sector. Some companies use social media to communicate with their customers B2C, however firms are using these applications in business for communicating with their employees and also, employees can get information related to the operation from each other by the help of that kind of business (B2B). In addition, they can benefit from social networks in contacting with suppliers which is the type of B2B.

The main role of B2B is mainly about operating the company's business and relation among suppliers, retailers, wholesalers, banks another firms related to business directly. Firstly, the term business-to-business was came out by the increasing use of online marketing, sales and capital market. Today it's using in everywhere related to enterprises.

2. Business-to-consumer

The term business-to-consumers or sometimes called as business-to-customers describes activities of both production and service businesses with customers. A primitive example can be the person buying shoes from online retailer. However, the transactions about purchasing of leather, cloth, rubber and etc. for creating that shoes is about B2B operation. The sale of that shoes from retailer to wholesaler is considered as B2B transaction too.

While the term e-commerce is about all online trading, B2C stands for business-to-customer and considers all businesses or companies that offers their products to consumer for only his personal use. If bought client have the interest for selling this product to other costumer it's the action of B2B. When people think about B2C market they mainly consider Amazon the online retailer e-shopping site that established in 1995 as the form of online bookseller and quickly took the control of one of most of the online retail market in the world. Moreover, besides from online retailing B2C has been increased to new areas; mainly service sectors such as, online banking, insurance, travel, auctions and etc. Some peer-to-peer websites also falls under this category.

B2C e-commerce went from some difficult times, mainly after the establishment of technology-heavy Nasdaq that crumbled in 2000. In the years of dotcom carnage most of the online retailer sites shut downed their websites to customers. After some times from this tough year's companies started to functioning again. It is the fact that North American consumers spent more than 172 billion $ (raising from 38.8 billion $ in 2000) for online shopping in 2005 after dotcom carnage without the fear of personal identity theft.

According to Forrester Research by 2010 customers estimated to spend more than 300 billion $ each year. The online shopping of household consumers is increased from 39 percent to 48 percent in 2010. In later 2010 there appeared the new term which named as B21. As we know that B2C refers to all actions for the sale of product including marketing and transporting of goods to consumers. However, the term B21 (business-to-one) defines the same relation in the case of only customer. B21 e-commerce requires more personalization as it works with individuals.

3. Business-to-employee

Business-to-employee (B2E) type of e-commerce is typically about the internal networks that located inside the company and the major role of it is establishing efficient, effective control and communication among employees and employers. Most of the companies use B2E in order to automate workers. The examples for B2E can be as following:

- The online type of insurance management
- Corporate announcements
- The request of online supply
- Some kind of employee offers
- Reporting of workers

The creation of labor contracts is also, the example of B2E.

In addition, there is a similar form of B2E which is called “Business-to-Manager”. B2M defines same things as B2E besides one part that it’s main target in there is manager which is different in B2E case. (in there it’s employee.)

4. Business-to-government

Business-to-government (B2G) is the one typical form of B2B commerce which is mainly about the operation related to some government entities. It is about the marketing of government product or services to public (Mainly about public and government company’s products) in the levels of state, federal or local with the help of marketing techniques. This kind of operations can be strategic public relations, promotion, advertisement and introduction of new governmental services.

For example, the prepared contracts with the state supplier, paying tax by using electron tax account or tax deposits, getting information related to some calculation (statistics) about predicting economic situation of that country which was given in website of government, information about government policy and etc.

In modern days this kind of activity takes place rapidly. From the establishment of e-government system by most of the countries boosted that activity transactions a lot. E-government is the online form of government that doesn’t limits by workers working hours and doesn’t stop in 24 hour a day. The huge benefit of e-government is that it reduces the time for creating some state level contract with federal entities as, there is no que for online applying government documents.

5. Consumer-to-business

Consumer-to-business (C2B) is a type of electronic business where customers offer some products or services to companies and like the job done, companies pay some amount of money to them. it’s the opposite form of traditional e-commerce (B2C) in which manufactures or retailers sell the product to clients. We can see examples for C2B in the articles, blogs or some online forms where the writer of it refers link to facilitator (seller, dealer, company) of traded product and the author

could receive some payment when successful sale of that product occurs. (Book offered in Amazon.com can be a good example for it.) This type of E-commerce creates the opportunities for developing countries as the form of payment for living and receiving income without establishing company.

6. Customer-to-customer

Customer-to-customer (C2C) or some time called as citizen-to-citizen electron business model involve transactions between 2 or more people by the trading of some products or services. It's mainly done through the help of third parties. The role of third parties in there is looks like agents or brokers who bring customers to agreement and in some times third parties can refer to logistics, the formal transporters of those goods from one person to other person. This type of e-commerce is expected to increase, there is many reasons for it to happen. The major reason for it is that C2C deducts the costs of using other company. The example for C2C market could be our local site: Tap.az which totally operating as the form of gathering non business buyers and sellers. But in some cases, in Tap.az could be B2C market when retailers create account and starts offering their products in there.

7.Other non common forms of e-commerce.

Government-to-business (G2B) is the non-commerce interaction between company and government. It's the special form of G2C communication. E-tax operations could be example for G2B. In there some governmental advices or consulting services.

Government-to-citizen (G2C) – It's about the communication between government and citizens. The e-government sites have the major role in there.

Government-to-government (G2G) is non-commercial online activities between part of the government (ministries). There are two types of G2G:

Internal G2G- it about interaction that happen inside the country. For example, writing between government departments, organizations are G2G actions.

External G2G- this type of G2G actions occurs when governments join multiple systems.

3.3. Poverty and HDI, multidimensional poverty index

The term poverty uses very often in nowadays world. You can hear it in TV, newspeapers, magazines and etc. But what is the main definition of poverty?

Reducing poverty is becomming an international matter, however, there is still no exact international consensus and guidelines to measure the poverty in countries.

In moderm economic terms, income poverty refers to the situation when the family's revenue is unable to deal with the federally formed threshold (which was established by goverment and there is including some factor that differs from country to country, such as, spending for the daily normal life needs, price for food, education, internet and etc.). Mainly this indicator is adjusted with respect to families rather than the individuals, and is measured for the quantaty of people in familiy. Most of economists usually identifie families whose economic level (it is about commanding over resources) is lower than minimally accepted level. Meaning from that way according to the World Bank report we can state that the global standard for extreme poverty is relates to part of population which get the income less than one dollar in a day.

Regularly, the term poverty is defined both absolute and relative terms. The amount of money that is essential to maintain basic and initial needs (which is mentioned in Maslows pyramide of needs as physicall needs) . For example, food, shelter and clothing. The absolute poverty approach isn't mainly related to broader snadards of life problems and the whole inequality level in society. Nevertheless, that consept doesn't consern that humans have their own personal social and cultural needs, which enchouraged the enteties to develope new consept that is named as relative poverty. This term defines poverty with relation to impact of economy or exactly economic status of the people. Such as, the society is living in poor standards

of life if they live in lower enviroment than given social context (which was maintained by goverment). The major similarity between those two consepts is that they all are depend on income and consuption level of society.

The social exclusion concept which is emerged with the reaction of such kind of small definition of poverty. But, actually there are multiple faceted indicators in defining poverty level in order to understand whole scale of it. There are three general principles that are relevant to indicate the further advance the meaning of poverty. First is the income perspective which identifies the person as poor only weather his revenue is lower than the country's poverty line. This limit is established by local government and defines the amount of income that is enough for outcome eating or food needs. The second one is basic needs perspective. This perspective continues after income perspective and the provision from community of basic social services has the major role to prevent persons from going to the poverty. The capability or sometimes called as empowerment perspective includes that the poverty signify lack of some simple capability to operate. (In UNDP Human development report there is further information about that.)

On the other hand, some social scientists understand the poverty as, it is critical to the economic free choice idea where individuals can control their own goals and of cause the reason of their own poverty. Besides from direct measurements, sociologists mainly interested in the causes of poverty. Such as, the impact of culture, social structure, power and other similar type of factors that are further from control of individual. The experts identify that in order to make efficient and effective programs or tools for alleviating poverty it is essential to focus on some particular social aspects, housing poor, time poor and health poor can be example for this factor according to the multidimensional nature of poverty. There are some scientific hypotheses that play a typical role in sociological theories about poverty are based on the information which individuals are altered by cultural and physical context where they are living, and it provides relevance to gender and household structure.

In nowadays it is globally held that one person cannot deal with the economic part of poverty only. Furthermore, it is reasoned to undercut human rights; economic (the right about having normal income and getting good work or work environment), political (freedom of communication, expression and etc.), social (related to the healthcare and education), cultural (about to be involved in some part of community, group or cultural life). There is Millennium Development Goals which was established by UN Millennium Summit in 2000. It is mainly about global targets that most of the world's leaders set at that summit. There is also one point that relates to poverty reduction, its causes and how to deal with it. As a part of that aim of eradicating extreme level of poverty and hunger, the UNDP (United Nations Development Programme) considers to halve the part of people whose living revenue is less than one dollar per day between the years 1990 and 2015.

How World Bank defines poverty

Poverty is mainly about unable to get enough money to encounter simple needs as food, clothing, shelter and etc. However, it is more, more than this definition. It considers much more areas than we understand this term in advance.

The WB (World Bank) states the term poverty in underline way;

"Poverty is hunger. It is lack of shelter. It is about being ill and cannot go to see a doctor. Poverty is not able to go to school and not studying how to read and write. It is about not having a job or the situation which is fear for future if you will lose your job or thinking about living a day at a time.

The poverty has different shapes which is altering from time to time or place to place and can be identified in different ways. In most cases poverty is the situation that people want to escape. First of all it occurs when there is a huge gap in wealth of population in country. So the poverty is an action that calls people to shearing and aiding the poor from mentioned factors."

Moreover, addition to the nonexistence of money, it is related to unbaling to reach recreational activities. Such as, cannot send children to daily trips and adventures with their schoolmates or friends, take placing birthday parties, cannot pay for doctors or medicines if illnesses occurs. They are some costs of being poor. For example, some part of people can consider themselves as they are able to pay for food and education but, other mentioned actions they doesn't give attention also are part of poor people. If person was excluded from society or his group, as when they have not enough education or when they get from worst illnesses and incidents, there is negative effects for the results of it to the society. The growing cost for the health care, justice and other systems which supports the people who living in poverty has direct impact on world's economy.

There are a lot of measuring done in analyzing poverty, World Bank Organization working more in identifying indicators that creates other dimensions of poverty. An example of this indicators can be identifying factors which have the major influence in education, accessing to services, health, social exclusion and vulnerability.

Generally, there is no obvious reason for poverty and the consequences of it are changing in every country. It is altering considerably depending on case. For instance, it is different feeling poor in developing state (for example Canada) and in LMICs (such as Zimbabwe). The one living in Canada sees poverty as unable to go entertainments. However, in Zimbabwe it is considered as not dying from lack of food. The differences among poor and rich population within the borders of state can also be huge.

Although the various form of definitions, have one main similarity that poverty is complex societal global problem. It has to be agreed that poverty is the problem that requires everyone's attention. The important fact in there is that all participants of our society have to work together in order to provide opportunities for whole our

members to get their full potential. Which helps all of us giving a hand to one another and of cause for reducing poverty.

HDI (Human Development Index) and modern trend of poverty index

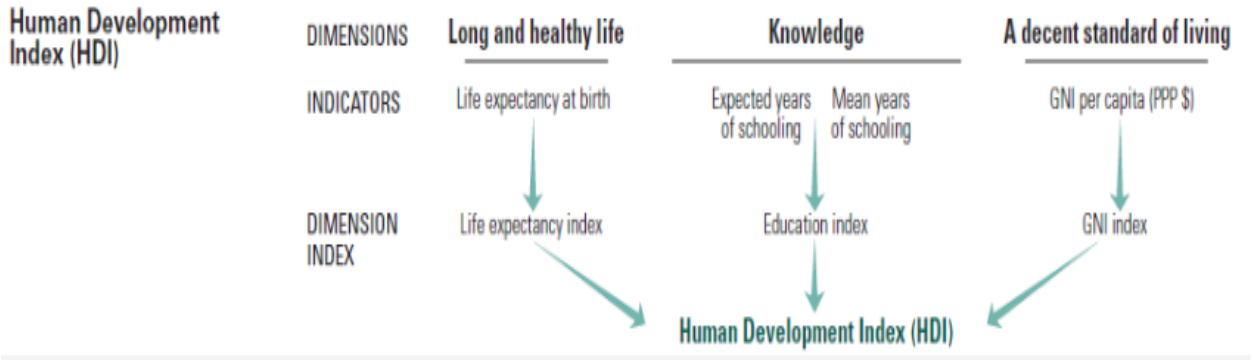
When the theme is about poverty, it is essential to mention HDI in there because, this index shows the level of country in social way and poverty is one of the factors to identify it.

The HDI was established with the aim of mentioning that people and their abilities have to be the main criteria for assessing the growth of country, but not development of its economy only. This index also can be used for measuring national policy choices, questioning that how two countries which have the same GNI (coefficient to measure poverty in country) per capita are able to end up with various human development outcomes. Which contrasts can encourage debate related to government policy priorities. The HDI is a type of summary measure of average successes in main dimensions of human development. Such as, long and healthy life, having enough knowledge and equipped with all major stuffs for leaving standard life. This index is a kind of geometric mean which is made from normalized indices for each three dimensions. These dimensions are:

- The health dimension: it is estimated by life expectancy of citizen from birth to his death.
- The education dimension: which is measured as average of schooling years of adults, whose age is more than 25 years and expected schooling years for children whose age is enough to enter school.
- Standard of living dimension: This dimension is measured accompanied with gross national revenue per capita.

HDI is using the logarithm of income in order to reflect the decreasing relevance of income related to raising GNI. The marks for the all three dimensions are later

gathered into a composite index where was used geometric mean to calculate it. The diagram below illustrates more obvious view for this information.



The HDI is mainly focus on only part of human development needs. The index couldn't mention inequalities (gaps between level of population), human security, empowerment and etc. The HDRO has other estimators which can mention the whole view of inequality, poverty, gender disparity and etc.

The modern fluctuations of HDI and country comparison

The trends of countries and level of HDI was remarkable over past 2 years. Such as, the years from 1990 to 2015 the quantity of countries which was in low human development decreased from 62 to 41, however, countries which had upper human development increased from 11 to 51. Those shifts in HDI have the huge impact in developments of the life conditions of worldwide population. But, the unfortunate truth is that a number of people came to the worse side of average who faced with poverty, illiteracy, hunger and etc. To make human development work, it is essential understanding people who they are and where those people living.

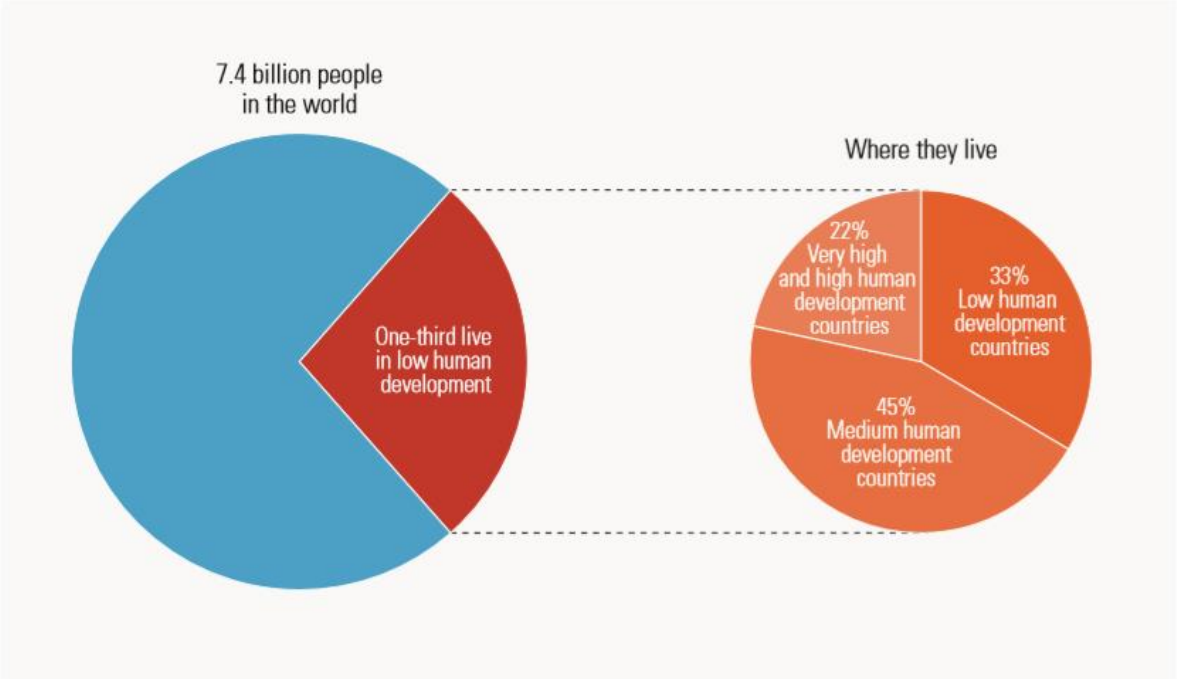
The values of disaggregated HDI collected from countries prove that most of the world population is living in un pleasant deprivation, even if these states are classified as improved in HDI or rank. For instance, Panama is one of the high human development country where 3 of this country's providences (12 in total) was confirmed as little human development, but the capital of state is mentioned as high HDI. Other example can be Ethiopia which country is classified as low HDI.

However, 2 of its 11 regions of this country have average human development. These countries have one similarity that urbanized provinces have more human development than rural regions.

It is the fact that thirty percent of global population lives in low human development. The big part of these kind of people are suffer from lack of good education, normal payment and healthcare.

FIGURE 2.1

A third of the world's population lives in low human development



Source: Human Development Report Office.

The multidimensional poverty index and nowadays view.

The MPI is one of the relevant indexes in order to classify country's innovation. According to HD report, this index is calculating for 102 countries and mainly focus on depth or peoples nonincome deprivations rather than directly measuring one dimensional account of poverty. It is consist of 10 indicators. They are mainly related to population's health, education, living standards. Nearly 1.5 billion of global population who is living in developing countries according to MPI live in multidimensional poverty. In more detail, 54 percent of those persons is located in

South Asia, 36 percent have habitation in SSA (Sub Saharan Africa). Individuals are also underprivileged in developed countries.

Some patterns can be recognized from the measurement of poverty. The part of society living in suburb areas is more likely to be multidimensionally poor (29%) rather than ones habituating in cities (11%). And of Couse, there are differences among countries and regions. The figure below shows the further information about that.

FIGURE 2.3

People in rural areas are far more likely than people in urban areas to be multidimensionally poor

Source: Human Development Report Office.

According to Human development report nearly half of people who is living in rural regions lack access to better sanitation and IT services comparing with 6 people from urban territories. Moreover, in suburb areas twice more children don't go to school than city population. It's calculated that 48 percent of city population is leaving in developed countries and underprivileged from many services and

opportunities, most of those people was migrated from countries in order to reach better environment in cities.

There is relationship among 10 indicators of MPI and if one indicator will get lower mark, it will affect other indicator to go worse direction and overall index too. Stated from this idea it is important and efficient to improve the poor population's life in cross-sectoral approach rather than separately targeting the components of poverty.

It is obvious that humans in conflict areas are more likely to get to the multidimensional poverty. The Human Development report shows that 49 percent of people living in 24 countries have conflicts whose MPI is estimated as population is living under poverty and other likely states live in middle poverty. Averagely, 27 percent of global population living in those kinds of countries are considered as multidimensional poor.

Scarcities also differs for socioeconomic groups. For example, in SSA poor people, generally women contributing to go to school in rural communities, have so little interest in learning than nonpoor people who learns essential skills, such as, writing, reading, mathematics and etc. For instance, in Chad for the richest part of population 7 years is average of schooling, comparing with the poorest where it is only one.

Thee same framework is similar for Ethiopia; 8 years is for richest and 2 years for the poorest population's schooling year and in Madagascar 10 and 2 years respectively. However, in South Africa's example HIV prevalence is more among the poorest type of socioeconomic groups. It is difficult reach basic social services between people who are living in poverty. Because of physical and social barriers, poor people have little probability to use even public hospitals in Zambia, even though they need those services more than other income groups.

4. Operating with ICTs by SMEs for alleviating poverty

In this part I mainly focus on the impact of ICT development to the LMICs (Low and Medium income countries) in achieving poverty reduction aims and reaching the goals that are mentioned in the MDGs (Millennium development goals that were established by UN. Some of these goals are decrease extreme poverty and hunger, achieving primary education of children, promoting gender equality and encouraging women, reducing child death, combating with some diseases and viruses with introducing high health levels for poor population, ensuring international sustainability, global partnership for international development and etc.). ICTs also provide social and economic opportunities to the people who are situated in under lines of human needs pyramid. There are successful examples of ICT and some applications that are developed by LMICs. Furthermore, in there I want to mention about digital divide too. Because digital divide has a huge impact in infrastructure, human and financial capital shortages that leads to the poverty. Such as, it breaks the equal access to several opportunities of ICTs. This review I will represent the general overview of the usage of ICTs in developing countries. Comparing two countries by their income level that is based on the developing use of ICTs and the role of them to the reduction poverty there appears some issues. A key problem in the expert's studies for ICT4D (Information communication technologies for development) in most of the low income groups are named as economic and social "dividers" or "equalizers", that are introduced in the digital gap context. During my research I find out that there are two opposite opinions. On the first hand the "supporters" position they believe that embracing digital technologies in LMICs can boost the economy of local country which as a result stimulates the decreasing of poverty. On the other hand, the critics view that there is huge available evidence pool on the result of ICT innovation to the developing economic growth rather than on the role of ICT advance to alleviation poverty. This review was made by comprising of some macroeconomic

and national accounting data that were introduced by local governments of such type of countries.

4.1. The position of ICTs in LMICs

The term ICT refers to amount of technologies sometimes. For example, hardware, software, networks, storage and etc. Nowadays, many people use technology often everyday. Society applied technological innovation every sector such as work, university or education. New innovations in technology creates new opportunities for health and insurance sectors. Access to technologies can increase the welfare of society as well. It gives us chance to expand our knowledge. Some specific technologies can solve the problems which are impossible by human. Moreover, high- tech can encourage economic growth and inspire people to partake in their communes.

There have big difference between traditional old and modern technology. The research process showed that, the first device that people used was radio, telephones and TV and they named as 1st generation. The 2nd generation is a bit different, scientist applied the functionalities of 1st generation to here. For example, client-server devices like PC, Windows and Office. Social media, cloud system and big data and analytics are 3rd generation. The last generation increased the virtual communication between society. Which can be defined as different background of people can communicate through social medias and even they can create business or work together as partnership company. Each generation has specific scientific models.

Since 1990s the technology improved to a great extent in LMICs. According to the income pyramid, access to mobile phone was referred as revolutionary aspect for society. It changed the way they hold the world and created new perspectives for them. Additionally, broadband devices developed too. Broadband devices mean that radio, text messages and media. Broadband technologies increased communication

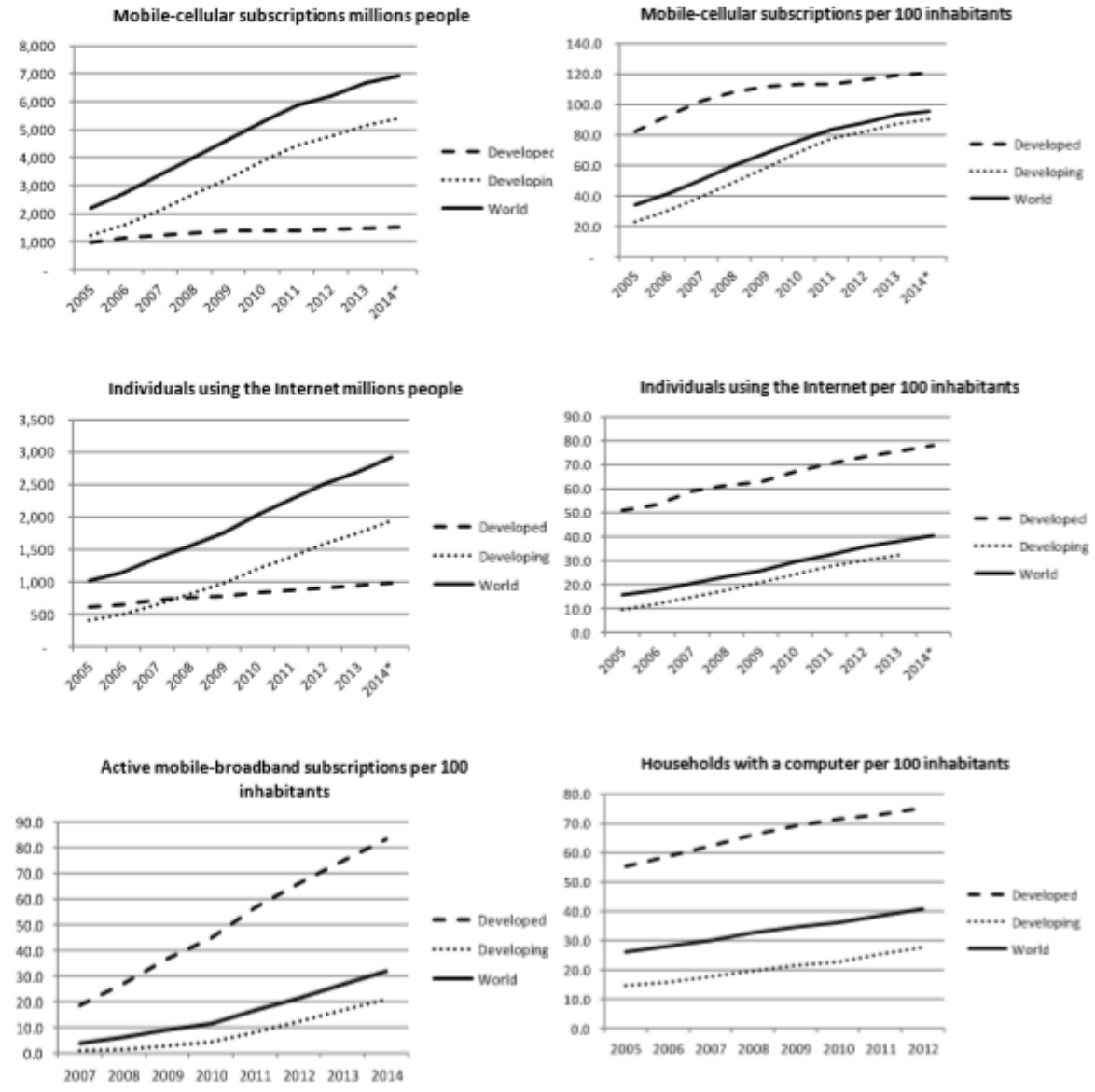
between countries. World Bank report in 2011 broadband technology is using on most of the companies.

Overall, ICTs extensively expanding in economic sectors of LMICs. Mobile phone applications are successfully developed in poor countries in terms of education, transport and health. These kind of applications can help to them to overcome form their limits on certain issues. For example, Kenya is in the 21st place in the world from gaining money through mobile phone devices. In 2014, International Telecommunication Union (ITU) delivered a report that, the use of ICT greatly reflects to the economic improvement and progress of country as well as technological alternatives.

The quick adjustment of mobile phones in LMICs meet with the expected demands. According to the research process LMICSs are the big consumer of mobile phones it is approximately three quarters of all mobile phones.

ICTs bring unity in diversity. In LMICs broadband or devices with cables become useless. For example, in African countries mobile phones are penetrated as better than broadband devices. This progress is slower in countries where the cost of production is higher for the demand and supply. Nearly last seven years, the access to mobile phone technologies are increasing in LMICs. However, there are have 4 billion of people whose does not have access to internet and 90% of them are included in to developing country.

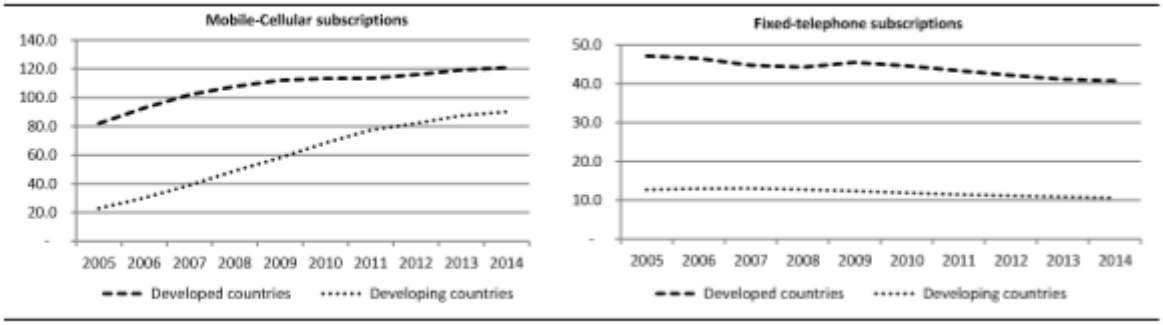
Figure 1. ICT key data by developed and developing country groups



Source: Authors elaboration from ITU's Measuring the Information Society Report, 2014

GSMA (the association related to mobile operators and company that promotes GSM mobile telephone system) declared a speech in 2014 that, the development in the next mobile phone generations are mobile internet. In LMICS the limited access to wired technology increased the demand for fixed and cable connected internet. Based on development in smartphones' applications like e-mail, m- health or m-learning increased the demand for that product in global market. By the end of 2014 smartphones are the best seller product and about to 70% of them sold. But still these are considered as pricy goods because of the manufacturing cost.

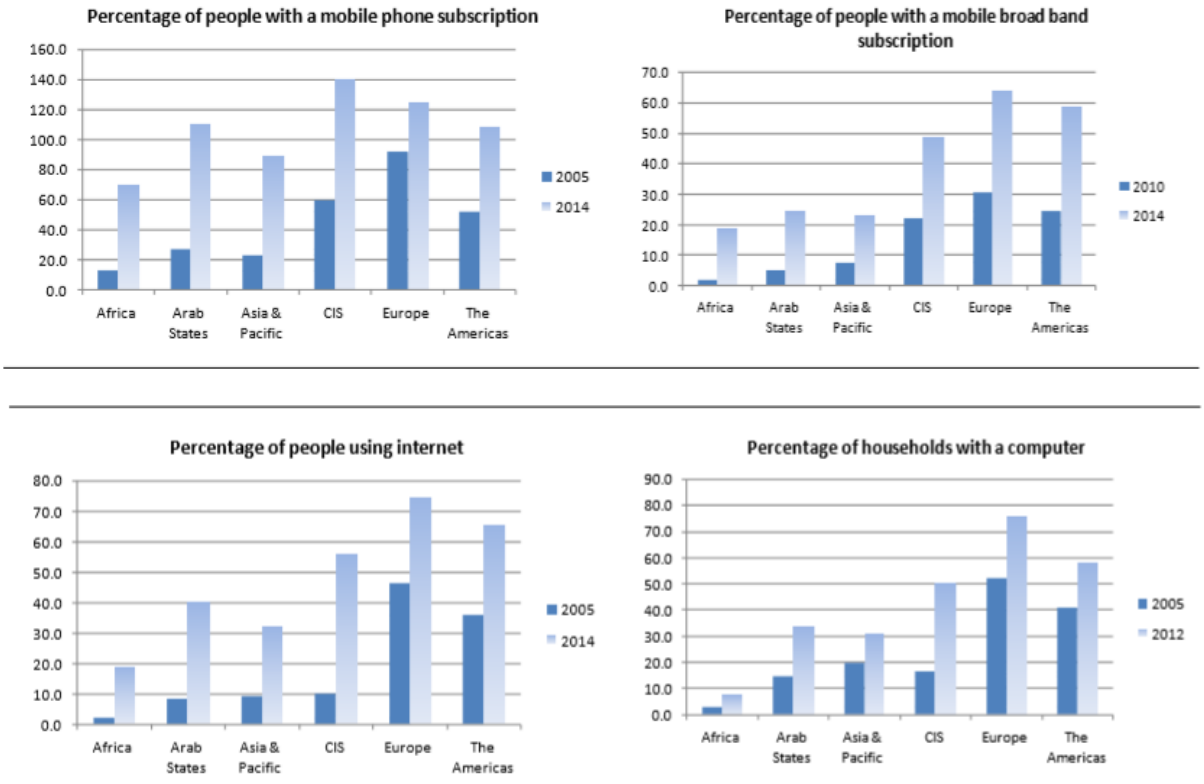
Figure 2. Comparison between fixed and mobile phone penetration in developed and LMICs



Source: Authors elaboration from ITU's Measuring the Information Society Report, 2014

Geographically, Asia, Africa and the Pacific regions are the territories with strong mobile-phone growth, and the penetration rates are less than other regions. However, in SSA this framework has different picture. In beside of very low environment and infrastructure endowment (in which nearly 29% of roads are cemented or asphalted), reaching to the mobile telephony has climbed sharply over the last 10 years. Approximately, this region's population has 60% of phone coverage. In addition, the phone subscription was increased 49 percent between the years 2002 and 2007. The CISCO Systems (American multinational corporation) reports that by 2020 people in SSA will increase their access to internet so that it will overpass the accessing to main infrastructures as, electricity. It is also essential to state that mobile phone penetration rate differs hugely across African countries. This rate was 38% in Cameroon which was the minimum for Africa and maximum was 110% in Seychelles in 2011 (UNECA, 2013).

Figure 3. ICT key data by geographical areas



Source: author's elaboration from ITU's Measuring the Information Society Report, 2014. Note: CIS stems for countries that belong to the former Soviet Republics

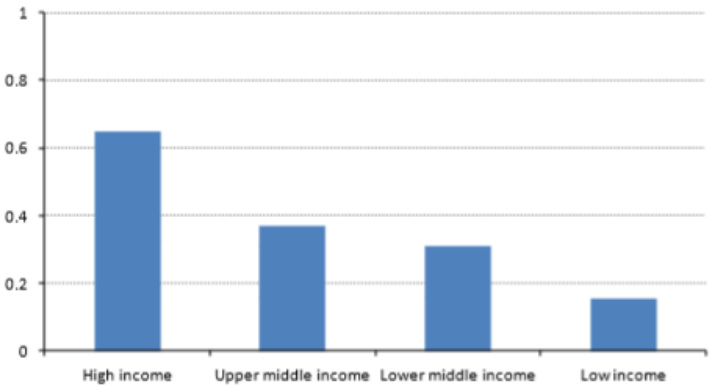
The percentage of using internet by African people was risen more than 18 times from 2005 to 2014. Nevertheless, this region is still stays behind from developed and industrialized countries in both computer access and internet use. Compared with higher growth in mobile brand usage and subscription in the world, in Africa only 19% of population have access to those kinds of technologies. Furthermore, the statistics collected from countries show that the internet penetration rate has huge variation among African countries. For instance, seven countries from that region have penetration rate more than 25 percent compared with 12 countries from same region where it is less than 2.5 percent.

In addition, besides from penetration low penetration rate in LMICs, most of the countries has growing trend of broadband internet. In 2010, people who have static broadband connection was no more than 1% in Africa, however, the wireless type of broadband internet connection has the growing rate more faster and estimated

more than 18 million subscribers. From this opportunity, most of the telecommunication operators located in continent offered wireless internet to their customers. Such as, 2G,3G, 4G mobile internet services usage was increased in region. But, in geographically there was seen concentration of using this service. As, two countries have the majority in usage: South Africa and Nigeria where were estimated as 81% of SSA's whole broadband subscribers.

The digital divide also has huge variety among African countries. The index of measuring the rate of sophistication of e-government services which was made by UN shows that there is wide difference between LMICs and developed countries. (The figure below shows it.) In same way low income countries lag in accessing schools to online network and in e-commerce usage.

Figure 4. Measures of e-government services in developing and developed countries, 2014



Sources: United Nations e-government survey 2014: e-government for the future we want; UNDESA, 2014.
Note: scores are from 0 for to 1 for top performers. Income groups correspond to the classification developed by the WB. For the e-government service survey the online service component is showed only, including the following thematic: whole-of-government, multichannel service delivery, bridging the digital divide, increasing usage, open government, e-participation.

The broadband internet created additional opportunities for LMICs, such as, social media has become an integral part of today's life and created social activism and accountability. It is obvious that social network platforms is strangle related to income level, and it depends on availability of devices as smartphones or computers with provided network connection. Penetration rate of social applications estimated as 7%, 5% and 44% in Africa and South Asia, Central Asia and Western Europe

respectively (According to 2014's We Are Social Report). Thanks to its young citizens Africa has seen as the fastest rising population in using Facebook which was the least in a decade ago.

However, in develop countries with the help of modern ICTs traditional media turns to new developed type of media, and in developing country case television and radio is the main part of mass media. For example, African people use TV and radio more than other type of IT devices. In middle income countries of Africa the rate of TV per household rate is more, whereas the most used such type of device is radio in low income states. It is predicted that by 2020, the television penetration rate will rise from 30% to 50% by households in Africa, and other variables (as cost of internet) will remain or decrease. The DSTV the African cable giant which streams its programs to smartphones in every location of Africa, and it is the biggest community that gets huge benefit from its service.

4.2. The affect of ICTs in economy and development stage

According to the research studies, ICT played a significant role during the economic innovation. Moreover, in different cultures most of the society believe that ICT have advantages like positive role in economic circumstance. In most cases ICT development results not directly to the contribution to growth of the GDP and mainly participate in terms of spillovers and externalities. The flow of ICT into low and medium income countries has been quick, recent and rapid. In result, the named evidence of the impact of such technologies to the innovation process has only recently occurred and sometimes that innovation wasn't sure. In this century, abrupt changes in ICT influence different sectors of economy, which make main decisions of society. In modern days, alterations in ICT affects the variety areas of economics and therefore, society applies ICT to the future plans.

In addition, information communication technologies sectors are changing very rapidly and according to that they make most of the conclusions time-contingent. And the usage of such type of technologies in enterprises takes a lot of time.

Moreover, to become master in those technologies is not a simple task and educating stuffs to working with new devices is not a cheap process and sometimes can create several problems. There are many examples for the introduction and the usage of ICTs in the LMICs and the result of it in economic development process. For example, in the time when new type of smartphones were introduced to some developing countries of Africa and mobile phone use altered from it's simple, original purpose to new server delivery platforms, the development process of those technologies is stirring from simple communication, coordinating to the new type of device that could change the life of entities through the new type of applications and services. The handiness of crucial data is also crucial for technological advancement and especially the availability of relevant information in native language. In addition, it has to be quality and comparable data in LMICs case.

The researchers analyzing connection between use of ICTs and economic advancement have identified several outlines that are made and several channels that identified the relationship between technological innovation and economic growth. According to my research economic experts mainly mention the positive impact of the usage of those devices in economic development. These channels can be divided in four channels:

- Productivity and growth
- Trading ICT products and IT services
- Contributing to attract funding and investment
- Promoting to job creation and new opportunities

All of them will be analyzed in the below paragraphs.

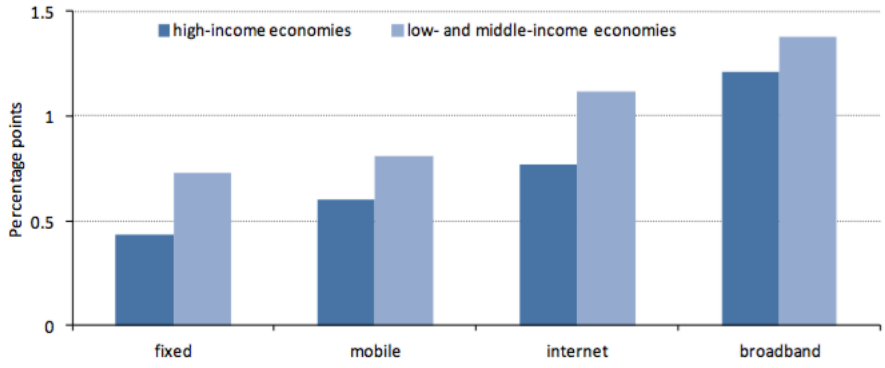
4.2.1. Productivity and growth

This is mainly about analyzing data related to development of economy with the role of ICTs in quantitate way. Such as estimating data using econometric studies that tackle with the issues about the impact of new technologies total and technologies

specific to economic evolution in developed country case. Those types of evidences are available for low level countries and the main reason for that is quick acceptance (usage of ICTs) by local residents and little availability of time series data. It proves the positive relation of economic growth with technology advancement, even if there could be some endogenous influences that may weaken the result of that process. This means that there is the positive correlation between those variables on the basis of economic growth.

According to the WB's analysis from 120 countries about the effect of economic growth and ICT adoption shows that there is a lot gain from ICT usage in LMICs. (Diagram1) The WB's study describes that the impact of ICTs usage in economic growth is significant. However, the certainty of that idea is little, because there are not much internet users in LMICs.

Figure 5. Growth effects of increased use of different ICT tools by country income groups



Source: World Bank, 2009

The ICTs usage also brings efficiency in LMICs and especially in SMEs according to research. They address some common market failures; one of them could be asymmetric information. Mobile phone usage (smartphones) can be a one way of cost reduction method. For example, in Kerala state (India) the use of mobile devices increased in the profit of fishermen's profit 8% and lead to 4% decrease in consumer prices in the fish market.

Lower transaction costs, decreased time, greater flexibility, improved access to several types of relevant information, higher market coverage can be examples of benefits of ICT use in enterprise level. WB's research finds out that the firms that use ICT growth faster and in most cases they are more profitable, productive and their work performance is better.

Table 1. Effect of ICT use on enterprise performance in LMICs

Indicator	Enterprises that do not use ICT	Enterprises that use ICT
Sales growth (%)	0.4	3.8
Employment growth (%)	4.5	5.6
Profitability (%)	4.2	9.3
Labour productivity (value added per worker, $)	5,288	8,712
Total factor productivity (%)	78.2	79.2

Source: World Bank, 2006

4.2.2. Trading ICT products and IT services

The development of ICT services such as, software and hardware maintenance, online applications, IT consulting services, network administration, engineering related to software, ITES which can be delivered remotely by using new type of technologies some LMICs could boost their economies and increased their GDPs. Besides their direct effect on GDP, all type of businesses got benefit.

There are four major LMICs that benefited most from digital technological advancement. They are India, China, Mexico, Philippines and all four countries have one similarity that after 2000 they became new industrialized countries and their percentage in Worldwide GDP is increasing in large scale. According to World Bank IT services took approximately 25% in Indian exports in 2007 and calculated as 5.5% in country's total GDP. On the other hand, in African countries example, they can't yet exploit their comparative advantages in EU market and integrate multi-lingual and young population to incorporate into the international value chain of several IT services and products.

4.2.3. Contribution to attract funding and investment

In supporting and investing to the expansion of ICTs in LMICs mobile tele communicators have the massive interest and developing the network infrastructure in local country. Examples of these financing could be the project named EASSy which is about creating fiber-optic cable from Eastern Africa to South Africa (2011). In modern days, the mobile ecosystem is becoming as a main contributor to the public financing of most of the African countries. In 2010 nearly more than 4.1% of whole African government incomes organized from mobile industry. But this quantity has some issues related to showing the real condition of most of the that region's countries. Such as, there is a gap between North African countries and Middle African countries in calculation this variable. For example, the mobile operator MTN estimated alone for 5% of the all country income in Ghana that is made from tax in 2008.

4.2.4. Promoting to job creation and new opportunities

There is huge pool of job opportunities from increased number of ICTs usage in modern day's jobs, some of them directly affects opening new employment areas, others indirectly have the part in applying new technologies in their daily work. People start to learn new skills, they go to training and development courses and the part of society which have enough skills to operate in jobs related to new technological usage in business life can easily find jobs. The new type of job opportunities could be internet cafes, mobile phone, computer other devices sales and repair services, phone card distribution systems and other entrepreneurial opportunities. In African continent only, it was estimated that nearly 5.8 million people were directly or indirectly employed in mobile phone ecosystem in 2010, and it's 1.4% of all African workforce.

In addition, working as IT worker is more beneficial and has more salary than other type of regular jobs. For instance, in India workers who worked in IT services were more than 2.01 million people and they got revenue from 50% to 100% more

than other workers who worked in different type of services in 2007. Moreover, Scientists calculated that every new job in IT services brings three or four new jobs in other areas. Same correlation was estimated in Philippines, where each new created IT jobs was the reason for appearing three additional jobs related to other sectors, such as, transport, food or housing. (2009)

Asian countries take advantage from usage of ICTs in enterprises. IT services created new job opportunities for women population, especially in India, China and Philippines. In India and Philippines women that have already worked in IT services estimates 30% and 65% of the whole workforce operating in IT services respectively (2009). The clear reason for rise of IT services and their usage in developed countries can be described as; availability of protected property rights, clear regulations, difficulties for new enterers to the market (most of the markets are oligopoly), effective governmental and national regulatory authorities, states support and availability of incentives and etc. But, known evidences in developed countries show that the competitive market competition lonely has not massive effect on it. Such as, difficulty for each new subscriber to market and high marginal costs are main issues for new SMEs to enter market. In this basis, governments have the key role in accessing those markets or internationalization of that firms. The example for states role in help of new enterers are public investment or unique price regulations.

4.3. The impact of ICTs in lowering poverty level

Nowadays, most of the people in the world believe that, application of ICTs is significant in different job areas and it can provide many opportunities, variety of services and etc. therefore, ICTs can reduce poverty in terms of accessing many resources gaining information from there. According to the Sustainable Livelihood Framework which visualizes life of the poor people by taking account five different factors. These factors are financial, physical, human, social and natural. Moreover, another major study did a research about measure of beggary by including two different factors. During the economic growth, ICTs advertise a great example of

socio-economic advancement based on authorize and involvement which are main factors to cause pro- poor and impartial growth progression.

According to the UNCTAD, in 2006 they declared a statement that, the advantages of technological advancement stay unequally spread between and inside countries and in some situations the poor people can favor from disproportionately less. The Information Technology digital split is capable of extending and intensifying the current disparities among revenue classes, gender and age groups, countryside and urban inhabitants of a city, welfare of society. The consequences of debates presented that, the role of ICTs is significant in decreasing the level of poverty in country and it leads to impartial growth. Moreover, ICTs can achieve the MDGs as well. Usually, the significance of ICTs in the innovation process known as an access to many resources, knowledges and socioeconomic communications not as a use of technology. From the economic growth policy aspect, two different sorts of ICT submissions can be acknowledged. These two sorts are progressive developments and transformational submissions. Progressive developments refer to extensive influence over economic progress and effective production. And transformational submissions refer to essential changes in the current social structure and equal power. The latters are those which have the sophisticated probable to have an effect on indigence and unevenness.

The importance Information Communication Technologies for beggary improvement and diminishment based upon how a particular technology can be combined into the maintenance policy of the low class. Nonetheless, the usual intention in evaluating the economic growth influence of ICTs remaining on expecting the opportunities for infrastructure and funding.

However, there is a wide-ranging investigation on the effect on poverty problems like gender properties, authorization or social suppleness.

4.4. The problems related to use of ICT in LMICs

As long as we know, the innovation of mobile phone is continued to grow in LMICs, new and cheaper type of services will appear. However, according to African Partnership forum (in 2008) the spread of ICTs in lower income countries, they get influence from 3 major and interconnected factors:

- First, that related to the establishment of environment for ICT usage in such kind of countries as well as about creating infrastructure for use of them in SMEs of LMICs. This can be related to establishment of general policy framework or in more specific way standardization the law for applied IT services and maintaining competition rules.
- Second, improving the established or former infrastructure, including upgrading the building or introducing new ones, creating reliable electricity supply and etc. Most of the ICT structure are collected in urban areas; like cities rather than in countries where the interconnectivity is not much. Nearly all of the LMICs can be included to that idea. In 2009 Africa Economic Outlook that investigated the whole African continent reports that in order to fuel a communicational revolution such type of LMICs need huge amount of technological equipment. Laptops, mobile phones (smart phones), PCs and optic-fiber cables and etc. could be example for those urgent devices.
- Third, is about increasing the quantity and developing public facilities and as well as, improving IT skills. In order to improve or making skills for use of new technologies people have to go to some kind of training and development courses.

4.4.1. Regulatory and policy barriers

It is obvious that as every model that applied in real life in LMICs, in the ICT strategy and policy basis many shortfalls still persist. Also, there could be limits for implementing e-strategies in the real world. According to the World Bank studies,

SSA (Sub Saharan Africa) countries have higher size of development and reaching decreased level of poverty goals and most of those goals gets very good scores in global forums. Nevertheless, they couldn't implement those arrangements and set appropriate targets or monitoring those frameworks. Even if, most of those targets will not be launched. Main reason for it was shown as lack of skillful workforce or need of huge amount investment.

However, in developed countries, those type of technological advancement happens by the hand of private findings, growing market competition and extending liberalization (WB, 2006). The econometric analyze that made by ITU in 2013 which covers 165 countries in the time interval from 2001 to 2011, describes that the trend of telecommunication markets were estimated as more than the average penetration rate to boost such as 1.4 % increase in fixed and 26.5% growth in mobile broadband services or products.

LMITs still try to set up better and national regulatory systems for mobile phone services. Most of them encourage competition in local IT service providers with the aim of making cheaper and better quality mobile phone or telecommunication services. There are a lot of examples for regulatory restrictions that creates less efficient and effective opportunities for the ICTs' usage. For example, constraints in competition of the infrastructure sector shows that they restrict the development of high-capacity networks, high commercial, economic, social and political barriers or risks limit the funding on that sector or this country. In order to let e-commerce and e-banking activities extend, LMICs have to go on from the lack of trust in online market and develop new laws to protect online personal data. Licensing and taxation is also important to be improved for attracting and establishing IT services in country.

In ICT related regulatory and political framework context, Africa is number one region for worst performing states. The World Economic Forum that took place in 2010 and Networked Readiness Index (This index was made of more than 54

indicators, such as, political and regulatory infrastructure, business environment, innovation level, digital content, ability of affording, personal ITs usage, government usage, firms usage, economic and social impact and etc.) studies show that approximately 64% of African countries placed at the lower levels of table (table 2). Nearly all under ranked countries have the similarity that they suffer from above mentioned things, as, dysfunctions, poor education, low level of research systems and low internet penetration rates.

The example of the main regulatory constriction for growing usage of telecommunication technologies in Africa is the restricted availability of allocation spectrum to the mobile and communication services. While the size of data traffic (volume of network usage in online applications or websites) rise over the African continent, the established spectrum licenses come to the near of the limit of network's planned capacity (potential capacity) then, it cannot let another extension happen. Privately owned operators always want better spectrum. Such as, better licensing, forecasting, pricing and re-framing can be example for that spectrum. Finally, in most of the LMICs have the problem related to wide spreading of corruption. Especially, in poor countries some government entities take the additional compensation in order to allow the enterprises to continue their activity in there. In companies' point of view, corruption creates additional costs for maintaining the output (final product and sell it). For example, firms can be asked to pay some amount of briberies for licensing, telephone connections and etc. The granting process of licenses is also needs a lot of time and some governmental support to take part. But according to UN's challenges, most of the countries try to decrease the level of bribery in local areas.

Table 2. Network Readiness Index ranking for selected African countries (2013)

Country	Africa Rank	Global Rank	Country	Africa Rank	Global Rank
Mauritius	1	48	Tanzania	20	125
Seychelles	2	66	Swaziland	21	126
South Africa	3	70	Mali	22	127
Rwanda	4	85	Gabon	23	128
Tunisia	5	87	Algeria	24	129
Cape Verde	6	89	Ethiopia	25	130
Egypt	7	91	Cameroon	26	131
Kenya	8	92	Malawi	27	132
Ghana	9	96	Lesotho	28	133
Morocco	10	99	Sierra Leone	29	134
Botswana	11	103	Benin	30	135
Namibia	12	105	Burkina Faso	31	136
Gambia,	13	107	Mozambique	32	137
Zambia	14	110	Libya	33	138
Senegal	15	114	Madagascar	34	139
Uganda	16	115	Mauritania	35	142
Zimbabwe	17	117	Angola	36	144
Liberia	18	121	Guinea	37	145
Côte d'Ivoire	19	122	Burundi	38	147

Source: World Economic Forum, 2014

4.4.2 The lack of sufficient infrastructure

The another type of relevant issue to ICT growth in lower income countries can be stated as, this problem is connected to major weaknesses of public environment; as, weaknesses of public infrastructure and mainly related to the lack of reliable and availability of monopolized and expensive electricity supply. In LMICs the usage of costly diesel generators fuels the base stations, because of, little accessibility of electricity supply. For example, in Nigeria the payment with the amount of 2000 USD per month is the cost for running base station which in India several electricity cost is 429 USD for every month. (GSMA 2011)

As the quantity of internet users continues to grow in LMICs, the need for wideband networks is also increase. All fixed and mobile need of networks is urgent

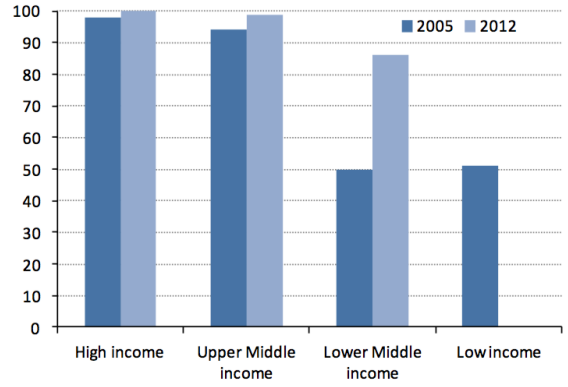
in order to support IT services which demand the high-speed internet connection or greatly high level of data spreading. For instance, cable TV, personal, enterprise, government, hospital data transferences. The advanced network coverage also has the crucial role for access to mobile internet. Moreover, differences between country groups based on income level are striking. This was shown in Figure 1 below.

Unreliable, costly, insufficient and slow IT services in majority of African countries avoids the continent from more investment opportunities on advanced applications and breaks the whole advantages of efficient and highly functional ICT areas. For example, in e-healthcare sector (as the type of IT services) needs fixed and high speed internet connection, as MB/sec which has the more connection speed than telecommunication firms offered 4G network in order to scan of urgent areas of body. In addition, if you think that you can use mobile phones or tablets to scan, it's worthless. Because the size of the screen, resolution and frames of image could not be suitable enough. Innovative applications and developed environment is important to be context and scope specific.

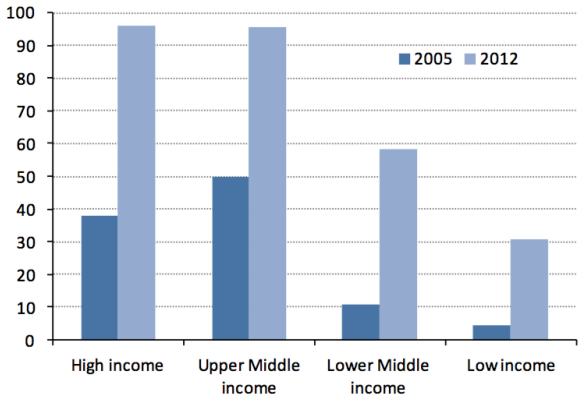
Most of the SMEs have the interests in find out and investing to those countries that have regulated rules and decreased costs. The commercial impact of broadband viability depends on generally on the cost of back bone networks which require more fixed costs, but small flexible costs. The profitability of investments look like the time when traffic volume is large, which is similar with urban areas. The GSMA data shows that there are 707 mobile wideband (such as, 3G and 4G) internet networks in international level and approximately 422 of them are located in developing countries. In modern days, nearly 70% of whole Earth population use 2G internet connection on mobile devices. However, 3G or 4G broadband mobile technologies are faster and they have big usage in developed countries, potentially in large cities and other areas which is profitable. In LMICs most of the private mobile phone firms focus on fixing cell towers rather than developing or requesting new type of ICTs.

Figure 6. Quality of infrastructure among countries with different income (2012)

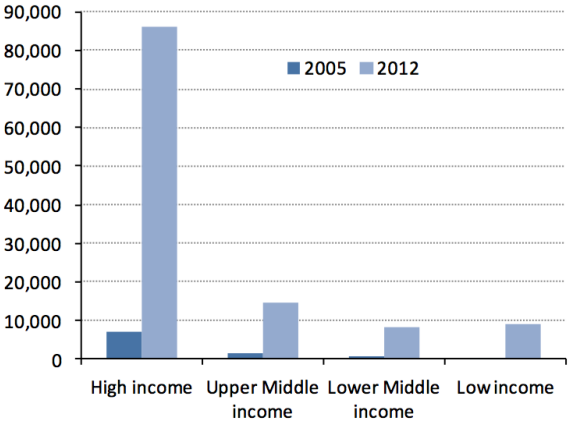
Population covered by a mobile-cellular network (%)



Fixed (wired)-broadband subscriptions (% of total internet)



International Internet bandwidth (bit/s per Internet user)



As of 1 July 2014, low-income economies are defined as those with a GNI per capita (calculated using the *World Bank Atlas* method), of $1,045 or less in 2013; middle-income economies are those with a GNI per capita of more than $1,045 but less than $12,746; high-income economies are those with a GNI per capita of $12,746 or more. Lower-middle-income and upper-middle-income economies are separated at a GNI per capita of $4,125. Note that low- and middle-income economies are sometimes referred to as developing economies. (Source: Word Bank website)

Source: World Bank, 2014

Besides from common assumptions, the spread of backbone network exposure in SSA is extensive, however the volume of them stayed in low levels. The main reason for it is the dominance of wireless devices which were made to transport voice traffics and some kind of texting messaging, and most of these technologies are insufficient to use in high speed internet connection. In international case some countries create the fiber-optic cable which carry internet data in very high speeds. Mainly such type of cables was developed in urban areas or the crossings of international routes. It was estimated in SSA that the formed backbone infrastructure is using by more than three quarters of that territory's communication operators, and other one quarter utilize the satellite technologies in order to get internet traffic. Moreover, there are widely use of satellite techs in connecting people with internet in

African countries. Chad, Liberia, Sierra Leone can be example for those countries. Also, the satellite services are more expensive to use in e-communication, even if connections between neighbor countries is so costly. In addition, there is a huge gap in use of broadband network in Africa which is came as geographically different. Such as, 60% of bandwidths use by North African countries (Egypt, Tunis, Morocco, and etc.). (ITU 2013)

4.4.3. Issues related to consumer constraints; such as, affordability and skill shortage

According to the World Bank's research of non internet connected population of 20 countries, It realized that approximately 64% of the offline human beings lives in suburb or country areas where they have low communication and energy supply infrastructure, little earnings, and of Couse lower level of literacy rates (WB 2009). It's known that in LMICs older, young and women population are less connected to the online network than adult men. Totally, women take 53% of the offline population and 41% of internet user population which resembles that in SSA countries the gender gap is able to reach 45% in some parts of this region. Nearly 28% of unconnected people is illiterate according to GSMA in 2014 report.

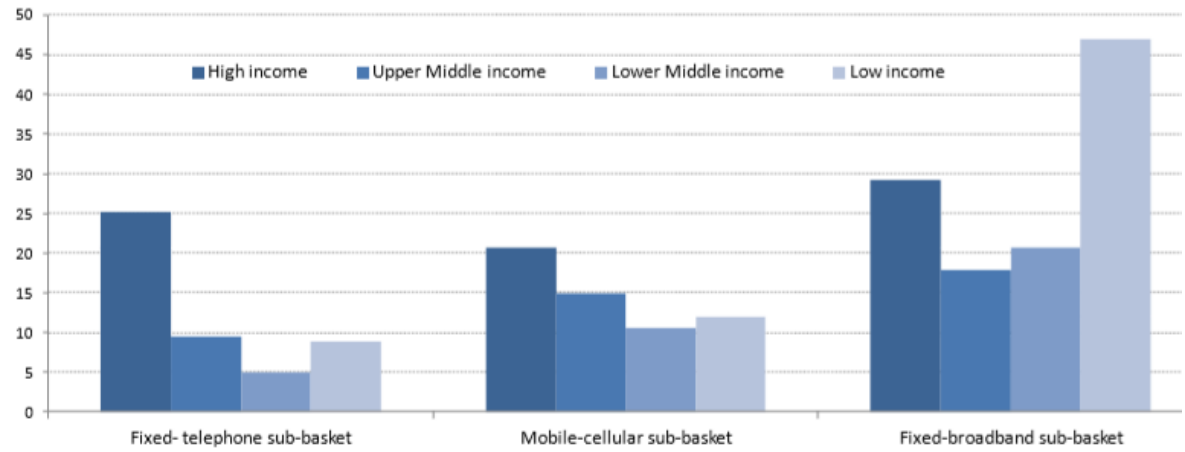
In poor countries, the lack of education works in two types in having impact of usage of ICT in services or businesses. While one of the user friendly technologies; mobile phone has the largest number in usage of ICTs by the poor, but the wide spreading of the internet steel in challenge. The online users have to be mastered in different type of skills in order to benefit from IT services and usage of ICTs. These skills can be structural, technical and strategic. Typing in keyboard also needs mastering in order to efficient use the computerized technologies which is type of technical knowledge. Structural ones are more related to the understanding of formats and contents, while skills about strategic base implies to skills to choose and realizing of the whole information that is available on the internet.

UNESCO was announced in 2013 that education hasn't to be separated from technology and technological education must become the one part of school literacy from primary to university level. The lack of adequate teachers and their education in ICT programs, learning materials low level of infrastructure are the main challenges in educating children in LMICs. However, it's essential in developing technological usage in those countries. There is also digital skill gender gap among men and women population of low income countries. Such as, men access internet more than women.

Moreover, some countries have enough benefit from ICT revolution. Those countries are which tried to produce or invent IT services. Thanks to the good educated IT professors, countries in South and Eastern Asia were also succeed in technological advancement and a few of them became the top exporters in telecommunication products and services. But SSA countries are still suffer from poor literacy level and developed technical equipment. Most of these countries are becoming the ICT consumers than ICT producers. Other negative results of lack of ICT skills is the restricted volume to get returns and expenses from using ICT, difficulties in keeping IT skilled labour for SMEs are difficult too.

Evidences prove that IT services have the high value both in low medium income and developed countries. Both types of countries have similarity that price and income elasticity are more. For instance, in Indian, 1% growth in households income can double telecommunication demand and mobile phone services. Nevertheless, the IT devices and telecommunication services are more costly in LMICs than developed states (Figure 7).

Figure 7. Cost of access to ICT devices in developed and LMICs (2012)



Source: World Bank, 2014

The growing use of prepaid and debited It services leads to increasing mobile phone usage rates in suburb areas and e-cards will help poor consumers to make payments for later times as a form of loan in banks and with small amounts. Growing competition level in local none government IT service providers will reduce costs for calls which is affordable for consumers. On the other hand, payments for internet access is high for average income levels of local in LMICs. Looking to the price basket of internet (which was maintained as the cheapest cost of internet receiving) in 2006, this index took 62% of monthly per capita revenue in SSA, in South Asia it was 12%, in developed countries example this price is 9% and only one percent in the highest income states (WB 2009).

4.5. The appeared common jobs in financial ICT work

The increasing use of ICT in financial service sector has made new business opportunities for investment firms, banks, insurance companies. And incorporation of financial services and ICT is growing very rapidly.

However, after 2008 crisis the sharp growth of ICT was decreased. In this difficult environment, firms related to financial works was requiring high skilled ICT

workforce and professionals in order to adapt to new technologies and reply to the continuing regulatory requirements of the after recession period.

According to ICTC (the company which made Census and labour force survey) data which was collected to visualize the labour market profile of IT workers in financial service sectors. They focused on 21 main ICT occupations (NOCS). During their research with those firms underline financial ICT job titles was mentioned:

- Analyst (this is generally about analyst role of technical, hardware and system)
- Programmer
- Technician (they are those who tests computer network, system and user support)
- IT manager
- Computer/ Developer/ Software engineer
- Web/ application developer
- IT business analyst
- IT security
- Information system analyst

4.6. How do LMICs get advantage from mobile communication?

Mobile technology can be used by SMEs functioning in agricultural and fisheries areas of poorer countries. Additional benefits of mobile devices can be seen in labour and transport mobilization, mobile money transferring and micro credit services. In this section I provide the information related to using ICTs in SME business areas and different sectors in LMICs.

Agriculture

The increased productivity can support farmers to rise their income, and mainly small sized farmers and fishermen, that have restricted resources to develop and marked their products. Establishing good, efficient and big value chains also needs a

lot of stakeholders, as suppliers who grow seeds or crops and raise cattle or distributors.

The farmers from developing countries begin to use mobile telephony in order to boost their commercial scale. The World Bank's 2012 report states that the farmers who use ICTs in their daily operations, benefit from accessing to relevant agricultural data such as stock piles or market prices, getting clear information for making value chain efficient and can find out new markets for his product or if it is more beneficial to operate in local market or export goods in foreign markets.

While farmers can reach information related to product stock and prices, it would be helpful for them to organize under or over supplying his goods to chosen region. According to World Bank the access of farmers to stock and price data can increase farming revenue more than 24 percent. However, traders of those crops can even get greater benefits as more than 57 percent of previous times, and overall price discounts for customers from around the world can get 4 percent by the help of ICTs.

Information transfers by mobile devices also can include to reaching preventable warning systems that can predict the weather conditions of region which can benefit farmers as the risk of losses related to extreme weather will decrease.

Information and online data services

The ICTs can also allow better entries to markets or other type of value chain stakeholders. Retailers are gradually using their websites in order to relay online data about logistics and transport, as nearly all of these services can be provided by mobile phones.

For instance, from the help of SMS and voice in Morocco, farmers can track with their truck drivers to develop product transportation and find where could be the best location for them to bring their products. In addition, some farmers use two-way trade by carrying goods back from regional markets in order to trade them in their native rural communities.

The control of product is becoming increasingly essential to those developing states that have the want to advance or expand to new export markets. ICTs usage in SMEs of low income countries can lead to advanced consumer protection and the better quality of food on the one hand. On the other hand, it can make better livelihood outcomes to farmers. Moreover, the RFID chips (Radio frequency identification) are also help for farmers to monitor their animals and collect data about them. The usage of this technology helped to replace the old paper based recording to new type of system which have increased accuracy of collected data.

RFID has additional benefits beside from upper mentioned. Such as government can use this system to prevention of animal poaching. They can now track wild elephants and rhinos from the illegal poaching. All these approaches are lead to positive results in most of the African countries which helps to make sustainable development and continue to attract tourists.

Fisheries

The fish traders now can communicate with each other's or customers through SMS, voice calls or by easily accessing to WAP services. (Wireless Application Protocol). It is the international standard for getting information through the mobile wireless network.

The WAP system was made for older devices too. It let users to communicate with each other without having new generation smartphones which are so expensive for LIMCs. New smartphones and high bandwidth access can only be supported by them in developed countries. Nevertheless, the use of WAP in older phones are kept in most of the African countries.

Making finance more reachable (M-PESA)

Besides from those mentioned opportunities for SMEs in LMICs there are other opportunity related to finance. On this part I will write about M-PESA program. It is mobile money system and was launched in 2007 in Kenya. According to WB in

2012 more than 17 million Kenyan citizens used that program. And it is counted as 60 percent of adult population or one quarter of gross national product of Kenya was gone by M-PESA program. This tool helps people to transfer money by only using mobile devices. It is the similar system as PayPal that is using more globally. After some times M-PESA offered a type of banking services, such as savings and loans, and also can distribute salaries otherwise pay bills. One research has shown that in rural areas of Kenya households used M-PESA had 5-30 percent incomes more than others. This kind of reliable mobile app encouraged a lot of start ups in Nairobi, which made the business models related to M-PESA foundation. In recent years this program was internationalized to Tanzania. In globally more than 72 countries (nearly 2 billion person) have access to M-PESA.

Further more M-PESSA program besides from financial services offers insurance service for its users. For instance, Kilimo Salama (the safe farming was established in 2010) is e-insurance platform that operates as micro-insurance firm and works with mainly small sized farmers. This start up was introduced from the co-operation with several companies, such as, a public agricultural company, insurance company and phone operator firm and Meteorological Department of Kenya. According to M-PESA when farmer buys seeds or fertilizers they can get insurance for un expected weather conditions and etc. Through the use of M-PESA farmers who bought goods from there can get compensations in case of excessive rain or drought. For weather insurance index more than 9500 farmers subscribed to this program.

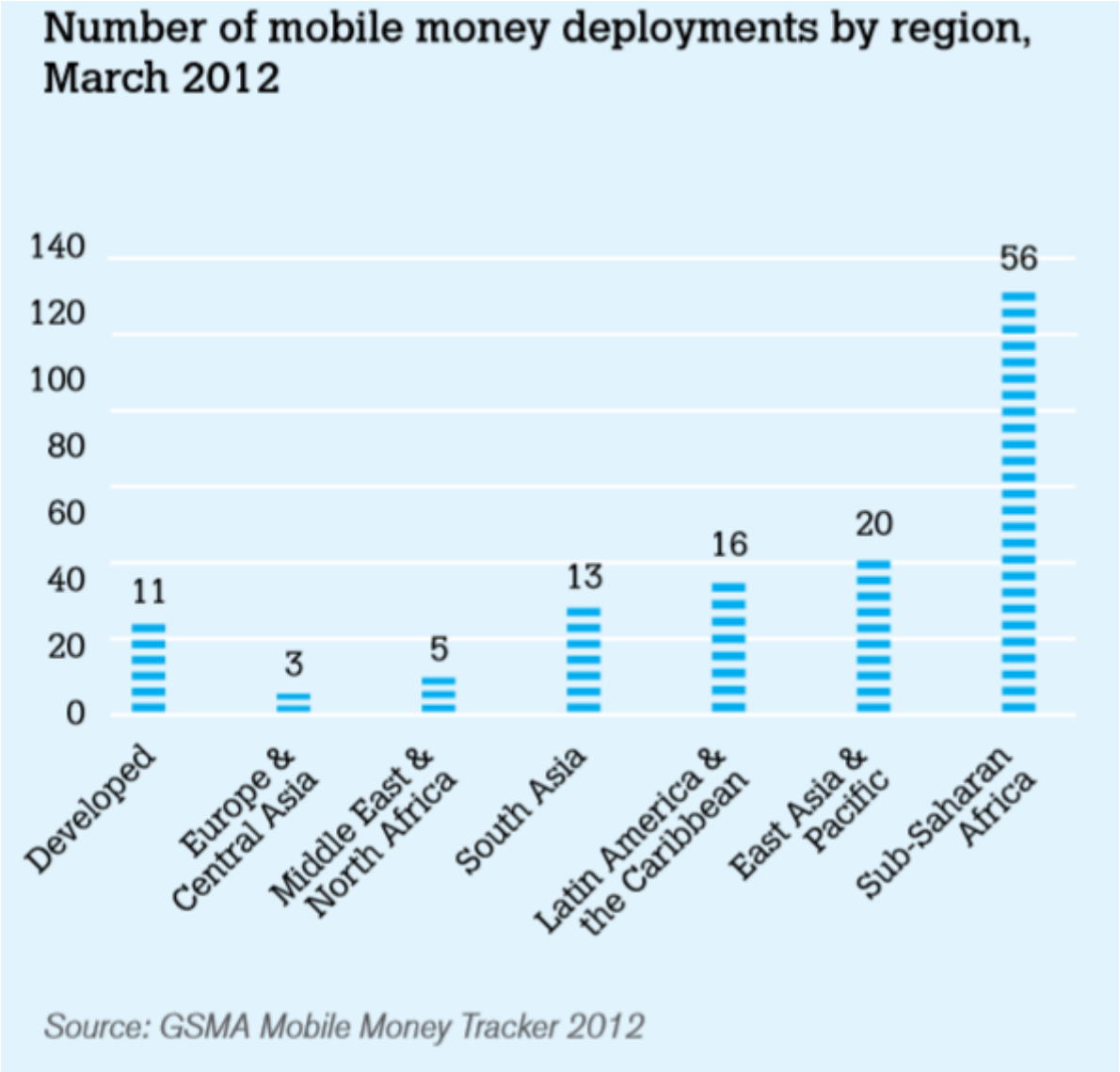
Moreover, in India there are low-cost platforms which ICTs provides for small branchless banks, microfinance and helps to make direct and faster financial transactions. The Indian company named as EKO offers leverages for existing retail shops, bank (branchless banks too), mobile networks and etc. Users benefit from opening accounts by using mobile phones and sent money across the country. Smart cards were also promoted by many companies in order to boost ICT adoption in

Africa. They apply small chips in those cards which identifies all relevant information about client as, credit history, salary and etc. that benefit customer to get lower cost smart cards. It is a kind of cheap solution to much cost of delivery and smart cards benefits customers as increasing efficiency, reducing errors, decreasing paperwork, some type of frauds and wasteful meeting time.

Electron money

Nowadays, most of the people using mobile money services around the world. Hence, mobile money services help to develop management of business and therefore, they are reducing the poverty gap. The main obstacle of decrease of poverty level is that, poor people have limited access to formal financial systems or even they do not have. Moreover, the low- class does not have capability to save or borrow money.

In the developing countries mobile money services became frequently useful because of the effectual way of providing entrance to finance, especially in places where physical banks have branches or place where ATM machines operates. Mobile banking systems helps to growth productivity and effectiveness. Additionally, this service decreases transaction costs. According to the chart most of the developing countries use mobile money services more compared to developed countries.



In April 2007 Safaricom founded the best successful and quickest improved mobile banking service which is M-Pesa.

Safaricom propelled a new mobile phone which will going to provide payment and money transfers to its customers, then it will be going to send balance of account using SMS functionality. Moreover, it will admit users to set their bills for different expenses. Users of this technology only charged about small fee for using this money service.

M-Pesa quickly became popular in developing countries and known as a successful mobile-phone financial facility. By 2012, approximately 17 million of m-Pesa accounts entered to Kenya.

Furthermore, M-Pesa is a service which users can use without going to bank branches and it is created special for users for basic financial needs. The success of M-Pesa in Kenya comes from the popularity of this device and affordable prices.

What limits SMEs from creating fuller use of e-business?

E-commerce is basically created for benefits reasons for developing countries, but besides it's positive sides it has some problems as well. The adoption of e-commerce are different in each country. Furthermore, they have common difficulties such as, limited financial, physical and legal organization specially of improvement of e- commerce.

The improvement of e- commerce is influenced by current structure of industrial area and how does this matches with sectorial value chain? Moreover, the different culture and traditions also affects to the usability and accessibility of e-commerce in many developed countries.

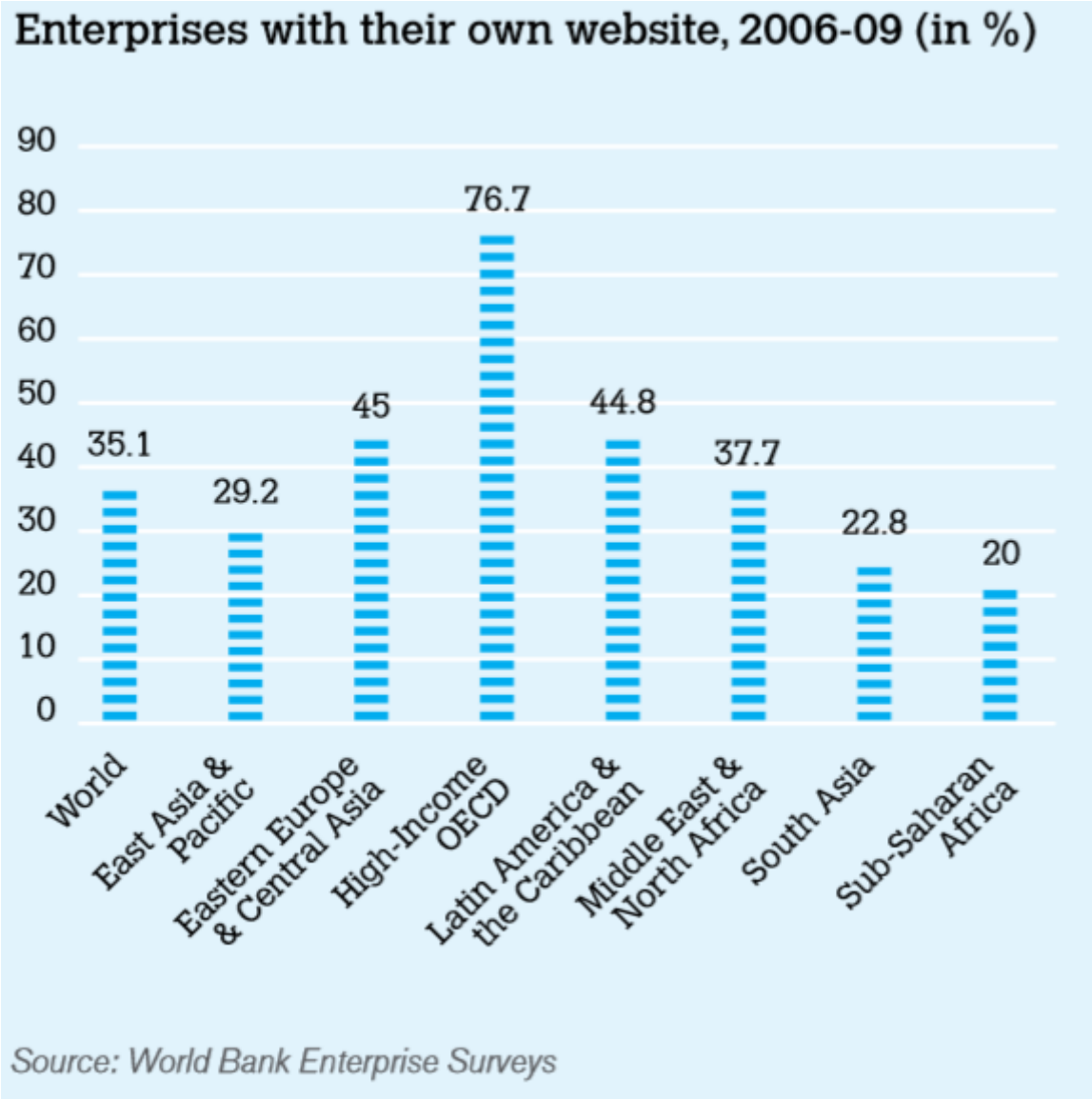
While SMEs have several causes for engaging in e- commerce, the security worries of the consumers remain an important weakness for expansion of e-commerce service. However, the main limitation is unwillingness of consumers to specify online information about credit cards.

The significant success of e- commerce is that, the website provided trust and familiarity to customers. The improvement of broadband established better security system for them. Both businesses and users concern about security and make sure that system works fine before the payment process.

The potential of e-commerce can be accomplished by satisfactory infrastructure. In many countries, this limitation shows a major problem. Low class of society cannot benefit from investments in infrastructure compared to others. For example, most of the African countries have restrictions and limitations about this.

In addition, most of these countries are located outside of high speed fiber optic cables which makes only satellites to create connection and that needs more advanced technology.

Moreover, the non enough technical skilled population is other barrier for the innovation of SMEs in LMICs. Which decrease the productivity of company. So most of such type of firms suffers from that issue.



5. The perspective of ICT in Azerbaijan (Perspectives of ICT based on economy of Azerbaijan)

The role of SMEs in the economy of Azerbaijan

The development of SMEs is one of the major topic in the economy policy of Azerbaijan Republic too. Such as, the advancement of small business boosts economical growth and maintain the sustainability of it. It forms the healthy competition in the country, introduces new job vacations and has the positive impact in reducing poverty. This type of business is mentioned as the most flexible, efficient and low cot type of business. Overall, we can state that the availability of SMEs can increase the efficiency of economic activity. It is also essential that the development of SMEs in country will result in forming medium income level population. For mentioned reasons the policy of developing small enterprises is the priority of Azerbaijan government.

In Azerbaijan the actuality of SMEs starts in the early years of 1990s. However, this country stays behind from some East Europe and Post Soviet Union countries in the development level.

According to Azerbaijan Republics law, the small firms can operate in two legal forms: creating legal person or without creating legal person like an individual entrepreneur.

In Azerbaijan the type of companies divides in 3 sizes for their quantity, market turnover and the number of workers. These 3 forms are: small, middle and big. According to The MINISTER CABINET OF AZERBAIJAN they are divided as mentioned:

The type of entities	The number of employees	The yearly income
Small enterprises	Till 25	Till 200 thousand manats
Medium enterprises	Between 25 and 125	From 200 thousand to 1250 thousand manats

Big enterprises	From 125 and more	From 1250 thousand and more

Other main statistics that was taken from the State Statistical Committee of the Republic of Azerbaijan which demonstrates the latest view of SMEs in the economy:

2.1 Ölkə iqtisadiyyatında kiçik və orta sahibkarlıq subyektlərinin payı, faizlə

Share of small and medium entrepreneurship subjects in the economy of the country, at percentage

Göstəricilər Indicators	2015			2016		
	Cəmi Total	o cümlədən of which		Cəmi Total	o cümlədən of which	
		Kiçik Small	Orta Medium		Kiçik Small	Orta Medium
Əlavə dəyər Value added	7,5	5,9	1,6	6,4	5,2	1,2
qeyri-neft sektoru üzrə non-oil sector	10,9	8,6	2,3	9,9	8,1	1,8
İşçilərin sayı Number of employees	18,7	5,8	12,9	18,5	6,6	11,8
qeyri-neft sektoru üzrə non-oil sector	19,1	5,9	13,2	18,9	6,8	12,1
Əsas kapitala investisiyalar Investments directed to fixed capital	55,1	41,8	13,3	59,7	44,1	15,6
qeyri-neft sektoru üzrə non-oil sector	48,9	24,8	24,1	52,1	17,6	34,5
İllik dövriyyə Turnover	11,9	9,2	2,7	9,2	7,4	1,8
qeyri-neft sektoru üzrə non-oil sector	18,8	14,5	4,3	14,9	11,9	3,0

4. Yeni yaradılmış sahibkarlıq subyektlərinin sayı

Number of newly created entrepreneurship subjects

Göstəricilər Indicators	2015			2016		
	Cəmi Total	o cümlədən of which		Cəmi Total	o cümlədən of which	
		Hüquqi şəxslər Legal persons	Fərdi sahibkarlar Individual ent.		Hüquqi şəxslər Legal persons	Fərdi sahibkarlar Individual ent.
Yeni yaradılmış sahibkarlıq subyektlərinin ümumi sayı Total number of newly created entrepreneurs	69894	5655	64239	139185	7435	131750
Yeni yaradılmış kiçik sahibkarlıq subyektlərinin sayı The number of newly created small entrepreneurs	69811	5572	64239	139012	7262	131750
Yeni yaradılmış orta sahibkarlıq subyektlərinin sayı The number of newly created medium entrepreneurs	83	83	-	173	173	-

In 2017 in order to develop the small and medium entrepreneurial activity and increase the efficiency of them our government created the agency named as the development Agency of SMEs of Azerbaijan Republic. This agency is operating to

support SMEs in country, relate important government entities with them and helps to regulate them.

The poverty situation of Azerbaijan

According to our government's statistical data the poverty level of Azerbaijan population is decreasing from the beginnings of this millennium to nowadays. It's given in the Table below:

Poverty line and poverty level

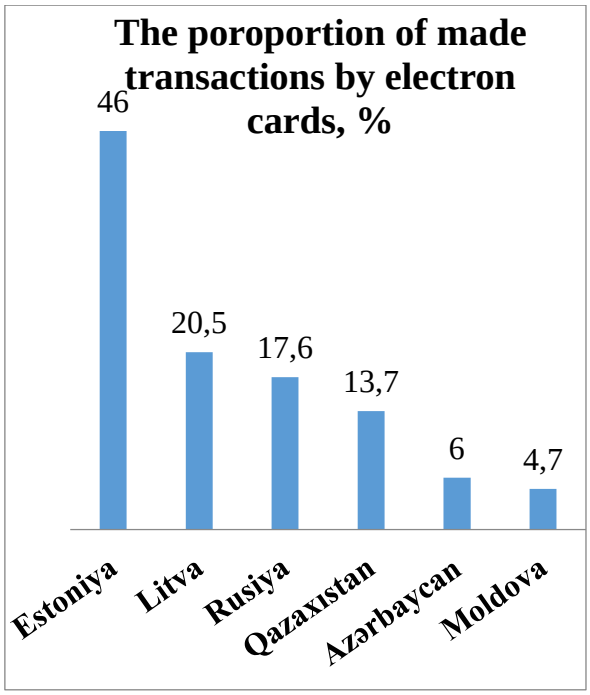
	2005	2010	2012	2013	2014	2015	2016
Poverty line (manat)	42,6	98,7	119,3	125,2	129,6	135,6	148,5
Poverty level (percent)	29,3	9,1	6,0	5,3	5,0	4,9	5,9

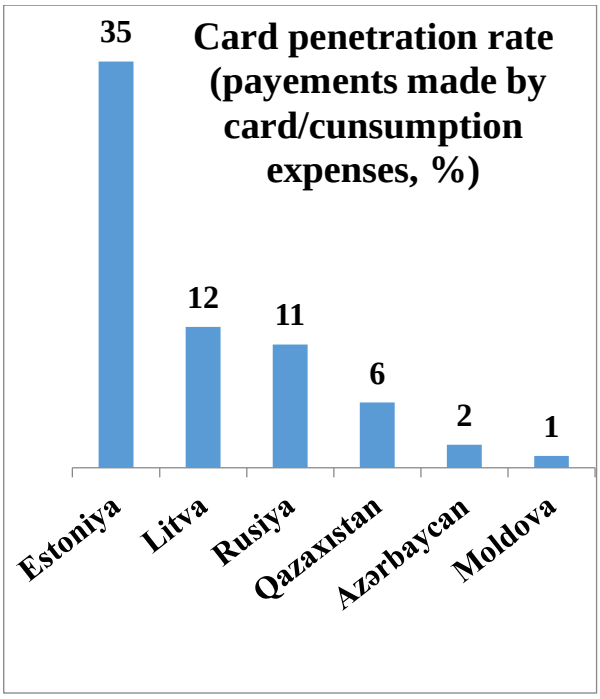
The ICT activity of Azerbaijan and role of them in local SMEs

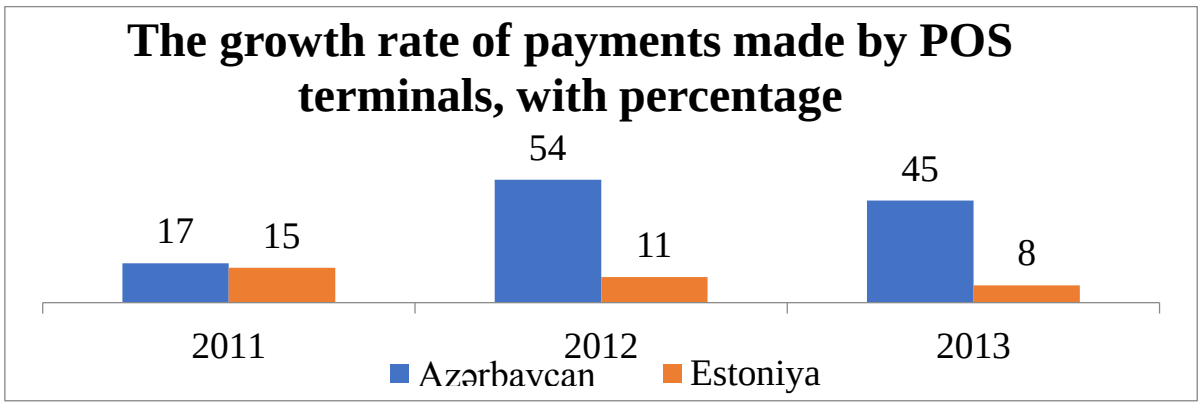
When the topic is about ICT it is essential that every year in Baku take places the international exebition of new type of technologies that introduces by most of the developed countries. In the life of efficient environment for development of local SMEs our government introduced the E-gov.az which is the electronical form of government. In our e-gov.az portal all our governmental ministries are available there. It allows users to decrease time for going government entities to do their work with more efficient way. Also, this type of tools have benefit such as applying it the corruption level in the country also decrease. Our governmental agency ASAN service provides e-signatures for the variety of people. It has enough advantages for local enterprises. Such as the firms obtained e-signatures are decreasing time for making transactions and etc.

Year	Internet Users**	Penetration (% of Pop)	Total Population	Non-Users (Internetless)	1Y User Change	1Y User Change	Population Change
2016*	**6,027,647**	61.1 %	9,868,447	3,840,800	1.2 %	72,153	1.17 %
2015*	**5,955,494**	61.1 %	9,753,968	3,798,474	1.4 %	81,329	1.29 %
2014	**5,874,165**	61 %	9,629,779	3,755,614	5.4 %	299,135	1.39 %
2013	**5,575,030**	58.7 %	9,497,496	3,922,466	9.9 %	501,110	1.45 %
2012	**5,073,921**	54.2 %	9,361,477	4,287,556	10 %	460,165	1.45 %
2011	**4,613,756**	50 %	9,227,512	4,613,756	10.2 %	427,805	1.4 %
2010	**4,185,951**	46 %	9,099,893	4,913,942	70.1 %	1,725,297	1.33 %
2009	**2,460,654**	27.4 %	8,980,488	6,519,834	62.4 %	945,878	1.26 %
2008	**1,514,776**	17.1 %	8,868,713	7,353,937	18.9 %	240,584	1.2 %
2007	**1,274,192**	14.5 %	8,763,359	7,489,167	22.7 %	235,414	1.17 %
2006	**1,038,779**	12 %	8,662,137	7,623,358	51.1 %	351,106	1.15 %
2005	**687,673**	8 %	8,563,398	7,875,725	1.5 %	10,029	1.15 %
2004	**677,644**	8 %	8,466,304	7,788,660	34.7 %	174,520	1.13 %
2003	**503,124**	6 %	8,371,536	7,868,412	21.5 %	89,118	1.1 %
2002	**414,006**	5 %	8,280,599	7,866,593	1553.2 %	388,963	1.04 %
2001	**25,043**	0.3 %	8,195,648	8,170,605	108.8 %	13,048	0.96 %
2000	**11,995**	0.1 %	8,117,742	8,105,747	50.2 %	4,009	0.87 %

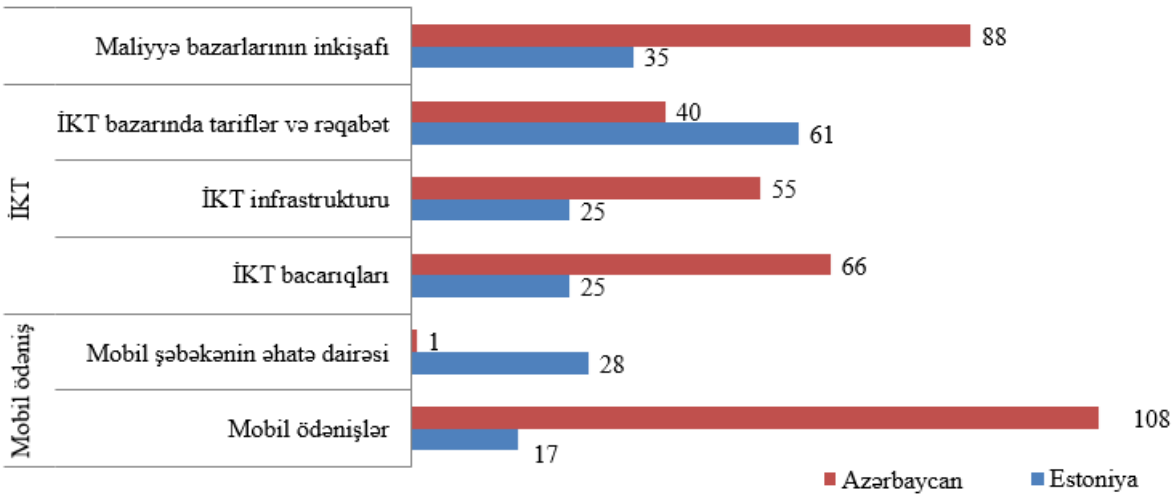
Coming to the established IT infrastructure, its usage and innovation we can easily state that Azerbaijan has all the relevant environment for ICT development. In IC technologies usage our country is front of many developing countries and still going to catch the developed countries position. The underline statistics can be prove for mentioned thesis. The most of them about online banking services and the situation of cashless settlements in our country.

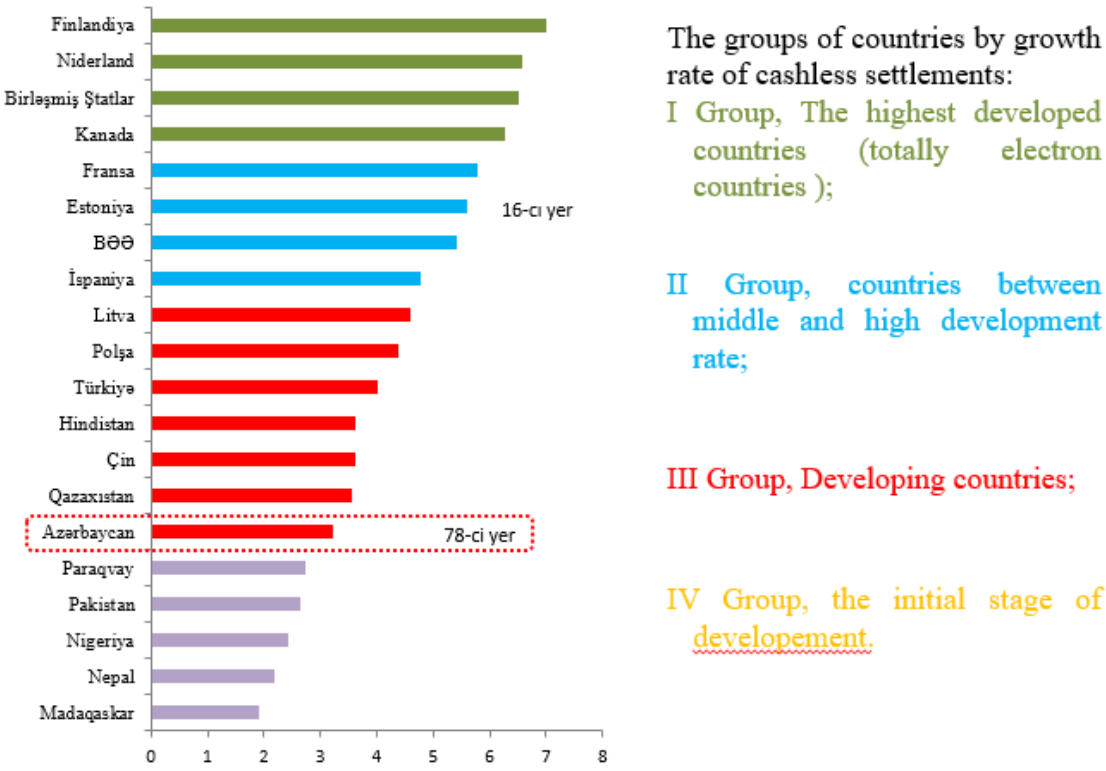






Nağdsız ödənişlərin inkişafını şərtləndirən amillər: *infrastruktur*





Source: Central bank of Azerbaijan (2014) and Citi Bank; Imperial College London (2014)

In addition, after major popularity of e-commerce operations made by social networks, this activity became famous among Azerbaijan population. People trade their handmade accessories, products and etc. in social media; Facebook, Instagram. These types of business activity have the positive impact in the society, SMEs and the poor population. As, now they can sell their produced products by only using internet connected devices and can get income for living.

Of cause like other countries our country also has little ICTs usage by rural areas which takes approximately more than 50% percent of Azerbaijan population than urban areas.

Overall, I want to point out that the ICT adoption by local entities can result more advantages than disadvantages for Azerbaijan such as reducing poverty or increasing accessibility of local SMEs. Our government established the project that named “2020 Looking Future” there was given a relevant part for ICT adoption by

SMEs. Moreover, our country has enough IT environment to innovate its economy and increase the turnover of local firms. In my opinion there is one main factor to boost IT activity among our society. It is about increasing the financial and electron literacy level of population. Because there are enough number of people who even can't use basic technological gadgets.

6. Conclusion

In nowadays, from the benefit of mobile operation technologies and services, LMICs have increased their role in International environment, even if developed countries use ICTs more than developing countries. Thanks to the IT development, some parts of low income states got access to gain new information, also technological revolution was created new job opportunities for a lot number of people and made a new source of income. From the result of those advancements, it was seen that technological development can support economic growth and reducing poverty level of country. In my examples from research it was clearly seen.

The use of ICTs has life-changing role in the poor people's live, there were evidences that I mentioned. There I was pointed out key dimensions of poverty and the impact of information technology usage in SMEs of LMICs in addressing those dimensions. According to my research we can categorize 4 main benefits of using advancing ICTs in SMEs and the poor population:

- Capability

It's about some kind of accessing to new type of information. Those are relevant to operate business, for education and etc. Also, people can get access to new kind of technologies which are more efficient and make life easier.

Transforming public services or creating new services which make them reachable to the poor. Such as, government services can be done by entering e-gov sites or banks can offer e-bank applications.

- Opportunity

Innovative IT services can create better environment for investment and funding or reducing corruption with the help of e-tracking systems.

Making finance inclusive to customers, with the help of low cost microloans than can be made by mobile phones.

Farmers can get information about weather and climate changes.

It creates new job opportunities for population.

With online applications people can control their businesses what time and where ever they are by only connecting their devices to online network.

- Encouraging and empowerment

Growing government and transparency, accountability, managing performance and etc., for example, with the help of opened and clear government data and local budget controlling.

Empowering demand for better governance, such as, via government websites to monitor human rights abuses or elections.

- Security and Sustainability

Securing cost effective money transactions or corruption proof social programs and securing digital identities and personal data.

In this writing the written examples prove that both economic growth and technological development are a like each other and can boost the level of society too. ICTs decrease the quantity of dysfunctional markets. With the help of telecommunication technologies markets work better than previous form, such as costs for transactions lowers and the productivity of operation would go up. The nations which were equipped with reliable IT infrastructure, high level of IT skilled work forces and of course the better regulations for businesses are those ones

prospered most for the applying technological innovation in domestic firms. Nearly all of those countries increased the national production, country exports and trades, financing to the local areas and opened new employment areas for society.

But, the proves that explores the connections between poverty reduction and ITs isn't developed enough. So, huge number of the advancements related to ICTs is about growing the result of technological revolution to the increasing economy of the country or production rather than upgrading the level of society. However, there are supportive evidences for the poor that by gaining chance to access ICTs the population who have lower income can develop their living environment (For instance, reaching to lower costly communication applications or devices they can keep in touch with relatives who are living in further areas.). This is the evidence for the mechanism which underpin the connection between poverty decreasing and ICTs.

It's the fact that the impact of ICTs to the poor's life depends on the factors; like cultural, technical, political and etc. Mobile devices were become the major tool in the life of poor population, however, they have limited use to provide communication services. Such as, they could be little effective in moving people from poverty. In this point of view, the usage of mobile network would create the huge difference, as suggestion shows that high infiltration of new ICTs can be a useful booster of socio-economic innovation. Moreover, first of all ICT services become available in cities, just as in literate groups, while the suburb regions and poor societies are less interested in IT revolution.

There are little number of countries among LMICs that have been effective in developing IT services. Example for those countries are Tunisia, South Africa and etc. In creating regulatory framework context Africa is the largest quantity of worst processing states in the world. There are also unreliable, slow, expensive and insufficient telecommunication services which depend on non excellent infrastructure endowment. Whole those factors in result increases the cost of reaching to

information technologies for the poor and stop the probability to advance IT based services.

However, the quick developments in technologies make ICTs and IT services be both more cheap and easier to use, restricted capabilities and responsiveness decrease the potential usage of ICTs among lower income population. In majority of LMICs, simple computer literacy hasn't been part of the primary lecture curriculum yet. The development process of applications, online services and tools to maintain the needs of lower income people is growing very slow. Entrepreneur activity of people related to ICTS is also have little degree in those states and some of them can't operate exactly for their needs. ICTs are still remain domain in developed countries, and from there occurs that there is digital gap between producers or sellers of those products (IT products) and their buyers which advantages first of all former. They sell their goods in the name of advantage of the poor. Nevertheless, the stage of ICTs in LMIC is altering very rapidly, and the number of IT applications increase too, mainly those ones related to the mobile phone devices. In addition, many type of technological services was invented there to fill the specific needs of locals. For instance, The M-PESA program was developed by Kenyan Safaricom was successful in establishing and advancing electron money and e-insurance services. This program also encouraged other African countries to form new type of IT services and products. Finance, healthcare and agriculture sectors are the most popular areas where most of application and IT tools are invented and developed in LMICs. Moreover, the social media helps to provide an unprecedented chance for altering the democratic landscape in low income countries, which promises to innovate accountability and trackability of action of local government, and to boost participation in political agreements and decisions.

6.1. Suggestions

From my research it was identified that there are variety barriers for ICT adoption by SMEs and the role of IT services in poverty reduction process. These

barriers can vary from country to country. There I will mention the most common suggestions for developing ICT adoption in LMICs and local businesses in order to decrease poverty level:

- It was proved that most of the unfamiliar people with ICTs live in rural areas and the huge part of them don't know the usage of those technologies. For that's why, I strongly recommend LMICs to start and develop the financial and online (electron) literacy level. There are some organizations that are doing it in nearly all of the developed countries. OESR is one of that organizations that mainly works with Post Soviet countries. Recently our government also focused on that idea. There is a department that is under control of Central Bank of Azerbaijan, it's also demonstrates some relevant information about financial and digital studies for Azerbaijan society.
- In low income countries it is essential to establish or innovate the digital infrastructure. Such as introducing fiber optic cable (which increases the speed of internet), IT services, new technologies and better ICT environment.
- The establishment of digital regulatory systems is important too for LMICs. Because when person thinks that his rights are protected, he encourages.
- Lastly, this suggestion is generally about our country. It is about allowing or attracting PayPal company to operate in Azerbaijan as it operates in other countries. I meant working with merchant accounts. As we know in Azerbaijan people only can buy things from other countries but can't sell their own product there. If the merchant account will be allowed to our country, we can observe the instant increase in export of Azerbaijan. Stated from social media trading, it is obvious that our society have enough experience to operate it in international level.

7. References

The European Parliament Research Service. (2015). ICT in the developing world.

World Trade Organization. (2013). E-commerce in developing countries.

Human Development Report. (2016).

RICHARD GERSTER AND SONJA ZIMMERMANN. (2003). INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) FOR POVERTY REDUCTION. SDC Swiss Agency for development and cooperation.

Rasim Ljajić Deputy Prime Minister and Minister of Trade, Tourism and Telecommunications and Željko Sertić Minister of Economy (Serbian Government). (Funded by European Parliament) (2015). eBusiness, Making your business competitive in the digital world.

Information and Communications Technology Council. (2013). ICT in the financial services sector. // Assessing the Human Resource Needs.

www.google.com Google Public Data

www.unesco.org Learning to live together. (2017).

www.stat.gov.az Statistical data about Azerbaijan Republic

www.cbar.az The Central Bank and Economy 2014 2. Nağdsız ödənişlərin inkişaf səviyyəsinin iqtisadi artıma təsiri.