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Assessment of Employment in the Development of the Distribution and Accessibility of Information Society in Azerbaijan

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Abstract

Purpose: In the current era of rapid development of the information and communication technologies (ICT) sector, the formation of an effective regulatory approach is important. There are some methodological shortcomings and difficulties in the approach system of international organizations that assesses the level of application of ICT in various areas in terms of quantity and quality. The basic element of economic growth differs according to the economic conditions prevailing in the period and the country. While the agricultural sector plays an active role in economic growth or development in an underdeveloped country, in a developed country, capital-intensive and even technology-intensive production is the main element of economic growth. From this point of view, the contribution of information and communication technologies (ICT) to Azerbaijan's socio-economy for the period between 2010-2020 will be examined. **Research design and methodology:** The unit root test and Granger causality test were applied by taking the CDPPC per Capita, Employment, and Unemployment Rate from the social-o-economic data as the dependent variable, fixed and mobile phone usage and internet usage as the independent variables. **The principal results:** According to the results obtained; It has been determined that the use of ICT positively affects the socio-economic economic situation.

Keywords: Distribution, Accessibility, ICT, Granger Causality, Socio-Economy.

JEL Classification Code: O30, 032.

1. Introduction

Dissemination of information - the process of providing information available in the information retrieval system to consumers of information.

Economic growth is the main goal of every country's economy. Ensuring sustainable economic growth, increasing production, expanding employment will enable the welfare of the people to increase. Until the industrial revolution, the world had an agricultural intensive production period. With the industrial revolution, machine and mass production was started. Thus, the countries that were able to make the transition to industry achieved serious economic growth. The countries that could not make the transition to the industrial revolution or made it late, on the other hand, lagged behind.

Today, economies have entered a more dominant information and technology era beyond the industrial revolution. It is no longer sufficient to have only machined mass production, the technological content of the products produced and the use of science and technology in the production process is of great importance. This period or process, which we call the information economy era, is more evident in countries that have reached the saturation point of the industrial revolution. Today, the fact that information transmission can be provided very quickly and securely, and that changes and developments in technological and production methods can be easily transferred are the results of the information economy.

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Adapting to these changes and transformations is important for the growth of national economies. At this point, the importance of information and communication technologies (ICT) emerges. Active use of ICT is of great economic importance. Because it increases the processing, transmission, storage, and efficiency of information.

This study aims to draw attention to the effect of ICT on economic growth and to explain the causality aspect of the interaction of ICT and economic growth by making an application for Turkey. After the introduction, a general conceptual framework was created in the second part. In the third chapter, previous studies on the subject were examined. In the fourth part, econometric applications were made, and in the conclusion part, general evaluations were made.

2. Socio-Economic Development and Information and Communication Technologies

Economic growth can be defined as the increase in a country's production capacity and the increase in the gross domestic product (CDPPC), which is calculated as the monetary value of the goods and services produced as a result of this capacity increase. This expansion may result from an increase in the number of production factors, as well as from the productivity of production factors (Parasiz, 2008).

An economy that can make significant progress in technological developments will grow more than an economy that is at the same investment-savings level but less technologically advanced. The production possibilities curve will shift to the right as shown in the figure (Unsal, 2007). While technological advances are being made, technologies that increase in quantity are also extremely important in increasing the efficiency of other production factors. It can be extremely important in terms of incorporating technology into production processes and increasing efficiency.

The above-mentioned technology is versatile. However, in the context of Information and Communication Technologies (ICT), technology can be defined as a broad concept that includes all the equipment used to gather information, transmit it to different points at the same time, process it, evaluate it in general, distribute it to different units and disseminate it. It has a large share in increasing the productivity of an economy. In this respect, ICT greatly affects the different functions of not only companies but also each unit in the industry and services sector; market research methods, new product design and development, machinery equipment, production and distribution systems, marketing and retail operations, private sector and public administration. In addition, ICT can reduce costs in general, coordinate units at different points, and accelerate the R&D processes carried out for the development of new technologies.

Natural resources, geopolitical location, agricultural wealth are no longer enough to revive a country (Sirin, 2015). Today, it can be said that the countries that direct the global economy are the economies that have generally completed the industrialization phase and have implemented higher economic models and methods. It can be stated that these economies are based on information, informatics, communication, and technology in general. In economies dominated by the knowledge economy, the ICT sector has an extremely important position. ICT is the main driver not only of key sectors such as industry, agriculture, and services but also of other sectors. At this point, it would be appropriate to say that ICT has increased its share and importance in an information-centered economy (Shahin & Asan, 2015).

According to the International Telecommunication Union (UTB), the specialized unit of the United Nations (UN) in the field of information and communication technologies, the development process of ICT, and the development of a country towards becoming an information society are shown in Figure-1.

As shown in Figure 1, certain stages must be passed in order for the ICT effect to occur. First of all, it means that the physical infrastructure necessary for the use of information and communication technologies has been provided in the stage called ICT Preparation by UTB. The ICT Capacity stage shows the ability of the population in a country to use technology devices such as computers, mobile phones and tablets related to ICT. This indicator, on the other hand, is obtained based on the education indicators that take into account the schooling and education levels indicated in Table-1. In the ICT Usage Intensity stage, it is calculated according to total subscriptions and usage indicators. The ICT Effect arises depending on the ICT Usage Intensity.

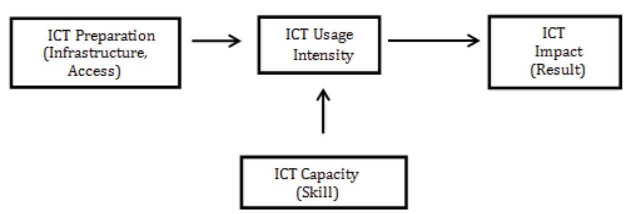

Figure 1: Stages to the Right Evolution of the Information Society

Table 1 shows the indicators that make up the ICT Index. In general, the index consists of three main headings and these three main headings consist of sub-indicator headings.

Table 1: Indicators and Weights Constituting the ICT Development Index

	Indicators	Reference Value Reference Ratio (%)	Reference Value Reference Ratio (%)	
ICT Access Indicators	Number of fixed telephone subscriptions per 100 people	*60*	*20*	*%40*
	Number of mobile phone subscriptions per 100 people	*120*	*20*	
	Proportion of households with internet access	*2'158' 212*	*20*	
	Proportion of households owning computers	*100*	*20*	
	International internet bandwidth per internet user (bit/s)	*100*	*20*	
BIT	Individual internet usage rate	*100*	*33*	*%40*
	Number of active mobile broadband subscriptions per 100 inhabitants	*60*	*33*	
	Fixed broadband subscriptions per 100 inhabitants	*100*	*33*	
Use of	Average Age of Schooling Rate	*15*	*33*	*%20*
	Gross enrollment rate in secondary education	*100*	*33*	
	Gross enrollment rate in higher education	*100*	*33*	

The main headings in Table-3 are ICT Access Indicators, ICT Usage, and ICT Capacity.

a) ICT Readiness: It shows the ICT infrastructure and ICT access of individuals. The indicators used to measure this stage can be expressed as follows.

Fixed Telephone Subscriptions Per 100 Persons: The term "fixed telephone subscriptions" refers to the sum of active analog fixed telephone lines, Internet voicemail protocol subscriptions, fixed wireless local loop subscriptions, voice channel equivalents of the integrated services digital network, and fixed public telephones.

The number of Mobile Phone Subscriptions Per 100 Persons: Indicates the number of subscriptions for a public mobile phone service that provides access to the public switched telephone network using cellular technology. It includes both the number of billed subscriptions and the number of active prepaid accounts (i.e. accounts active during the previous three months).

International Internet Bandwidth Per Internet User (bit/s): The term "International Internet bandwidth" refers to the total used capacity of international Internet bandwidth, in megabits per second (Mbit/s). It means the average usage of all international links including fiber optic cables, radio links, and traffic processed (in Mbit/s) by stations and teleports to orbital satellites. All international links used by all types of operators (fixed, mobile and satellite operators) are taken into account. Average calculated over the 12 months of the reference year. For each international connection, if traffic is asymmetrical, i.e. inbound traffic is not equal to outbound traffic; the higher of the two is taken into account. The combined average usage of all international connections is the sum of the average usage of each connection Internet. It is calculated by converting the international internet bandwidth per user (bit/s) to bits per second and dividing it by the total number of internet users.

Computer Owner's Household Ratio: "Computer" refers to a desktop computer, laptop (portable), tablet, or similar portable computer. The proportion of Households with Internet Access: The Internet is a worldwide network of public computer services. This concept of access can be done over a fixed or mobile network. A house with internet access means that the internet can be used by all members of the house at any time.

b) ICT Capacity (Skill): Indicators in this group calculate the intensity of ICT use. Data for all these indicators are collected by UTB. These indicators (Shahin, & Asan 2015):

• Individual Internet Usage Rate: This term indicates the proportion of people who used the Internet from any location and for any purpose in the previous three months, regardless of the device and network used. Use is a computer (for example, desktop computer, laptop, tablet, or similar portable computer), mobile phone, gaming machines, digital television, etc. available. Access can be provided over a fixed or mobile network.

• Fixed Broadband Subscriptions Per 100 People: The term "fixed broadband subscriptions" refers to the sum of subscriptions with public internet at speeds equal to or greater than 256 kbit/s. This includes cable modem, DSL, fiber, other fixed (cable) subscriptions, satellite broadband, and terrestrial fixed wireless broadband.

• Number of Active Mobile Broadband Subscriptions Per 100 Persons: refers to subscriptions accessed only from mobile devices, not fixed subscriptions for internet access. In order for mobile devices to be included in this category index, they must have provided a subscription for the last three months.

c) ICT Skills Indicators: Data on average years of education and gross enrollment rates (secondary and higher education level) are collected by the Statistical Institute of the United Nations Educational, Scientific, and Cultural Organization. Here, a relationship is established between education level and internet usage skills.

• Average Age of Schooling Rate: The term "average years of schooling" refers to the average of years of schooling completed by a country's population; excludes years spent repeating individual grades. The distribution of the population by age group and the highest level of education attained in a given year were calculated using time series data on the official duration of each education level.

• Gross Schooling Rate (middle and senior): According to the statistics of the United Nations Educational, Scientific and Cultural Organization Institute, the gross schooling rate represents the percentage of the school-age population, regardless of the age of the individuals.

3. Literature Review

As a requirement of the information and technology age we live in, every area of life more or less interacts with technology. While this is the case, technology and economic growth also interact. One of the studies dealing with the relationship between ICT and economic growth is Kumar, Staurvermann, and Samitas (2016) examined the relationship between economic growth and ICT use in China for the period 1980-2013. Unit root, co-integration, and Granger causality tests were applied using economic growth, number of mobile phones, internet subscribers, phone exports, and telecommunication subscribers. According to the Granger causality test, there is a bidirectional causality relationship between the number of mobile phone subscribers, telecommunication subscriptions, and economic growth, as well as between the number of mobile phone subscribers, telecommunication subscriptions and economic growth, and the direction of this relationship is positive.

In the study of Jorgenson and Vu (2016), the relationship between ICT and economic growth was examined using various indicators, and the effect of internalization of ICT on economic growth was investigated. It has been observed that ICT has a positive effect on economic growth. Hofman, Aravena, and Aliaga (2016) CDPPC and human capital, physical capital, and internet usage rate indicators were examined for Latin American countries. Although it has been observed that the rate of human capital, physical capital, and internet usage as independent variables have a positive effect on the economy in all Latin American countries, it has been observed that this effect is more in the USA, which uses ICT more intensively.

Shahin and Asan (2015) examined the share of ICT exports in total exports for OECD countries. The result was reached by using the Shift-share technique for the period 2008-2009. In the period under consideration, it was observed that the share of OECD countries in total exports decreased by 0.08% due to the global crisis.

Artan, Hayaloğlu, and Baltaci (2014) investigated the effect of ICT on economic growth for transition economies. In this study, the relationship between the number of telephone lines and internet subscribers per 100 people and economic growth for the period between 1994-2011 was reached by using panel data analysis. It has been observed that the use of ICT has a positive effect on economic growth in both the short and long term.

Vu (2013), in his study, examined the relationship between ICT and economic growth in the Singapore economy during the 1990-2008 period. Three results were obtained in this study. First, it has been determined that there is a strong positive effect between intensive use of information and communication, added value, and labor productivity. Secondly, information and communication technologies have increased the national income by approximately 1% for the period in question in Singapore and it has been seen that the importance of sustainable economic growth has started to increase. Thirdly, although it was observed that information and communication technologies had a positive effect on Singapore's manufacturing industry, this effect was observed to decrease.

Türedi (2013) investigated the effect of ICT on economic growth by using the panel data method for the period 1995 - 2008 in 23 developed and 30 developing countries. It has been concluded that information and communication technologies have a positive effect on economic growth in both developed and developing countries, although it is more in developed countries during the examined periods. Sassi and Goaied (2013), who found similar results, also found a positive relationship between ICT and financial development in their studies and concluded that MENA region countries should invest more in ICT sub-investments.

In her study of Aliyeva (2016) emphasized that people and organizations who know that they exist in the modern world need to understand the ways of coping with the competitive environment of information and communication technologies and electronic digitalization by using the information society.

In their study, Yaprakli, and Saglam (2010) analyzed the relationship between information communication technologies and economic growth for the period 1980 - 2008 using multivariate co-integration analysis, error correction-enhanced Granger causality test, and vector error correction model. It has been revealed that there is a positive relationship between ICT and economic growth. With the Granger causality test, it was concluded that there is a two-way causality between economic growth and ICT. Moshiri and Nikpoor (2010) analyzed the impact of information and information technologies on productivity in developed and developing countries. Panel data analysis was conducted for 69 countries between 1992 and 2006, and it was concluded that information technologies had a positive effect on productivity worldwide.

Akbulaev and Mammadova (2021) emphasized that it is necessary for people to access financial information and increase their level of knowledge. In order to realize this, the importance of information communication systems plays a great role.

Hanahmedov (2018) emphasized that the financing of citizens is important to support micro-enterprises and that its legal infrastructure should be developed. For micro-enterprises, the importance of information communication systems is increasing in order to realize them without renting a place today.

Considering the studies, it can be said that the relationship between ICT and economic growth or development shows that there is a positive effect in general. At this point, the development of ICT infrastructure investments by the state and the encouragement of the private sector are important in terms of increasing economic efficiency.

4. Empirical Application

4.1. Model and Dataset

In this study, the effect of ICT on socio-economic development will be examined for Azerbaijan in the 16-year period between 2005 and 2020. Assuming the other factors affecting the socio-economic development are fixed, the number of fixed phone usage (SABIT), the number of mobile phone subscribers (CEP), the number of Internet usage (INTERNET), and socio-economic development as CDPPC, Employment and Whether there is a relationship between the unemployment rate and if there is a relationship, the direction of the relationship will be investigated.

As data, the data of the variables for the years between 2005 and 2020 were taken annually from the Azerbaijan Statistics Committee. Since the simultaneous existence of the data started in 2005, the period covered by the study was limited to 16 years.

A model was established for the study as follows. In addition, the logarithmic states of the variables are included in the model.

4.2. Method

Time series analysis was used as a method. In this context, in the first step, the stationarity of the series was determined by applying the ADF and KPSS unit root tests, which examine the stationarity of the time series. Because when non-stationary time series are used, spurious regression problems may be encountered. In this case, the results obtained will not be able to reflect the relationship between the variables in a healthy way. The non-stationary series will be made stationary by ADF and KPSS tests (Gujarati, 1999).

When trying to determine the stationarity of the series, the test that can be said to be more effective than other methods in catching the structural breaks in the series is the ADF unit root test, and the KPSS unit root test will also be applied to support the results of the ADF. The causality relationship between the variables and the direction of the relationship was tested with the help of "Granger Causality Analysis." According to Granger (Granger, 1969), "Causality is expressed as "If the prediction of Y is more successful when the past values of X are used than when the past values of X are not used, then X is the Granger cause of Y." Since the causality relationship, not the estimation, is investigated with the Granger causality test, the variables should be removed from the stationary state, that is, from the unit root (Granger, 1988).

4.3. Results

ADF Unit Root Test

Ekonometrik metodoloji öncelikle zaman serilerinin durağanlık özelliklerini irdeler. Değişkenler arasında anlamlı sonuçlar elde edilebilmesi için serilerin durağanlaştırılması gerekmektedir. Yukarda değinilen ve yaygın olarak kullanılan "Geliştirilmiş Dickey-Fuller (ADF)" aşağıdaki şekilde formüle edilebilir.

Δ is the difference, t is the time trend, u is the error term, t is the number of series included in the model. The extended Dickey-Fuller test is assumed to have constant variance and the error term is statistically independent. In addition, the lag lengths chosen correctly in the ADF test are important for the power of the test (Said & Dickey, 1984).

Table 2: ADF Unit Root Test Results

VARIABLES	t-Statistic	Prob.*
KBGSYIH	-1.669542	0.4254
IST	-3.356423	0.0354
ISS	-2.561705	0.1267
INTER	-2.179271	0.2208
MTEL	-12.11183	0.0000
STEL	-6.546702	0.0001
TEST RESULTS AFTER TAKING DIFFERENCES		
DKBGSYİH	-4.381708	0.0058
DİTSİHDAM	-	-

DİŞSİZLİK	-3.720270	0.0668
DİNTERNET	-3.755144	0.0222
DCEP	-	-
DSABİT	-	-

ADF unit root test results are given in Table 2. Here, in cases where the probability values are greater than 0.10, the Ho hypothesis, that is, the variables have unit roots, cannot be rejected. In other words, since the probability values of the variables are greater than 0.10 at the level, there is a unit root problem. The first differences of the variables are taken to solve the unit root problem. Since the probability values of the first differences of the variables are less than 0.10, the first differences of all variables have become stationary according to the ADF unit root test. Here, the first difference between the CDPPC, INTERNET, and CEP variables is stationary at the 1% significance level, while the FIXED variable is stationary at the 5% significance level.

KPSS Unit Root Test

Despite the alternative hypothesis that the series is not stationary, Kwiatkowski, Philips, Schmidt, and Shin (1992) proposed the Lagrange Multiplier (LM) statistic for testing the main hypothesis that the series is stationary. According to Kwiatkowski et al. (1992), stationarity and unit root tests are complementary to each other. The similarity between KPSS unit root test and ADF unit root test is that both are first-generation tests. The difference between the stationarity tests, which are referred to as KPSS in the literature, from the ADF test is that their hypotheses are reversed. KPSS is based on a linear regression model and is formulated as follows.

KPSS test statistics

This is displayed as. ñ does not show a normal distribution. Kwiatkowski et al. (1992). Critical values of ñ were calculated with the Monte Carlo simulation made by $H0$ve in KPSS test.

The hypotheses $H1$ are set up as follows.

Table 3: KPSS Unit Root Test Results

VARIABLES	LM-STATS	CRITICAL VALUE
KBGSYIH	0.739000	0.490314
IST	0.739000	0.509374
ISS	0.739000	0.453111
INTER	0.739000	0.592816
MTEL	0.739000	0.505244
STEL	0.739000	0.507051
TEST RESULTS AFTER TAKING DIFFERENCES		
DKBGSYIH	0.216000	0.304570
DIST	0.216000	0.142728
DISS	0.216000	0.500000
DINTER	0.216000	0.238203
DMTEL	0.216000	0.399378
DSTEL	0.216000	0.226949

KPSS unit root test results are given in Table-3. In order to interpret the KPSS unit root test, it is necessary to compare the LM-Statistics values with the absolute value of the critical value. Ho: The hypothesis of unit root, that is, non-stationary, cannot be rejected when the LM-statistics value is greater than the absolute critical value. Here, it can be seen from the table that all variables contain unit roots at their levels. In order to eliminate the unit root problem of the variables, the first differences of the variables were taken. When the first differences in the variables are taken, they become stationary according to my KPSS unit root test. Here, the first difference of CDPPC, INTERNET FIXED variables is stationary at 1% significance level, while CEP variable 1st difference is stationary at 10% significance level.

Granger Causality Test

Granger (1986) developed causality between time series. This test is a test used to determine the existence of a causal relationship between the variables, the direction of the relationship, the cause variable, and the result variable. The Granger causality test requires the estimation of the two regression equations in the lower panel.

In this model, "aj, bj, cj, dj = delay coefficients, m, q, r, s = delay periods, u, v = error terms, Δ refers to difference. The following hypotheses are tested by finding out whether all the b and d coefficients are statistically equal to zero with the help of the F-test. $H0=b1 = b2 = b3 = ... = bq = 0$ if this hypothesis is accepted, there is no causality from Y to X. If this hypothesis is rejected, there is causality from Y to X. $H0 = d1 = d2 = d3 = ... = ds = 0$ if this hypothesis is accepted, there is no causality from X to Y. If the hypothesis is rejected, there is causality from X to Y. If both hypotheses are rejected, there is bidirectional causality. If one of the two hypotheses is accepted and the other is rejected, there is unidirectional causality. If both hypotheses are not rejected, there is no causality between the X and Y variables." (Granger, 1986).

Table 4: Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
LOGSTEL does not Granger Cause LOGMTEL	14	0.08024	0.9235
LOGMTEL does not Granger Cause LOGSTEL		1.14609	0.3602
MTEL does not Granger Cause LOGMTEL	14	5.20232	0.0315
LOGMTEL does not Granger Cause MTEL		4.98029	0.0350
LOGIST does not Granger Cause LOGMTEL	14	0.19955	0.8226
LOGMTEL does not Granger Cause LOGIST		1.13628	0.3631
LOGISS does not Granger Cause LOGMTEL	14	0.21781	0.8084
LOGMTEL does not Granger Cause LOGISS		0.70341	0.5202
KGSYIH does not Granger Cause LOGMTEL	14	1.46473	0.2814
LOGMTEL does not Granger Cause KGSYIH		14.1901	0.0016
MTEL does not Granger Cause LOGSTEL	14	0.27892	0.7629
LOGSTEL does not Granger Cause MTEL		1.30233	0.3186
LOGIST does not Granger Cause LOGSTEL	14	0.37319	0.6987
LOGSTEL does not Granger Cause LOGIST		4.79190	0.0383
LOGISS does not Granger Cause LOGSTEL	14	0.12893	0.8806
LOGSTEL does not Granger Cause LOGISS		9.80660	0.0055
KGSYIH does not Granger Cause LOGSTEL	14	0.58807	0.5754
LOGSTEL does not Granger Cause KGSYIH		4.28498	0.0493
LOGIST does not Granger Cause MTEL	14	0.28137	0.7612
MTEL does not Granger Cause LOGIST		1.22190	0.3393
LOGISS does not Granger Cause MTEL	14	0.18072	0.8376
MTEL does not Granger Cause LOGISS		0.61053	0.5641
KGSYIH does not Granger Cause MTEL	14	1.41241	0.2928
MTEL does not Granger Cause KGSYIH		11.9148	0.0030
LOGISS does not Granger Cause LOGIST	14	3.79259	0.0639
LOGIST does not Granger Cause LOGISS		4.11502	0.0538
KGSYIH does not Granger Cause LOGIST	14	0.78139	0.4865
LOGIST does not Granger Cause KGSYIH		0.78854	0.4836
KGSYIH does not Granger Cause LOGISS	14	0.71576	0.5147
LOGISS does not Granger Cause KGSYIH		4.26663	0.0497

Note: * indicates 1% significance level, ** indicates 5% significance level, *** indicates 10% significance level.

Granger causality test results are given in Table-4. When evaluated according to the critical values of 1%, 5%, and 10%, CDPPCPC is accepted as h0 not the cause of CEP, but at the 5% significance level, the hypothesis ho is rejected. CEP is the cause of CDPPC. While the INTERNET is the cause of 5% of CDPPCPC, the CDPPCPC is the cause of the INTERNET at 10%. There is a bidirectional causality relationship between FIXED and CDPPC at the 5% significance level. No causal relationship was observed between the INTERNET and CEP. While there is no causality from FIXED to CEP, there is a causality relationship from CEP to FIXED at the 5% level. Similarly, while there is no causality relationship from FIXED to Internet, there is a 5% causality relationship from INTERNET to FIXED.

5. Conclusion

Distribution as a process is a volitional conscious activity of the subject, aimed at obtaining a certain anticipated result that corresponds to the motive of the subject's activity and has a corresponding personal meaning.

It can be said that countries enter into competition in ensuring economic growth with globalization. The technological innovations of today's economies can provide serious advantages in gaining superiority. In this respect, information and communication technologies have an extremely important place in the transmission, processing, and storage of information. The effect of the information and communication technologies we have tested for Turkey on economic growth has been tried to be revealed by basing on the results of the Granger causality test. According to the Granger causality test; GDP is not the cause of the increase in mobile phone use, but mobile phone use is a factor in GDPPC.

At the 5% significance level, there is a one-way relationship from pocket to CDPPC. Although there is a bidirectional relationship between the Internet and CDPPC, there is a causal relationship from the Internet to CDPPC at the 5% significance level and from the CDPPC to the Internet at the 10% significance level. There is a two-way and 5% significant relationship between fixed telephone and CDPPC. These figures were obtained for the relationship between dependent and independent variables. Considering the relationship between the independent variables, no relationship was found between mobile and internet, there is no causality from fixed to mobile, but there is a causal relationship from mobile to constant at the 5% significance level. There is one-way causality from Internet to fixed, where there is no one-way relationship from fixed to Internet. In general, mobile phones, landlines, and the internet are the cause of CDPPC. CDPPC is the cause of the internet and landline phone, but not the mobile phone. From the results obtained, it can be observed that it is important to increase the use of information and communication technologies, especially to use them actively at every stage of economic activities. In order to increase the use of ICT, it can be said that the necessary infrastructure services should be provided by the state and the private sector should be encouraged.

According to the results of the study, in the future, it is necessary to study, through a survey of the population, their requirements and shortcomings in ICT services. What recommendations can the authors offer to the Azerbaijani government and authorities to improve the quality of ICT services. And also make it available in all regions of Starna.

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