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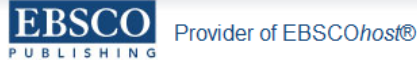
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## Use of Information and Communication Technologies in Rural Mersin (Turkey); Prospects For Rural Development

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Rural development is playing a crucial role in developing countries to alleviate poverty in rural areas. Information and communication and technologies can be an important instrument in of support of rural development and poverty alleviation by providing equal access opportunity to knowledge and market information, basic public (health, education) and financial services. The relationship between demographic characteristics and use of ICT in rural areas was assessed in this study by a survey carried out in two villages in Mersin province (Turkey) with distinct high and low educational and income profiles. The linkage between demographic variables (e.g. income, education, age, gender) and use of information technologies by rural household including number of personal computers, access to internet and connection time as well as telephone and television services were explored. The use of information technologies in poverty alleviation in rural areas was further discussed.

**Keywords:** Rural development, information communication and technologies, sustainable, Mersin, Türkiye.

### Mersin Kırsalında Sürdürülebilir Kırsal Kalkınmada Bilgi ve İletişim Teknolojilerinden Yararlanma

Kırsal kalkınma, gelişmekte olan ülkelerde kırsal alanda yoksulluğun azaltılmasında önemli rol oynamaktadır. Bilgi ve iletişim teknolojileri de, kırsal kalkınmayı destekleyen önemli bir araç olarak; kırsal alanda bilgiye ve pazarlara erişim, temel hizmetlerden yararlanma (sağlık, eğitim, yol, su), kamu ve finans hizmetlerine erişim ve yararlanmada fırsat eşitliği yaratarak, yoksulluğu azaltmada önemli bir rol oynamaktadır.

Çalışmada, hane geliri ve eğitim düzeyi dikkate alınarak; bu kriterler açısından Mersin ilinde aynı ilçeye bağlı en yüksek ve en düşük iki köy belirlenmiş; bilgi teknolojileri sahipliğinin (telefon, bilgisayar sahipliği ve internete bağlanma durumu) demografik değişkenler (gelir grupları, eğitim durumu, yaş, cinsiyet) ile ilişkisi belirlenmiştir. Kırsal alanda yoksulluğun azaltılmasında bilgi ve iletişim teknolojilerinde yararlanma tartışılmıştır.

**Anahtar Kelimeler:** Kırsal kalkınma, bilgi ve iletişim teknolojileri, sürdürülebilirlik, Mersin, Türkiye.

#### 1. Introduction

ICT has a potential of contributing to provide economic, social and environmental benefits (Gelb et al., 2008). In previous studies, majority of economists stated that improvement and diffusion of information and communication technologies served as a catalyzer in increasing economic growth and efficiency (Antonelli, 2003; Colecchia and Schreyer, 2002; Jalava and Pohjola, 2002; Singh, 2003). McNamara (2003) reported that ICT was used as a tool for sustainable economic growth, alleviation of poverty, fight against hunger and diseases, economic development, education opportunities for the poor and gender equality.

Low market access, inadequate infrastructure, low health and education access, difficulty of access to capital, lack of or very low access to state services are the causes of rural poverty in developing countries. Rural development has become a significant focus for developing countries as the poverty that exists in the world today is predominantly rural (Mwabu and Thorbecke, 2001). Adoption of technologic innovations for sustainable rural development gains more prominence particularly in countries with agriculture-based economy (Gelb et al., 2008). Gelb et al. (2008) reported that in 1993-2002 period, rural poverty around the world can be considerably (80%) reduced by technologic innovation. ICT has proven to be the single most

powerful tool for development in the past ten years (Hafkin and Taggart, 2001).

In developing countries, change in favor of the poor depends on development of individual and corporate capacity. ICT contributes to this change. To achieve development, it is of great importance to understand restrictions in compatibility to ICT, to produce appropriate solutions to decrease these restrictions and to contribute to developing effective politics to promote the use of ICT (Gelb et al., 2008).

The differences between globally developed and developing countries reached a new dimension with information and communication technologies. The differences such as poor-rich, educated-uneducated, female-male, old-young, married-single among the individuals became more striking with owning and using information technologies. 1999 "Human Development Report" prepared by United Nations Development Program drew attention that internet caused access and exclusion problem. As long as information technologies plays a leading role in economic development, education, health and public administration, the exclusion of the poor, illiterate, rural people gradually deepens. In 1997, the United Nations reported as follows: "There is a gradually increasing inequality in the distribution of opportunities, resources and access in the field of information and communication". Inequality in access to ICTs (digital divide) became a frequently discussed issue in recent years. The issue of digital divide is discussed in recent international summits and the countries attempt to set out national policies to address this issue. The measures to be taken against digital divide were discussed in United Nation Millennium 2000 summit. Drawing attention to the gradually increasing divide between information rich and poor, it was reported that the divide between the people with and without internet access also affects education, vocational skills, literacy, public health and economic success and has multiplying effects to the existing divide. In addition, the definition of the concept of "digital divide", measuring this divide and precautions to be taken against this inequality are among priority issues in the studies of Organization of Economic Cooperation and Development (OECD) (URL 1). Access to ICTs and ICT uses of individuals are

different and unequal due to their socio-economic characteristics and residence places. As a result, it is important to analyze this issue in terms of different sections in addition to the general of the country. The use of telephone, computer and internet, which are widely used in the society, differs in urban or rural regions in terms of residence place, age group, gender, education and labor force and points out to the presence of digital divide which should be investigated (DPT, 2011:18).

The global aim of reaching sustainable agricultural development is also a strategic issue in Turkey. Although the role of agriculture sector proportionally decreased within the economy, it still has a significant role in Turkish economy. Agriculture sector constitutes 8% of Gross Domestic Product (GDP) (Olhan, 2011). Settlements apart from those with a population of 20.000 and higher are defined as "rural area" in Turkey. 24% of the population (74.724.269 people) lives in rural areas. Agricultural sector and rural areas are intertwined; the majority of the people living in rural areas work in agricultural sector. 25.5% of the employed population in Turkey earn their living from agriculture (TZOB, 2010). Nonfarm pay roll opportunities in rural areas are rather limited in Turkey; agriculture sector is the only employment for the majority of rural dwellers. This fuels the severity and density of poverty in rural areas. In Turkey, 18.08% of households live under poverty line, which includes non-food spending. While poverty ratio of rural dwellers is 38.69%, it is 8.86% in urban dwellers. As for poverty ratios according to economic activities, poverty ratios in services, industrial and agricultural sectors are 7.16%, 9.63% and 33.01% respectively (TÜİK, 2009).

In this context, the existing situation in Turkey in terms of ICT (urban and rural) was investigated in the present study. In addition, taking into account household income and educational level two villages of the same district with the highest and lowest profiles in terms of these criteria were selected as the study area. The study aimed to determine the relationship between ownership of information technologies (telephone, computer and internet access) and demographic variables (income groups, educational status, age, gender).

Table 1- Available of devices in households (%)

	Turkey	Urban	Rural
Desktop computer	34.3	41.0	17.4
Portable computer (Laptop, Tablet PC)	22.6	27.9	9.2
Mobile phone	91.9	93.6	87.7
Television (including satellite dish, cable TV)	97.7	99	95.6
Fixed line telephone	51.4	55.1	41.9

Source: Turkish Statistical Institute, 2011. Results of the ICT usage in households and by individuals.

## 2. Current State of Information and Communication Technologies in Turkey

Diffusion of information technologies is quite new in Turkey. PCs and internet became widespread at the end of 1990s. This market showed a fast development in 2000s. Communication technologies became widespread in a relatively earlier period. According to "Global Information Technology" report prepared by World Economic Forum, which determines competition of countries in the field of information technologies, Turkey ranked 48th among 115 countries in 2005-2006 period; 52th among 122 countries in 2006-2007 period; 55th among 127 countries in 2007-2008 period and 69th among 133 countries in 2009-2010 period (URL 4). "The ICT Usage Survey on Households" was conducted to determine ICT access in households in Turkey and tendencies of citizens to mentioned technologies. Results of the survey are presented in the following tables.

According to Table 1, analysis of availability of information technologies in households in Turkey showed that availability ratio of desktop computers and portable computers was 56.9% in general of Turkey, 68.9% in urban areas and 26.6% in rural areas. It was observed that, following television, telephone had the highest ratio in availability of information technologies. Furthermore, availability of mobile telephones was found to be higher than the availability of fixed line telephone both in urban and rural areas. Availability of mobile phones in the general of country was high (91.9%). The distribution of availability of mobile phones in urban and rural areas was found to be similar (93.6% and 87.7%).

The hardware used to access internet by the households was mainly personal computers. Desktop computers have 25.5% share in devices

used for internet access in households in Turkey, which is followed by portable computers (18.7%) and mobile phones (13.9%). Similarly, in rural areas, desktop computers ranked the first (11.5%), mobile phones ranked the second for internet access.

Copying or transferring file/folder and copying and transferring a data in a document ranks the first among the activities performed in computers both in urban and rural areas. There was a significant difference between urban and rural areas in terms of writing a computer program using a computer language, setting up an operation system and preparation of presentations. These activities are not performed in rural areas.

As for the uses of internet in Turkey and around the world, it was observed that reading news, newspapers or magazines online, downloading news, searching information about health (injury, disease, diet etc.) participation to social groups via the internet were the most common activities both in urban and rural areas.

It was found that ratio of households with no access to internet was 54.9% in Turkey, 47.1% in urban areas and 74.3% in rural areas. The reasons for not having internet access were found to be high computer etc. prices, the opinion that nobody in the households needs internet (content is useless, harmful or uninteresting etc.) and high internet connection cost. On the other hand, the most important reason for not having internet access was found to be having no idea of internet.

As indicated in Table 2, it was found that ratio of computer and internet use was the highest between the ages of 16-34. It was found that as age increased, ratio of computer and internet use decreased and reached the lowest level between the ages of 65-74. It was found that females fell

behind males in all age groups. There was a linear relationship between educational level and computer and internet use. While computer and internet use increased in advanced levels of education, (75% in high school) it reached 92% at university. At university level, there was no difference between males and females. Analysis of computer and internet use in terms of labor force indicated that employers had the highest share (78.8%), followed by waged/paid (66.8%) employees. On the other hand, unemployed women used computer and internet at a higher level than males. As for the group which is not included in labor force, students (90%) had the highest share and there was a slight difference between males and females (1%).

### 3. Material And Method

Based on the interviews with Mersin Provincial Directorate of Food, Agriculture and Livestock, Emirler and Kamberhöyüğü Villages of Tarsus

district, which have the highest and lowest educational and household income level profiles, were selected as study area.

### Study Area

*Emirler Village* is 60 km to Tarsus and 80 km to Mersin city center. The village has a population of 147 people and a total of 70 houses. The villagers mainly make a living through animal husbandry (sheep, goat and cattle) and grow wheat and barley in an area of 1537 daa.

*Kamberhöyüğü Village* is 12 km to Tarsus and 38 km to Mersin city center. The village has a population of 626 people and a total of 130 houses. Citrus, drupe fruits, low amount of corn and wheat, lettuce, beans and okra are grown and cattle and small ruminants are reared in an area of 5 757 498 daa.

Table 2- Individuals using the computer and Internet by age groups, education level and employment situation(%)

	Total	Male	Female	Total	Male	Female
<b>Age group</b>						
16-24	67.7	77.9	58.3	65.8	76.5	55.9
25-34	57.1	67.5	46.7	55.1	65.4	44.9
35-44	41.7	52.6	30.6	39.7	50.4	28.9
45-54	24.1	34.3	13.9	22.7	32.1	13.2
55-64	11.2	17.2	5.4	10.4	16.0	5.0
65-74	3.0	5.0	1.4	2.7	4.5	1.2
<b>Education level</b>						
Literate without a diploma	3.3	7.8	1.9	2.8	6.8	1.6
Primary school	17.2	21.7	12.9	15.7	20.0	11.5
Secondary and vocational school	60.2	66.1	52.6	57.7	63.8	49.7
High and vocational high school	75.6	77.8	72.6	73.3	75.6	70.2
Higher education	92.3	92.8	91.4	91.0	91.5	90.3
<b>Employment situation</b>						
	<b>In labour force</b>					
Regular employee, casual employee	66.8	64.7	73.6	64.6	62.3	72.1
Employer	78.8	79.1	73.7	76.6	77.0	71.0
Self-employed	29.7	29.7	29.8	28.1	28.0	28.5
Unpaid family worker	17.0	38.9	7.0	16.5	37.8	6.7
Unemployed	54.6	49.3	70.9	53.9	48.7	69.7
	<b>Not in labour force</b>					
Houseworks	19.7	17.5	19.8	18.3	17.5	18.3
Retired	19.3	17.8	23.9	17.7	16.3	22.2
Student	90.1	90.5	89.7	88.3	89.4	87.2
Not want to work	33.5	23.3	46.4	31.5	20.1	45.9
Disabled	5.6	6.3	4.7	4.9	5.9	3.6
Other	25.9	26.1	25.8	24.7	20.0	24.4

Source: Turkish Statistical Institute, 2011. Results of the ICT usage in households and by individuals.

It is understood that residing place, age group, gender, education and labor force status are the indicators determining computer and internet ownership and usage.



Data was collected through face to face interviews. The following data was obtained from the questionnaire.

- Educational levels and occupations of the households and household income,,
- Availability of information and communication technologies (computer, fixed line or mobile phones, television, camera and DVD/VCD),
- Status of internet connection from households and operations performed in computer and internet,
- Furthermore, analyzing the data obtained from questioners, the relationship of computer and internet use with demographic indicators was determined.
- Data was collected through interviews with prominent people in a total of 63 households in Emirler Village (90%) and 114 households (88%) in Kamberhöyüğü Village. A full census was tried to be conducted, however no data could be obtained from a total of 16 households who had a house in Kamberhöyüğü Village but dwelled in district or city center. Furthermore, 7 households in Emirler Village refused to make interviews.

*Data analysis:* Descriptive statistics and chi-square analysis were used for data analysis.

## 4. Findings and Discussion

### 4.1. Education levels and occupations of females and males interviewed in the study areas and income status of households

It was found that both females and males in Kamberhöyüğü Village had higher educational level than those in Emirler Village. In Kamberhöyüğü Village 19.5% of females and 48.1% of males were secondary school and high school graduates. In Emirler Village, none of the females received high school or higher education; 10.3% of females were secondary school graduates, while 26.4% of males were secondary-high school and university graduates.

81.7% of females in Emirler Village and 86% of females in Kamberhöyüğü Village were

housewives. Ratio of income earning females was 14% in Kamberhöyüğü Village and 3.3% in Emirler Village. Ratio of males earning income from farming was 84.1% in Emirler Village and 41.1% in Kamberhöyüğü Village. While none of the males in Emirler Village worked as worker-public servant or were self-employed, 32.6% of males in Kamberhöyüğü Village worked as worker-public servant or were self-employed.

It was found that 88.9% of households in Emirler Village and 59.2% of households in Kamberhöyüğü Village had monthly income of lower than 417\$. 11.1% of households in Emirler Village and 40.8% of households in Kamberhöyüğü Village had monthly income of higher than 750 TL. It was found that average household income in Kamberhöyüğü Village was higher than that of Emirler Village.

### 4.2. Ownership of Information and Communication Technologies and Internet Access in House

Numbers of personal computer, mobile phone and internet users are used as alternative indicators of ICT (Lutz, 2003). Indicators of the study area are presented below.

#### Availability of ICT in houses

It was found that availability ratio of desktop computers was 1.6% (1) in Emirler Village and 23.7% (27) in Kamberhöyüğü Village. There was a statistically significant difference between availability of desktop computers in Emirler and Kamberhöyüğü Villages ( $p=0,001$ ). Income level of households is an important indicator determining ownership of computers. In other words, the percentage of homes with computers is higher in the village of Kamberhöyüğü, which has a higher household income, than in the village of Emirler. Statistical Report of Information Society of Turkey (DPT, 2011) stated that as the income level of households increased, ownership of computer as one of the information tools increased as well. Today, the distinction between information technology and communication technology is vague. Although mobile phones are used as the main communication devices, now the consumers can also reach data and information via mobile phones (Lutz, 2003). Within the scope of social work model applied by Vodafone in Turkey, information and early warning messages are sent to 700.000 subscribers including weather forecast, warnings for crop diseases, agriculture support announcements, marketplace and market

prices and latest developments in agricultural sector and thus contribution is made to rural development. As a result, work processes or farmers become more efficient and practical; costs are reduced and their quality of life is increased (URL 2). Similarly, farmers in far villages of Kenya use mobile phones to reach valid crop prices. In Sri Lanka, fishermen locate fish colonies on satellite map. Workers migrating from Sierra Leone can make money transfer to their relatives in far villages through mobile banking (URL 3). In this respect, it is important to determine ownership of mobile phones in households.

It was found that number of households having mobile phones was 62 (98.4%) in Emirler Village. Despite 1.6% households with no mobile phone, 52.4% of households had one mobile phone; 44.4% had two mobile phones and 1.6% had three mobile phones. Average number of mobile phone per households was found to be 1.46 in Emirler Village. On the other hand, 96.5% of households owned mobile phones. It was found that 33.3% of households had one mobile phone; 47.4% had two mobile phones; 14.0% had three mobile phones and 1.8% had four mobile phones. Average number of mobile phone per households was found to be 1.77 in Kamberhöyüğü Village (Table 4.1). Considering high mobile phone ownership ratio, it was observed that mobile phones showed the most democratic distribution than other ICTs. It can be stated that mobile phones are used as the principle communication devices in rural areas. This data indicates that ownership of mobile phones is high in both villages and creates a significant opportunity to offer certain services to citizens over mobile phones. There was no significant difference in terms of ownership of mobile phones between

the two villages in the study area. However, Statistics of Information Society of Turkey Report (DPT, 2011) stated that as income level increased, percentage of mobile phone ownership increased as well. It comes to mean that, household income is not a distinguishing factor in mobile phone ownership. Analysis of ownership of mobile phones according to education group showed similar results. According to transposition of individual mobile phone ownership and age, gender and education, as age groups increases mobile phone ownership ratio decreases (URL 5). Kora (2006) reported that functions to use mobile phones in rural Tanzania were as follows; i. Keeping in touch with the family and friends, ii. Emergency situations iii. Collecting data about agricultural products and market. Lio and Liu (2006) reported that mobile phones had a positive impact on increasing and strengthening social status of women and families. It was found that there were no fixed line phones in 33.3% of houses in Emirler Village and 48.2% of houses in Kamberhöyüğü Village. When compared to ownership ratio of mobile phones, it can be stated that the villagers preferred to use mobile phones.

It was found that 98.4% of household in Emirler Village had television, while 1.6% did not have television. Of the houses with television, there were one television in 77.8%; two televisions in 19.0% and three televisions in 1.6% of houses. On the other hand, it was found that 96.5% of houses had televisions in Kamberhöyüğü Village. There were 4 houses with no television. It was found that there were one television in 92.1%; two televisions in 4.4% of these houses. Average number of televisions per house in Emirler and Kamberhöyüğü Villages were found to be 1.20 and 1.01 respectively.

Table 4.1- Available of devices in households (piece)

	Emirler	Kamberhöyüğü
Desktop computer	1	27
Portable computer (Laptop, Tablet PC)	1	1
Mobile phone	92	202
Television (including satellite dish, cable TV)	76	115
Fixed line telephone	43	59

### Internet Access from houses

It was found that 1.6% of houses in Emirler village and 12.3% of houses in Kamberhöyüğü Village had internet access. There was a statistically significant difference between internet access opportunities at home between the villages ( $p=0,014$ ). It was found that internet access was via mobile phones in Emirler Village and via fixed line phone from Kamberhöyüğü Village. Because the level of income is higher in the village of Kamberhöyüğü, while internet access is mainly through computers, whereas it is through cell phones in the village of Emirler, which has a lower income level. Considering ratio of ownership of computers in Kamberhöyüğü Village (23.7%), it was understood that half of the computers had no internet connection. As for Emirler Village, it was found that ratio of computer ownership in houses was 1.6% and ratio of internet connection via computer was 1.6%. This can be explained by the fact that the people in Emirler village who have computers and have internet connection via computer are university graduates. Considering distribution of internet ownership in houses according to income groups, it was found that upper income group had the highest ratio and internet ownership decreased as income level decreased. Similarly, analysis of the distribution of internet ownership ratio among different educational level showed that university graduates had the highest ownership ratio (URL 5). Internet creates a more significant impact than phone on income difference as i. Internet access in more expensive than telephone, ii. Internet use requires a higher educational level than telephone. Low educational level is high among the poor, iii. The use of internet language is difficult to use for the poor. Finally, internet requires electric access and qualified personnel, which are lacked in rural area (Lio and Liu, 2006).

The reasons for not having internet access at home were found to be high internet connection fee; no need of internet use among the house (not beneficial); inability to buy computers due to high price and lack of enough knowledge to use computers respectively. Gelb et al. (2008) carried out a questionnaire study in AFITA/EFITA (Asian/European Federation for Information Technology in Agriculture) and reported that the most significant restrictions/blocks in ICT uptake (purchase/use) were i. Cost of technology, ii. Do not understand the value of ICT, awareness and

iii. Personal impediments (Illiteracy or ICT skills). Adequate infrastructure in physical and human resources constitute the greatest barriers in adoption of ICT. Even if information infrastructure reaches rural regions there is no guarantee for the poor to access ICT applications (Cecchini and Scott, 2003: 73-84).

### 4.3. Computer and Internet Operations

#### Computer Operations

It was found that mainly the following operations were done with computers: copying or transferring file/folder; copying or transferring data in a document using copy and paste instructions; file transferring to computers and other devices (sending/receiving files to /from mobile phone, mp3/mp4, receive file from digital camera),

There were significant differences between Emirler Village and Kamberhöyüğü villages in terms of computer operations:

- copying or transferring file/folder,  $p=0,002$
- copying or transferring data in a document,  $p=0,002$
- compressing files,  $p=0.022$
- transferring file between computer and other devices (send/receive file to/from mobile phone, mp3/mp4, digital camera),  $p=0,007$ .

Since the level of education is higher in the village of Kamberhöyüğü, the above-mentioned work can be performed on computers, but not in the village of Emirler.

#### Internet operations

It was found that internet was generally used to participate in social groups (facebook) over the internet, to read and share opinions on social and political issues via the web, for webcam chat, to read news, newspapers, magazines and to subscribe to news services or products to receive information on regular basis. In a study carried out in the USA, 8 out of 10 internet users around the world visit social network sites (DPT, 2011).

There were significant differences between Emirler Village and Kamberhöyüğü villages in terms of internet operations

- participate in social groups over the internet (facebook),  $p=0,010$

- read and share opinions on social and political issues over the web,  $p=0,001$
- webcam chat,  $p=0,010$
- read news-newspaper-magazines,  $p=0,001$
- subscribe to news service of products to receive information on regular basis,  $p=0,004$ .

In other words, the level of education and the profession are the factors that determine the internet usage. The types of work mentioned above are routinely performed on the the village of Kamberhöyüğü, where workers, officials and self-employed people can be found, in addition to those who are engaged in farming.

#### 4.4. The relationship between computer ownership and internet access with demographic variables (gender, age, educational level and job)

Computer and internet use according to gender, age group and educational level was analyzed in the study area.

##### 4.4.1. Status of using computer and internet according to gender

It was found that computer was used in only 1.6% of houses in Emirler village and 22.8% of houses in Kamberhöyüğü village. Of the computer users, 66.7% were male, 33.3% were female. The number of male computer users double the number of female computer users. Female/male ratio is 1/2 in both villages.

Female/male internet use ratio is 1/2 in Emirler Village. In Kamberhöyüğü Village, internet use ratios of males in 2.9 times higher than that of

females. Of the internet users, 75% are males and 25% are females.

It was found that there was a significant difference between the genders in favor of males in terms of computer and internet use. Particularly restricted mobility, low education level of rural women and male domination over the media exclude women from ICT (Cecchini and Scott, 2003: 73-84). However, today ICT is the most effective tool in enhancing personality and capacities of women and their participation in various areas of production. Elnaggar (2008) reported that ICT can ensure effective participation of women in development activities involving planning and decision-making at familial, organizational and social level.

##### 4.4.2. Status of using computer and internet according to educational level

Of the computer users in houses, 42.9% were primary education; 46.9% were high school and 10.2% were university graduates/students. It was found that computer use was the highest at high school level (Table 4.2). Schooling rate at university level is quite low; there were only five university graduates in Kamberhöyüğü village. In other words, all of the university students/graduates (100%) use computers.

It was found that of the internet users in houses, 26.6% were primary education, 56.7% were high school and 16.7% were university students/graduates. In parallel to use of computers, the use of internet was the highest at high school level (Table 4.2). However, Lutz (2003) emphasized that contrary to expectations, there was no relationship between widespread ICT use and education.

Table 4.2- Distribution of computer and internet use according to education level

Education status	Computer			Internet		
	Number of person	%	Emirler / Kamberhöyüğü	Number of person	%	Emirler / Kamberhöyüğü
Primary education	21	42.9	1 / 20	8	26.6	1 / 7
High school	23	46.9	2 / 21	17	56.7	2 / 15
University	5	10.2	- / 5	5	16.7	- / 5
Total	49	100.0	49	32	100.0	30

Table 4.3- Distribution of computer and internet use according to age groups

Age groups	Computer		Internet	
	Number of person	%	Number of person	%
10 – 20	25	51.0	10	33.3
21 – 30	15	30.6	14	46.7
31 – 40	8	16.3	5	16.7
41 – 50	-	-	-	-
51 – 60	1	2.1	1	3.3
Total	49	100	30	100.0

#### 4.4.3. Status of computer and internet use according to age groups

It was found that 81.6% of computer users were between the ages of 10-30. As age increased, computer use decreased. Computer use was almost zero after the age of 40. In the study it was found that 80% of internet users were between the ages of 10-30. Internet use ratio decreases after age 30 (Table 4.3).

#### Conclusion

In the present time, the use of information and communication technologies (ICTs) is extremely important in developing countries, for the sustainable rural development. In the access to ICTs and their use, the determining factors are urban or rural residence, age, gender, education, profession and the level of income. In this context, this study has examined the relationship between demographic variables (age, gender, the level of education, income and profession) and the access and use of ICTs. In this respect, the governments

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1) must develop policies to encourage and increase the education beyond the primary level, and 2) must encourage the increase of income sources outside farming.

In the use of computers and internet, age, gender and the level of education are the determining factors. Whether in computer or in the internet use, the ratio of men is higher than that of women. In order to increase the use of computer and internet, which are effective tools in improving women's capacities and ensuring gender equality, it is necessary to increase the schooling ratio of women beyond the primary level.

The household income and the level of education cannot be used as determining factors in mobile phone or television ownership. Mobile phones are being used as the main communication device in the rural areas. Therefore, mobile phones can be employed in providing services, such as informing about health, education, produce prices and market status, etc. For that, the rural residents must be educated about accessing these different services through mobile phones.

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