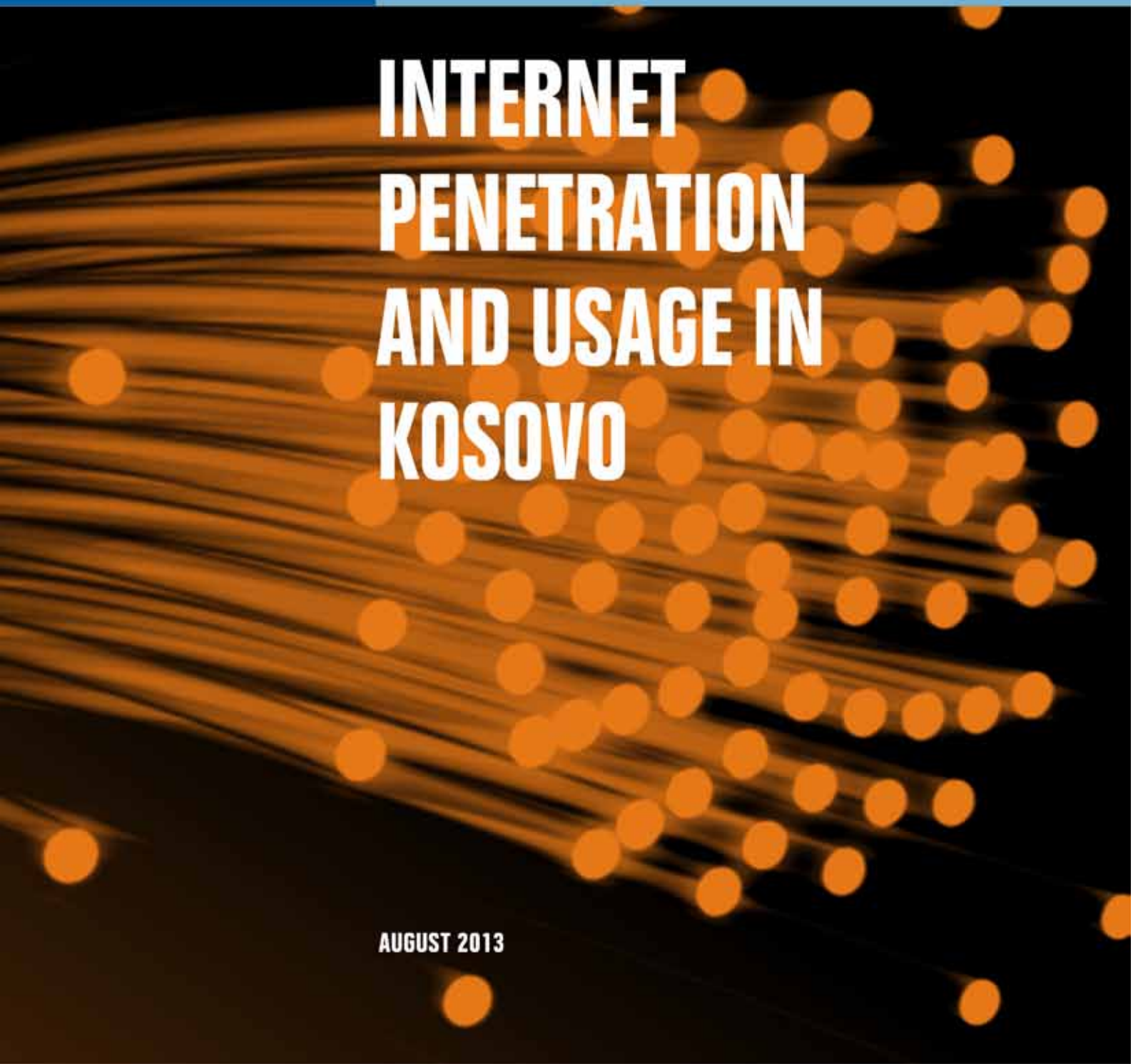
STIKK

KOSOVO ASSOCIATION OF INFORMATION AND COMMUNICATION TECHNOLOGY

INTERNET PENETRATION AND USAGE IN KOSOVO



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Disclaimer

The views expressed in this report are those of the survey respondents and author, therefore they do not necessarily represent the views of STIKK.

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ABBREVIATIONS

ccTLD - Country code top-level domain
CIA - Central Intelligence Agency
EU - European Union
GPS - Global Positioning System
ICT - Information and communications technology
ISO - International Organization for Standardization
ISP - Internet Service Provider
ITU - International Telecommunication Union
LAN - Local Area Network
PC - Personal Computer
PoP - Point of Presence
RIPE NCC - The Réseaux IP Européens Network Coordination Centre
RSSI - Received signal strength indication
SSID - Service Set Identifier
STIKK - The Kosovo Association of Information and Communication Technology
TRA - Telecommunications Regulatory Authority of Kosovo
UNDP - United Nations Development Programme
VoIP - Voice over Internet Protocol

KEYWORDS

Internet penetration, Kosova, Kosovo, Internet service provider, parental control, Internet usage, households, rural population, proportional stratified random sampling, facebook usage, email usage, Albanian, survey, wardriving, contention ratio.

FOREWORD

We are very proud to present the Internet Penetration and Usage in Kosovo, the second in a series of reports measuring citizens' perceptions of problems and challenges regarding the Internet access as well as covering various needs and data gaps pertaining to business support and Internet infrastructure and services.

The report channels the voices of 1050 Kosovans from 30 municipalities, sharing their opinions on whether they enjoy an adequate access to internet and how satisfied are they with services provided. Further, this study aims to better understand Internet attitudes and behaviours. Understanding how users, especially youth, utilise the Internet is of major importance to further empower the younger generations in Kosovo using ICT as a tool.

The first chapter presents an analysis of the existing studies on the subject matter from year 2000 onward, using the available data from Regulatory Authority for Post and Electronic Communications (ARKEP) and Kosovo Statistical Agency, as well as other International and local organizations.

The remainder of the report presents demographic Internet penetration (households and users), geographic Internet penetration and Internet usage (user behaviour).

We are confident that the wealth of data and the analysis that Internet Penetration and Usage in Kosovo brings will stimulate meaningful and participatory discussions and will help local and central governments prioritize and implement actions to improve the access to and the quality of public services in their municipalities, contributing to a better life for all people of Kosovo. In addition, this report will enable better positioning of Kosovo in global ICT Agenda and will open doors for potential investment possibilities.

We extend our appreciation to the Kosovo Ministry of Foreign Affairs for their valuable insights and financial contribution in the preparation of the report.

Enjoy the report!

Vjollca Çavolli

STIKK Executive Director

SUMMARY

Using desk research, quantitative approaches and other methods, this study aims at refreshing the previous research[1] on the very same subject matter – namely, updating data related to Internet penetration and usage in Kosovo. In the course of this study, Internet usage and habits, and demographic Internet penetration based on households and users were studied. In addition, data on geographical Internet penetration was gathered and presented. The findings show that both rural and urban areas utilise Internet connectivity and its benefits. Further, this study reveals that Internet penetration in Kosovo is at satisfactory levels and can be compared to developed countries. Internet penetration based on households is 84.8%, Internet penetration based on users is 76.6%, and geographical Internet penetration shows that on regional roads there are, in average, 9 wireless networks per kilometre. There are various reasons for these levels of penetration, the main ones being Kosovo's very young median population age who want to follow the latest global trends and Kosovo's population living abroad who want to stay connected with their families and friends living in Kosovo.

According to the findings of this study, most of user habits are comparable to global trends. Social networking and Internet voice communication services are mostly used by women, and this is also a global trend. Kosovars are most active in Facebook, being the main channel for reaching the widest user base. Regardless of employment status and family income, Kosovars are a connected society at similar levels as developed countries.

Further, the study concludes that there will be a slow down in further Internet penetration in Kosovo due to market maturity. This being the point in time when Kosovo's institutions, companies, and other organizations will need to further advance general quality of service, e-governance, parental control, market regulation, and information society in general. The study provides additional information that can support the authorities, private sector, international organizations, and potential investors to make policies and decisions based on evidence. Finally, the report suggests that Kosovo's institutions may wish to consider the establishment of the Ministry of Information Society.

1 http://www.stikk-ks.org/images/stories/publikime/STIKK-raport_eng_email.pdf

1. INTRODUCTION

The Kosovo Association of Information and Communication Technology (STIKK), an ICT association based in Prishtina, is proactively engaged to enhance the ICT sector in Kosovo. This study was made possible with their kind support.

Currently, in Kosovo, there are mostly top-down data collection and analyses on the subject matter. The information and data sources that are publicly available have been created using feeds mainly from Internet service providers or other secondary sources. As explained further below, this approach did not prove to be the most accurate because of quick market changes, information provision errors, and lack of information exchange between stakeholders, as well as difficulties in data aggregation in order to bring the analysis at the national context.

There is obvious potential for further development of the ICT sector in Kosovo. Therefore, STIKK have contracted the second annual publication of this research report with the aim of providing further information on the subject of Internet penetration and usage, including analysis and recommendations. Phogen LLC was contracted to digitally collect, process, analyse, and interpret the data. Field data collection process was contracted to the University College Universum who assigned a team of 30 field researchers (university students) lead by a university professor, expert on the subject matter.

2. EXISTING STUDIES

The subject of Internet penetration in Kosovo has been researched by various companies and organisations. There is a fair amount of information from secondary sources such as Internet World Stats[2]. Furthermore, there are online reports suggesting that there was no Internet usage increase in Kosovo since 2000[3]. The table below provides details on various resources on the subject matter:

2 http://www.Internetworldstats.com/europa2.htm#kv

3 http://ptgmedia.pearsoncmg.com/images/9780789747884/supplements/9780789747884_appC.pdf , p. 9.

Nr	Title/link	Internet Penetration	Ref. Page	Month/Year
1	**EU Kosovo Progress Report 2009**[4]	5.40%	41	2008
2	**eSEE ICT Status Report - Stability Pact**[5]	6%	95	April, 2004
3	**Cullen Report IV (Enlargement countries telecommunications monitoring)**[6]	6.24%	136	Jan, 2010
4	**EU Kosovo Progress Report 2010**[7]	6.40%	28	2009
5	**Pasyre e tregut te Telekomunikacionit: TM1-2011**[8]	7.69%	12	2011
6	**Investing in Kosovo 2009**[9]	12%	16	2005
7	**National Background Report on ICT Research for Kosovo (2009)**[10]	20%	24	Nov, 2009
8	**Investing in Kosovo 2010**[11]	20.90%	19	Sept, 2009
9	**Households* with Internet Connection**[12]	53%*	homepage	2009
10	**Internet penetration and usage in Kosovo**	72.1%*	20	March, 2012
11	**Kosovo Census 2011**[13]	57.1%*	118	2011
12	**UNDP - Kosovo Mosaic 2012**[14]	62%*	29	Feb. 2012

Table 1: Related Studies *) households.

4 http://ec.europa.eu/enlargement/pdf/key_documents/2009/ks_rapport_2009_en.pdf
5 www.stabilitypact.org/e-see/040906-ict-status.pdf
6 http://www.cullen-international.com/ressource/224/0/final-study-report-31-march-2011.pdf
7 http://ec.europa.eu/enlargement/pdf/key_documents/2010/package/ks_rapport_2010_en.pdf
8 www.art-ks.org/repository/docs/Pasqyre%20e%20tregut%20te%20Komunikimeve%20Elektronike%20TM3%20dhe%20TM4_2012.pdf
9 www.eciks.org/english/publications/investing_in_kosovo/content/media/investorsguide_web.pdf
10 www.wbc-inco.net/attach/KosovoICTReportFINAL_01_12_2009.pdf
11 http://ambasada-ks.net/us/repository/docs/Attach_1._Investing_in_Kosovo_2010.pdf
12 http://www.indexkosova.com
13 http://esk.rks-gov.net/rekos2011/repository/docs/Final%20Results_ENG.pdf
14 www.ks.undp.org/content/dam/kosovo/docs/Mozaik/Kosovo_Mosaic_2012_Eng_735317.pdf

2.1. TELECOMMUNICATIONS REGULATORY AUTHORITY (TRA) OF KOSOVO

The Telecommunications Regulatory Authority (TRA) of Kosovo regularly gathers information on the Internet penetration from Internet Service Providers via a questionnaire[15] that is filled out on quarterly basis. The TRA is the official source of information about Kosovo's state of affairs in regards to telecommunications (including Internet penetration) and it is the main sector information source for various global and regional companies and institutions (including the ITU in the future), hence it was given more attention.

The previous STIKK-sponsored research (2012) concluded that segregated data on municipalities is not published, although it is required on the questionnaires provided by the TRA. As of Q4 2012, the TRA have started publishing a list (excluding rural and urban segregation) of Internet penetration based on municipalities[16].

Based on the TRA report, as of Q3 2012, Internet user penetration is 8.72% (see fig. 56 on TRA's report). It is apparent that there are discrepancies between various research publications and TRA's publications but consultations are ongoing in order to understand the methodologies and approaches adopted by the TRA. In order to enable greater clarity, the TRA may wish to consider the following:

1. Revise and publish the methodology of data collection and analysis
2. Note the source of data
3. Determine consistent definitions
4. Segregate between urban and rural municipal areas

One of the reasons behind these suggestions is related to the United Nations (UN) Millennium Development Goals (MDG) indicator 8-16 (Internet users per 100 inhabitants), developed in cooperation with the ITU and other international organizations. Because a growing number of countries are measuring the Internet user penetration through surveys, this STIKK sponsored research has also adopted this method. Discrepancies in results arise because the TRA report calculates the Internet inhabitant (user) penetration by dividing the number of line subscriptions with the number of total population, shown as a percentage. However, the Cullen International Assessment report on Kosovo[17] states that this calculation shows only the broadband network penetration and not the Internet user penetration, as cited below:

"The broadband network penetration defined as the number of access subscribers with speeds of 144k/bits or more as a percentage of population."

Further, in regards to the methodology utilised by the TRA, the UN MDG state the following[18]:

"A growing number of countries are measuring the percentage of individuals using the Internet through household surveys…Where surveys are not available, an estimate of the percentage of individuals using the Internet may be derived based on a number of indicators such as fixed (wired)-broadband subscriptions, fixed-telephone subscriptions, active mobile-broadband subscriptions and the income of the country.

While the data on the percentage of individuals using the Internet are very reliable for countries that have carried out official household surveys, they are much less reliable in cases where the number of Internet users is estimated based on the number of Internet subscriptions.

Disaggregation for this indicator, including by age and sex, is possible in countries where data are derived from household surveys. This is the case in a growing number of developing countries.

The methodology used to estimate the percentage of individuals using the Internet should always be described when presenting the data."

As Kosovo aspires European integrations, UN and ITU membership, and the Internet penetration is comparable to developed countries, using the second cited paragraph as a basis for a suggestion, the TRA may wish to follow the latest trends on globally adopted methodologies for generating indicators, including the Internet penetration.

15 http://art-ks.org/repository/docs/Pyetesori%20per%20Sherbimet%20e%20Internetit_(ISP).xls

16 www.art-ks.org/repository/docs/Pasqyre%20e%20tregut%20te%20Komunikimeve%20Elektronike%20TM3%20dhe%20TM4_2012.pdf

17 http://www.ebrd.com/downloads/legal/telecomms/kosovo.pdf

18 http://mdgs.un.org/unsd/mi/wiki/8-16-Internet-users-per-100-inhabitants.ashx

2.2. KOSOVO AGENCY OF STATISTICS - CENSUS 2011

Recently, Kosovo has completed a population census 2011 and two questions were included with regards to the Internet household penetration and computer ownership[19]. These results[20] have been processed further and presented below:

Kosovo Census 2011	Urban	Rural	Total
Households	127886	168649	296535*
Households with Internet access	89311	80007	169318
Internet Penetration based on Households	**69.84%**	**6.24%**	**57.10%**

Table 2: Internet Penetration - Census 2011 **) see the publication table, p.118*

Previous research sponsored by STIKK covered 28 urban areas (cities) and 49 rural areas (villages). The results showed that the Internet penetration based on households was 72.1%. As the majority of interviews were completed in urban areas, this result was close to Kosovo's Census Urban Internet penetration based on households, which is 69.84%.

It is important to note that the lack of a unified/dynamic published tables with data segregation based on age groups, gender and rural/urban strata, made the calculations complicated for the purpose of various analysis.

3. NEED AND OBJECTIVES OF THE STUDY

The main objective of this study is to provide a snapshot of Kosovo Internet penetration and usage (completed in June 2013). Additionally, the purpose of this study is to cover various needs and data gaps pertaining to business support and Internet infrastructure and services. Based on available data, it is obvious that there is a strong need for up-to-date and thorough studies that would address relevant issues, support businesses and attract potential foreign investing companies who want to make informed business choices. Additionally, in order to further improve the quality of Internet services, it is a prerogative to create a competitive market through offering more transparent services, better value for money, and better monitoring of the sector which can be achieved through introducing efficient government regulations (ex. ISP quality of service), performing research on specific subjects of interest, optimizing existing resources, and implementing good practice.

Further, and highly relevant, this study aims to better understand Internet attitudes and behaviours. Understanding how users, especially youth, utilise the Internet is of major importance to further empower the younger generations in Kosovo using ICT as a tool[21]. This study aims at further developing baselines that can be monitored and analysed with a focus on how ICT skills of Kosovan youth can be further improved and developed through a myriad of activities and projects such as innovation centres, vocational trainings, internships, certifications, study visits, etc.

The desk research phase also revealed that currently in Kosovo the Internet infrastructure is not properly mapped out. Companies operating in Kosovo are limited in information exchange and coordination among relevant actors. This, in turn, does not provide an accurate aggregated map of Internet infrastructure and, as a result, cross-sector cooperation is hampered. To illustrate, construction companies, in lack of information and strict control by the local authorities, can destroy the Internet infrastructure during the course of their work (as it often happens with electrical power cables and water pipelines).

19 http://esk.rks-gov.net/rekos2011/repository/docs/R2ENG.pdf

20 http://esk.rks-gov.net/rekos2011/repository/docs/Final%20Results_ENG.pdf , p. 118, 204

21 http://www.stikk-ks.org/sq/component/dms/doc_download/9-skills-gap-analysis-for-information-and-communication-technology+skillsgap+analysis+STIKK

Internet infrastructure is vital to the development and business processes of a given country. One example worth looking into is that of New Zealand, who were successful in creating the National Broadband Map, which essentially serves "to comprehensively map New Zealand's Broadband landscape and provide information and tools to aid in demand aggregation and infrastructure planning."[22] A good practice was highlighted in this process, the network suppliers around New Zealand voluntarily provide to the State Services Commission with their network coverage map[23].

4. METHODOLOGY AND SCOPE

The data collection for this study began by desk research. During this phase, the study considered secondary sources by going through the existing literature and body of knowledge. The demographic data segregated based on gender, age and location were sourced from the results of the Census in Kosovo[24] organized by the Office of Population Census.

Survey data collection was completed using a quantitative approach. Through Phogen's e-questionnaire software on Tablet PCs the data was collected during the period from 11th – 22nd of June 2013. The scope of this study includes the demographic Internet penetration (households and users), geographic Internet penetration and Internet usage (user behaviour). Except desktop and laptop computers as means of access to the Internet, smart phones (defined as mobile phones with Internet access capabilities) were also included in the questionnaire.

4.1. POPULATION SAMPLING

The sample population was stratified using the Proportional Stratified Random Sampling methodology. Initially, total population grouped by gender and divided based on location (rural and urban) was analyzed. This data was stratified based on age groups. Finally, the number of questionnaires for each municipality (urban and rural), age group and gender was defined. Population under age of 10 was excluded due to the nature of questions and children's assent aspects. Hence, the population for research purposes was around 1.4 million (1,409,604) covering approximately 77.64% of the Kosovo's population of 1,815,606[25]. The final step was the incorporation of the proportional aspects of the methodology. The total number of questionnaires (1050) was divided in age groups, gender and location (urban and rural) strata. The following results in relation to confidence levels and intervals were obtained[26]:

a) The Confidence Level is 95%

b) The Confidence Interval 3%

In words, if the same survey methodology (with the same sample population) was to be implemented again, with 95% of confidence the results would be within plus/minus 3% of the current results. Note that the lower level of confidence interval will be calculated on this paper.
A summary of the final distribution results is shown below:

22 http://www.broadbandmap.govt.nz/
23 Ibid.
24 http://esk.rks-gov.net/rekos2011/?cid=2,40,265
25 http://esk.rks-gov.net/eng/
26 http://www.macorr.com/sample-size-methodology.htm

Nr.	Municipality	Urban	Rural	Total
1	Deçan	2	25	27
2	Gjakovë	24	34	58
3	Gllogoc	15	23	38
4	Gjilan	40	26	66
5	Dragash	1	31	32
6	Istog	6	20	26
7	Kaçanik	9	17	26
8	Klinë	1	21	22
9	Fushë Kosovë	11	10	21
10	Kamenicë	5	17	22
11	Mitrovicë	32	22	54
12	Lipjan	5	29	34
13	Novobërdë	1	16	17
14	Obiliq	3	8	11
15	Rahovec	1	25	36
16	Pejë	27	28	55
17	Podujevë	15	33	48
18	Prishtina	97	26	123
19	Prizren	57	21	78
20	Skenderaj	8	18	26
21	Shtime	3	14	17
22	Suharekë	8	31	39
23	Ferizaj	24	38	62
24	Viti	1	26	27
25	Vushtrri	18	26	44
26	Malishevë	2	30	32
27	Junik	1	1	2
28	Mamushë	0	1	1
29	Hani i Elezit	0	5	5
30	Kllokot	1	0	1
Total:		***428***	***622***	***1050***

Table 3: Survey Distribution

The following graphs provide more information about respondents who answered the e-questionnaires, and who are not necessarily Internet users or non-users. It is obvious that most of respondents belong to the age group between 10-30 years old, this being the biggest age group in Kosovo because, as noted on one CIA website[27], Kosovo's median age is 27.4 years old.

Respondents by age

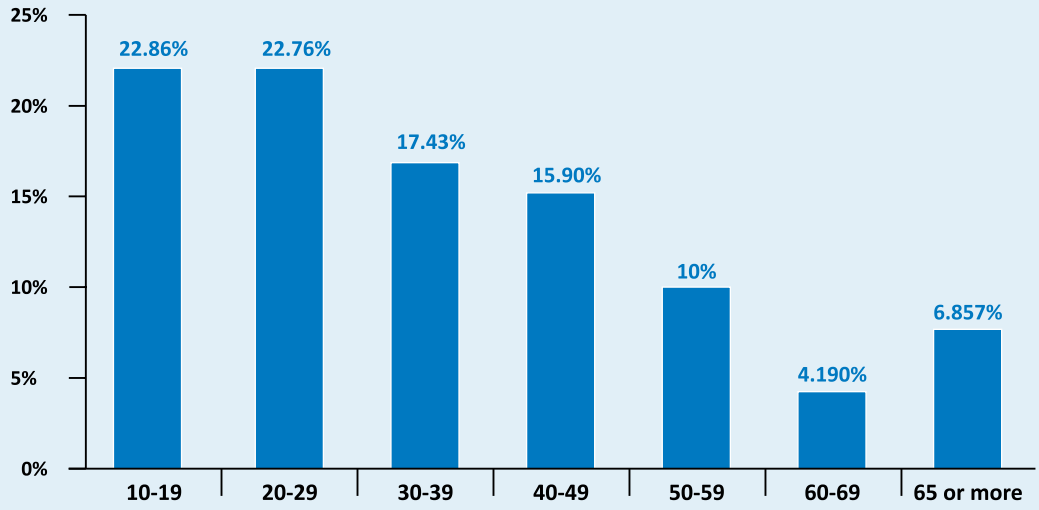

Figure 1: Respondents by age

The majority of respondents are secondary school graduates, whereas 2.76% had no formal education.

Respondents by education

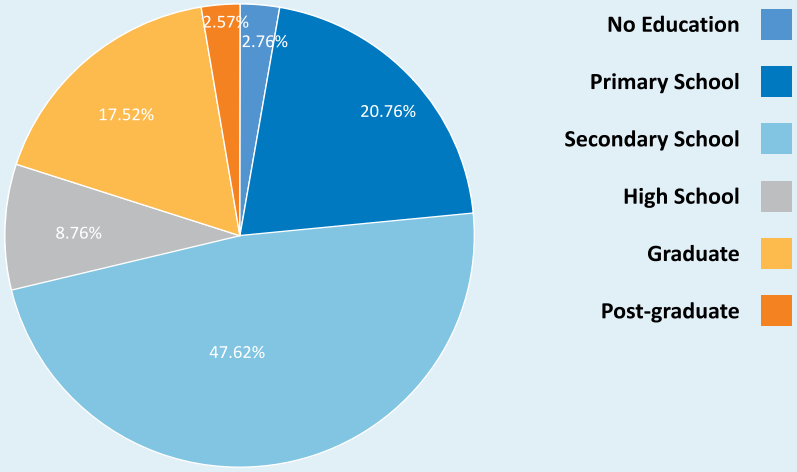

Figure 2: Respondents by education level

27 http://www.macorr.com/sample-size-methodology.htm

The graph below shows respondents based on gender. Note that based on census 2011, the ratio between male and female is 101.32 / 100.

Respondents by gender

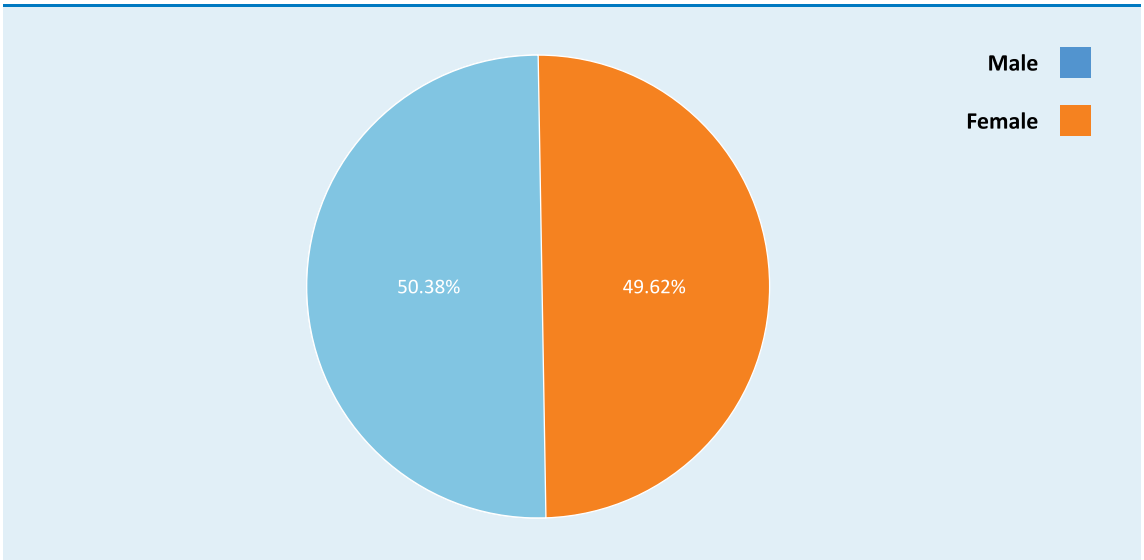

Figure 3: Respondents by gender

Based on Census 2011, in average, there are 5.85 family members living on a household. This corresponds with the graph below where the majority of respondents live in households of 5-6 members.

Number of household family members

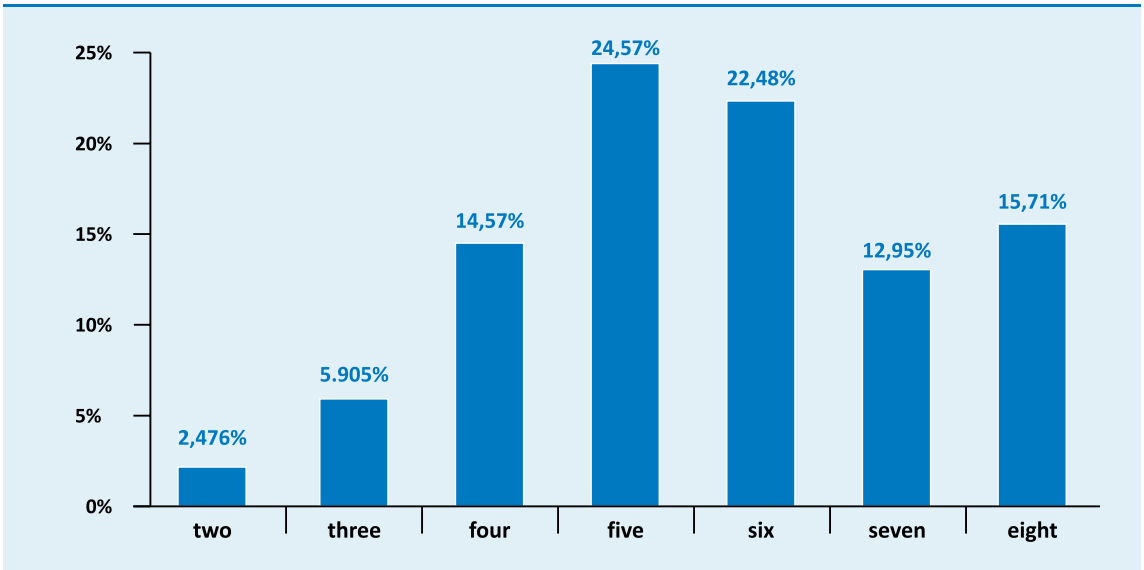

Figure 4: Respondents' family members

4.2. QUESTIONNAIRE

The questionnaire was designed using questionnaire design guidelines[28]. The number of questions was 39, including few questions covering respondent's information details (age, gender, residence). The questionnaire included multiple choice questions and no open ones. Furthermore, the questionnaire was divided in sections covering demographics information, Internet users and non-users. Out of the sample size of 1050 questionnaires, 59.2% were distributed through rural areas and 40.8% through urban areas. The interviews were performed face-to-face with randomly selected respondents within the defined strata. Considering that electronic questionnaires were used, other features were also utilised. Namely, skip logic, multiple answer selection control, and other validation techniques were fully implemented.

5. INTERNET PENETRATION

There are two types of Internet penetration, geographic Internet penetration and demographic Internet penetration (households and users). Data collection in regards to penetration can be completed using many methods and approaches. Geographic Internet penetration is, in a nutshell, a detailed geographical map with mapping mediums that carry Internet traffic to households. The demographic Internet penetration is based on households and individual users. The former is defined as the percentage out of the total households that have Internet connectivity, whereas the latter defines the number of Internet users out of total population.

5.1. DEMOGRAPHIC INTERNET PENETRATION – BASED ON USERS

The graph below shows the Internet user penetration considering also the frequency of usage. Users who use the Internet once a month or less (1%) were excluded while users who use the Internet two times a week or more, up to everyday, were included. In addition, the lower range of the confidence interval of 3% was also taken into consideration. Therefore, the Internet penetration based on users is **at least 76.62%** or 1,080,038 Internet users (based on Census 2011 total population).

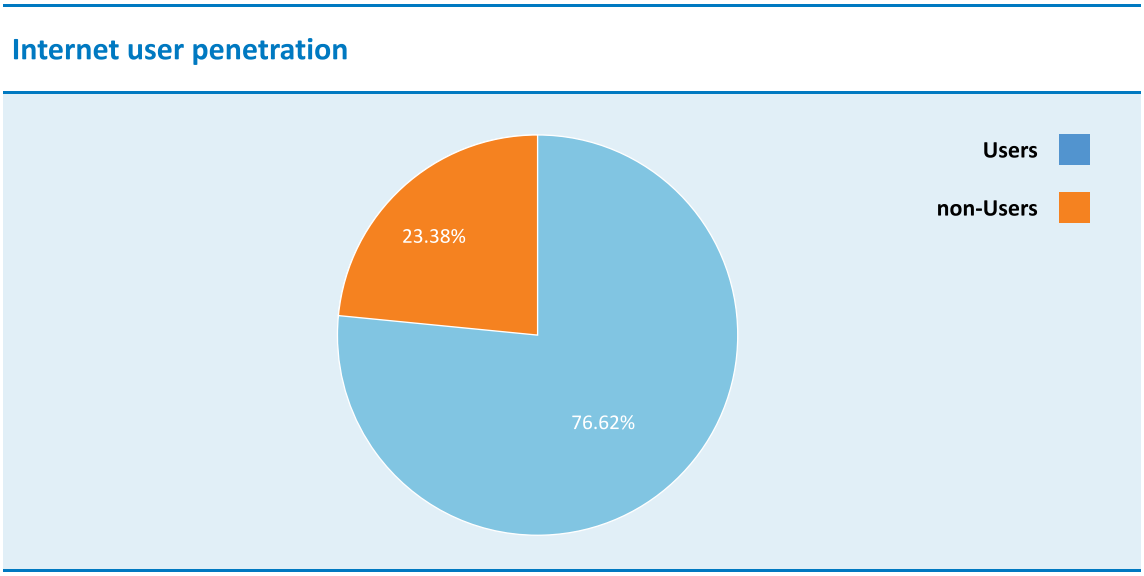

Figure 5: Internet user penetration

28 https://www.mrs.org.uk/pdf/2011-07-27%20Questionnaire%20Design%20Guidelines.pdf

This is indeed a significant Internet user penetration level. However, in developed countries the Internet penetration in 2013 is estimated at 77%, as per ITU's published report[29]. Another factor that further explains the rate of Internet penetration in Kosovo is the unregulated market of Internet service providing. Namely, there is a typical situation of service provision where one person in a village (as mentioned above the majority of population lives in rural areas) buys wireless Internet connectivity from one of the bigger service providers and resells it to as many households in the village as possible. This model is unregulated and out of the reach of authorities, however it is an effective way of ensuring wider access to Internet by the local population. Based on the TRA's reports, other unspecified ISPs serve as many as 10412[30] users. The other not less important reason is the Kosovan diaspora[31], who want to be connected with their families in Kosovo and thereby may provide computers and cover internet connectivity costs to their families in Kosovo. In this context, UNDP's Kosovo Mosaic 2012 states that "25 per cent of households reporting reliance on remittances, a figure that is even higher among households in rural areas and those headed by women."[32]

The results of the Internet user penetration in rural and urban areas are interesting, because a higher proportion of Internet users live in rural areas, as shown in the graph below. Several factors might have influenced this fact, some of them being: the majority of Kosovans live in rural areas, the average number of family members in rural households (houses) is higher compared to urban areas (flats), the need to stay connected with family members living abroad (as the majority of Kosovan Diaspora comes from rural areas), etc. Similar to total Internet user penetration, the occasional users (once a month or less) and lower end of the confidence interval (3%) were considered.

Internet users based on rural and ubran areas

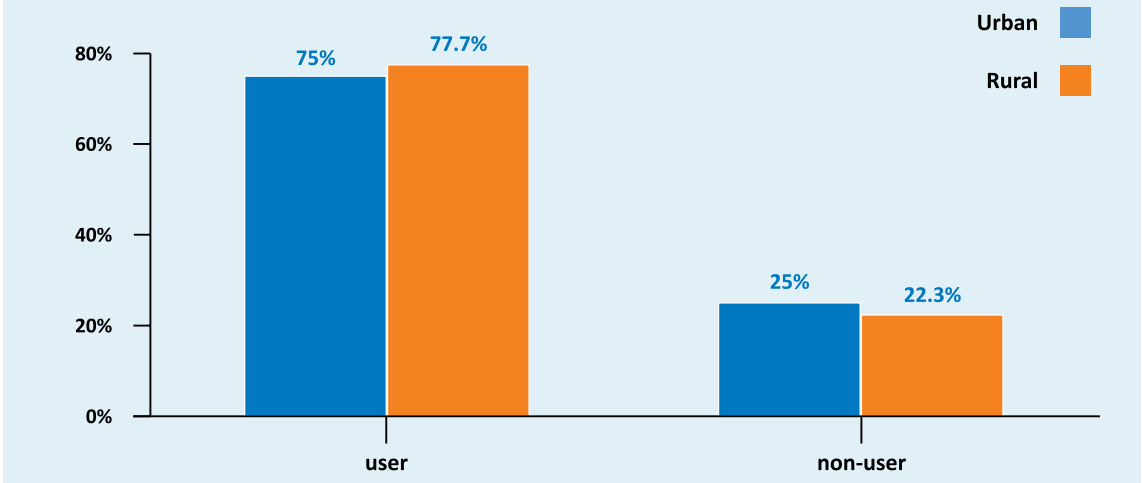

Figure 6: Internet users (rural and urban)

There is a relationship between Internet penetration, education and income as concluded on a publication[33] which also describes a model which enables the estimation of Internet penetration rate given the income and education level. In Kosovo, the family/personal income is among the rarest reasons selected by Internet non-users, as mentioned further below (see Figure 42).

29 http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2013.pdf

30 www.art-ks.org/repository/docs/Pasqyre%20e%20tregut%20te%20Komunikimeve%20Elektronike%20TM3%20dhe%20TM4_2012.pdf

31 www.swiss-cooperation.admin.ch/kosovo/ressources/resource_en_180366.pdf

32 www.ks.undp.org/content/kosovo/en/home/ourwork/povertyreduction/successstories/how-to-become-a-driving-force--kosovo-diaspora-/

33 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2145704

Internet users by family income

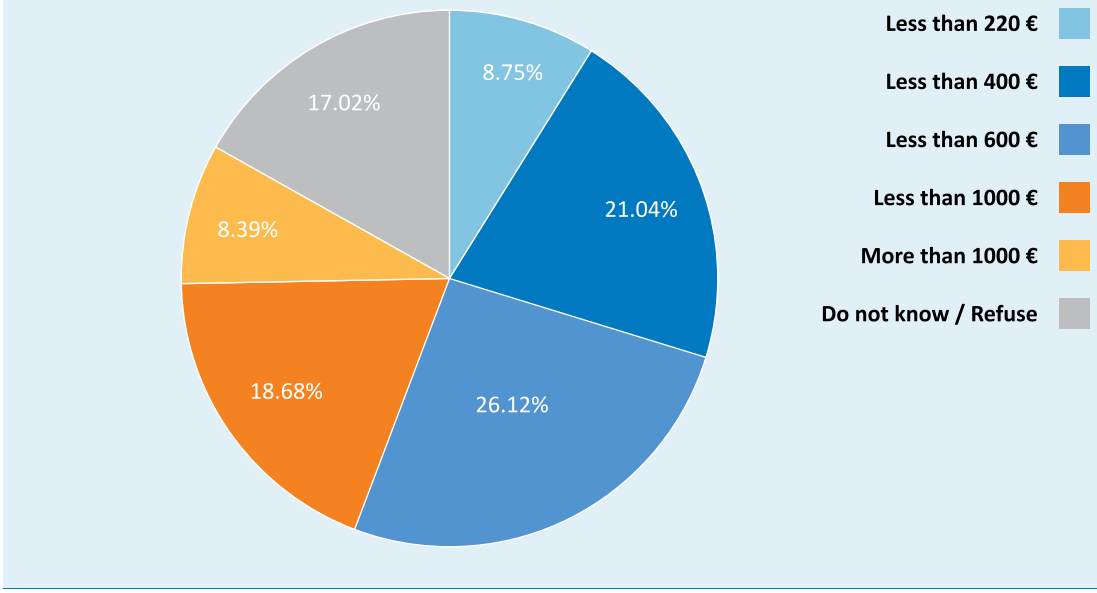

Figure 7: Internet users by family income

Internet users based on education level

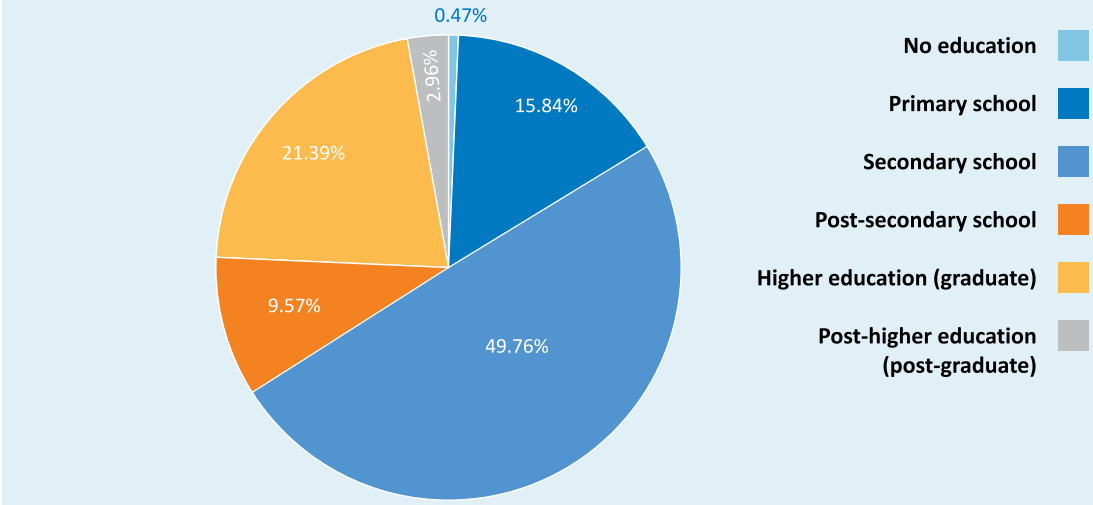

Figure 8: Internet users by education level

The results of the Internet users based on the education level are similar to overall respondents' results, the reason being that high proportions of respondents are Internet users.

Internet users by gender

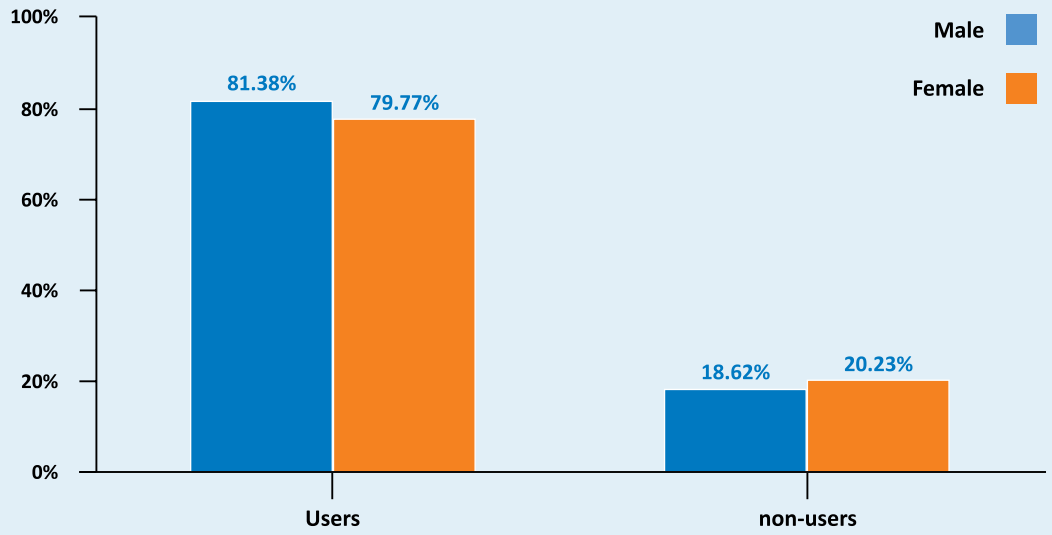

Figure 9: Internet users by gender

The graph above shows the Internet users by gender where out of all male respondents there are 81% Internet users whereas 19% are non-users. Similarly, 80% of female respondents are internet users whereas 20% are non-users. These figures should not be compared to overall user Internet penetration without considering other factors mentioned above. In comparison to other countries, as published by the ITU[34], Kosovo's figures are similar to developed countries, as shown on the table below. Note that the data is not collected on the same year - Kosovo's data is collected 4 years later compared to other countries on this table.

Country	Male	Female	Year	Source
Kosovo	*81.4*	*79.8*	*2013*	*STIKK*
Turkey	50.1	29.9	2010	ITU
Serbia	47.3	36.3	2009	ITU
Croatia	55.4	46.1	2009	ITU
Bulgaria	47	43.1	2009	ITU
Macedonia	54	49.5	2009	ITU
Greece	49.2	40	2009	ITU
Germany	83.2	75.3	2009	ITU
Switzerland	88.6	79.4	2010	ITU
United Kingdom	84.5	81.2	2009	ITU

Table 4: Internet users based on gender

34 http://www.itu.int/ITU-D/ict/statistics/Gender

Internet users by age

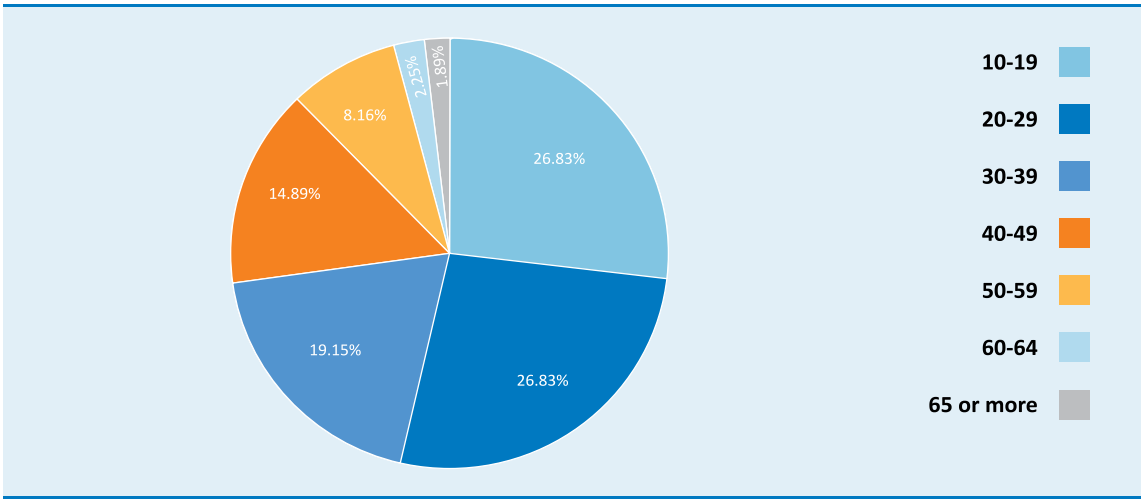

Figure 10: Internet users by age

The graph about Internet users by age shows clearly that Kosovans are young Internet users and the majority of them are below 30 years old.

Internet usage from home showed to be 94.21% (this does not represent the household Internet penetration), while interviewees also said that they use the Internet in other places such as work (26.6%), at friends' homes (12.17%), schools/universities (12.41%), and Internet cafes (8.16%). Note that Internet cafes are defined as purpose build shops where hourly usage of Personal Computers wired to the Internet is provided as a primary business activity. This is to clarify the difference with the hotels, bars and cafes where Internet wireless connectivity is provided free of charge throughout all cities of Kosovo.

Respondents' Internet usage location

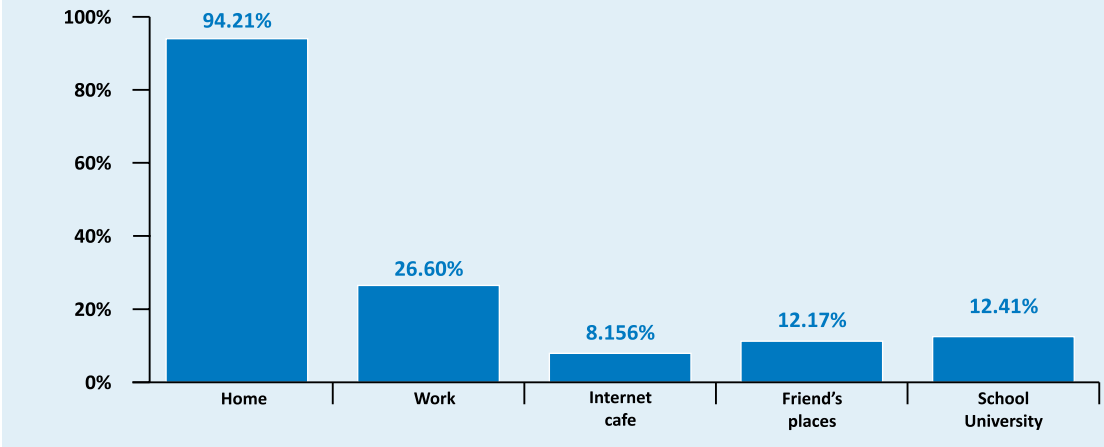

Figure 11: Internet usage location

There is a variation in regards to cost per bandwidth unit (1Mbps) that subscribers pay, the cost being higher in villages. Also, there is a different approach in regards to the technologies that are being used, as described in the previous research carried out by STIKK in 2012 where the majority of rural areas connect through wireless technologies, whereas urban areas make use of cable-based connectivity. The topic of cost is further analysed with regards to Internet service provision (see below).

Internet service prices in rural areas

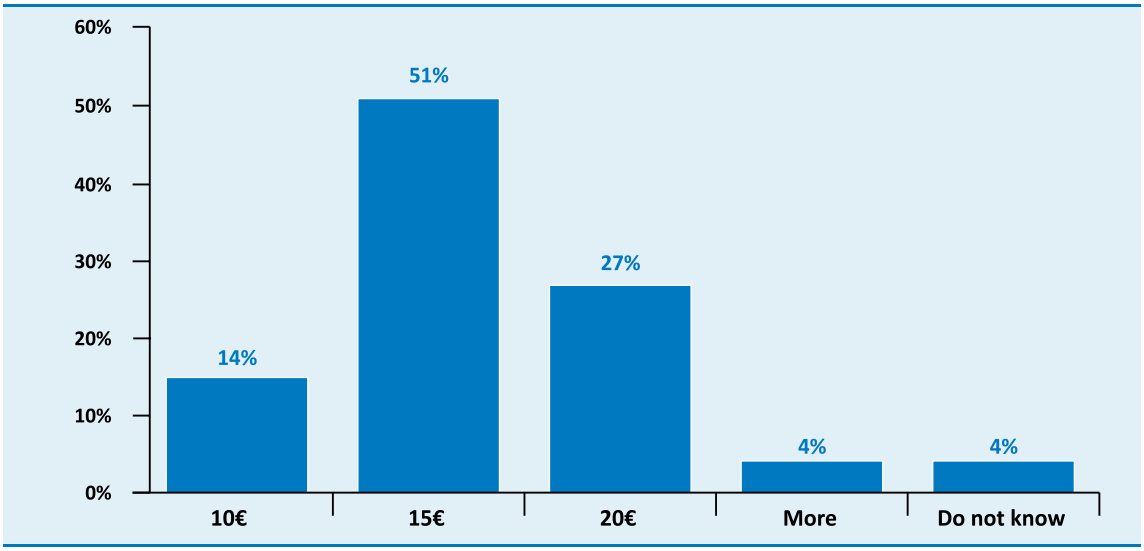

Figure 12: Internet service prices in rural areas

5.2. DEMOGRAPHIC INTERNET PENETRATION – BASED ON HOUSEHOLDS

In regards to the Internet penetration based on households, the graph below shows more details. Considering the lower confidence interval and summarizing "Yes" answers (see graph below) shows that household internet penetration is **at least 84.81%** or 251962 households (based on Census 2011 total households)**.** In comparison, European Union has published a report stating that 84% of households in developed countries have Internet connectivity[35]. It is worth mentioning that UNDP have published the Kosovo Mosaic Report 2012 (data collected February 2012) and the Internet penetration based on households, for example, in Prishtina is 82% followed by Mitrovica at 76%[36].

35 http://ec.europa.eu/public_opinion/archives/ebs/ebs_362_en.pdf
36 www.ks.undp.org/content/dam/kosovo/docs/Mozaik/Kosovo_Mosaic_2012_Eng_735317.pdf

Do you have Internet access at your house or flat?

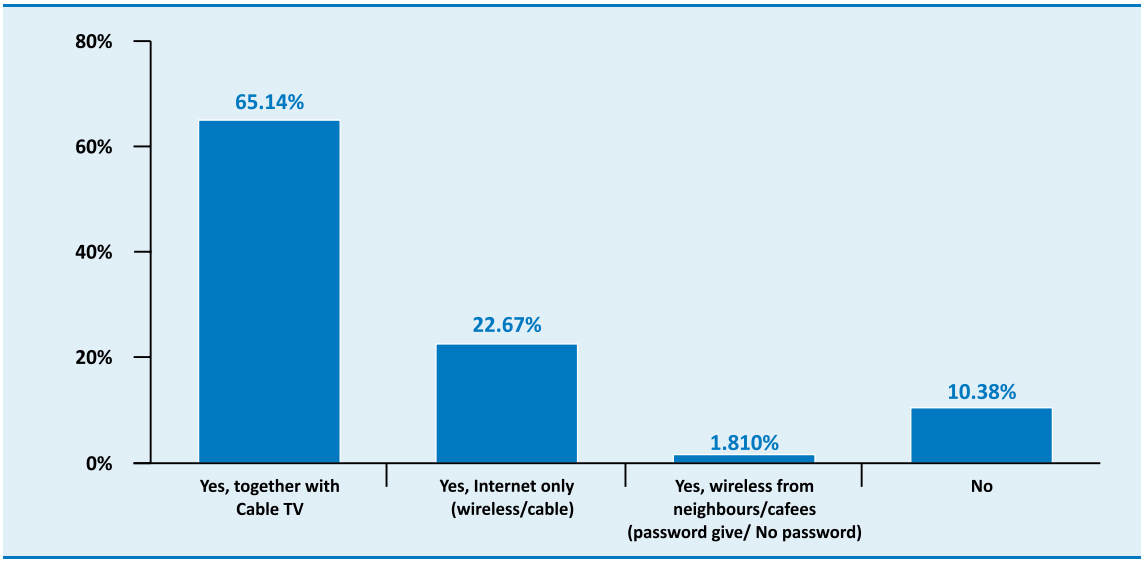

Figure 13: Internet penetration based on households

Household internet penetration in urban areas is at least 87% which is slightly higher than in rural areas, where is it at least 83%. This is to be expected because urban areas consist of flat buildings where the average number of family members is lower, whereas in rural areas population lives in houses (with a higher probability of having more Internet users). Hence the smaller proportion of households with Internet access in rural areas while the number of users is bigger. The second reason is that the majority (61%) of population lives in rural areas.

Internet penetration based on households in rural and urban areas

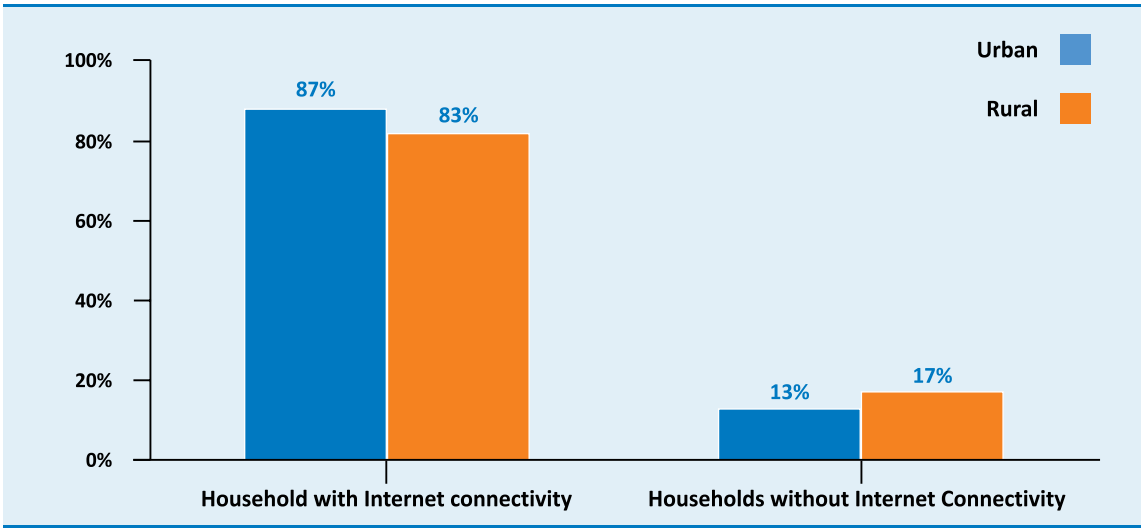

Figure 14: Internet penetration based on households in rural and urban areas

5.3. GEOGRAPHIC INTERNET PENETRATION

In order to further analyse the level of Internet penetration from geographical point of view, a variation of wardriving[37] and GPS-based location logging was performed on randomly selected regional roads. Based on CIA's website, Kosovo has in total 1964 km of road network which includes the length of the paved and unpaved portions[38], as of 2009. Note that only public information such as SSID, authentication protocol, channel and RSSI details were retained (see interactive map for details).

Nr	From	Through	To	Wireless Networks	Distance (km)
1	Prishtine	-	Gjilan	389	42
2	Prishtine	-	Podujeve	232	26
3	Prishtine	-	Mitrovice	468	33
4	Prishtine	-	Peje	917	78
5	Gjakove	Decan	Peje	175	35
6	Prishtine	Ferizaj	Hani i Elezit	582	60
7	Gllogoc	Skenderaj	Kline	371	55
8	Lipjan	Shtime, Suhareke	Prizren	560	53
9	Prizren	-	Gjurgjice	190	48
Total:				**3884**	**430**

NOTE: Wireless Networks within these cities were not recorded

Table 5: Geographical Internet penetration

As can be seen on the map below, the density of networks increases close to the bigger cities while there is also a constant presence of access points in-between cities, confirming the high Internet penetration rate in rural areas. The naming conventions of recorded wireless access points give hints in regards to service providers. Most of Internet service providers have their equipment pre-configured, hence the same name appears in many access points. Moreover, a portion of access points were obviously a property of local Internet Service Providers. This fact was very often visible on the wireless access point name which included ISP's name and even the telephone number, presumably for customer support. Based on the collected data, there are 9 wireless networks per kilometre across regional roads in Kosovo. Note that there are other factors that will affect this approximation, such as population density factor, hills, lakes (see lake of Badovc towards Gjilan, there are no access points), etc. A Google map layout can be accessed to interactively analyse data about these wireless networks[39] (see link below).

37 http://dspace.cusat.ac.in/jspui/handle/123456789/2362
38 https://www.cia.gov/library/publications/the-world-factbook/rankorder/2085rank.html
39 http://goo.gl/shHUF

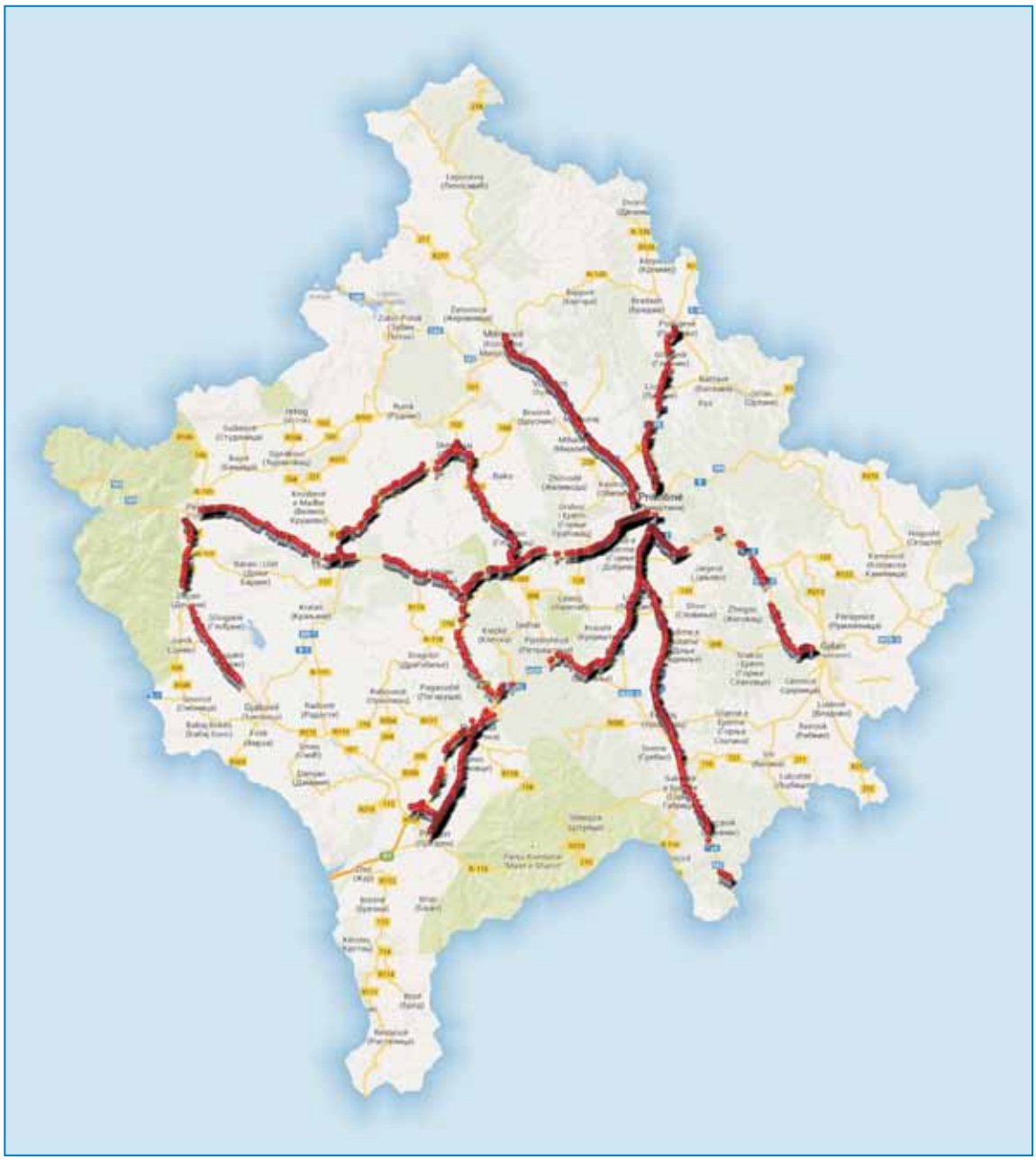

Figure 15: Geographical Internet penetration (http://goo.gl/shHUF)

6. INTERNET SERVICE PROVISION

Based on the quarterly report[40] published by the Telecommunications Regulatory Authority, there are 51 licensed companies (an increase of 14 ISPs that have been licensed, based on Q3 2011) that provide Internet services to end-users and 5 (one ISP less, from Q3 2011) companies have licenses for International Internet traffic exchange. The remaining 46 Internet Service Providers have access to the Internet through the main five licensed ISPs. In addition, through the wardriving process mentioned above, it has been noticed that there are regional and rural ISPs that function but are not necessarily listed on TRA's reports. It is a good practice to include more details in regards to listed and not listed ISPs. In addition, further details for RIPE-registered ISPs can be easily found in the RIPE NCC Database[41].

The graph below shows market shares of major ISPs (urban and rural) but it also includes other local ISPs that take 33% of overall shares. Note that the option 'other local ISPs' consist of all other ISPs which might be supplied with Internet connectivity through the major ISPs – therefore, there are no definite details on ISP market shares. In addition, other smaller ISPs with international connectivity were also included in this group.

Which company provides you with Internet services?

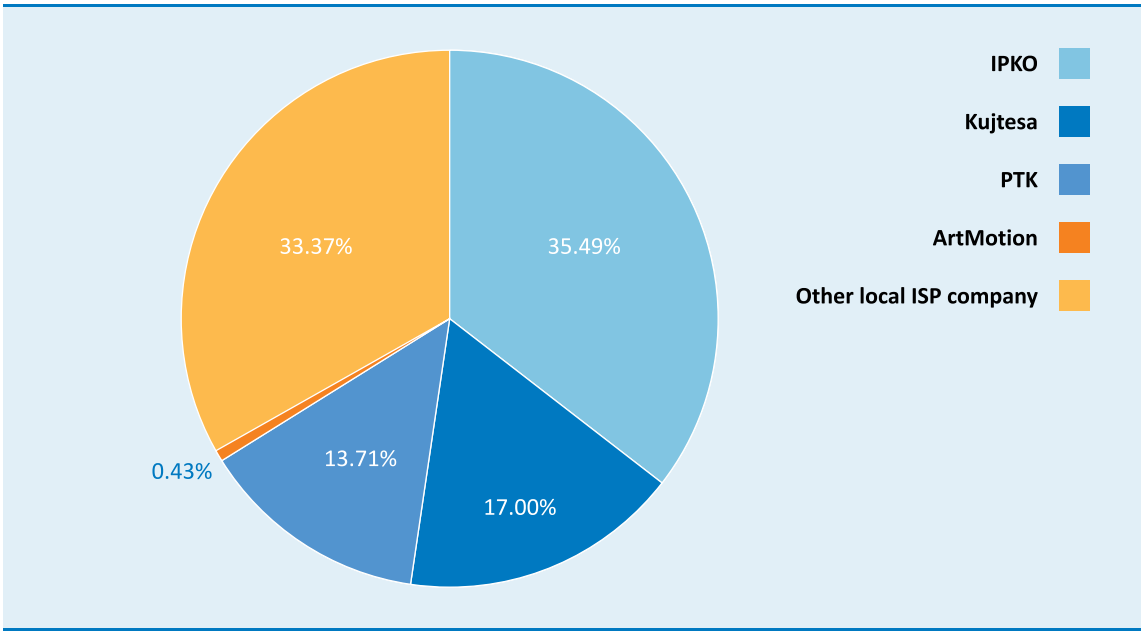

Figure 16: ISP Market shares

Based on the gathered data and as seen on the graph below, 44.5% of rural areas are covered by local ISPs (without direct access to the Internet but through one of the major ISPs). The other 55.5% are covered by major ISPs. For transparency reasons, TRA and major ISPs may wish to consider exchanging information with the TRA in regards to their minor / local (downlink) ISPs while these ISPs would also submit records related to their uplink providers. This approach would guarantee a clearer picture of market shares on this topic at the national level.

40 www.art-ks.org/repository/docs/Pasqyre%20e%20tregut%20te%20Komunikimeve%20Elektronike%20TM3%20dhe%20TM4_2012.pdf

41 https://apps.db.ripe.net/search/full-text.html

Internet Service Providers in rural areas

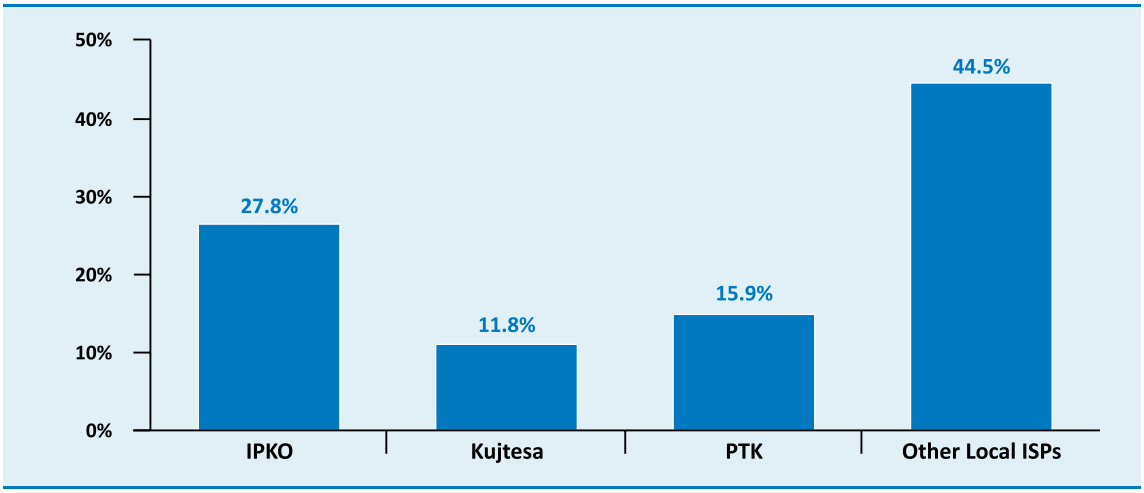

Figure 17: ISP market share in rural areas

In regards to the costs of Internet services, the bar chart below gives more information. It is worth noting that only 7% of population do not know the price of the Internet service package that they pay. However, when they are asked about the bandwidth of the service that they pay for, the percentage of respondents who did not know is 40.7%. These figures show lack of awareness among population in relation to what services and bandwidth they are paying for.

How much do you pay monthly for the Internet (and TV, if bundle)?

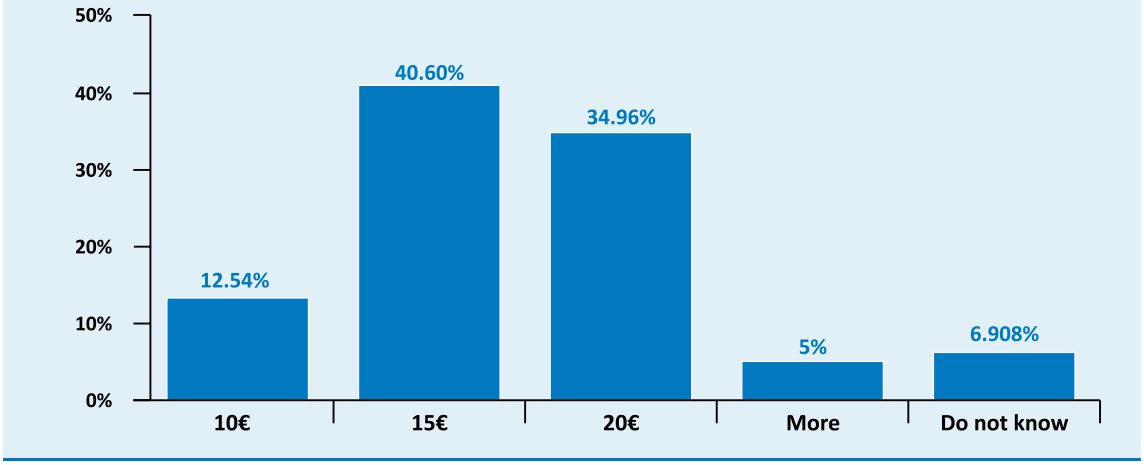

Figure 18: ISP prices in Kosovo

What Internet bandwidth do you have at home?

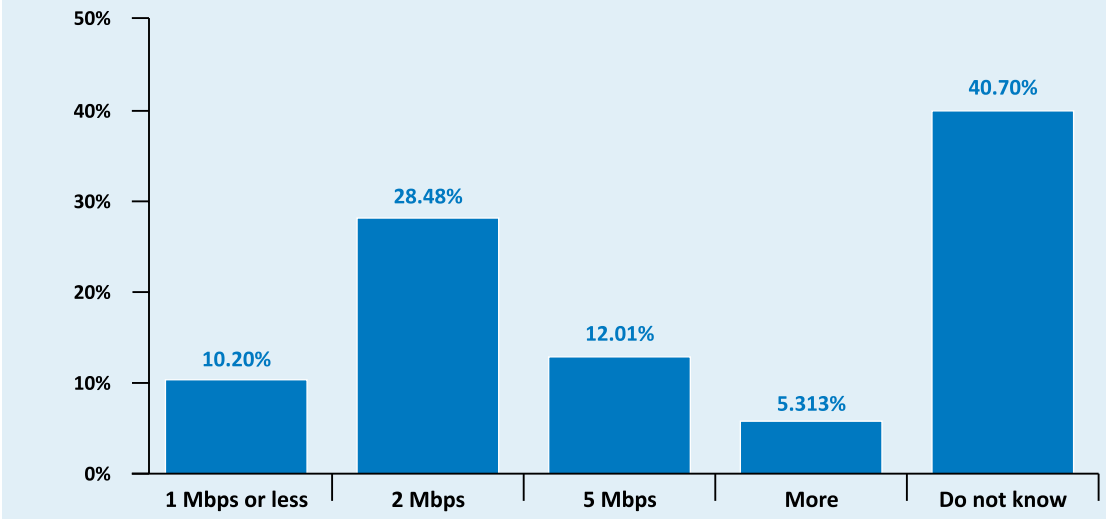

Figure 19: ISP bandwidth packages

The graph below shows the satisfaction of subscribers with the provided Internet bandwidth. It is important to consider the proportion of users (8 %) who are satisfied with Internet speeds only in the early morning and late in the evening. This issue is related to Contention Ratio[42] and the number of users that are connected to the same exchange/wireless point (PoP).

Are you satisfied with the Internet speeds at your home?

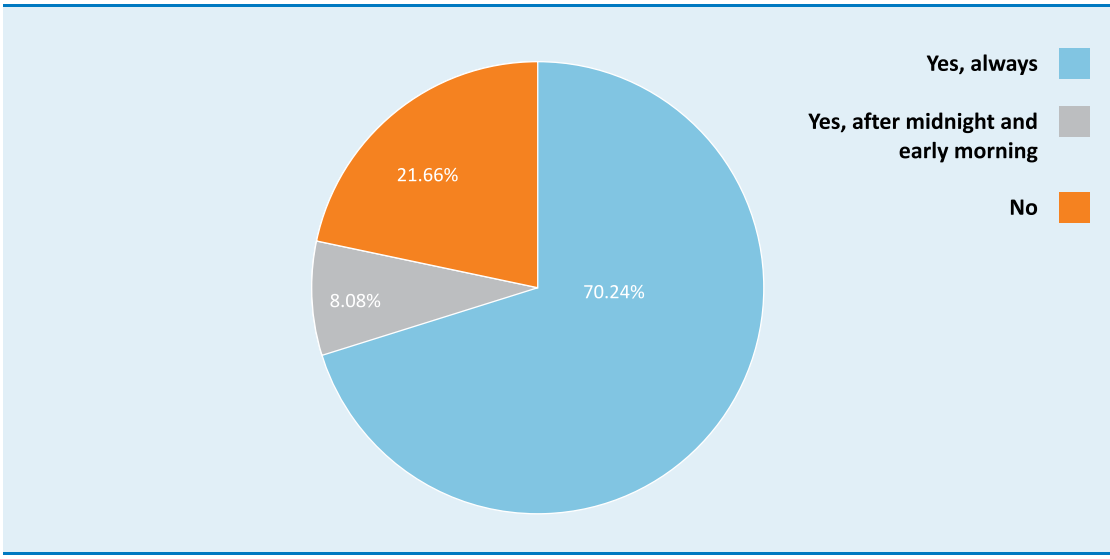

Figure 20: Internet connectivity satisfaction

42 http://www.broadbandwatchdog.co.uk/contention.php

Considering the fact that the Telecommunications Regulatory Authority of Kosovo is collecting information from Internet Service Providers every three months, adding contention ratio data would be beneficial[43], although the majority of users are happy with their Internet speeds. In order to illustrate the issue of content ratio, the following paragraph is cited from the Telecom Regulatory Authority of India:

"All the service providers shall provide information regarding contention ratios adopted by them to provide Internet/broadband service in their tariff plans submitted to TRAI, manual of practice, call centers and on their websites.

All the service providers (ISPs, UASLs, CMSPs, BSOs) shall quarterly publish contention ratio for different Internet/broadband services on their website to facilitate subscribers to take informed decision."[44]

The table below shows Internet service provider prices and it also shows Information provision details related to package bandwidth, maximum speed, etc. Note that most of ISPs advertise fixed bandwidth, not maximum speeds. Based on the advertised values, it is implied that the client will have a guaranteed advertised speed at any time. This is similar to the situation created in India (2009) where the Telecom watchdog had to promptly act, pointing out that "available broadband speed is lower than the subscribed speed"[45].

43 http://berec.europa.eu/doc/berec/bor_10_46.pdf
44 http://www.trai.gov.in/WriteReadData/UserFiles/Documents/AnuualReports/ar_08_09.pdf
45 http://www.trai.gov.in/WriteReaddata/ConsultationPaper/Document/cpaper15jan09.pdf

ISP	Package	Monthly Cost (VAT Inc.)	TV Channels	Download Bandwidth (Mbps)	Transfer Limit (GB)	Source
IPKO	TV + Internet	19.95 €	64	Up to 10	No Limit	www.ipko.com
	TV + Internet	32.95 €	98	Up to 10	No Limit	
	Internet	44.95 €	-	Up to 80	200	
	Internet	9.95 €	-	Up to 10	10	
	Internet	14.95 €	-	Up to 10	No Limit	
	Internet	19.95 €	-	Up to 15	No Limit	
	Internet	29.95 €	-	Up to 30	120	
Kujtesa	TV + Internet	18.00 €	n/a	5	No Limit	www.kujtesa.com
	TV + Internet	21.00 €	n/a	20	No Limit	
	TV + Internet	29.00 €	n/a	40	No Limit	
	TV + Internet	39.00 €	n/a	60	No Limit	
	Internet	8.00 €	-	2	No Limit	
	Internet	13.00 €	-	10	No Limit	
	Internet	19.00 €	-	20	No Limit	
	Internet	29.00 €	-	40	No Limit	
PTK (Tele-komi)	Internet	8.99 €	-	2	No Limit	www.telekomi.net
	Internet	13.99 €	-	4	No Limit	
	Internet	17.99 €	-	8	No Limit	
ArtMotion	TV + Internet	15.00 €	70 - 80	20	No Limit	www.artmotion.info
	Internet	7.99 €	-	10	No Limit	
	Internet	11.00 €	-	15	No Limit	
	Internet	15.00 €	-	25	No Limit	
	Internet	30.00 €	-	50	No Limit	
					Retrieval Date: 12 June 2013	

Table 6: National ISP prices

Finally, it is worth mentioning that Kosovo is highly competitive in the region regarding the international retail leased lines. Namely, Cullen International, in their 2013's report stated that "For 2 Mbps half circuits to a near country…Kosovo has the lowest prices, which were further reduced in from March 2012 by 32%, a level of €7,200 per year."[46]

46 http://www.cullen-international.com/ressource/5127/0/report-3-april-2013-final.pdf

7. INTERNET USERS

7.1. SMART PHONE INTERNET USERS

The new topic, not present in the previous STIKK-sponsored research is the users' Internet connectivity through smart phones. As described above, smart phone is considered every mobile phone that has Internet connectivity capabilities. The graph shows the percentage of Internet users who also access the Internet through their mobile smart phones.

Do you access the Internet from your mobile phone?

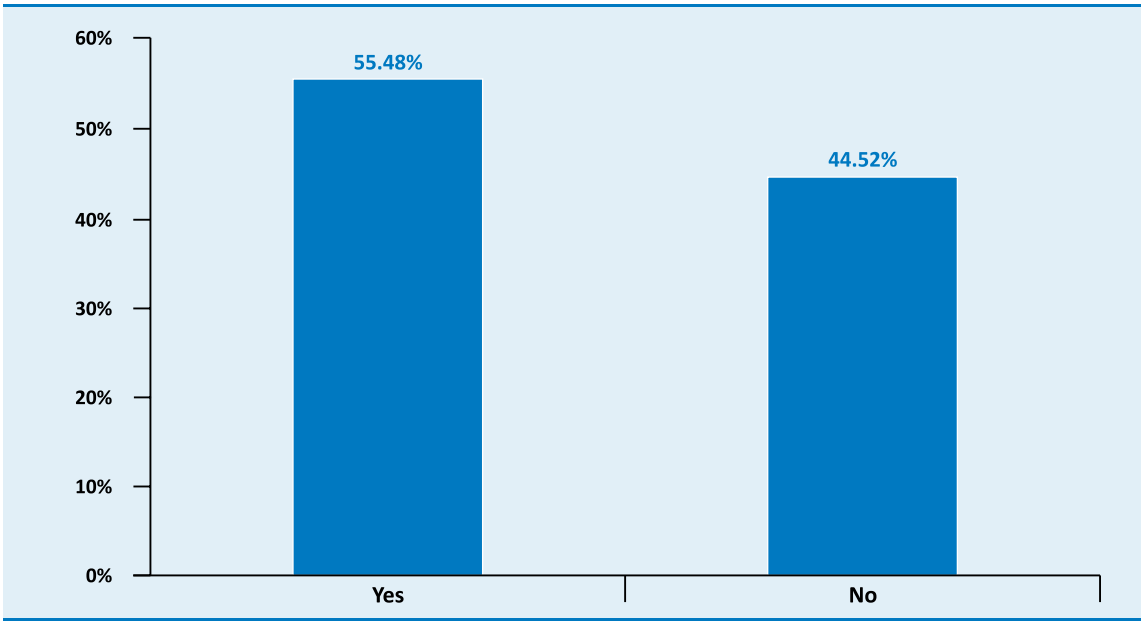

Figure 21: Smart phone Internet users

The relationship between employment and smart phone ownership is interesting. Namely, in Kosovo, the unemployed have more smart phones when compared to the employed population. Except the fact that unemployment is 35.1%[47], the other factor that seems to have influenced this interesting point is the family members living abroad who continue sending smart phones to their relatives in Kosovo. The other possibility is that the employed Kosovars buy smart phones for their unemployed family members, relatives or friends. To further consider this, Pearson correlations and t-tests were calculated, as shown below:

		Mobile Internet User?	Employed?
Mobile Internet User?	Pearson Correlation	1	**-.030**
	Sig. (2-tailed)		***.404***
	N	775	763
Employed?	Pearson Correlation	**-.030**	1
	Sig. (2-tailed)	***.404***	
	N	763	978

Table 7: Correlation between Mobile Internet users and Employment

47 http://esk.rks-gov.net/eng/

As it can be noticed in the table above, significance (2-tailed p value) is less than 0.5 therefore there is no statistically significant correlation between the two variables (mobile Internet usage and employment). In other words, increases or decreases in one variable (ex. employment) do not significantly relate to increases or decreases in the second variable. Further and more importantly, Pearson's value is close to 0, meaning that there is a weak relationship between the two variables – hence, changes in one variable are not correlated with changes in the second variable. In a nutshell, this means that if more people get employed this does not relate to more, or less, smart phone ownership in Kosovo. Therefore, no matter the employment status, Kosovars are connected to the Internet just as any other regional and European country. The actual figures are shown on the graph below:

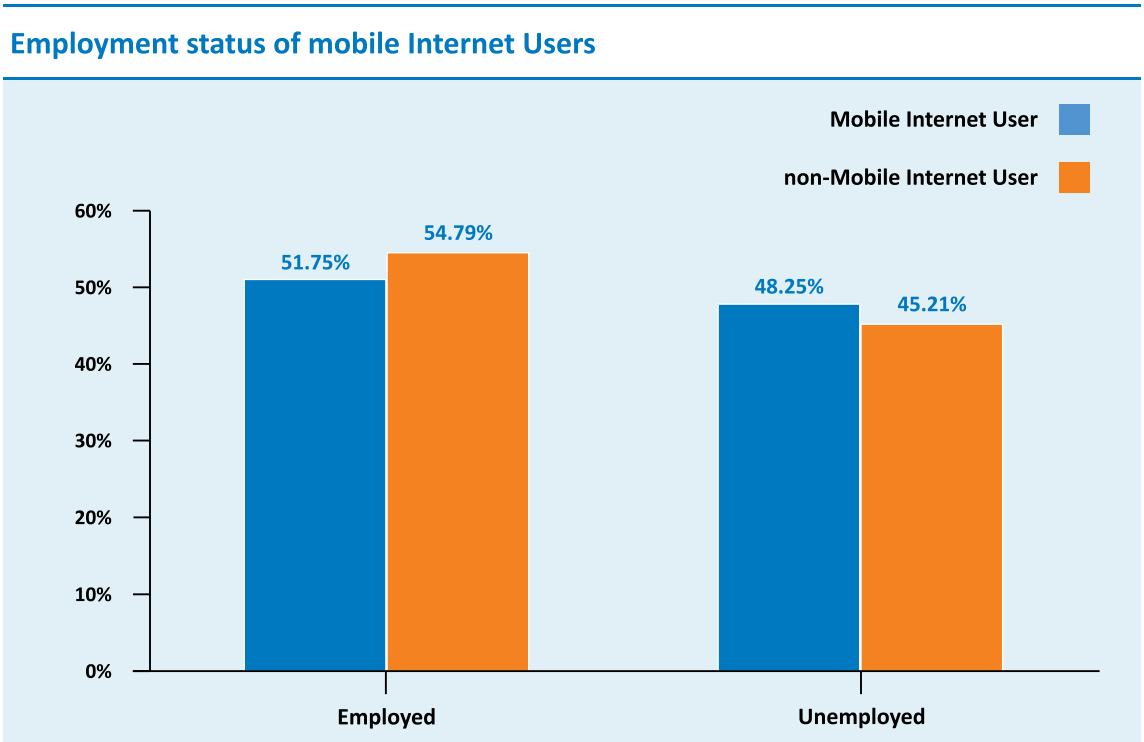

Figure 22: Relationship - Employment and smart phone ownership

The graph below shows Internet usage on mobile phones based on age groups and gender. It is eye-catching the fact that the majority of mobile Internet users belong to the age groups of 10 – 29 years old and the number of males is slightly larger. To illustrate, the graph below shows that 72% of 20-29 years old respondents use the Internet on their smart phones whereas 28% of them do not use Internet connectivity capabilities of smart phones.

Internet usage on mobile devices (by age)

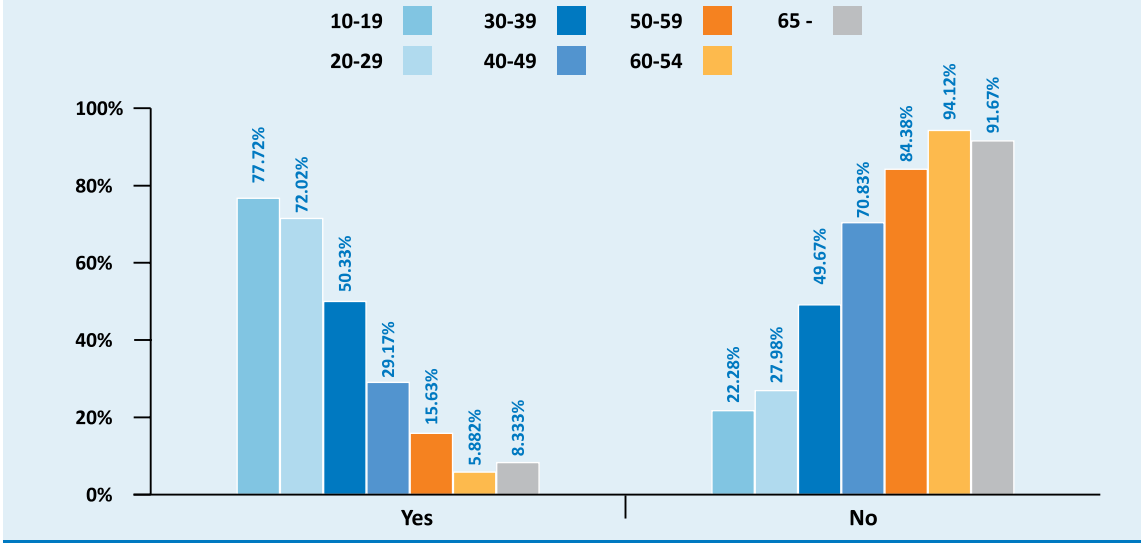

Figure 23: Internet usage on mobile devices (by age)

Internet usage on mobile devices based on gender

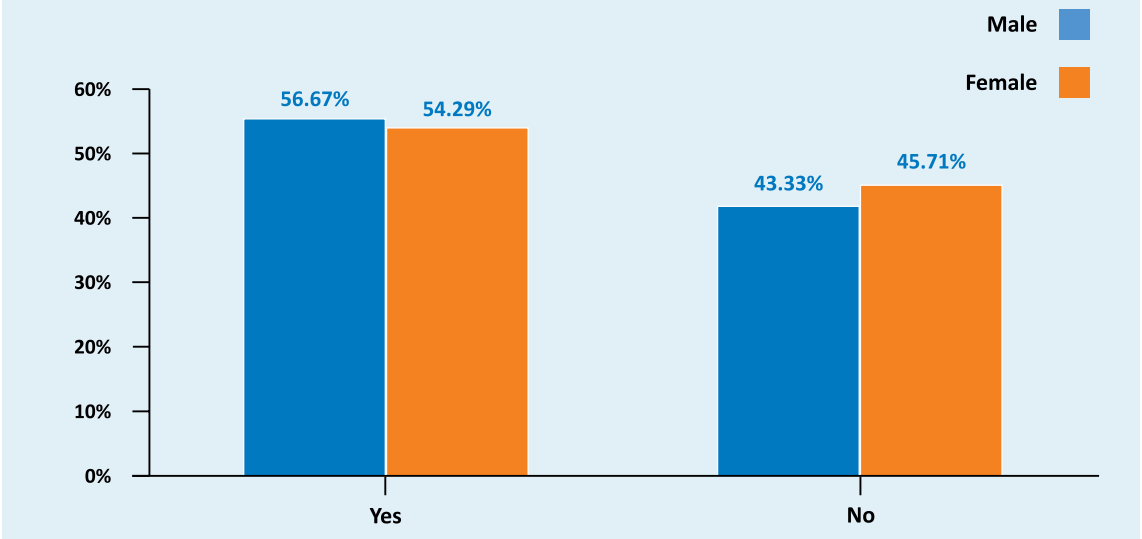

Figure 24: Internet usage based on mobile devices (by gender)

The graph below reveals an interesting point, although biggest mobile network operators offer the GPRS service, only 16% actually make use of this technology. One of the main reasons for this is related to wide coverage of Wifi networks in Kosovo. Note that only a tiny percentage of smart phone owners are not aware of these possibilities.

How do you connect on the Internet through your mobile phone?

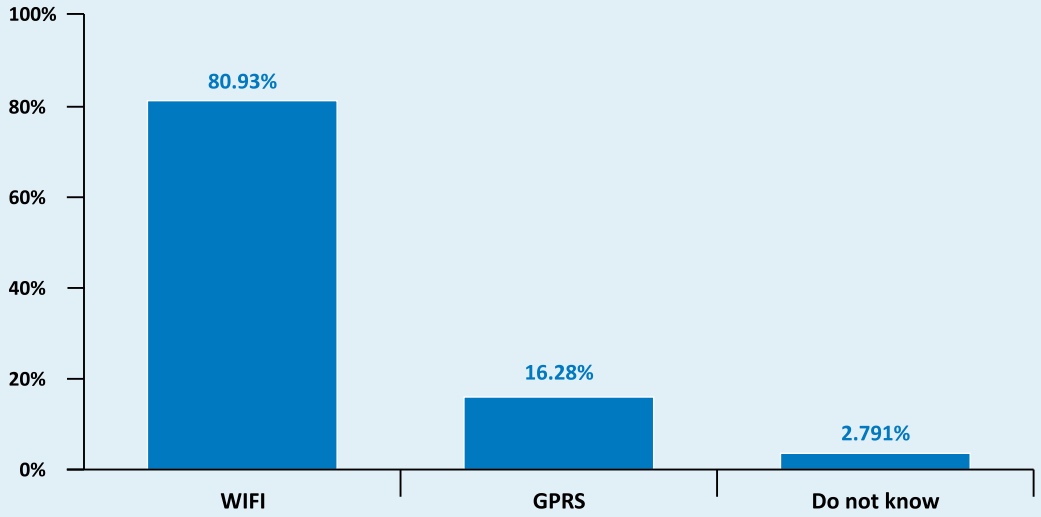

Figure 25: Smart phone Internet connectivity

On the graph below, it can be noticed that the majority of smart phone users in Kosovo seem be spending one hour per day online on their mobile devices, compared to United Kingdom where, in average, users spend 2 hours a day[48]. On the other side, 36.5% of Kosovars spend more than 3 hours online on their mobile devices.

How many hours a day you use the Internet on your phone?

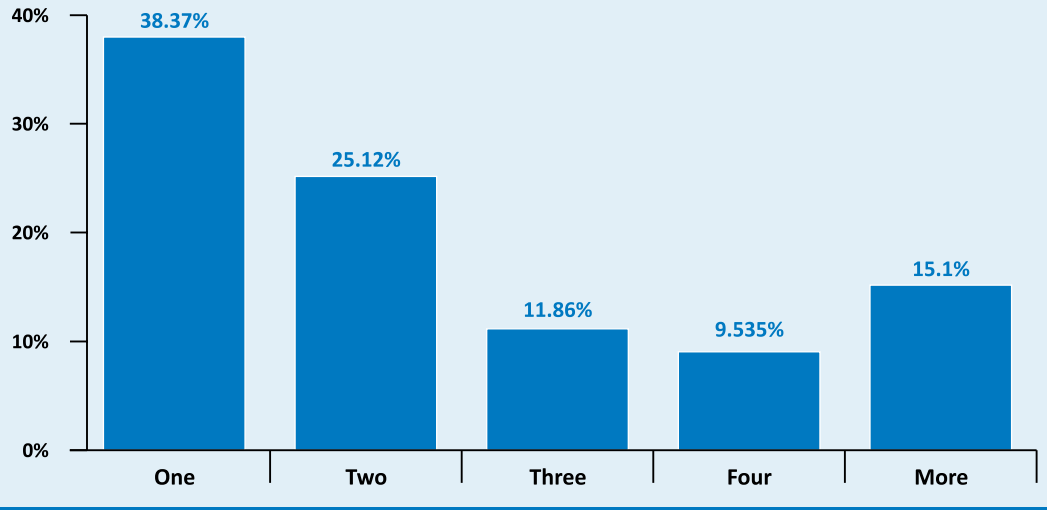

Figure 26: Smart phone users – time spent daily

48 http://www.dailymail.co.uk/sciencetech/article-2333261/We-spend-MORE-time-phones-partner.h

In regards to respondents' family members, it is obvious that the majority of smart phone users have another two family members who own smart phones, too.

How many other family members use the Internet on their phones?

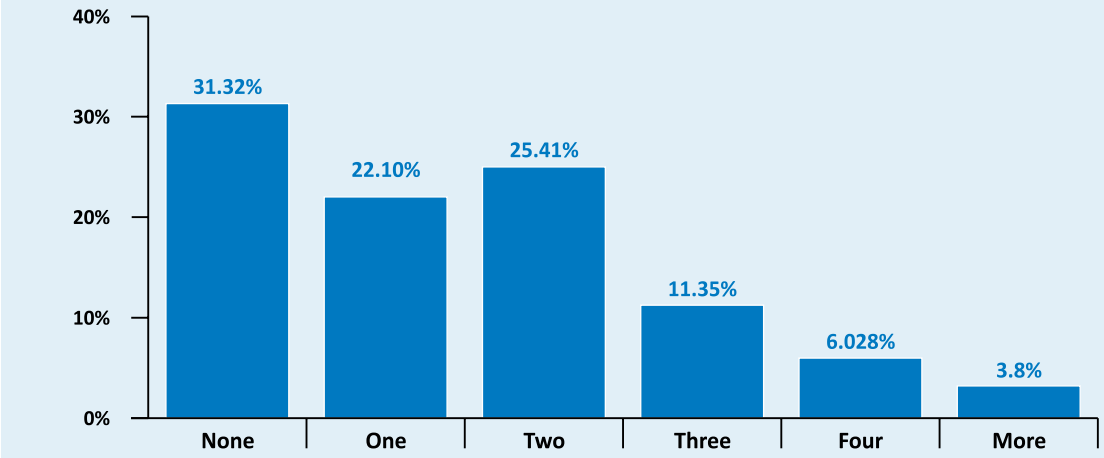

Figure 27: Smart phone users and family members

The graph below is not related to smart phones because it simply asks for mobile phone users and their corresponding mobile network operator services. It is possible that the group "Other operators" represents respondents who are either on roaming services or are clients of operators based in neighboring countries.

If you own a mobile phone number, who is your mobile network operator?

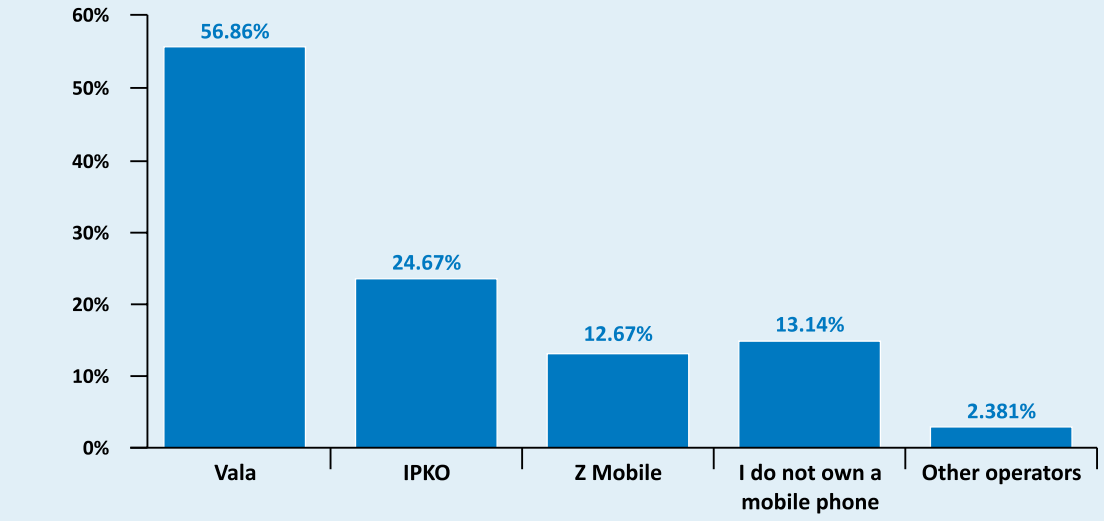

Figure 28: Mobile network operators – Market share

7.2. COMPUTER OWNERSHIP

Data shows that currently 52% of respondents' households are equipped with a desktop or laptop. It is important to note the fact that 37% of households own the second computer and almost 9% own the third computer. Note that the computer ownership in Kosovo is lower compared to European countries where the percentage is 68%. However, Kosovo has comparable figures with other regional countries such as Romania (53%), Hungary (54%), and Greece (55%)[49]. It is important to mention that the UNDP Kosovo Mosaic report states that 87.5%[50] of households in Prishtina own a computer.

How many computers and/or laptops do you have at home?

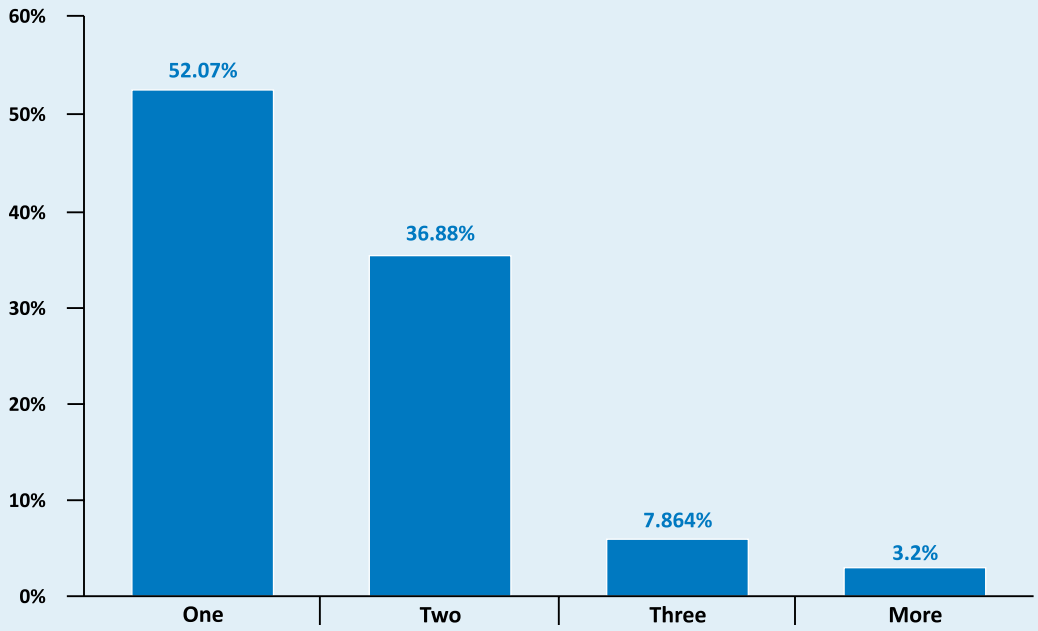

Figure 29: Computer ownership - per household

If this information is compared to the next graph, it becomes apparent that the highest proportion of families is in a situation where 3 users use the same computer. Hence, it is evident that more computers per household are needed in order to accommodate the standard of one computer per user at home. One of the questions that could be raised is why Kosovans find it easier to source smart phones but not PCs. The answer could be related to the easiness of smart phone transport compared to PCs (monitors and towers).

49 http://ec.europa.eu/public_opinion/archives/ebs/ebs_362_en.pdf
50 www.ks.undp.org/content/dam/kosovo/docs/Mozaik/Kosovo_Mosaic_2012_Eng_735317.pdf

Including you, how many other family members use the same computer?

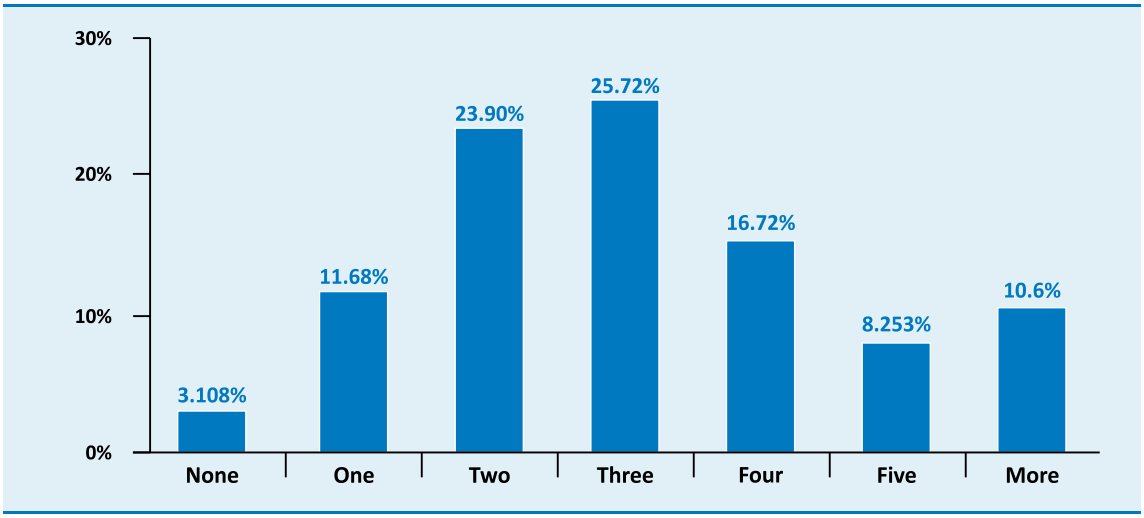

Figure 30: Computer users per desktop/laptop equipment at home

7.3.USER HABITS

Kosovans are serious Internet users, as shown on the graph below. The percentages of users who use the Internet once a month or less were not considered as Internet users. In comparison, EuroStat ([isoc_ci_ifp_fu]), states that 84% of European citizens use the Internet on daily basis. It is important to note that Kosovo has much younger population compared to EU countries and Internet has always been more appealing to younger generations.

Frequency of Internet usage

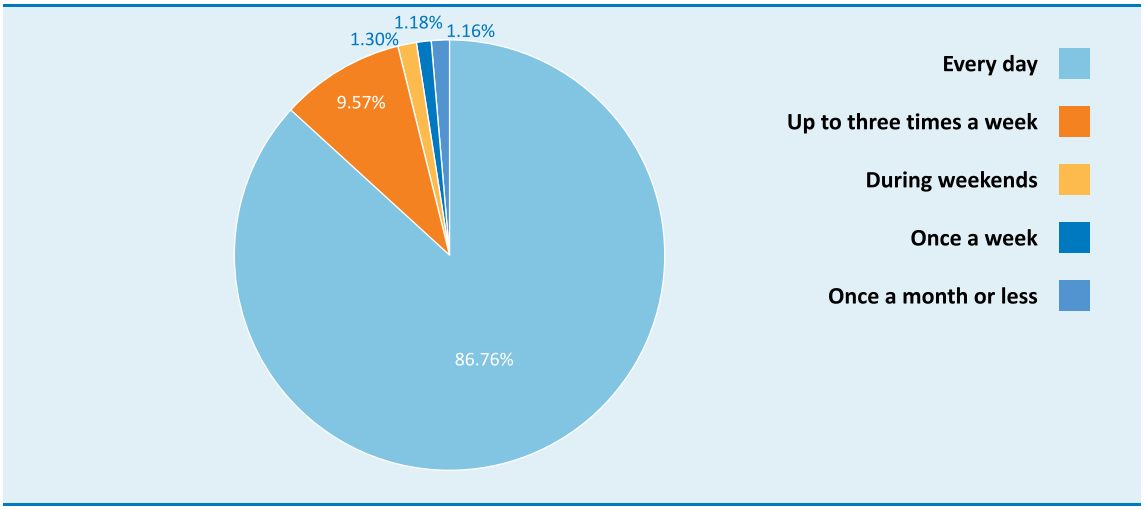

Figure 31: Frequency of Internet use

Frequency of Internet use (by gender)

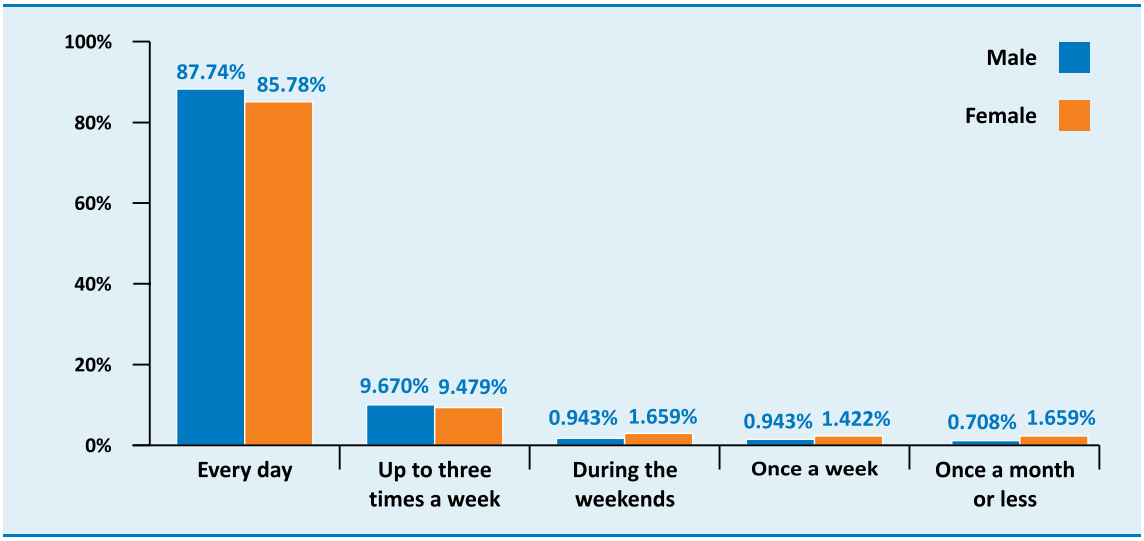

Figure 32: Frequency of Internet usage by gender

Frequency of Internet use (by age)

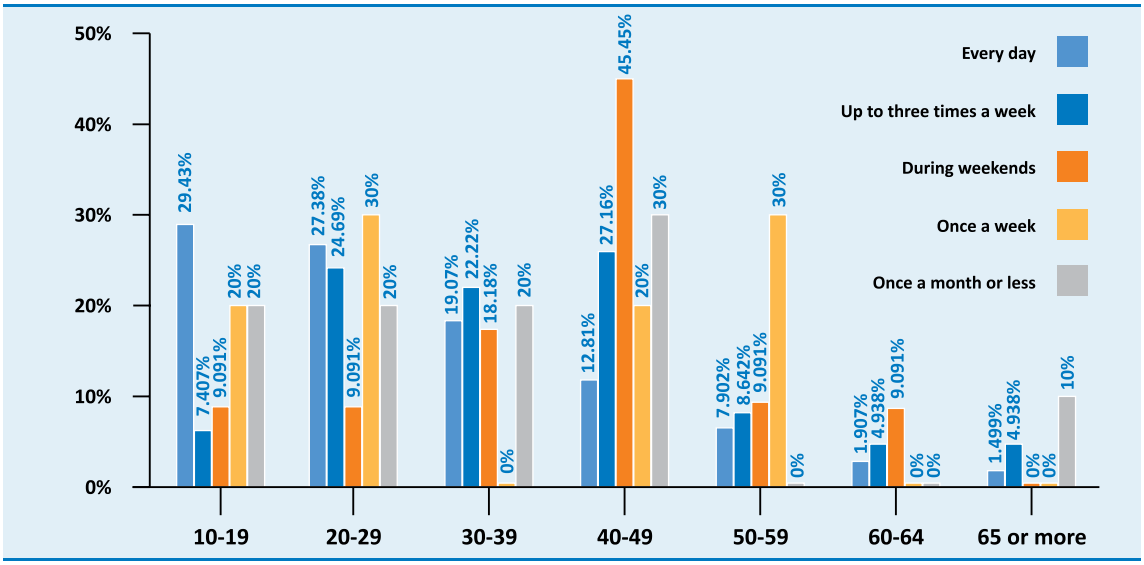

Figure 33: Frequency of Internet use (by age)

The graph below shows that most users use the Internet through out the day but less in the mornings and late in the evenings.

During what time of the day do you use the Internet?

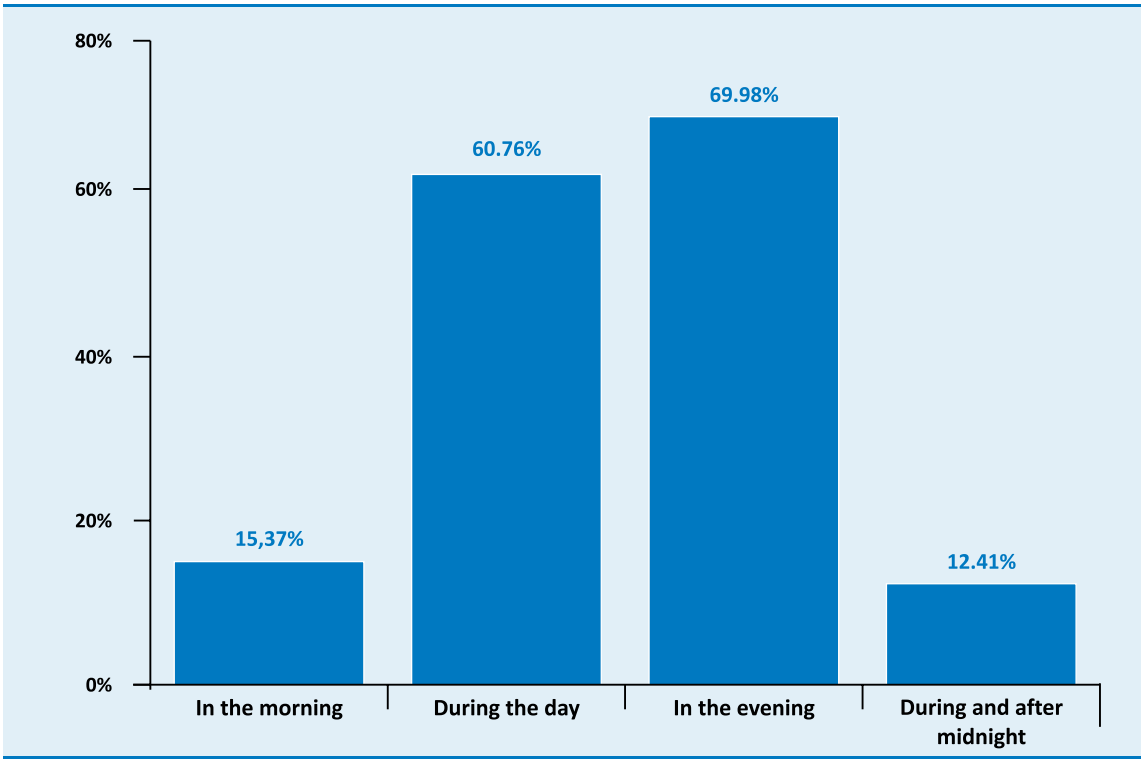

Figure 34: Daytime Internet usage

The following graph gives a better picture. It is grouped by age and it reveals interesting information in regards to younger generations (being the biggest age group) who do not necessarily use the Internet in the morning but are rather active during the day and late in the evenings. In comparison, respondents who are 50 or more years old are active in the morning and during the day, but not during late nights. Finally, it is important to notice that Internet is quiet in Kosovo during the afternoons and after-work rush hours. To illustrate the reading of the graph below, 7.9% of 10-19 year old respondents use the Internet in the morning, during the day 42.6% of this age group uses the Internet, during the afternoon 20.4% of teenagers use the Internet and finally during the evening and after midnight 29.2% of 10-19 age group users use the Internet.

Daily Internet usage by age

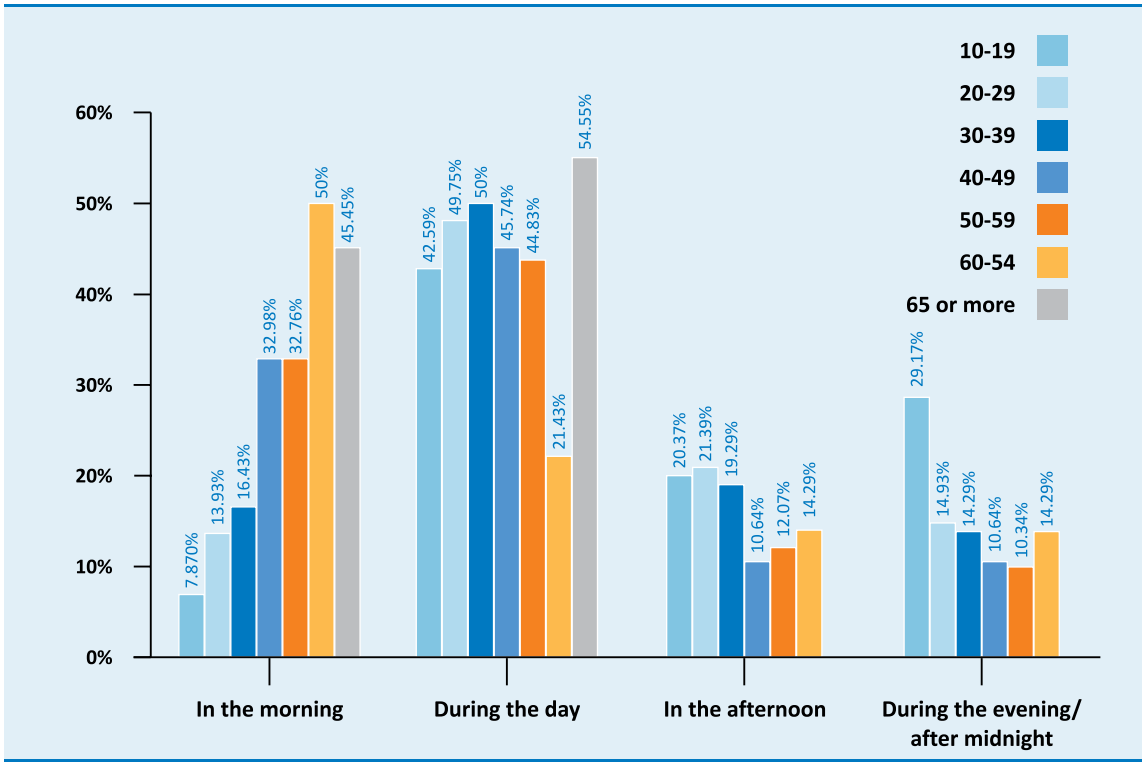

Figure 35: Daytime Internet usage by age

Compared to smart phone Internet users, where most of users spend 1-2 hours a day online, desktop users reach up to 3 hours a day being online. Note that there is no information if smart phone mobile users, in addition to their mobile online presence, spend further more time online on their desktops or laptops.

How many hours a day you spend on browsing the Internet?

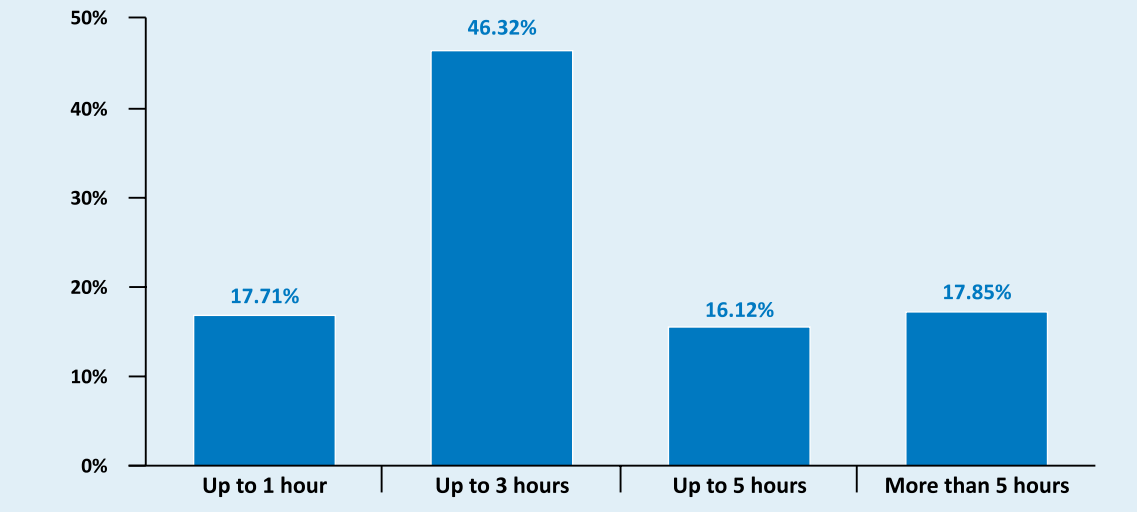

Figure 36: Internet usage - hours per day

It seems that Kosovan Internet users' community is genuinely communicative, as 80% of them use the Internet mostly for communication purposes, while the second biggest group is fun-lovers.

Fow what purpose do you use the Internet?

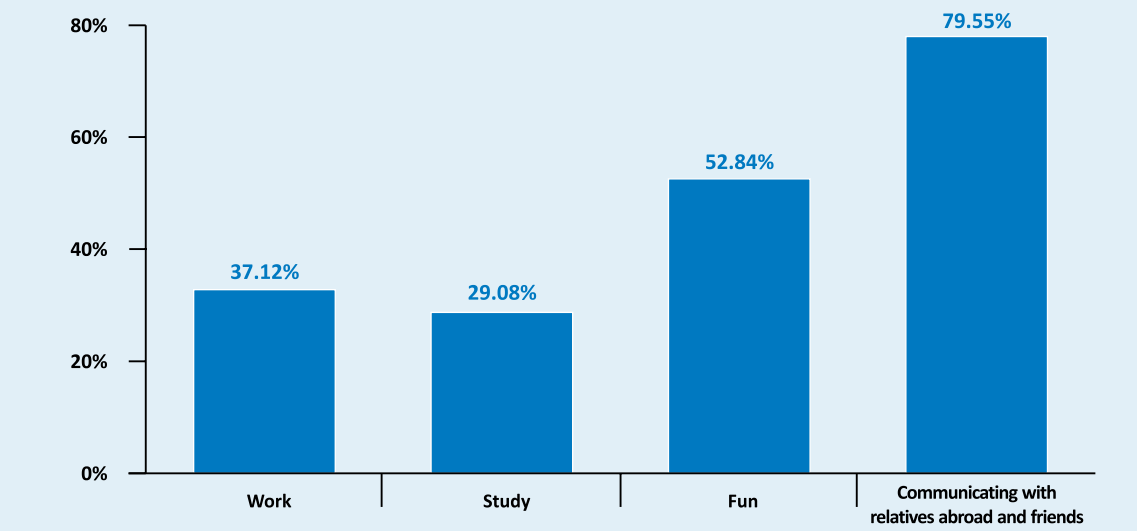

Figure 37: Purpose of Internet use

Based on Census data, in average, there are 5.85 family members living in the same household. If this is compared to the graph below, it turns out that, in average, at least half of family members are Internet users.

How many other family members use the Internet?

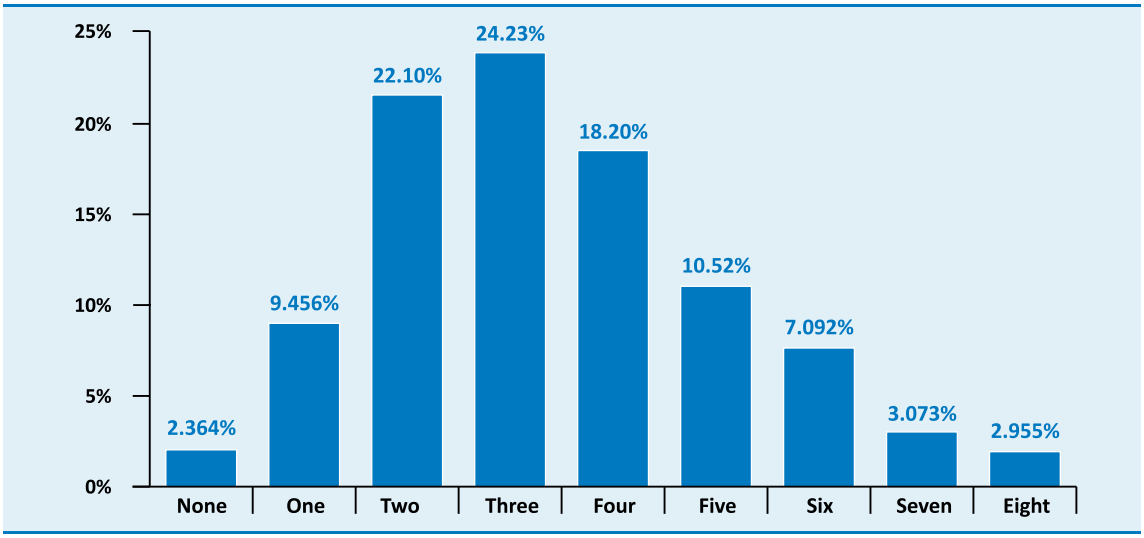

Figure 38: Family members' Internet usage

7.4. LANGUAGE

The graph below gives information in regards to languages that users use while browsing the Internet. Note that most of young Internet users use the English language as primary language, while Albanian language is used more by age groups from 40 – 59.

Languages used by Internet users

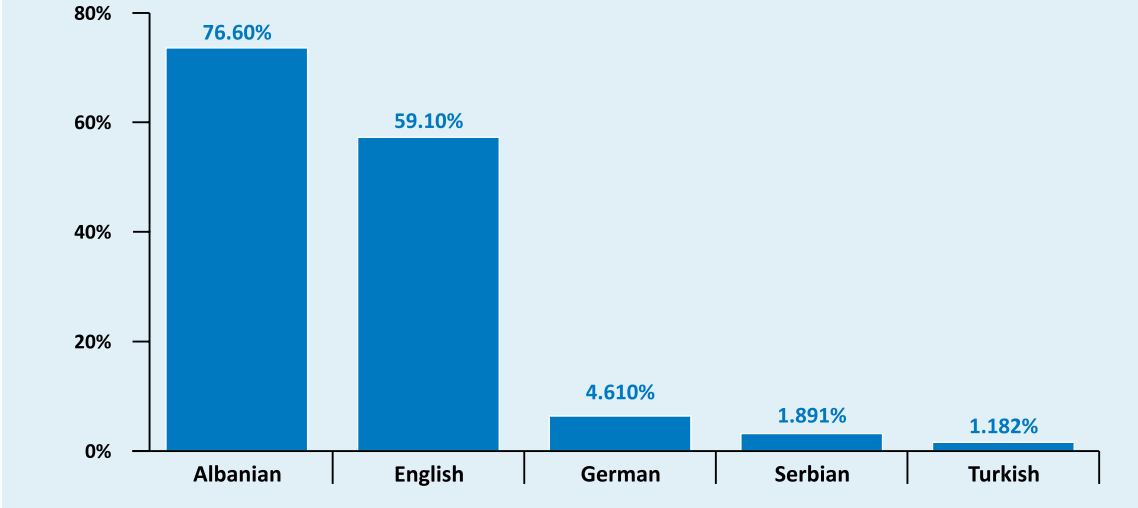

Figure 39: Languages used by Internet users

Languages used for Internet browsing based on age groups

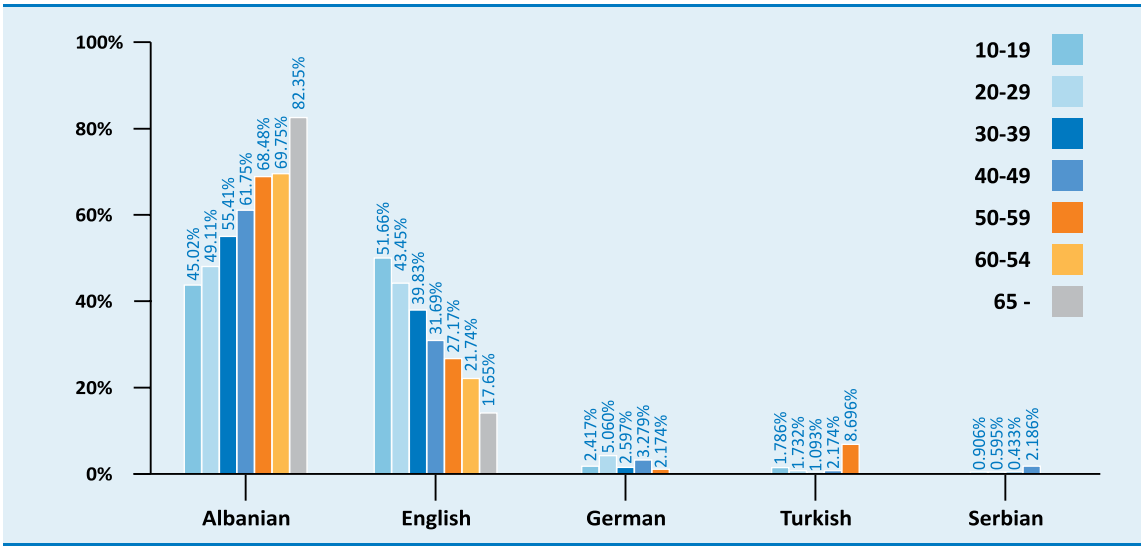

Figure 40: Languages used by Internet users based on age

Concerning languages for Internet use based on gender, the female group is the true winner. They use Albanian and English more than male counterparts. In regards to the German language, it is important to note that males of 20-29 are the major user group. This perhaps relates to various German speaking call centre businesses operating in Kosovo and possibly other communication needs with the Albanian diaspora in Germany and Switzerland.

Languages used for Internet browsing based on gender

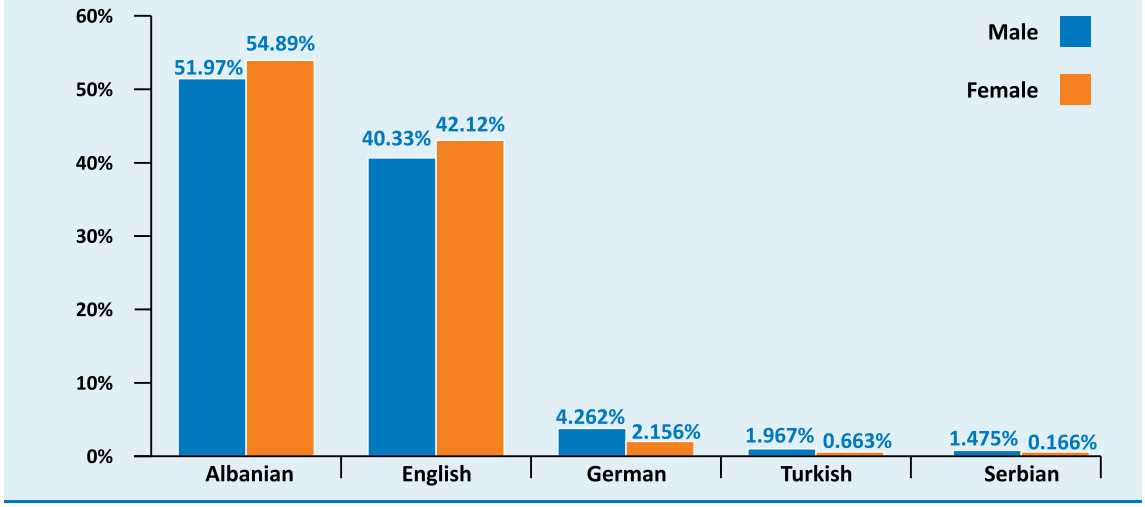

Figure 41: Languages used for browsing (by gender)

8. INTERNET NON-USERS

Further above, it was concluded that Kosovo has high Internet user and household penetration rates (comparable to developed countries). This will be one of the main factors to influence future slow down in Internet penetration aspects. Results from the graph below where 65% of non-users do not plan and do not believe that they will use the Internet any time soon shows that there are only 35% of non-users who are potential users in the future. This fact further supports the conclusion that Kosovo will experience a slowdown in Internet penetration growth, similar to developed countries.

Do you think that you should start using the Internet as soon as possible?

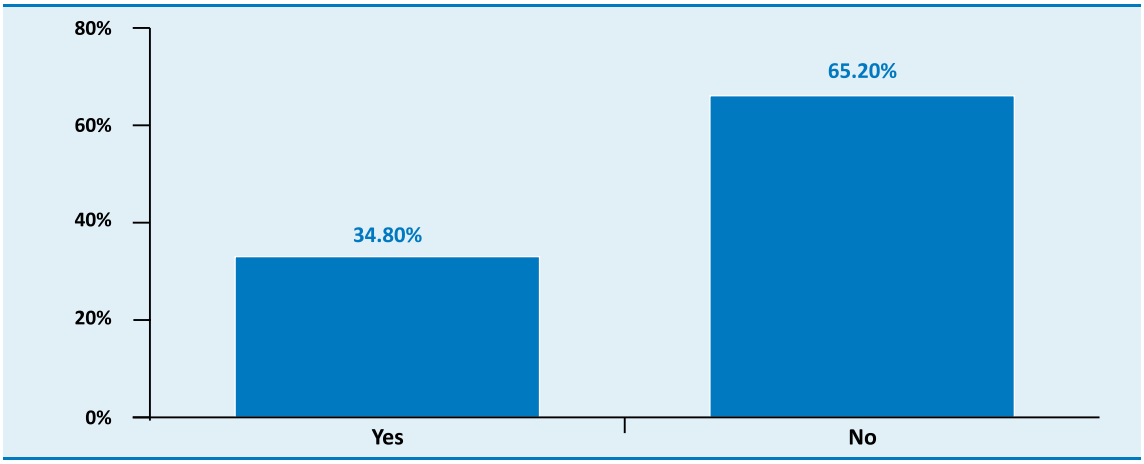

Figure 42: Internet future usage by non-users

European Commission reports from 2012 state that the most frequent reason for not using the Internet is lack of Interest[51] and the situation is no different in Kosovo. Similarly, in Europe, the second reason is the lack of skills and the graph below shows the same result for Kosovo. Note that the figures below do not add to exactly 100% because of multiple answer options available on the e-questionnaire.

Why do you not use the Internet?

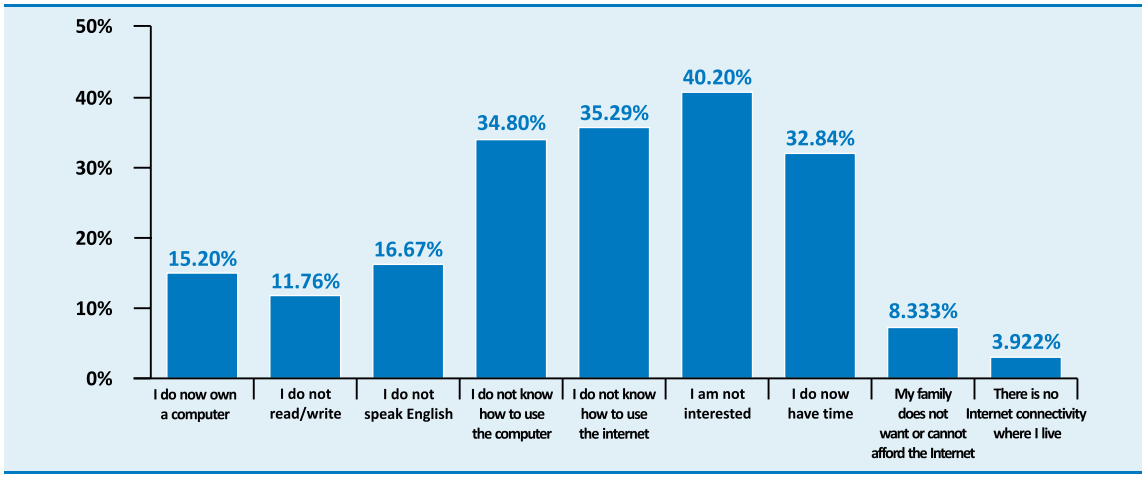

Figure 43: Reasons for not using the Internet

51 https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/scoreboard_digital_skills.pdf

9. INTERNET USAGE

9.1.1. ENTERTAINMENT

The Internet has been traditionally used mostly for entertainment. The situation in Kosovo is no different especially nowadays when it is being used also for socialising. There are many other services that the Internet provides but only the following were considered.

It is apparent that emailing, Facebook, Skype and Youtube are the main services that are used in Kosovo. The graph below shows multiple Internet services that are independent, hence these variables will not add up to 100%, as one might expect. To illustrate, 73.3% of Internet users use the facebook service. This shows that 73.3% of 76.6% (Internet users) are facebook users – meaning that 43.6% (approximately 790000) of Kosovo's total population uses the facebook service.

What services do you use on the Internet?

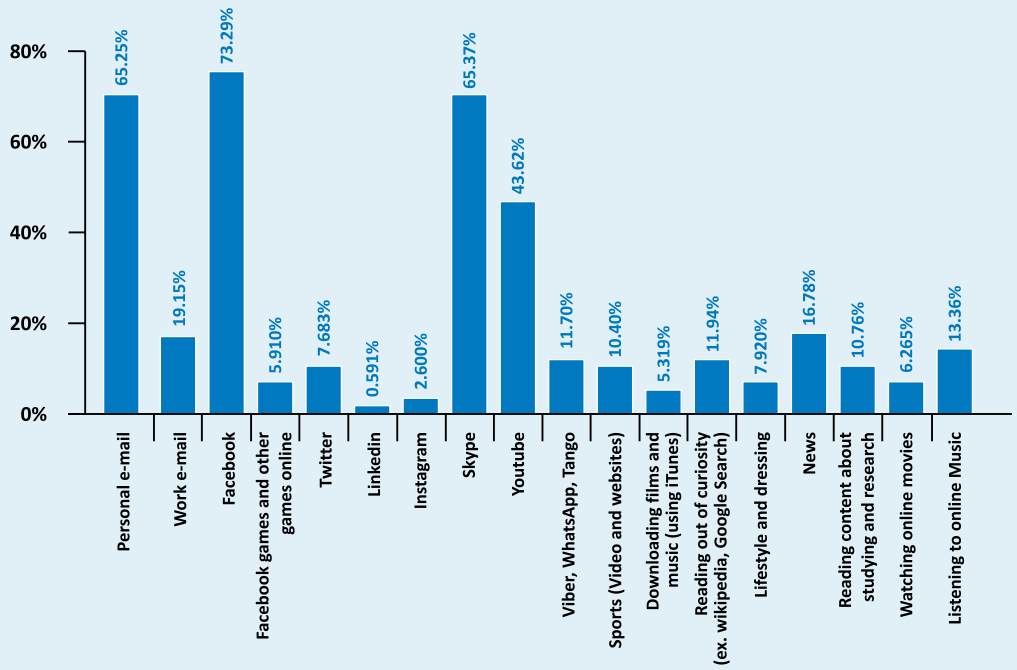

Figure 44: Internet services used in Kosovo

When it comes to employment status and Internet services used, it is interesting to note that differences are unexpected. For example, as shown on the graph below, Twitter is mostly used by unemployed (hinting at younger generations - see next graph), whereas reading about research and studying is the activity of employed (hinting that many employed respondents might be also studying/researching in some form). Expectedly, work e-mails and LinkedIn are activities of employed respondents while Facebook games and Instagram are services mostly used by the unemployed. Finally, news reading is more preferred by the employed citizens. To illustrate the graph below, 93% of employed Internet users use work-related emails, whereas 7% of unemployed use their emails for work-related purposes. Similarly, 54% of employed Internet users have personal emails whereas 46% of unemployed users own personal emails.

Relationship between employment and Internet usage

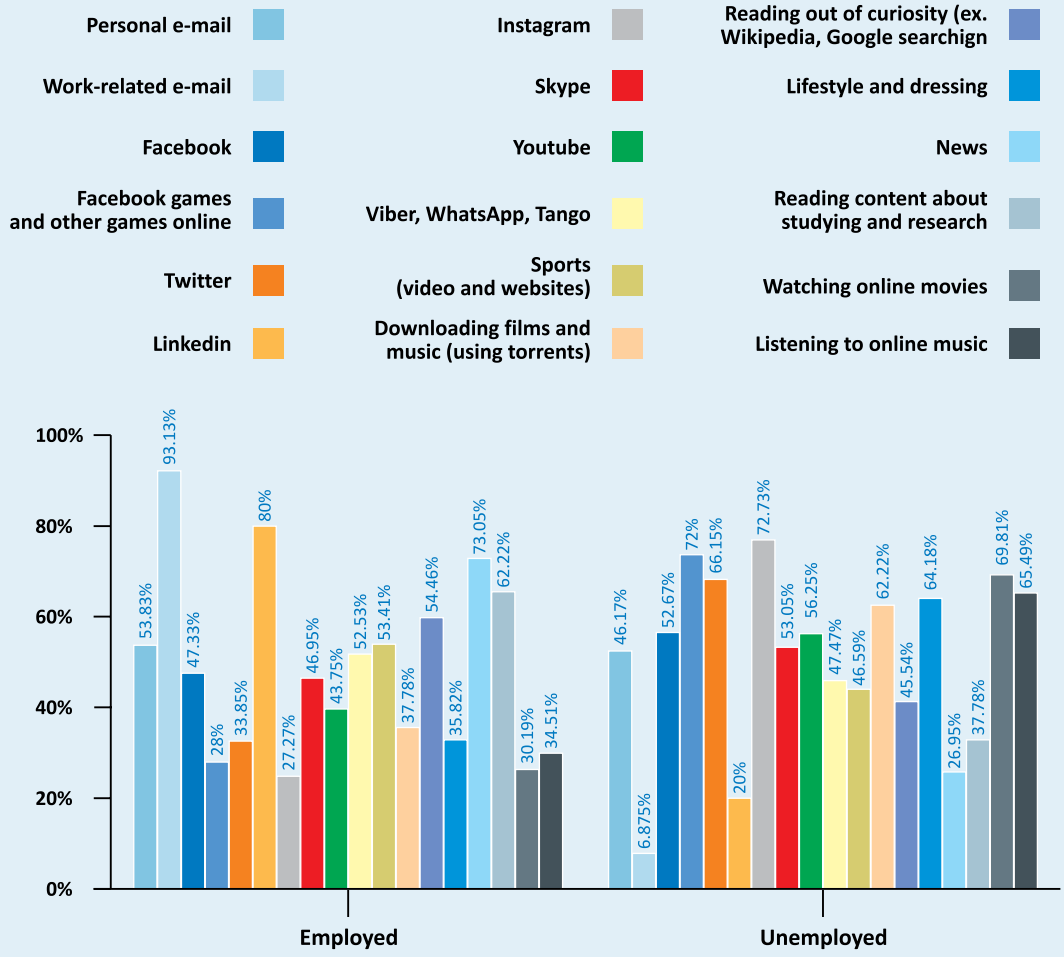

Figure 45: Relationship between employment and Internet services usage

9.1.1.1. SPORTS

As seen in the graph below, when there is the question of Sports information, male teenagers and youngsters (up to 29) are the biggest group. There is a considerable difference when it comes to gender, as shown in the graph further down.

Sports (video and news) usage based on age

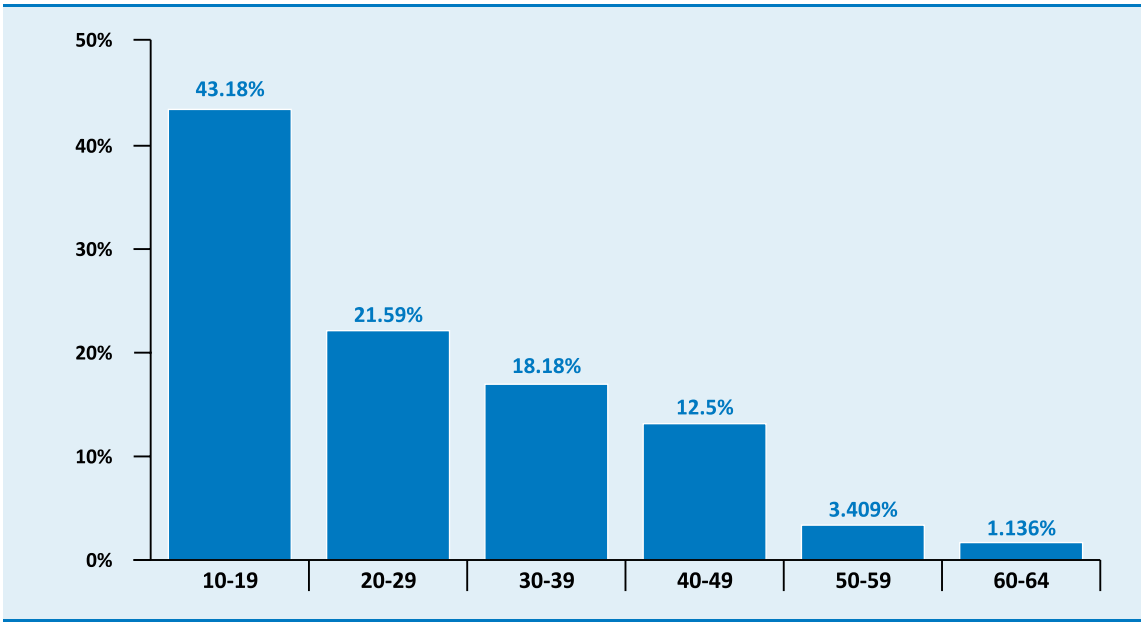

Figure 46: Sports (video and news) usage by age

Sports (video and news) usage based on gender

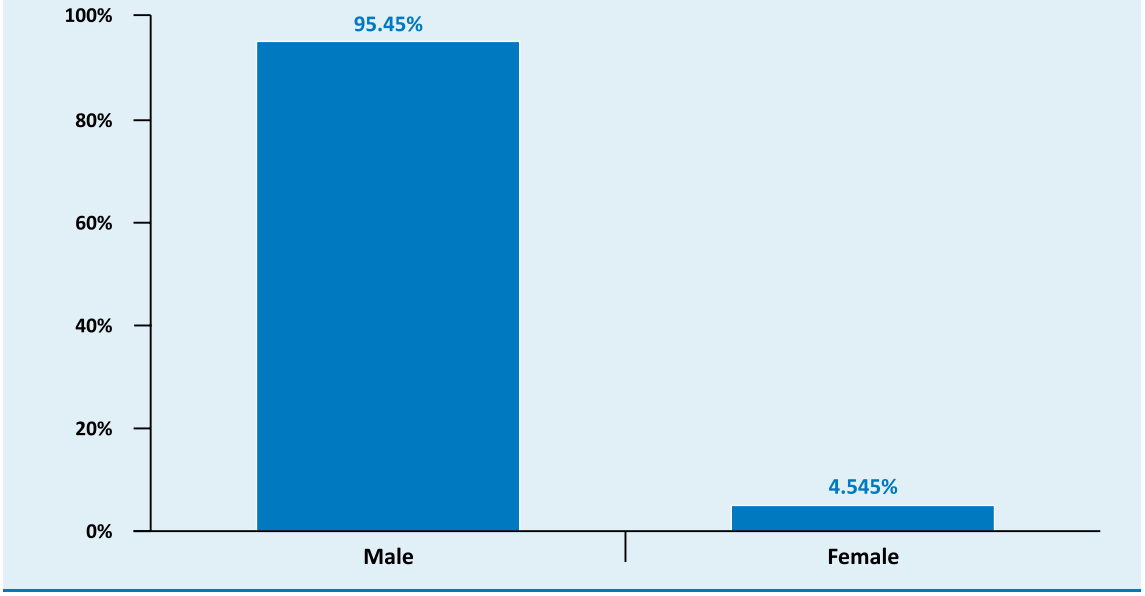

Figure 47: Sports (video and news) usage by gender

9.1.1.2. NEWS

The age group from 20 to 49 are the main group interested in news whereas from gender point of view, males consist the majority in news reading. It is worth noting that younger generations are more interested in online news when compared to the older generations, as shown in the graph below. The reason for this might be that older generations use printed media and TV as their main source of information while younger generations rely on the Internet services.

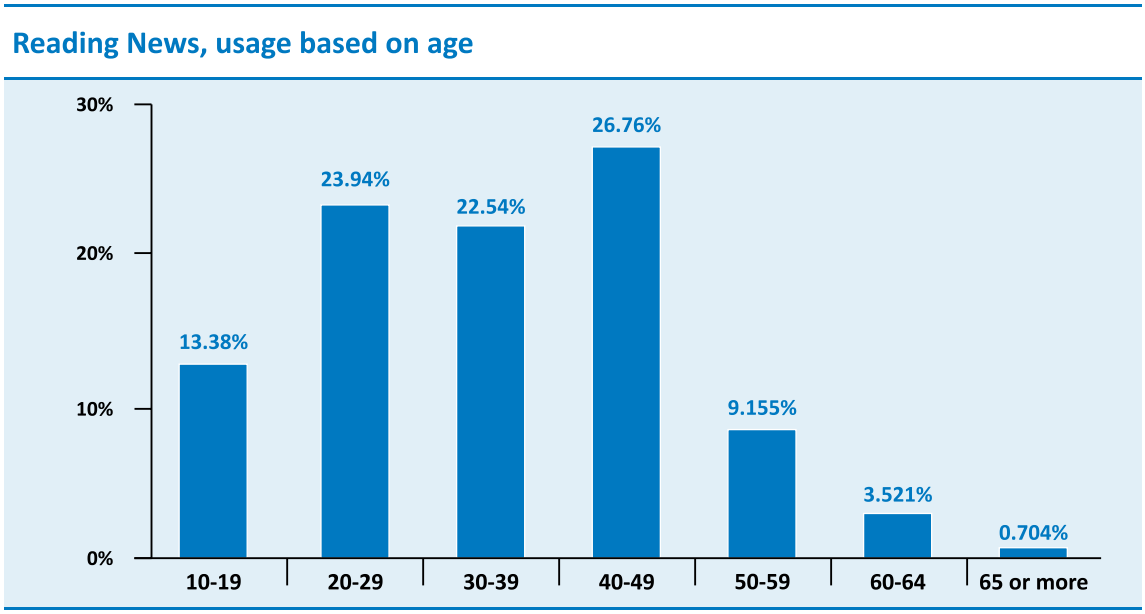

Figure 48: Internet usage for news by age

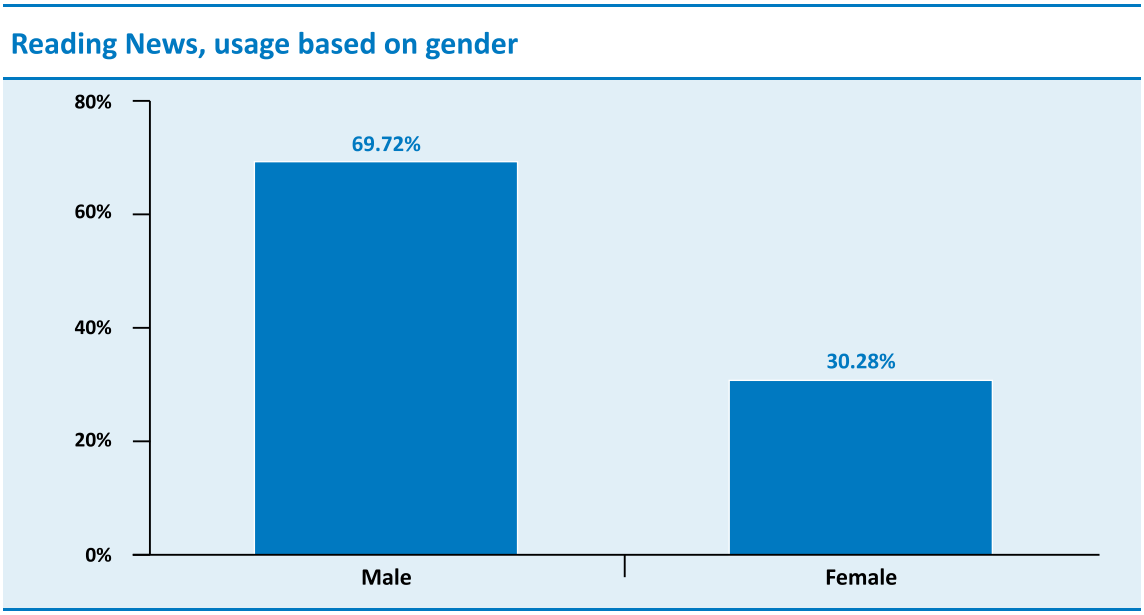

Figure 49: Internet usage for news by gender

9.1.1.3. MUSIC AND MOVIES

In this section, the usage of the Internet for downloading movies (torrent files[52]) and watching movies online has been included. It is interesting to further analyze this type of information, once the law on copy-rights[53] starts to be implemented in Kosovo, as is being discussed lately in various media. The graph below shows that main movie watching and downloading activities come from male teenagers, followed by age groups from 20 to 39.

Movie and Music downloading (via torrents), users based on age

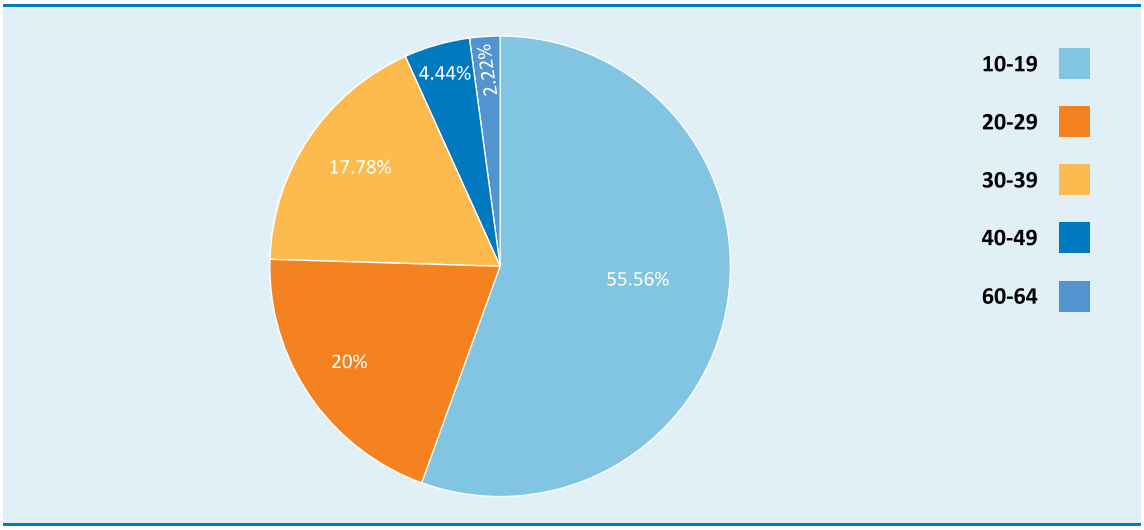

Figure 50: Movie and Music downloading (based on age)

Movie and Music downloading (via torrents), users based on gender

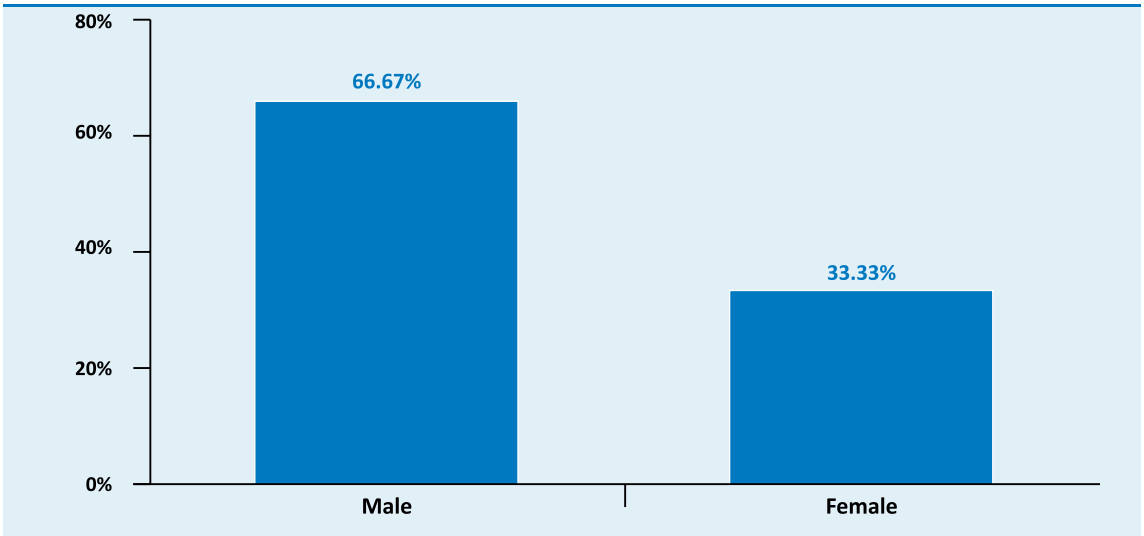

Figure 51: Movie and Music downloading (based on gender)

52 http://paths.sheffield.ac.uk/wikiana/wiki/Torrent_file
53 http://www.kuvendikosoves.org/common/docs/ligjet/2004_45_en.pdf

9.1.1.4. GENERAL BROWSING

The graph below shows that female young Internet users are ahead of male population in regards to Internet browsing and reading. This also holds true when it comes to using the Internet for research and studying, as it is shown further down.

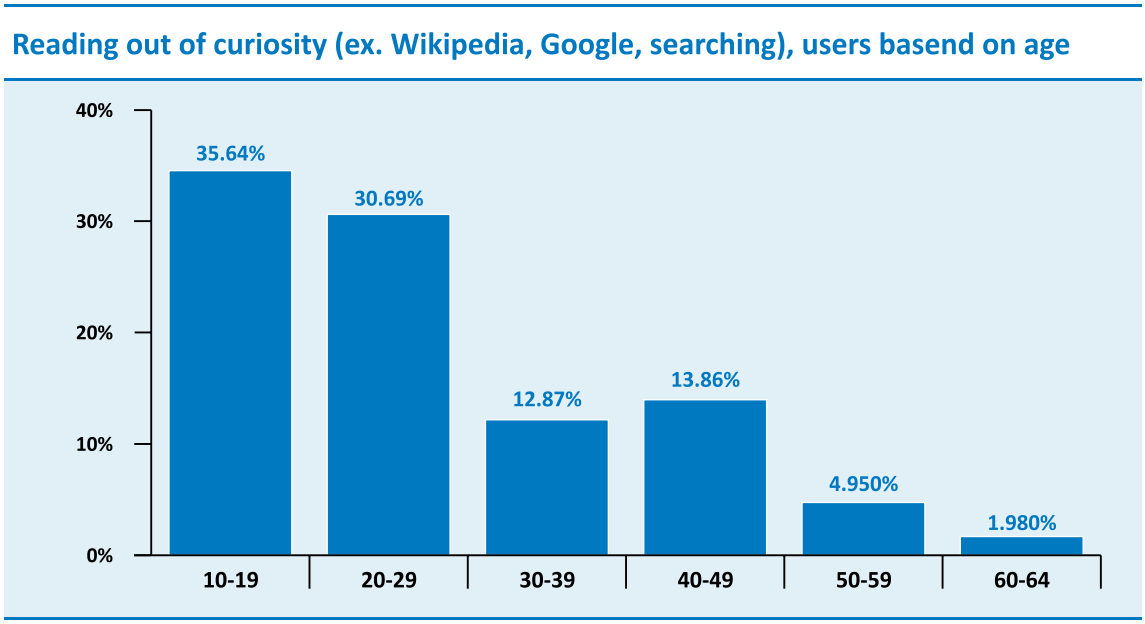

Figure 52: General Internet browsing (based on age)

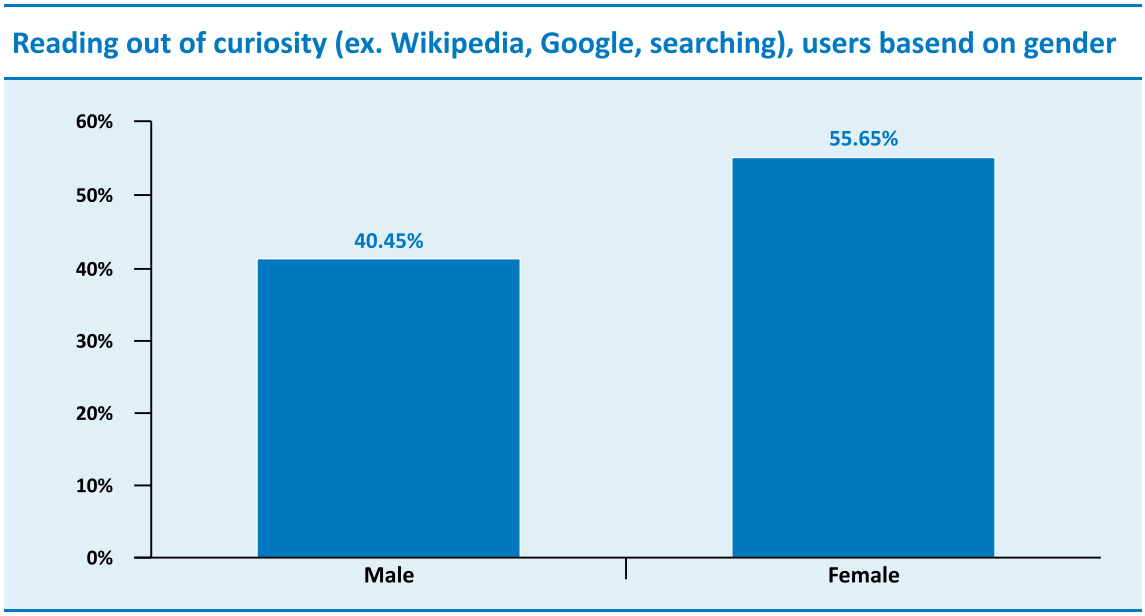

Figure 53: General Internet browsing (based on gender)

9.1.1.5. INTERNET, E-BANKING AND ONLINE SHOPPING

Due to the lack of online payment options and of low interest rates, Kosovo did not manage to move ahead with online payment services compared to, for example, expansion of Internet penetration. There are also other reasons such as overall wealth of citizens, lack of coordination among local banks, but also shipping services that are poorly developed in national and international aspects. The question below emphasizes the fact that most of the respondents do not actually believe in online shopping while, on the other side, the second group represents the users who do not have any problem with purchasing online. As it can be seen, the Internet users' community is deeply divided and this is the result of the lack of online payment services that would clearly raise awareness amongst Kosovan Internet users. As seen further down on the graph segregated by age, older generations clearly do not believe in this service, whereas younger generations are divided in their opinions whether to believe online shopping or whether it should be avoided. In any case, 44% of respondents would be happy to shop online.

Would you shop online if products and services where available to be purschased using your bank card?

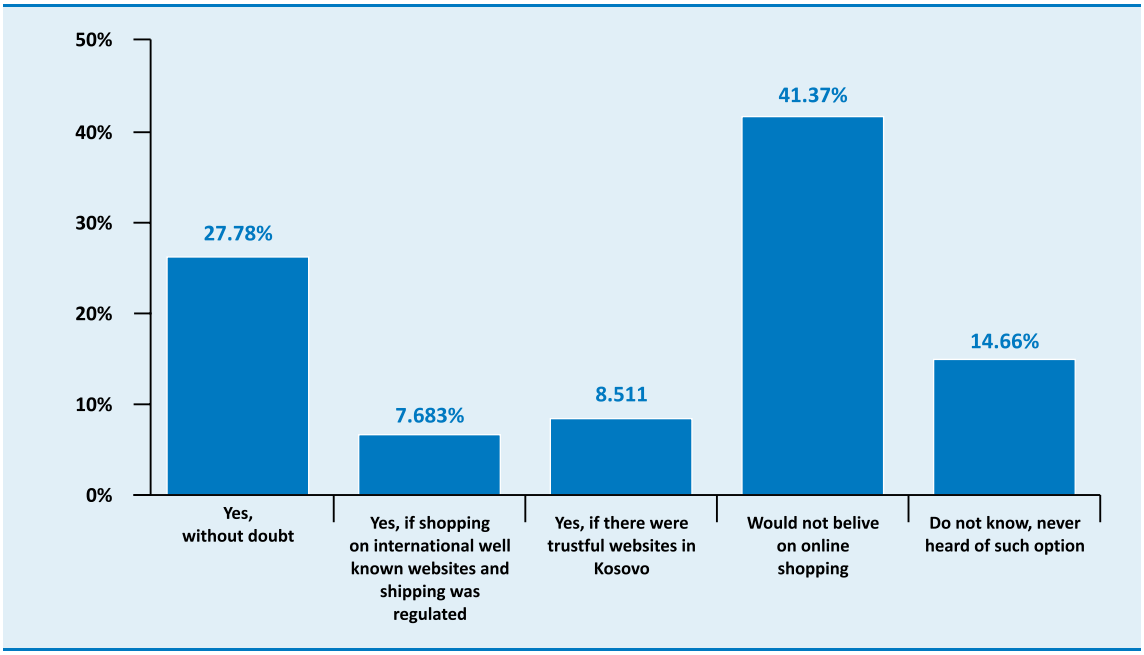

Figure 54: Online shopping confidence

Would you shop online if products and services where available to be purschased using your bank card?

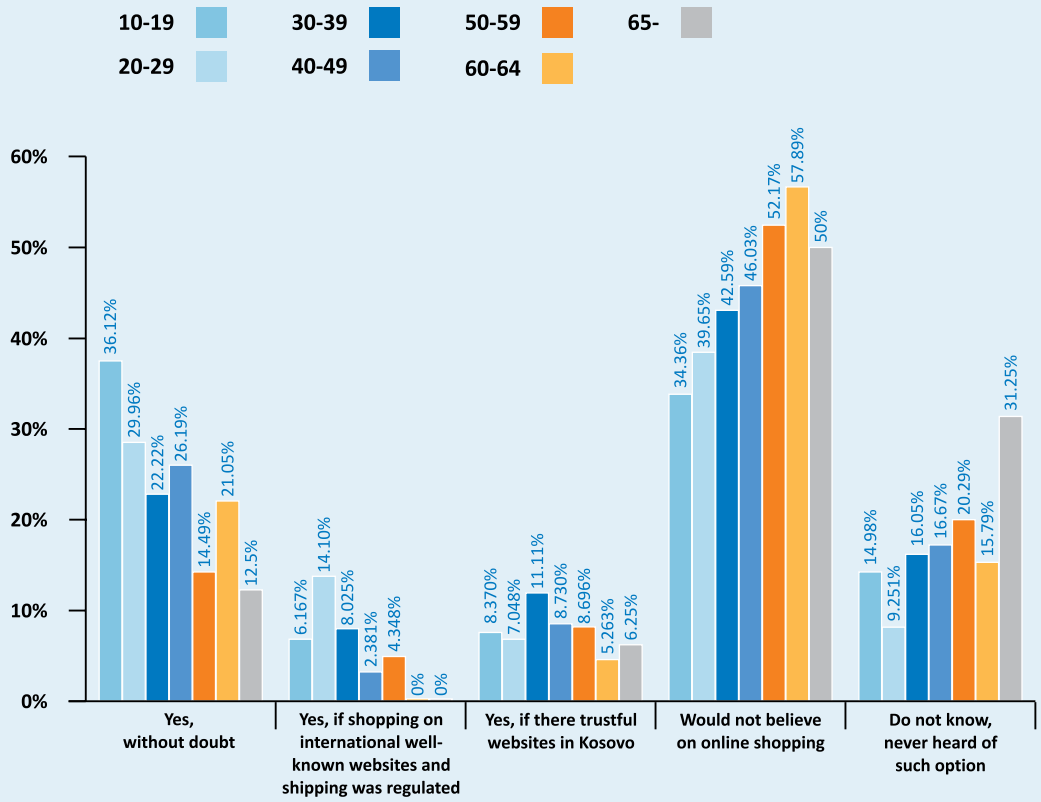

Figure 55: Online shopping confidence based on age

9.1.2. VOICE COMMUNICATION

One of the main drivers of the increase of Internet demand is the convenient means of communication that Internet offers. Considering the fact that nearly every third Kosovan today lives abroad and that every third household in Kosovo has at least one family member living abroad[54], low cost communication is of vital importance and the Internet offers exactly this. With a high number of internet users and various equipment such as desktops, laptops, tablets and smart phones, Kosovans are and will be serious users of voice communication over the Internet, having a considerable number of family members living abroad. Again, younger generations are the main user group making use of smart phone VoIP services, as shown below. When it comes to gender, females are doing slightly better in using smart phone apps such as Viber, WhatsApp, and Tango.

54 www.swiss-cooperation.admin.ch/kosovo/ressources/resource_en_180366.pdf, p.5

Viber, WhatsApp and Tango users based on age

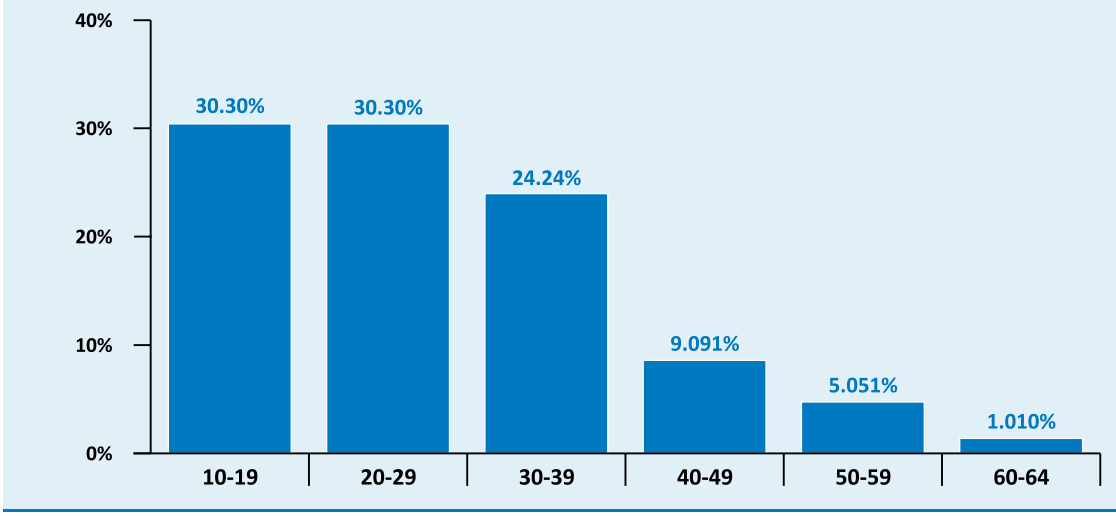

Figure 56: Internet usage for VoIP communication by age

Viber, WhatsApp and Tango users based on gender

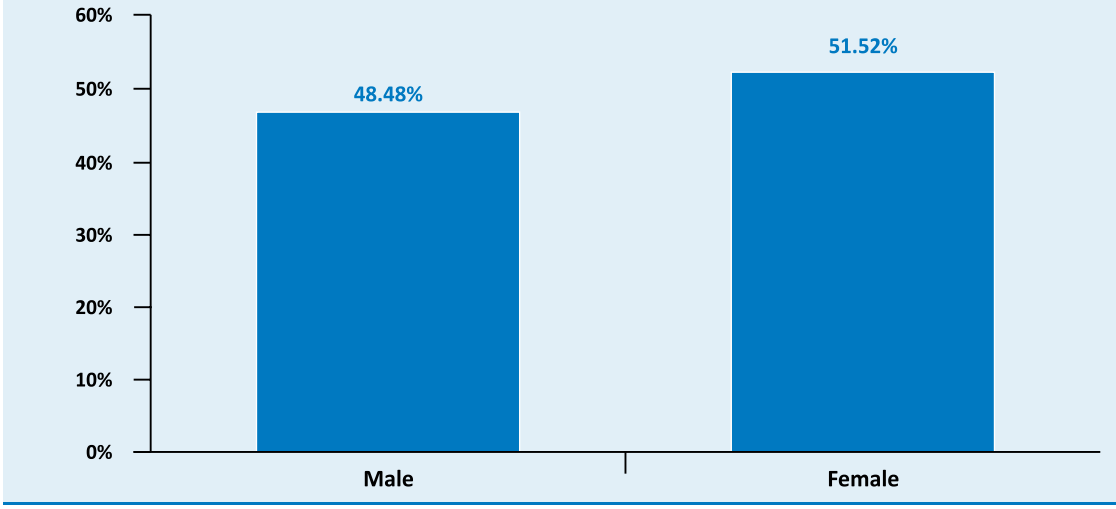

Figure 57: Internet usage for VoIP communication by gender

Skype service is an addition to the communication means with Kosovans' families living abroad. However, this service is also globally very popular due to its optimized audio and video communication capabilities. Additionally, this service is very popular with rural areas[55] considering the fact that higher numbers of migrants come from rural areas. In regards to age groups, Skype is used across all age groups up to 49 years old, where it starts to head down.

55 Ibid. p.6

Skype users based on age

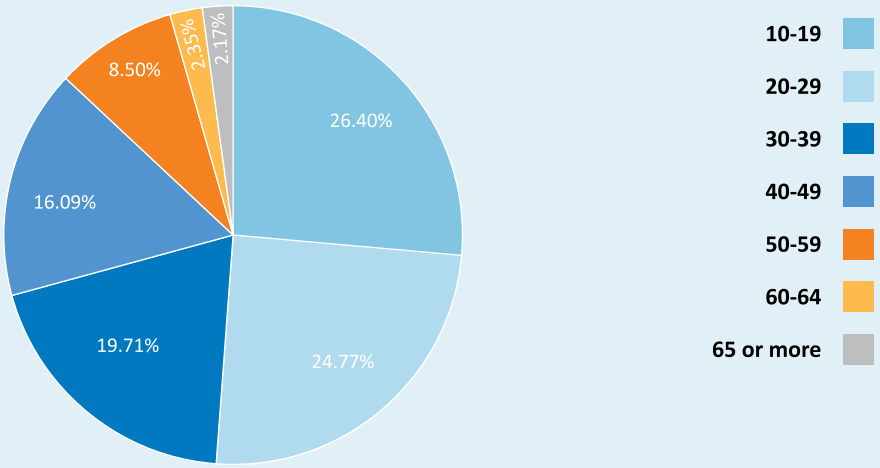

Figure 58: Internet usage - Skype services (by age)

Similar to smart phone VoIP apps, Skype, which also exists as a smart phone app, is again used slightly more by the female user group.

Skype users based on gender

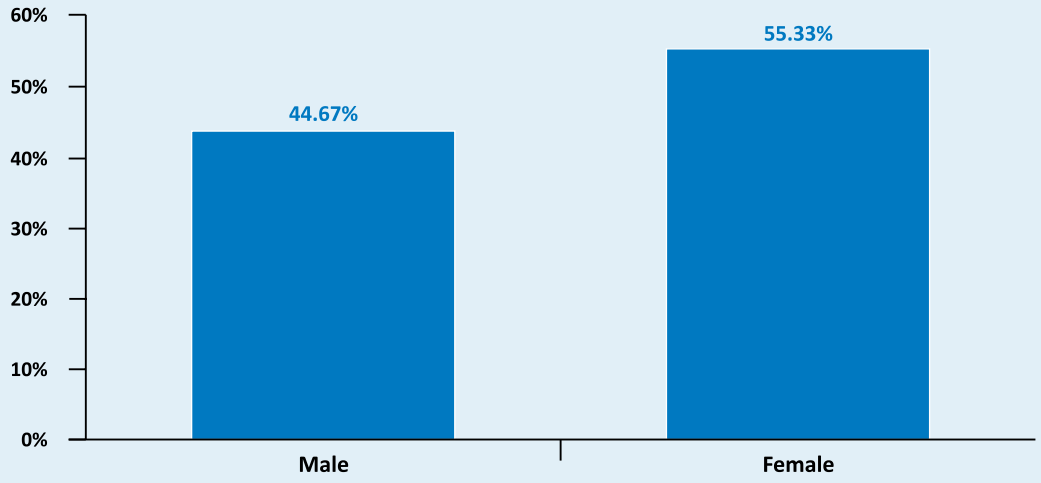

Figure 59: Internet usage - Skype services (by gender)

9.1.3. SOCIAL NETWORKS

For purposes of this study Twitter, Instagram, and Facebook were considered because other social media network services such as LinkedIn and Xing are less popular in Kosovo (Xing is very popular in German speaking countries where most of Kosovo's diaspora is located). The results are shown in the graph below. It is evident that both male and female users are very active in using these services. Globally, based on Pew Research reports, Facebook service is especially appealing to women and adults aged 18-29. Twitter is mostly used by adults aged 18-29 and urban residents. Instagram is used by adults aged 18-29, women, and urban residents[54].

9.1.3.1. TWITTER

As noted above, Twitter is by far used by Kosovo teenagers and the age group up to 29. As with other communication and socialising services, the female user group is slightly ahead on usage. It is important to note that this service is frequently used by Kosovo politicians and celebrities.

Twitter usage based on age

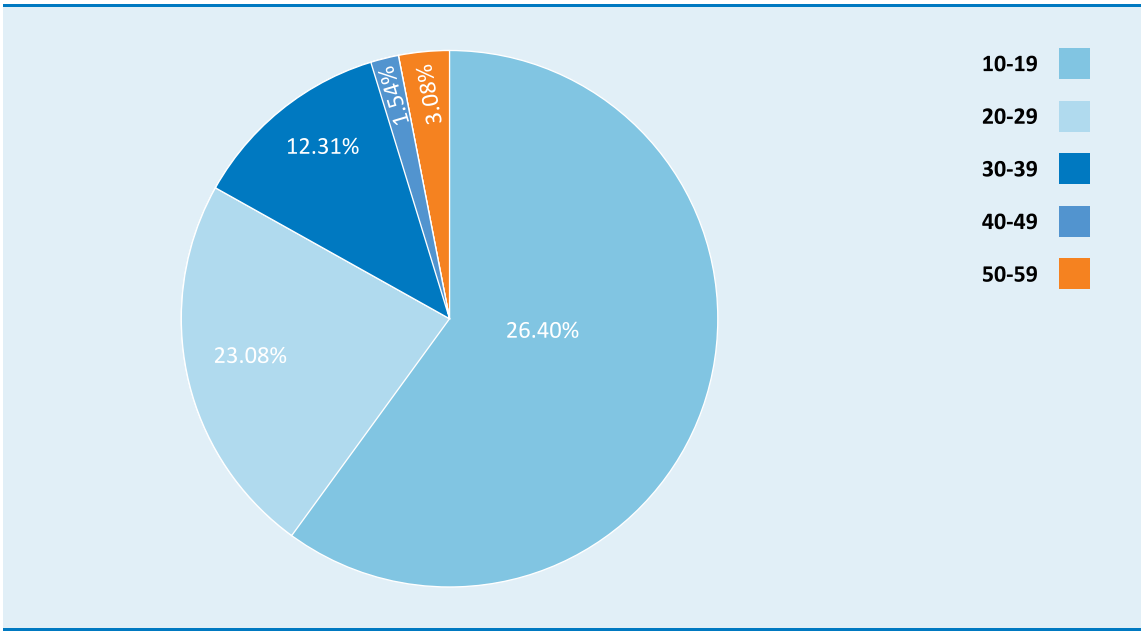

Figure 60: Twitter usage based on age

56 http://pewinternet.org/~/media/Files/Reports/2013/PIP_SocialMediaUsers.pdf

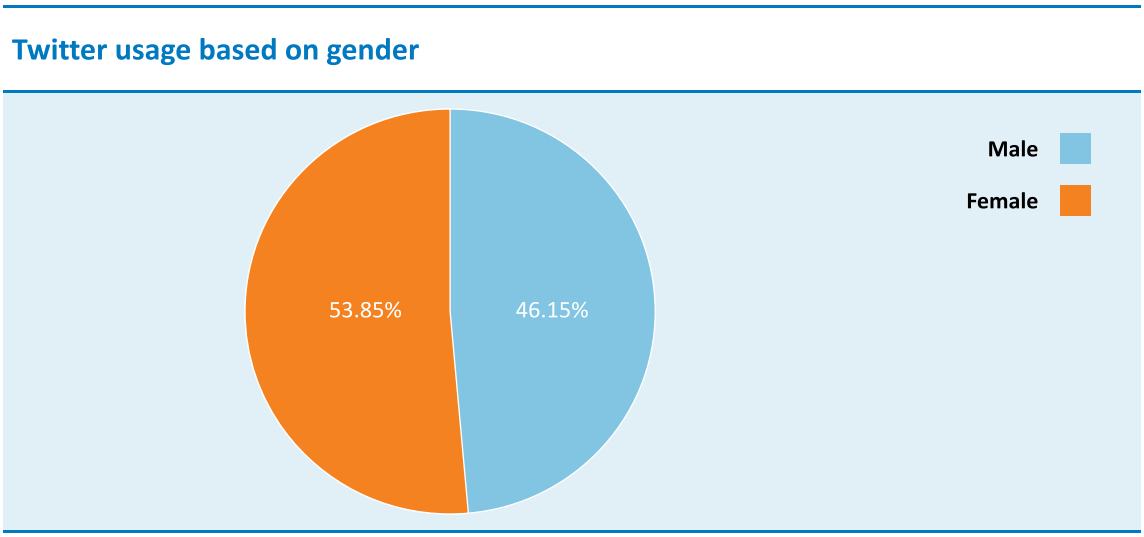

Figure 61: Twitter usage based on gender

9.1.3.2. INSTAGRAM

In Kosovo, as with Twitter, Instagram is mostly used by teenagers however when it comes to gender, its usage is equal among men and women.

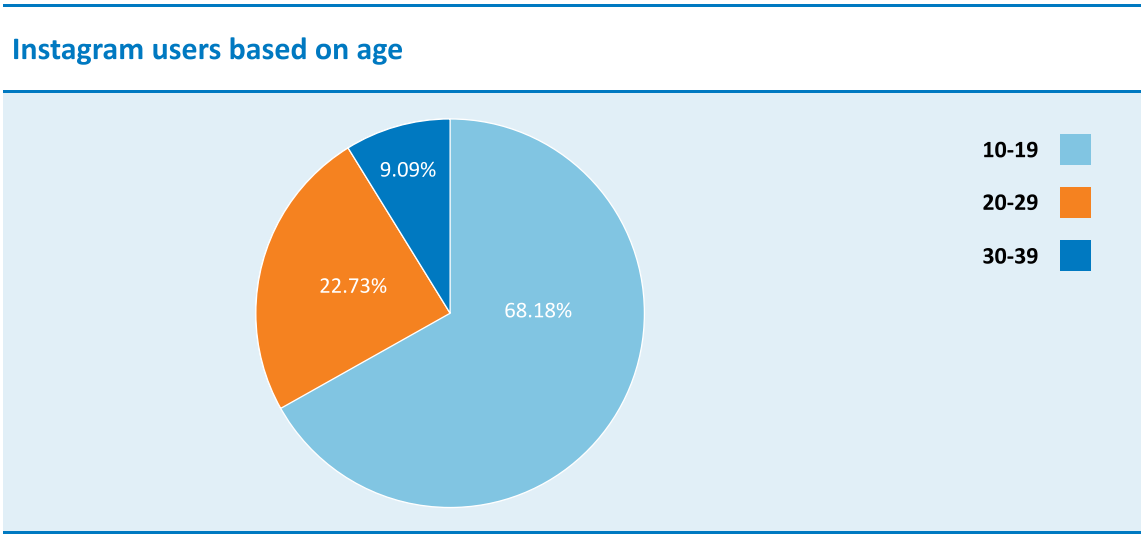

Figure 62: Instagram users based on age

9.1.3.3. FACEBOOK

The usage of Facebook is somewhat different compared to Twitter and Instagram. Firstly, it attracts users from all age groups. In comparison, Facebook is used more by men and it is one of the four activities that are preferred by the Kosovan Internet user community.

Facebook usage based on age

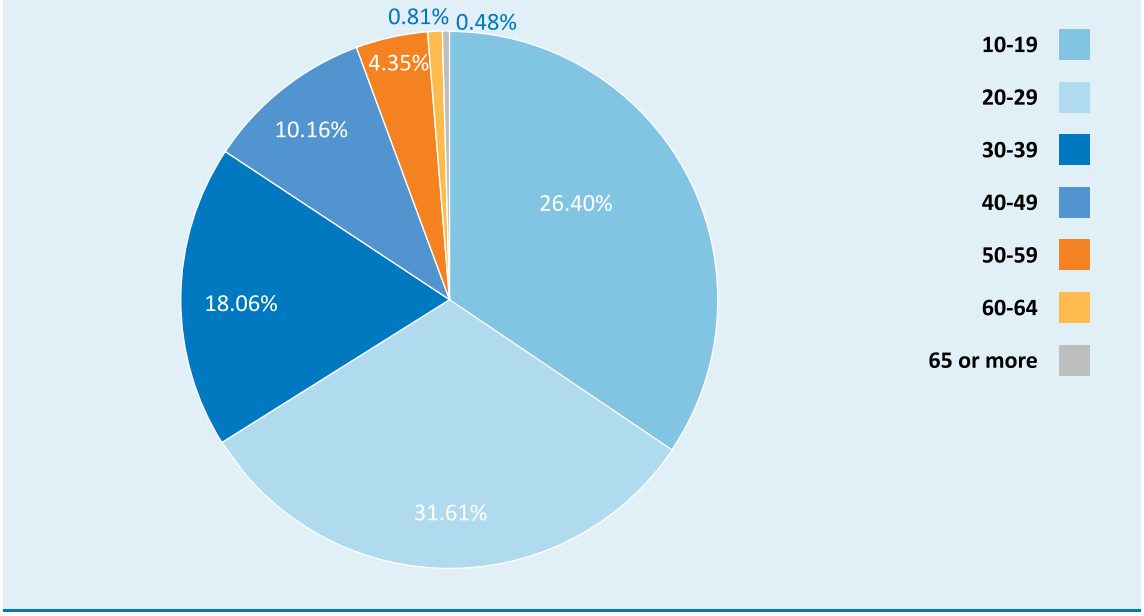

Figure 63: Facebook usage based on age

Facebook usage based on gender

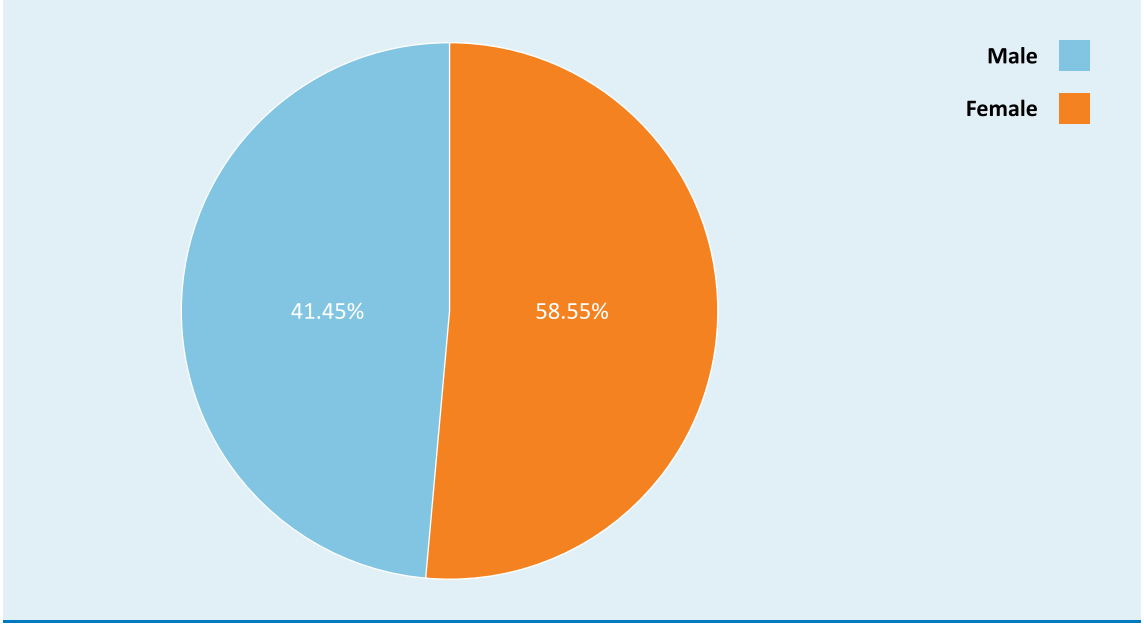

Figure 64: Facebook users based on gender

9.1.3.4. YOUTUBE

Analysing YouTube survey data, it is obvious that female population is slightly ahead of male population during the young ages. Both groups are far more frequent YouTube users during their teens and also during 20's. It is interesting to note that there is a sudden sharp drop once users reach 30 and then again when they reach the age of 50.

YouTube users based on age

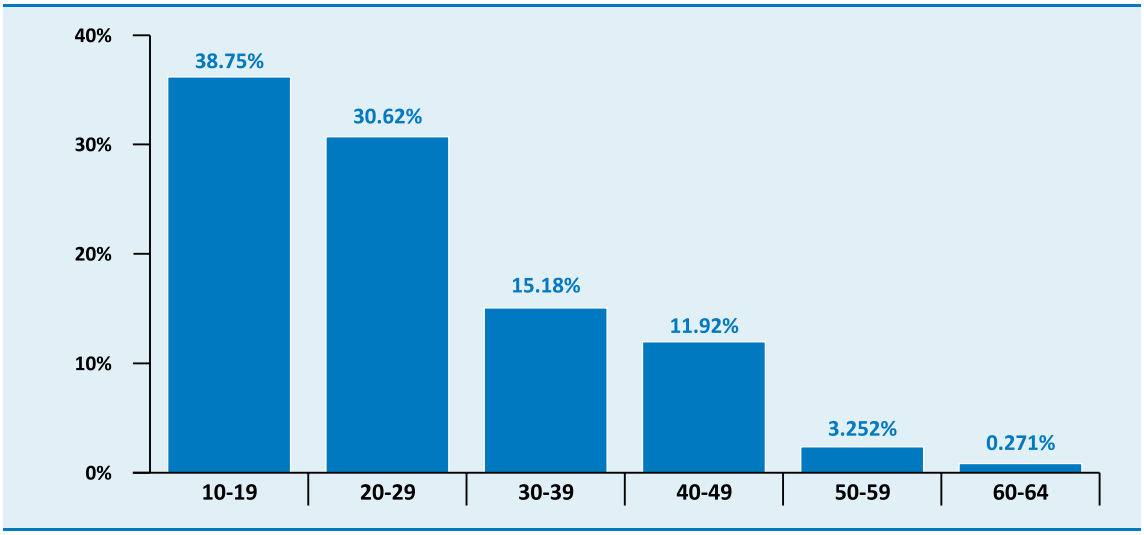

Figure 65: Internet usage - Youtube services (based on age)

YouTube users based on gender

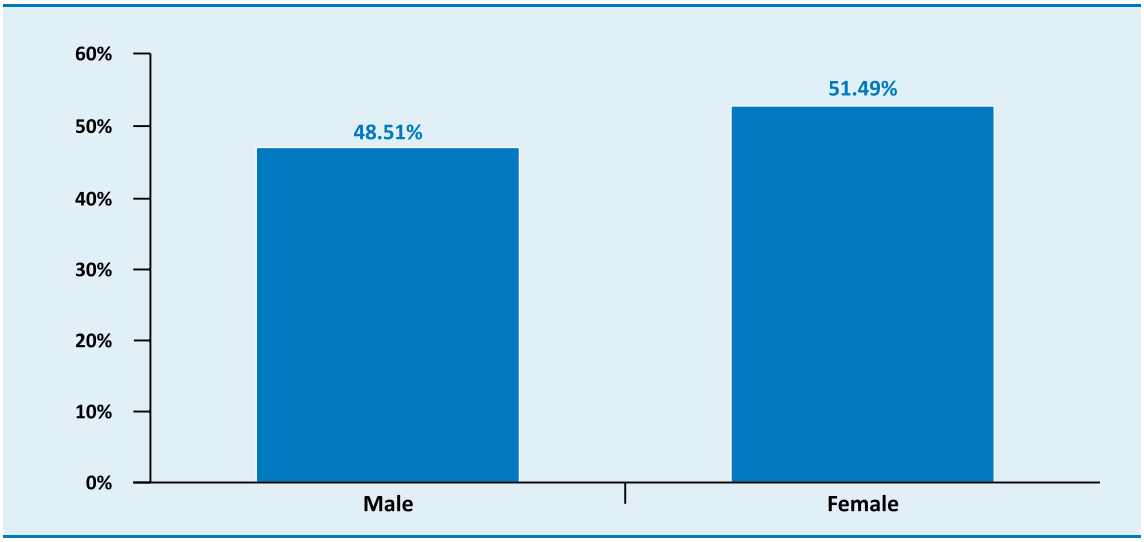

Figure 66: Internet usage - Youtube services (based on gender)

9.1.4. EMAIL COMMUNICATION

Email communication for personal reasons is being used mostly by younger generations and adults up to 40 years old, and almost equally among male and female. However, the graph further below shows that email communication for work and business is being used more by men. This might give a hint on career differences that are present based on gender and requires further research by field experts. In regards to age and work related email communication, the graph further below shows that users of the group age 30 – 39 are more active than other groups.

Personal e-mail usage based on age

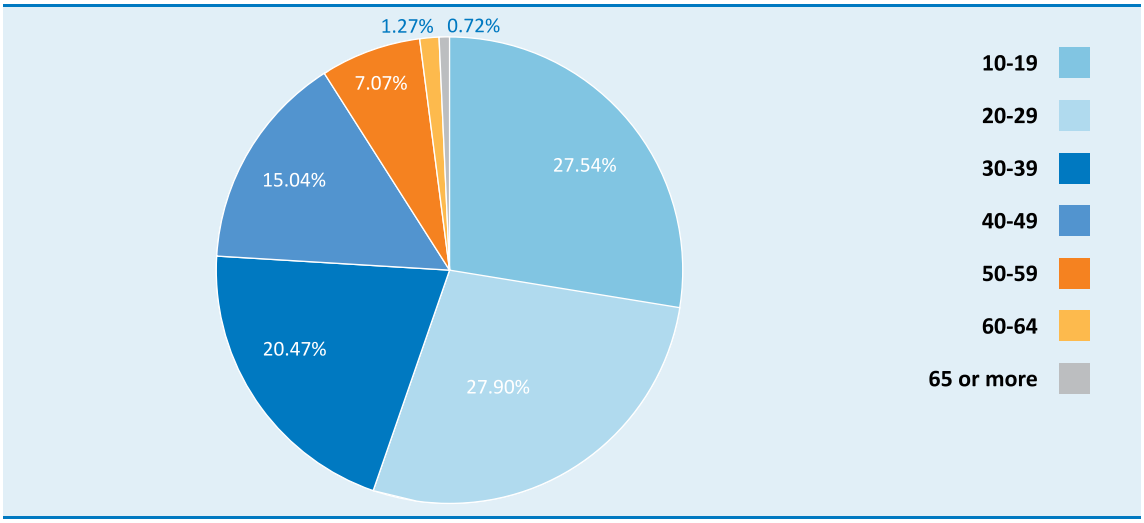

Figure 67: Personal e-mail usage by age

Personal e-mail usage based on gender

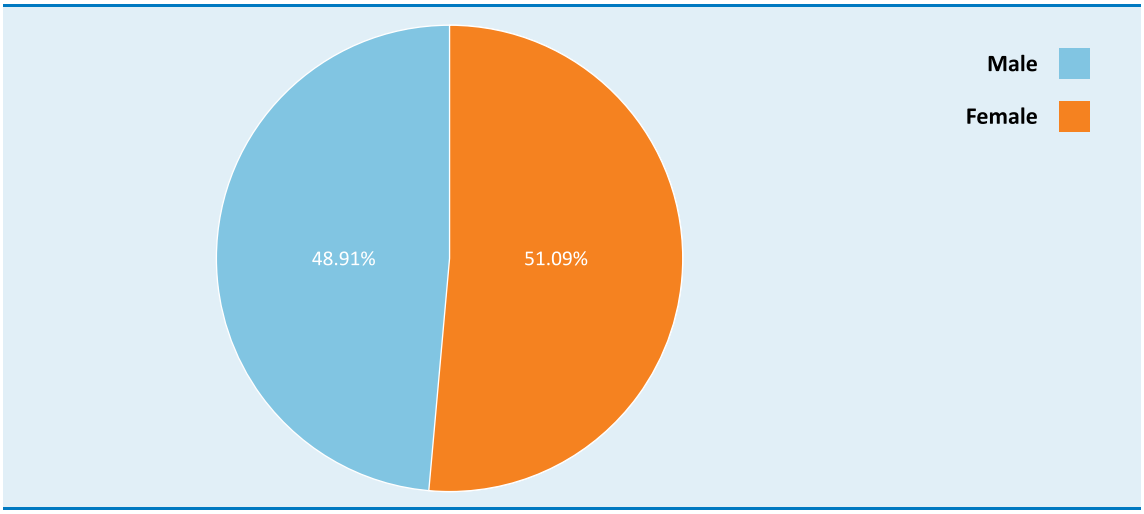

Figure 68: Personal e-mail usage by gender

Work-related e-mail usage based on age

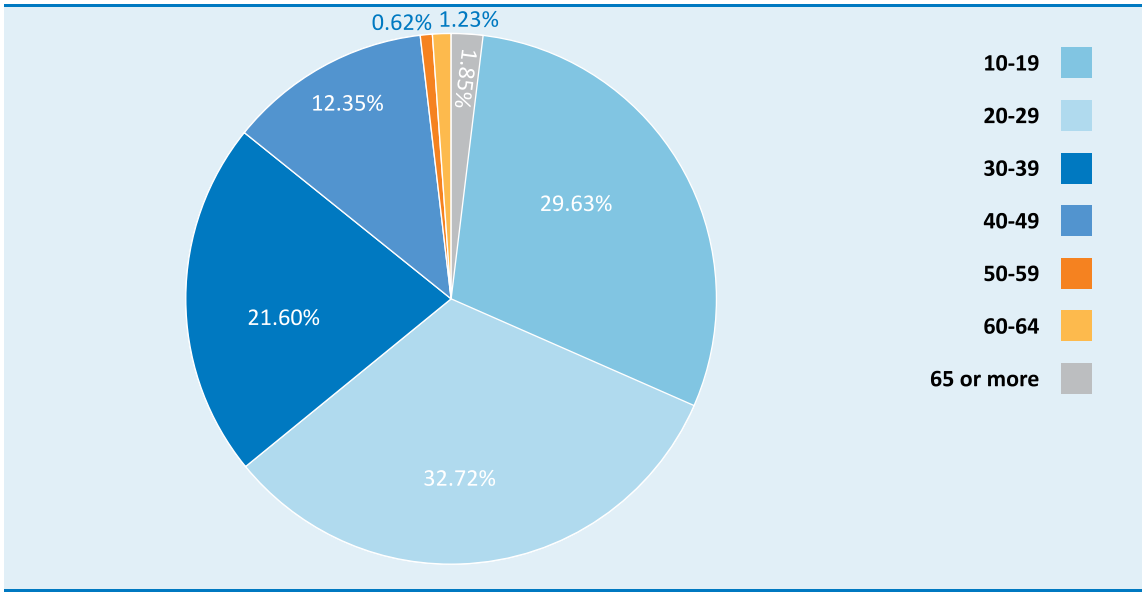

Figure 69: Work e-mail usage by age

Work-related e-mail usage based on gender

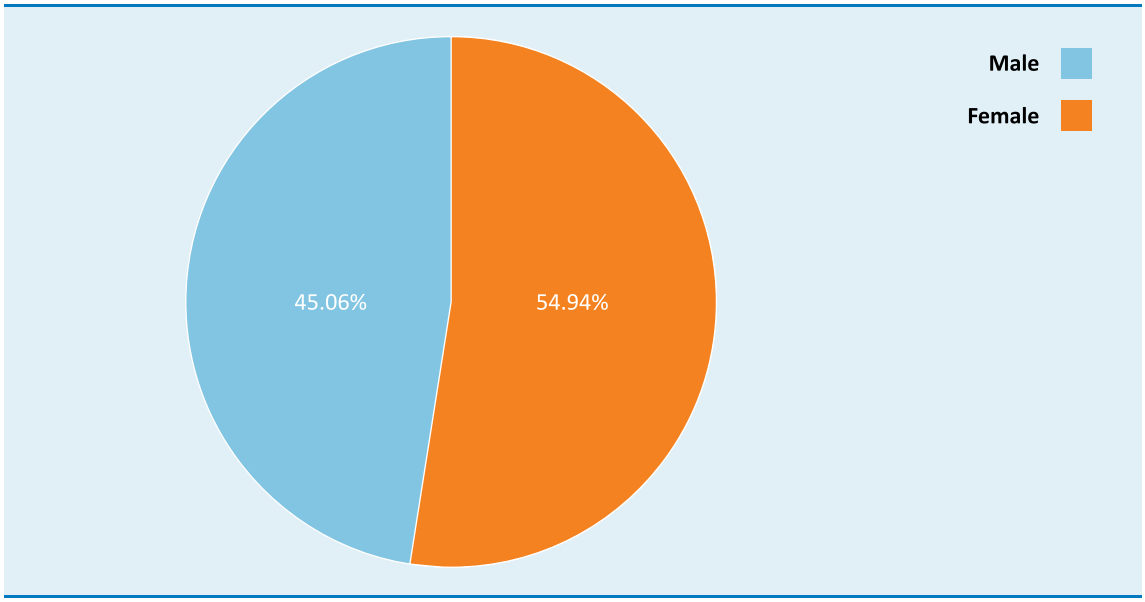

Figure 70: Work e-mail usage by gender

9.1.5. LIFESTYLE

Compared to male population, female population is ahead in using the Internet for gathering lifestyle and dressing ideas. In regards to age, age groups from 10-29 are much more active but then there is a sudden drop, once users reach their 30's. As women are the majority user group, it is obvious that once women reach their 30's for some reason they sharply (more than 50% drop) lose interest in searching for clothing ideas and lifestyle

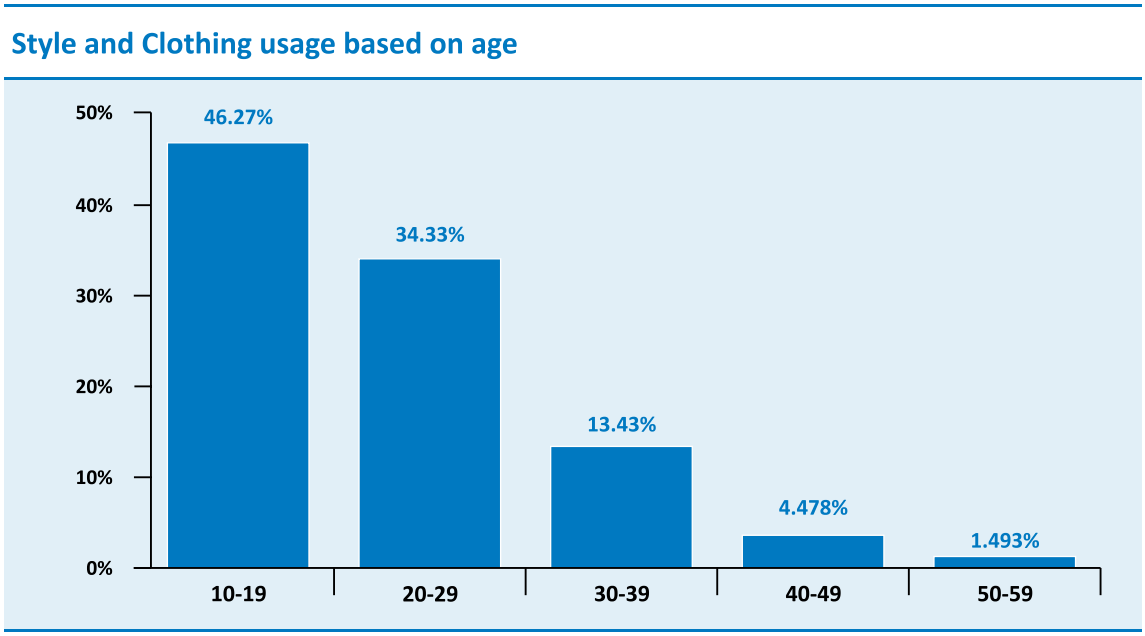

Figure 71: Internet and lifestyle (based on age)

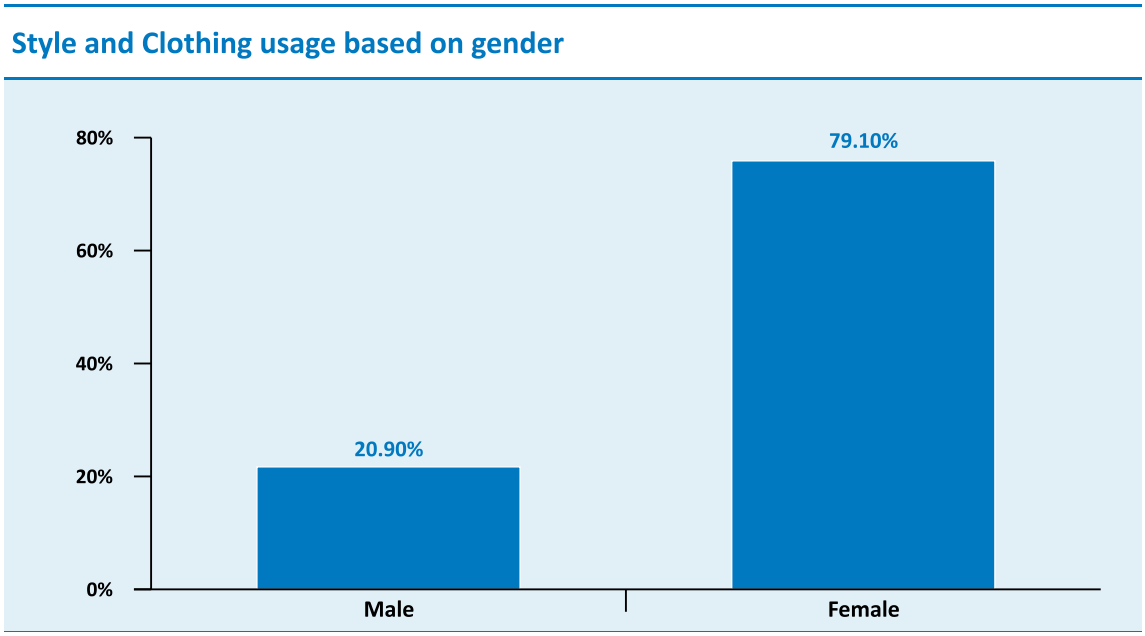

Figure 72: Internet and lifestyle (based on gender)

9.1.6. RESEARCH AND STUDY

Similar to the communication and social network sections above, female young population is also much more active in using the Internet for research and studying. The age group 20-29 are the leaders of these activities, which is expectable as most of these users are studying or attending trainings of some sort. There are two sharp drops once users reach the age of 30 and then 40, as if there is not much to learn anymore. This statistics might be interesting for those promoting life-long education and/or training

Research and Study purposes, users based on age

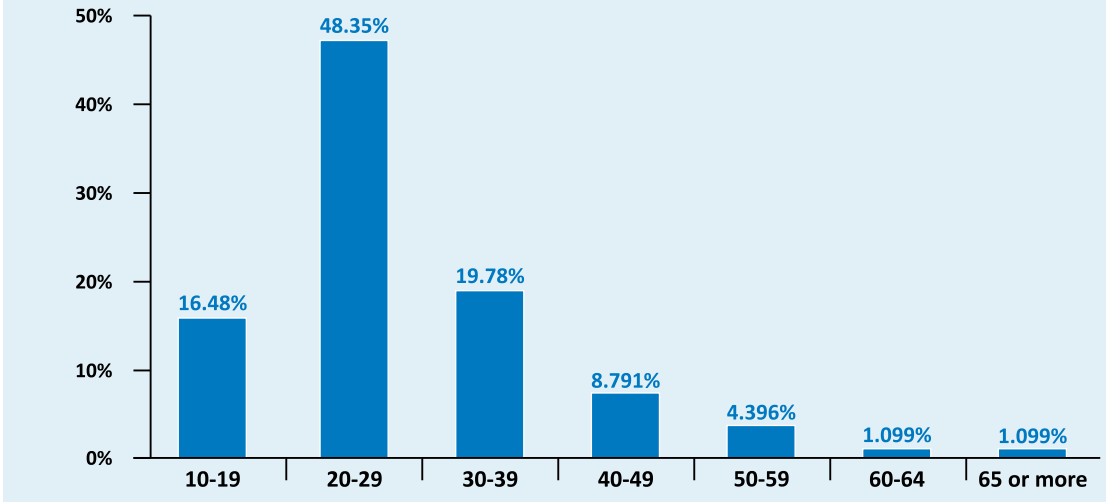

Figure 73: Internet utilization for research and studying (based on age)

Research and Study purposes, users based on gender

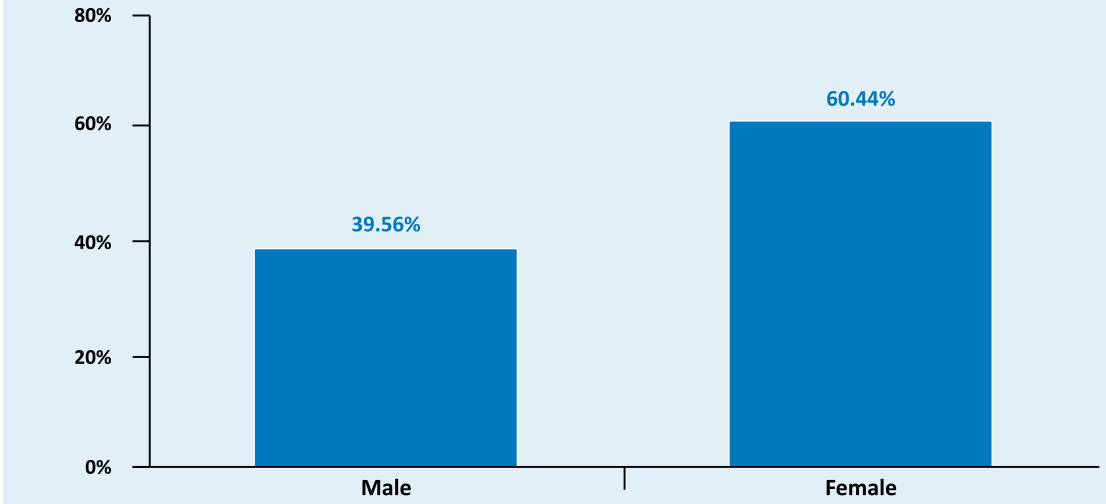

Figure 74: Internet utilization for research and studying (based on gender)

10. e-GOVERNMENT AWARENESS

The graph below shows the awareness of population in regards to services offered by the Government of Kosovo through utilizing the Internet. Just under half of the respondents are aware of the service. Awareness reaches the peak for the age group 20-29, while for older users it starts to slowly drop. As shown, women are less aware about this service, compared to their counterparts.

Are you informed that when you apply for official documents (ID, passport, driving lincense), you can check your application status online?

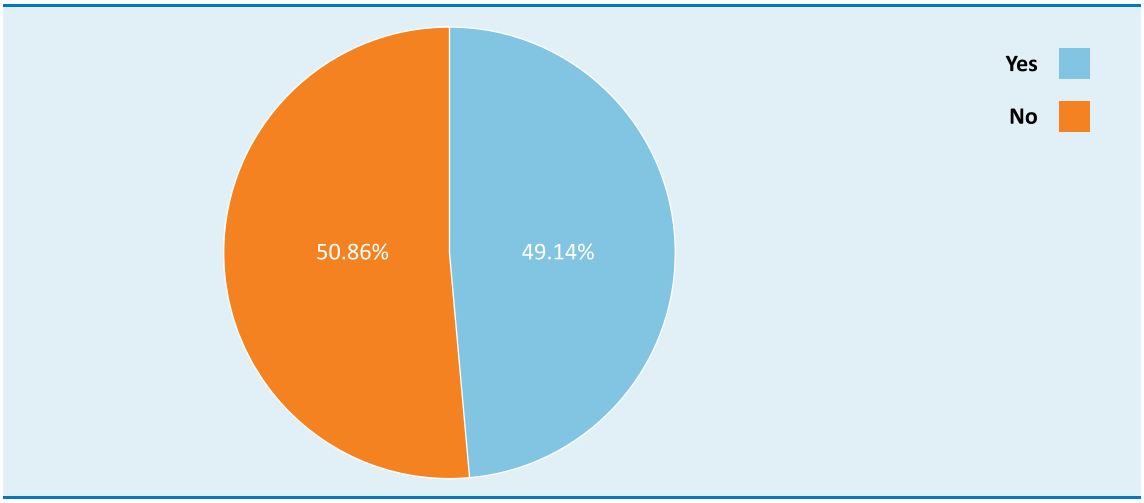

Figure 75: e-Government services

Are you informed that when you apply for official documents (ID, passport, driving lincense), you can check your application status online?

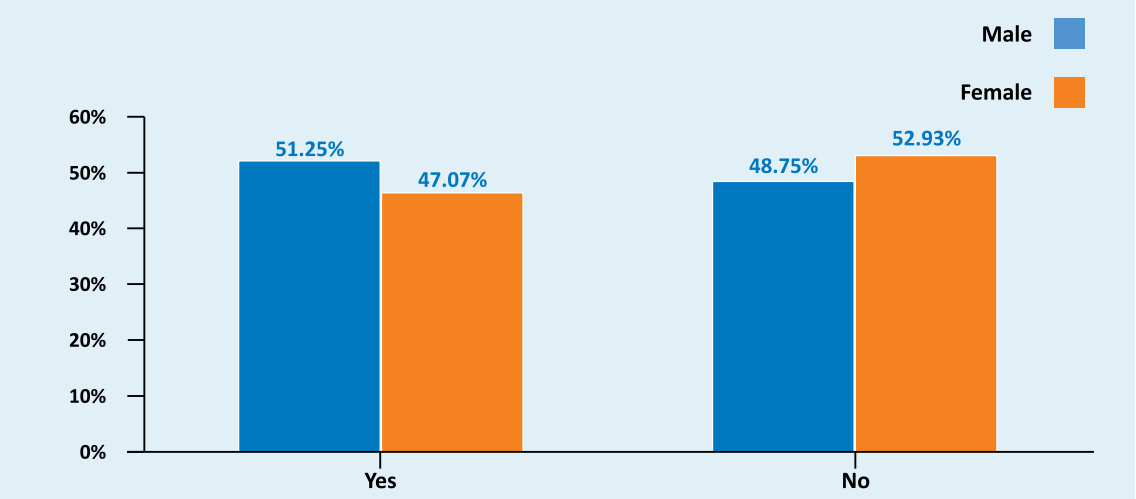

Figure 76: e-Government services based on gender

Are you informed that when you apply for official documents (ID, passport, driving lincense), you can check your application status online?

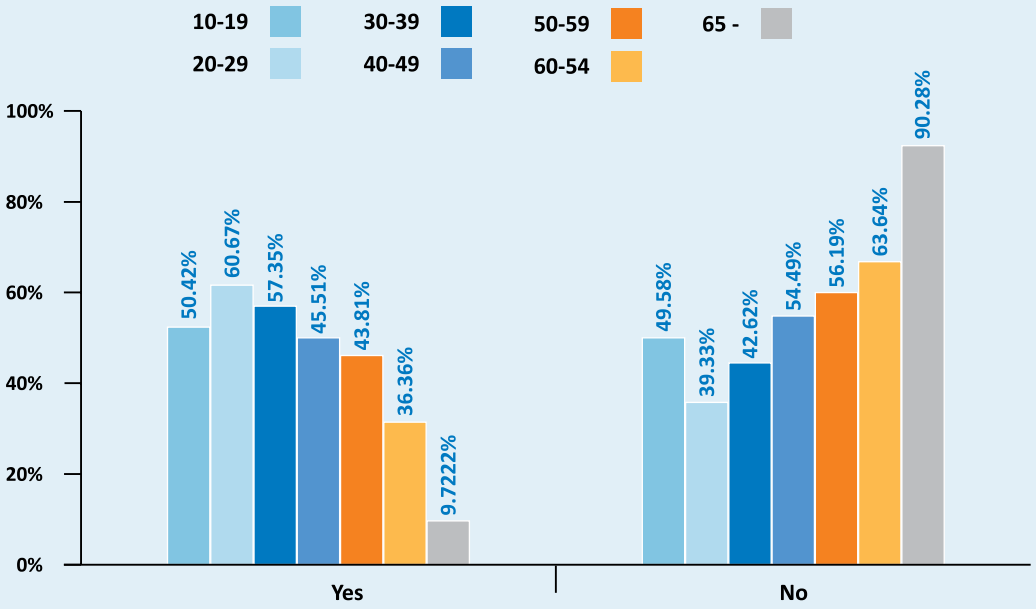

Figure 77: e-Government services based on age

11. INFORMATION PRIVACY

Information privacy, especially on the Internet, has always been one of the most interesting topics. This topic has been discussed from various aspects, including demographics. Based on the graph below, it is obvious that women are more careful when their privacy is in question and this corresponds with the data collected globally[57]. As far as age is concerned, all age groups up to 59 have some level of awareness about privacy, which again is similar to world trends. Older generations are less aware about the issue of privacy – however 19% of 10-19 years old users are also not aware about information privacy. On the other side, 10-19 year old users are also the largest group that knows about privacy but is not concerned about it.

57 www.pewinternet.org/Reports/2012/Privacy-management-on-social-media/Summary-of-findings.aspx

How much information do you have about the privacy on the Internet?

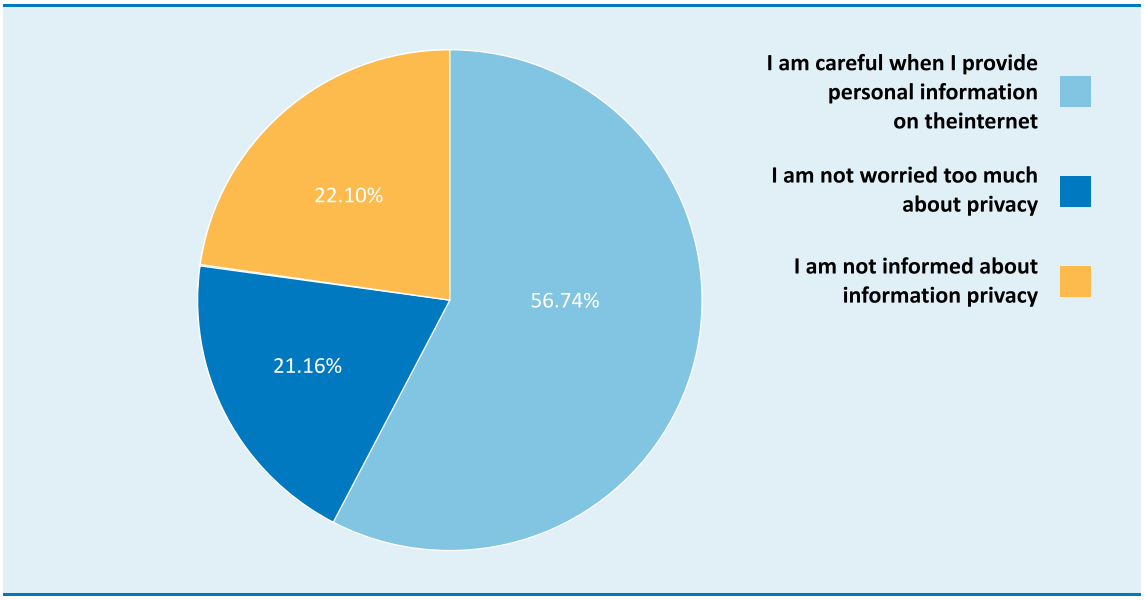

Figure 78: Awareness about Information privacy

Awareness about the Internet privacy based on gender

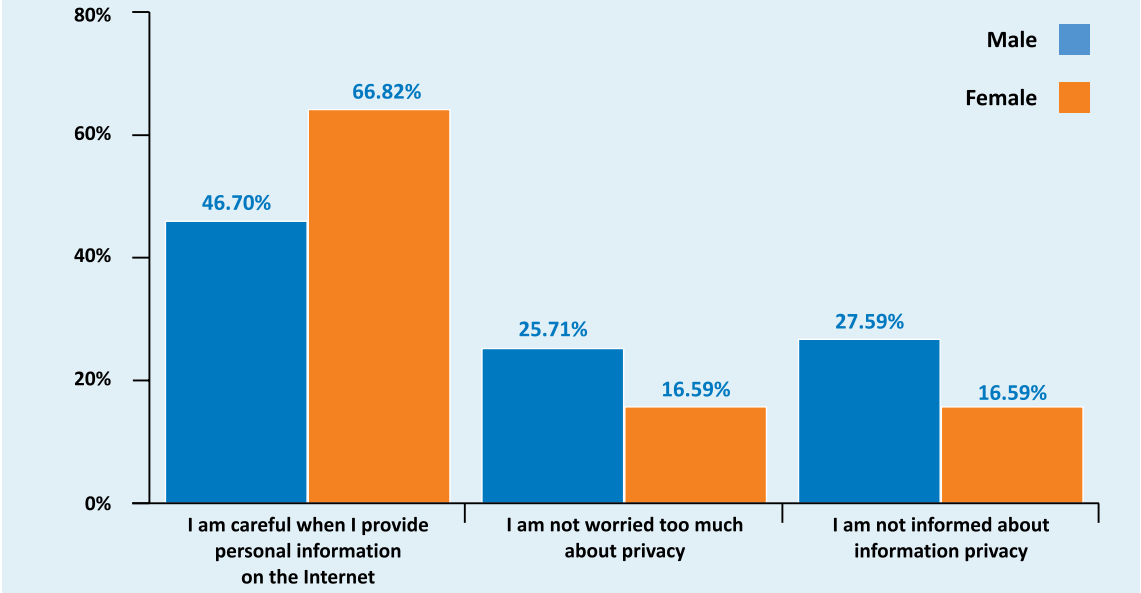

Figure 79: Awareness about Information privacy (based on gender)

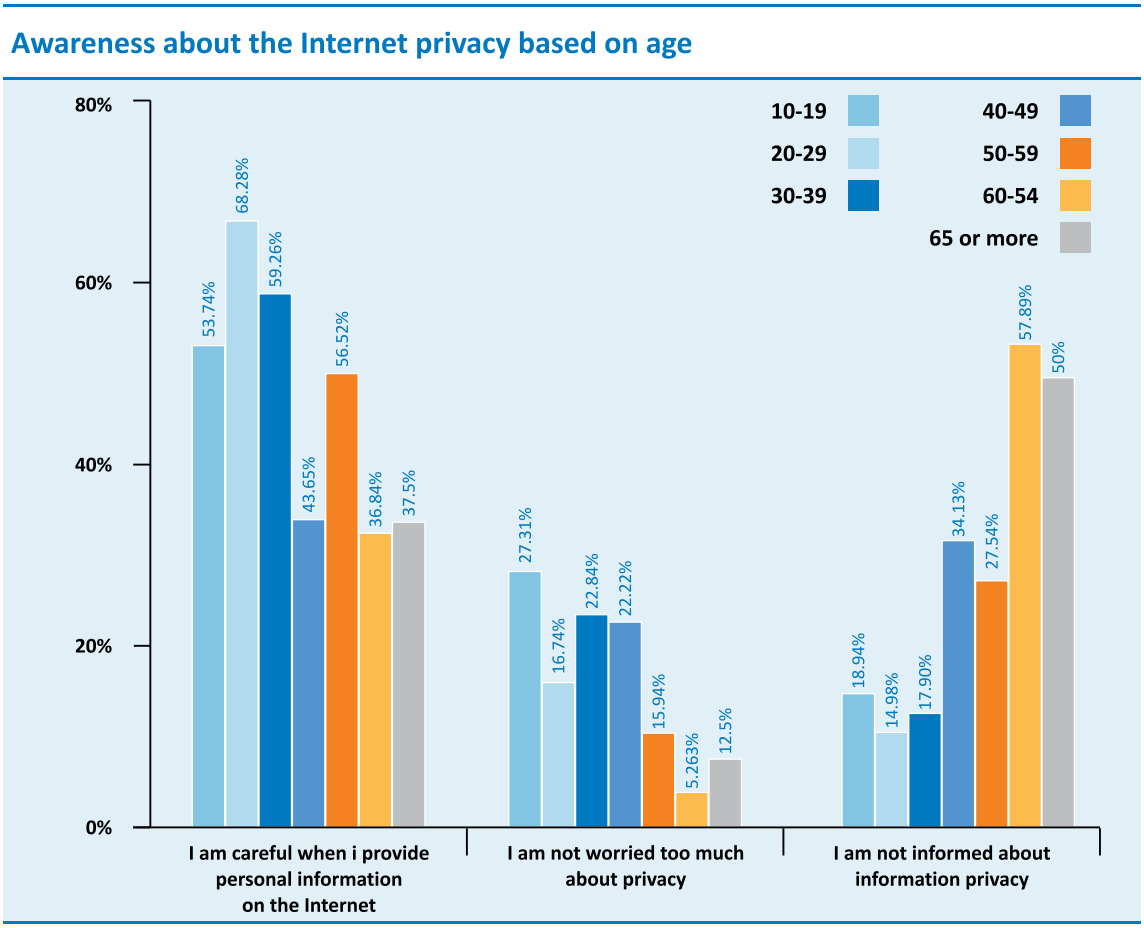

Figure 80: Awareness about Information privacy based on age

12. CONCLUSIONS AND RECOMMENDATIONS

The Internet penetration and usage in Kosovo is comparable to developed countries. There are many factors that contribute to these high levels, some of them being related to Kosovo's young median age population (27.4)[58], many families having relatives living abroad (diaspora), overall culture, country's political orientation (western values), Kosovo's geographical position, etc. There is a proven correlation between education, income and Internet penetration[59] but this is not valid for Kosovo due to reasons discussed above. The relationship between high levels of Internet penetration and Kosovo's poverty figures (12.1%)[60] can be explained by two means. The first being that Kosovo is an outlier, as it can happen[61], due to various reasons mentioned above and the other reason is related to analysis above on this report where respondents have stated that family income is not among the main reasons for not using the Internet. In fact, family/personal income is among the rarest reasons selected by Internet non-users, as mentioned above.

58 https://www.cia.gov/library/publications/the-world-factbook/fields/2177.html
59 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2145704
60 http://esk.rks-gov.net/eng/
61 http://arcusadvisors.com/new-markets-for-content-infrastructure/ict-and-poverty-2/

It is evident that there is more to be done in regards to initiatives and coordination in the ICT sector in Kosovo with the aim of providing better value for money to end-users. Considering high Internet penetration levels, main stakeholders should consider opportunities for the employable youth who are a majority, active and capable in utilising the Internet and communication means in extremely efficient and beneficial aspects. The ICT sector needs to further cooperate in terms of developing joint activities and synergic multi-stakeholder information exchange, as well as define a common action plan from the perspective of youth inclusion and empowerment.

It is expected that there will be a slow-down on future national Internet penetration rates. This is expected for two reasons – the first one being related to already high levels of penetration and lack of potential clients for market expansion and the second reason is presented above on this report where 65% of non-users state that they are not thinking of using the Internet in the near future.

According to the findings of this study, most of user habits are comparable to global trends. Social networking and Internet voice communication services are mostly used by women, and this is also a global trend. Similarly, Sports related news are read and watched by male Internet users, which is also similar to world trends.

As Kosovo is aiming towards fulfilment of International standards in ICT sector, corresponding sets of information should be gathered and processed accordingly by the responsible stakeholders i.e. information provision such as contention ratio, which is a very important parameter of quality of service. Subsequently, it is imperative for the Kosovo political agenda to begin immediately with the development of ICT indicators that can and will be measured regularly and presented to general public and to interested parties[62].

It has been broadly discussed that there is a need for multi-direction initiatives, further development of ICT EU-compatible legislation and policies, sector development plans, implementation of a wide range of ICT related strategies, addressing current issues related to the ccTLD and ISO codes for Kosovo, participation in ICT related international activities, etc. Therefore, it is suggested to Kosovo institutions to consider the establishment of the Ministry of Information Society, similar to what neighbouring countries have done (Macedonia[63] and Montenegro[64]). Macedonia has developed two national strategic documents which are publicly available[65] [66] (in Macedonian), whereas Montenegro has published a list of few documents which are specific to various subjects[67] such as disaster recovery, open source, digital communications, etc. (in Montenegrin).

It is further recommended that relevant stakeholders intensify awareness raising among the population on Internet security, Internet-based financial transactions (online payments), parental control, information privacy, etc.

As a last word, this study aimed at providing fresh information to be built on top of the previous report. This could produce invaluable information related to trends, attitudes and behaviour. It was also the aim of this study to initiate a discussion on Internet penetration, usage, and cooperation among relevant stakeholders.

62 http://www.unescap.org/idd/pubs/st_escap_2353.pdf

63 http://www.mio.gov.mk

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66 www.mio.gov.mk/files/pdf/dokumenti/Nacionalna_strategija_za_razvoj_na_elektronski_komunikacii_so_informaticki_tehnologii.pdf

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INTERNET PENETRATION AND USAGE IN KOSOVO 2013

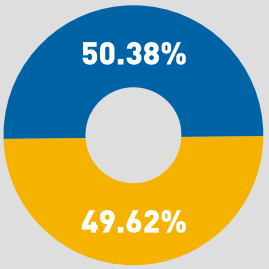
INTERNET USER PENETRATION

76.62 % USERS

23.38 % NON USERS

1,080,038 INTERNET USERS
(BASED ON CENSUS 2011 TOTAL POPULATION)

INTERNET USERS BY GENDER



HOUSEHOLDS WITH INTERNET CONNECTIVITY IN URBAN AND RURAL AREAS

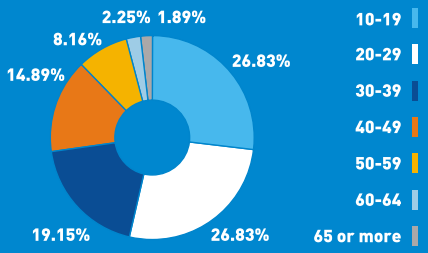
URBAN	87 %
RURAL	83 %

INTERNET USERS BASED ON RURAL AND URBAN AREAS

URBAN	75 %
RURAL	77.7 %

WHO USES THE INTERNET IN KOSOVO AND HOW DO THEY USE IT

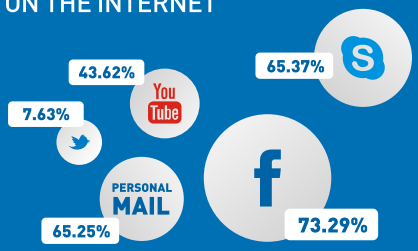
INTERNET USERS BY AGE



INTERNET USERS BASED ON EDUCATION LEVEL

NO EDUCATION	0.47 %
PRIMARY SCHOOL	15.84 %
SECONDARY SCHOOL	49.76%
POST-SECONDARY SCHOOL	9.57%
HIGHER EDUCATION	21.39%
POST-HIGHER EDUCATION	2.96%

WHAT SERVICES DO YOU USE ON THE INTERNET



INTERNET USAGE LOCATION

94.21%	HOME
26.60%	WORK
12.41%	SCHOOL / UNIVERSITY
12.17%	FRIEND'S PLACES

INTERNET ACCESS FROM MOBILE PHONES

EMPLOYMENT STATUS OF THE MOBILE INTERNET USERS

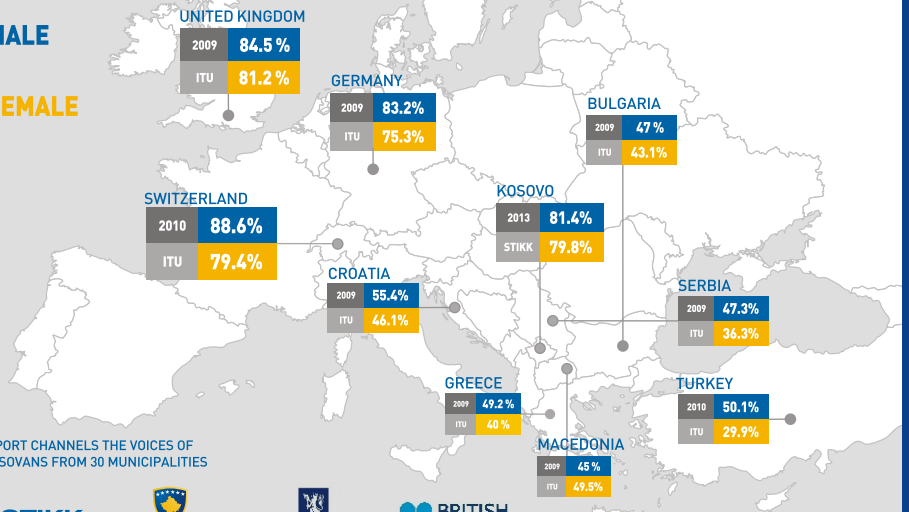
EMPLOYED	51.75 %
UNEMPLOYED	48.25%

KOSOVO MIRRORS EUROPEAN NEIGHBORS ON USAGE

INTERNET USERS BY GENDER

MALE

FEMALE



THE REPORT CHANNELS THE VOICES OF 1050 KOSOVANS FROM 30 MUNICIPALITIES

STIKK

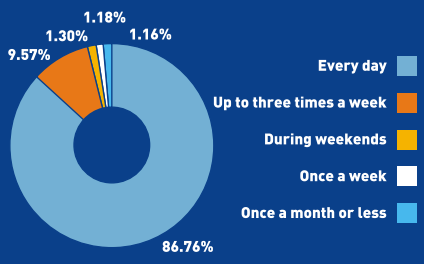
Ministria e Punëve të Jashtme
Ministry of Foreign Affairs

NORWEGIAN MINISTRY OF FOREIGN AFFAIRS

BRITISH COUNCIL

WWW.STIKK-KS.ORG

FREQUENCY OF INTERNET USAGE



FREQUENCY OF INTERNET USAGE BY GENDER

MALE	56.67%
FEMALE	43.33%

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