Elkhan Adil SALAYEV
Azerbaijan State University of Economics (UNEC)
Faculty of business and management
E-mail: elxan_salayev@mail.ru

E-CITIZEN MODEL AT THE DIGITAL MUNICIPALITY LEVEL AND MACROECONOMIC ANALYSIS OF INTERNET SERVICES

Abstract

The article focuses on the formation of civil society, which plays an important role in the implementation of e-municipality, and the study of the shades of influence at the macroeconomic level. From this point of view, the article analyzes the contribution of Internet services to the social economy of Azerbaijan in 2000-2020. The purpose of this study is to investigate digital citizenship on social field in municipalities and to investigate relations among Internet services, fixed capital investment, per capita income and subsidies to local budgets (municipalities) using economic methods of econometric analysis, and to determine the direction of relations. The research methodology is based on the ARDL (autoregressive distributed lag models) cointegration technique and the Granger Causality test. According to the ARDL co-integration analysis, there is a one-sided cause-and-effect relationship between internet services (thousand manats) and subsidies (million manats) to local budgets (municipalities). The limitation of scientific research covers the processes of establishing civic relations in e-municipality and the processes within economic relations in the field of ICT. According to the results, the impact of Internet services (thousand manats) on subsidies (million manats) to local budgets (municipalities) is positive.

Keywords: e-municipality, e-citizen, digital, ICT, subsidy.

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1.Introduction

The main task of the municipal management development line is to transform the management into an innovative socially oriented type of management. Based on this, the application of digitalization services in municipal administration can lead to basic innovations and improvements in this structure. That is, the addition of Internet services to the activities of municipalities involves the development of an e-citizen model in the context of documenting civil relations. Knowing the basics of modern documentation of management activities is a tool for local self-government bodies to work effectively in providing better municipal services.

Internet technologies allow creating new forms of communication, new sources of information and new platforms for disseminating information. These platforms have a strong impact on people's lives, cultural characteristics and social trends, as well as large social structures such as economics and politics [1]. In modern times, Internet services are of great importance in human life, as well as in the municipal management system of developed countries. Internet services embody the operation of the subsystems of the municipal management system which are managed or manage and it can be considered as the circulation, input and processing of information about the external environment for the operation of the municipal management system. From this point of view, the provision of digital services in local self-government bodies has laid the foundation for the adoption of e-municipality. The concept of e-municipality includes the application of modern information and communication technologies in local self-government activities of municipalities, the provision of services to citizens and other institutions via the Internet[9].

As a new form of interaction, e-municipality envisages the creation of socially oriented projects based on ICT in the municipality in order to provide various services to the population[2]. The current situation in municipal governance is not of serious economic interest for socially and strategically important issues that are commercially inefficient. For this reason, it is important to finance the provision of new services in the municipal administration, and it is also important to implement a public policy to attract investment. The application of municipal services in the form of Internet services also depends on the opportunities available in this field in the country. In general, how Internet services are offered, as well as how these services are met and used by the population, are among the factors that have a significant impact on the e-municipal system. In this regard, the analysis of the impact of Internet services in the macroeconomic field and the impact on e-municipal services was studied in our research.

2. Subsidies allocated to municipalities

One of the important sources of income for the operation of municipalities in Azerbaijan is the allocations from the state budget. According to the Law on the Budget System, transfers - subsidies, as well as targeted funding - subsidies and subventions can be provided from the state budget to local budgets to cover the budget deficit. The part of local budget expenditures that are not covered by their own revenues (local budget deficit) may be covered by subsidies from the state budget [13]. The norms applied in the calculation of local budget expenditures receiving subsidies, subventions and loans from the state budget shall not exceed the expenditure norms applied for the calculation of state budget expenditures. When calculating the amount of subsidy, the number of people living in the municipality, their share in the formation of the country's financial resources, municipal revenues and expenditures, location of settlements within the municipality on the front line, border zone, high mountainous area, living standards, socio-economic projects should be taken into account.

Subsidies are gratuitous funds provided from the state budget to local budgets in order to regulate their revenues and expenditures. Municipalities may cover the part of their expenditures (the local budget deficit) that are not covered by their own revenues with subsidies from the state budget. In determining the amount of the subsidy, the number of people living in the municipality and their share in the formation of the country's financial resources are taken into account.

3. E-citizen model in e-services of the municipality.

Today, the concept of dichotomy of civilization is widely used. This implies the division of civilizations into technogenic and traditional forms. The first is used in the sense of a resource, and the second shows a collective and social advantage[14]. In local (municipal) areas where collective relations take place, productive close relations are established with the help of information systems. Municipal Information System is a complete technological, software and information environment for the creation, storage and dissemination of information for the interests of municipal authorities, institutions and citizens. Municipal Information System is an information support tool for municipal administration and should be considered as a set of all information technologies adopted by the organization.

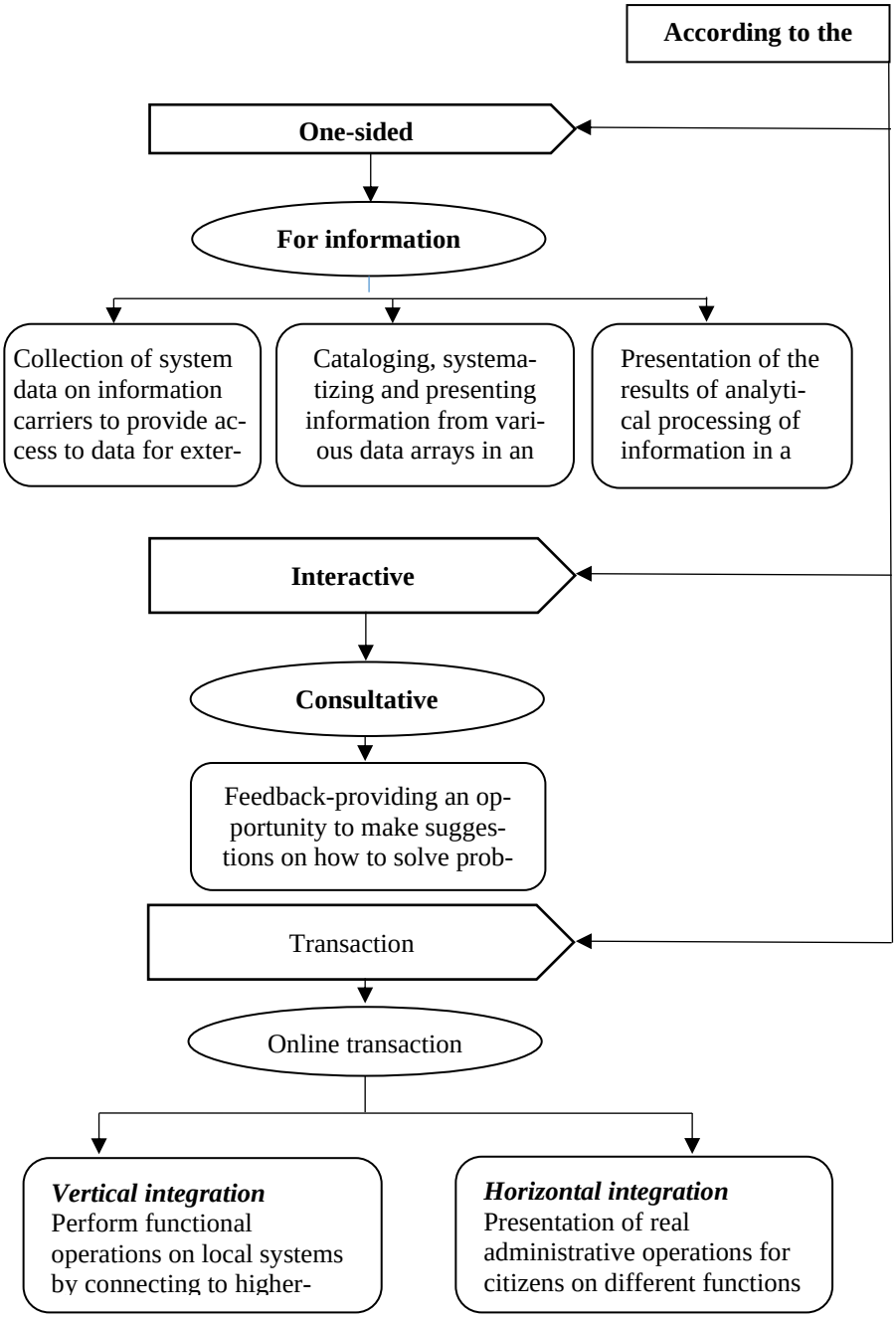
E-municipality can be defined as a modern municipal approach that provides transparent services to people using advanced technologies in a rapidly changing world of technological development [11]. The following areas of use of modern information technologies in the activities of municipalities can be distinguished:

- information interaction of municipal management entities;
- information and analytical support for management decisions;
- providing paperless technology for information processing and storage.

Digital transformation has an accelerating and transforming effect on the life cycle of formal and informal institutions. It remains the socio-cultural type of society and begins gradually over a long period of time [12]. E-citizenship is a person's attitude towards membership in the digital community. In local self-government bodies, e-citizens have the opportunity

to express their views on referendums, elections and other general issues.

The e-citizen model within the digital services of the municipality can be described in the following scheme:



Scheme 1. Establishment of e-citizen model in digital municipal services

In general, this model allows all members of society to actively participate in local governance. The ability to process, store and transmit these types of electronic information processes encourages the socialization of people with hearing and speech disabilities [10]. It is clear from the scheme that the e-citizen receives information from the municipality at 3 levels. Creating the widest range of connections within them is possible when performing online transactions. Creating the widest range of connections within them is possible when performing online transactions.

The Municipal Information System presented in Scheme 1 allows the implementation of the "one window" principle for the provision of administrative services to the population. Citizens have access to relevant levels of information to benefit from the services. The main purpose of the e-citizen model is to ensure the implementation of municipal functions in electronic form. At the interactive level, the Municipal Information System transmits inquiries from citizens to the information systems of the relevant government agencies, and, conversely, provides information to the citizen on the processing of data in the department's information systems and the implementation of operations during the surveys.

A well-organized documentation center should describe all materials in its collection and be accessible. Cataloging in the Municipal Information System should focus on the successful execution of significant transactions. When performing online administrative operations, citizens become participants in vertical and horizontal integration processes. Vertical integration involves a chain of sending and transmitting requests at different levels. Vertical integration reflects a citizen's personal issues, as well as complex connections for business expansion and promotion. However, horizontal integration implies that citizens with the same rights interact with each other electronically.

4. Dataset and Econometric Methodology

As the part of the study of e-services in municipalities, it is important to compare the level of Internet services at the macroeconomic level in terms of volume and profitability, as well as to analyze the state of financial assistance to municipalities. The data have been taken from the official website of the **State Statistical Committee** of the Republic of **Azerbaijan** for analyzing the relation between fixed capital investments and Internet services.[5] The statistics used in the study refer to 2000-2020. The variables in the model are abbreviated as follows:

INX: internet services (Dependent variable)

INXM: Internet services (thousand manats) (Independent variable)

EKI: Fixed capital investments (million manat) (Independent variable)

KBG: Per capita income (manat) (Independent variable)

YBVDOT: Subsidies to local budgets (municipalities) (million manat) (Independent variable)

Cointegration tests are used to analyze the long-run relationship of variables to each other. In commonly used cointegration tests, the variables must be stationary in the same way. This situation creates some problems in the use of the cointegration test. These problems are solved by the ARDL method, which allows to analyze the long-run relationship between non-stationary variables of the same sequence. This ARDL test, developed by Peseran et al., is widely used in cointegration tests [6]. Cointegration analysis is performed with the ARDL model using the following formula.

$$\Delta Y_t = \beta o + \beta 1 + \varepsilon i \qquad (1)$$

$$\Delta Y_t = \beta o + \sum_{i=1}^{n} \beta_i \Delta Y_{t-1} + \sum_{i=1}^{n} \beta_{\delta i} \Delta X_{t-1} + \varphi_1 Y_{t-1} + \varphi_2 X_{t-1} + \mu_t \qquad (2)$$

The symbol Δ in formula 2 represents the difference operator, the fixed condition, the error term. To conduct the cointegration analysis, formula (1) is first evaluated. After formula (1) is found, the long-run relationship should be checked. The Wald test is used to check for the existence of a long-run relationship between variables. The hypotheses of this test are as follows:

$$H_O \div \delta_1 = \delta_2 = 0,\ H_O \div \delta_1 \neq \delta_2 \neq 0 \qquad (3)$$

The statistical value F calculated for the analysis of the long-run relationship is compared with the levels of significance obtained in the studies of Pesaran and Smith. If the F statistic is above the critical value, H_0 is rejected and H_1 is accepted. Based on this, it is known that there is a cointegration connection.

Once the model is determined to have a cointegrating relation, long-run coefficients are obtained. The ARDL (m, n) model in formula (4) is used to calculate the long-run coefficients.

$$\Delta Y_t = \beta o + \sum_{i=1}^{n} \beta_i \Delta Y_{t-1} + \sum_{i=0}^{n} \beta_{1i} \Delta X_{t-1} + \sum_{i=0}^{n} \beta_{2i} \Delta X_{t-1} + \varphi_1 Y_{t-1} + \beta_i \qquad (4)$$

After determining the coefficients of the long-run relationship, the model compatibility is decided by reviewing the experiment tests of the model. An ARDL-based error correction model

is used to determine short-run relationships between variables. The following formula (5) is used for this.

$$\Delta Y_t += \beta o + \beta_1 HDM_{t-1} + \sum_{i=0}^{m} \beta_{2i} \Delta X_{t-1} + \sum_{i=0}^{n} \beta_{3i} \Delta X_{t-i} + \varepsilon i \quad (5)$$

HDM_{t-1} in formula (5) is correction term of variable errors. The error correction factor represents the delayed value of the remains of the model in which a long-run relationship is obtained between the variables. The HDM coefficient indicates how long the effects of a short-run shock will disappear in the long run [4].

4. Application and results

4.1 Unit Root Analysis

Stationary in time series means that the variance does not change over time. It is important for the series to be stationary in studies that use time series data.

When non-stationary series are used in the analysis of time series, the results of the model to be used are unrealistic, and the use of non-stationary series leads to a fake relation between the variables in the model. The most reliable analysis used to determine the stationary of a variable, or its degree of stationary, is the Unit Root Test [7]. Although Unit Root Tests are of great importance in econometric research, they are used in many fields.

The most commonly used unit root tests in practice:

- Dickey Fuller (DF)
- Extended Dickey Fuller (ADF)
- Phillips-Perron (PP) unit root tests.

Table 1.

Phillips Perron (PP) unit Root test result

UNIT ROOT TEST TABLE (PP)					
At Level					
		INX	INXM	EKI	YBVDOT
With Constant	t-Statistic	4.2492	-5.1652	-4.4570	-14.0648
	Prob.	***1.0000***	***0.0006***	***0.0027***	***0.0000***
		n0	***	***	***
With Constant & Trend	t-Statistic	-0.6071	-7.0211	-5.0684	-13.5722
	Prob.	***0.9661***	***0.0001***	***0.0036***	***0.0000***
		n0	***	***	***
Without Constant & Trend	t-Statistic	4.5379	-2.6956	-4.1242	-10.7166
	Prob.	***0.9999***	***0.0099***	***0.0003***	***0.0001***
		n0	***	***	***
At First Difference					
		d(INX)	d(INXM)	d(EKI)	d(YBVDOT)
With Constant	t-Statistic	-4.6440	-14.8667	-5.8751	-42.5163
	Prob.	***0.0020***	***0.0000***	***0.0002***	***0.0000***
		***	***	***	***
With Constant & Trend	t-Statistic	-13.3124	-14.8703	-7.7333	-41.2988
	Prob.	***0.0000***	***0.0001***	***0.0000***	***0.0001***
		***	***	***	***
Without Constant & Trend	t-Statistic	-3.3756	-12.7930	-5.9348	-41.0697
	Prob.	***0.0021***	***0.0001***	***0.0000***	***0.0001***
		***	***	***	***
Notes: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant					

Table 2

ADF unit root test result

UNIT ROOT TEST TABLE (ADF)					
At Level					
		INX	INXM	EKI	YBVDOT
With Constant	t-Statistic	1.1398	-5.2870	-5.5797	-3.5870
	Prob.	***0.9962***	***0.0005***	***0.0003***	***0.0189***
		n0	***	***	**
With Constant & Trend	t-Statistic	-1.4407	-7.4691	-5.8668	-3.8063
	Prob.	***0.8138***	***0.0000***	***0.0009***	***0.0442***
		n0	***	***	**
Without Constant & Trend	t-Statistic	2.6296	-2.7238	-4.9611	-3.7100
	Prob.	***0.9962***	***0.0093***	***0.0001***	***0.0009***
		n0	***	***	***
At First Difference					
		d(INX)	d(INXM)	d(EKI)	d(YBV-DOT)
With Constant	t-Statistic	-4.6242	-11.3747	-5.9795	-14.1905
	Prob.	***0.0021***	***0.0000***	***0.0002***	***0.0000***
		***	***	***	***
With Constant & Trend	t-Statistic	-3.8558	-11.1286	-5.7029	-13.7180
	Prob.	***0.0406***	***0.0000***	***0.0015***	***0.0000***
		**	***	***	***
Without Constant & Trend	t-Statistic	-3.3847	-11.5401	-6.2262	-14.6159
	Prob.	***0.0020***	***0.0001***	***0.0000***	***0.0001***
		***	***	***	***
Notes: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant					

Table 1 and Table 2 show the 1%, 5%, and 10% confidence intervals for the variables. INXM, EKI, and YBVDOT appear to be stationary at ADF and PP unit root tests. Unit root tests of ADF and PP show that the INX level is not stationary and it becomes stationary when the first difference is obtained. Once the appropriate values of stationary are determined, the cointegration test can be applied using the Autoregressive Distributed Lag Models (ARDL) model.

4.2. ARDL cointegration test

Cointegration analysis eliminates data loss due to differences in long-run time series and provides great flexibility for its resolution. Engle Granger, Johansen and ARDL are some of the cointegration tests. Cointegration tests are also used to check the long-run relationship between variables. Frequently used cointegration tests assume that the variables are stationary at the same level. Therefore, there is a limitation in cointegration tests. However, Pesaran and the others (1996) proposed the ARDL approach, which allows the analysis of the relationship between stationary variables at different levels.[8]

In our study, INXM, EKI and YBVDOT levels are stationary. INX was analyzed as a first-class stationary. Therefore, the ARDL approach was preferred in the cointegration test.

Table 3. ARDL (1, 4) Model Diagnostic Test Results

When the ARDL test results are analyzed in Table 3, the R-squared value of 0.787807 appears to be able to explain 78.7807% of the value of the independent variable EKI in the dependent variable INX. In contrast, the F-statistic shows that the model as a whole is important because it is smaller than the critical values of 0.05 and 0.10. Breusch-Godfrey values show that there is no dispersion problem in the model. When this value is analyzed, it seems that there is no such a variable that is not taken into account in our study. The Jarquera-Bera Normality value indicates that the errors have a normal distribution.

Table 3

ARDL test results (INX)

Tests	Statistics (EKI)	Statistics (INXM)	Statistics (YBVDOT)
R-squared	0.787807	0.497967	0.043171
Adjusted R-squared	0.646345	0.390388	-0.161864
F value	5.569032 (0.011417)	4.628871 (0.018889)	0.210556 (0.887407)
Breusch-Godfrey LM	0.176682 (0.8417)	0.20118 (0.8205)	0.665795 (0.5319)
Jarquera-Bera Normality	0,181181 (0,913392)	0,950055 (0,621858)	9,536512 (0,008495)

The closer this value is to zero, the more accurate the distribution corresponds to the normal distribution [3]. If the R-squared value of INX and INXM is 0.497967 it means that the independent variable INXM can explain 49.7967% of the changes in the dependent variable INX, and the explanatory power seems being moderate. On the contrary, the F-statistic result shows that the model as a whole is important, because it is smaller than the critical values of 0.05 and 0.10. The R-squared value of INX and YBVDOT is 0.043171, and the independent variable YBVDOT can explain 4.3% of the changes in the dependent variable INX, and its explanatory power is very weak. The fact that the F-statistical result is not less than the critical values of 0.05 and 0.10 indicates that the model is completely insignificant.

Table 4

Bounds test results (INX and EKI)

	ARDL bound F- statistic	Bounds Test
INX	(1,4)	11.77162
Significance level	Lower bound	Upper bound
10%	3.02	3.51
5%	3.62	4.16
1%	4.94	5.58

Table 4 shows the bounds test results of the model. The results of the Bounds test are used in the ARDL model to analyze whether there is a long-run relationship between the variables or no. As the Bounds F-Statistical value is calculated as 11.77162 and exceeds the upper bound value at 1%, 5% and 10% significance levels compared to the critical values, H_0 is rejected. According to this result, there is a cointegration relationship between the levels, and it shows us that there is a long-run relationship between the variables.

Table 5

Bounds test results (INX and INXM)

	ARDL bound F- statistic	Bounds Test
INX	(1,4)	7.703564
Significance level	Lower bound	Upper bound
10%	4.04	4.78
5%	4.94	5.73
1%	6.84	7.84

Table 5 shows the bounds test results of the model. The results of the bounds test are used in the ARDL model to analyze whether there is a long-run relationship between the variables or no. As the Bounds F-Statistic value is calculated as 7.703564 and exceeds the upper bound value at 1%, 5% and 10% significance levels compared to critical values, H_0 is rejected. According to this result, there is a cointegration relationship between the levels, and it shows us that there is a long-run relationship between the variables.

Table 6

Long-run coefficient results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EKI	-0.031874	0.009532	-3.344057	0.0086
C	0.861074	0.138879	6.200176	0.0002
EC = INXF - (-0.0319*EKI + 0.8611)				

Table 6 shows the long-run coefficients of the variables in the ARDL model. Accordingly, if there is 1% increase in EKI during the study period, it has 0.31874% negative impact on INX. In other words, in addition to cointegration with EKI, the direction of this relationship is negative. It means that 1% increase in EKI leads to 0.31874 decrease in INX.

Table 7

Long-run coefficient results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INXM	0.017711	0.013292	1.332440	0.2040
EC = INXF - (0.0177*INXM)				

1% increase in INXM has a positive impact on INX of 0.17711%. In other words, despite the lack of cointegration of the INXM, the direction of this relationship is positive. In this regard, during the study 1% increase in INXM has 0.17711% positive impact on INX. In other words, 1% increase in INXM leads to 0.17711% increase in INX.

4.3. Granger Causality Test

Table 8

Granger causality test results

Null Hypothesis:	F-Statistic	Prob.
EKI does not Granger Cause INX	2.99912	0.0849
INX does not Granger Cause EKI	0.74972	0.4919
INXM does not Granger Cause INX	0.67547	0.5259
INX does not Granger Cause INXM	2.78198	0.0987
YBVDOT does not Granger Cause INX	0.01815	0.9820
INX does not Granger Cause YBVDOT	0.02655	0.9739
INXM does not Granger Cause EKI	0.73168	0.4999
EKI does not Granger Cause INXM	1.44769	0.2706
YBVDOT does not Granger Cause EKI	0.27575	0.7633
EKI does not Granger Cause YBVDOT	0.39245	0.6831
YBVDOT does not Granger Cause INXM	0.02655	0.9739
INXM does not Granger Cause YBVDOT	6.90674	0.0090

Table 9 shows the results of the Granger causality test. The effects of EKI or INT have been investigated here. Table 9 also shows the results of the Granger test calculated with 2 delayed values. Table 9 shows the cause-and-effect relationship between the variables. Accordingly, at the 5% significance level, the probability that INX has no effect on INXM is rejected. Taking into account the results given in the table, the probability that the INX has no effect on the EKI is accepted to be at the 5% significance level. In other words, there is a one-sided causal relation from EKI to INX. It means that EKI affects INX. In addition, this result supports long-run coefficient results in the ARDL model.

Conclusion

The electronic citizen model is the formalization of legal and technical measures that combine the digital environment and the physical environment. The e-Citizen model for the implementation of municipal activities accelerates processes, increases the utility, transparency and quality of services. The e-citizen model depends on the level of internet services provided at the macroeconomic level. The high level of internet services as an infrastructure factor has a positive

impact on the provision of digital municipal services.

The scientific and practical significance of the research is that the features of economic utility of technological communication processes in the relevant field have been studied and they have been explained theoretically. As a result of the analysis, it should be noted that at the 5% significance level, the probability that INX has no effect on INXM is rejected. The probability that the INXM has no effect on the INX is accepted to be at the 5% significance level. In other words, there is a one-sided causal relationship from INXM to INX. It means that INXM affects INX.

On the other hand, at the 5% significance level the probability that the INXM does not affect YBVDOT is rejected. The probability that YBVDOT has no effect on the INXM is accepted to be at the 5% significance level. In other words, there is a one-sided causal relationship from INXM to YBVDOT. It means that INXM affects YBVDOT.

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Эльхан Адиль Салаев
Азербайджанский государственный экономический университет (UNEC)
Факультет бизнеса и менеджмента

Модель электронного гражданина на уровне цифрового муниципалитета и макроэкономический анализ интернет-сервисов

Резюме

В статье актуальное значение имеет формирование гражданского общества, которое играет важную роль в применении электронного муниципалитета, и изучение эффектов на макроэкономическом уровне. С этой точки зрения в статье анализируется вклад интернет-услуг в социальную экономику Азербайджана в 2000-2020 гг. Целью данного исследования является исследование цифрового гражданства на социальном поле в муниципальных образованиях, а также изучение взаимосвязей между интернет-услугами, инвестициями в основной капитал, доходом на душу населения и дотациями в местные бюджеты (муниципалитеты) с использованием экономических методов эконометрического анализа, а также определение направления отношений. Методология исследования основана на методе коинтеграции ARDL (авторегрессивные модели с распределенным запаздыванием) и тесте причинности Грейнджера. Согласно коинтеграционному анализу ARDL, существует односторонняя причинно-следственная связь между интернет-услугами (тыс. манатов) и дотациями (млн. манатов) местным бюджетам (муниципалитетам). Ограниченность научного исследования охватывает процессы становления гражданских отношений в электронном муниципалитете и процессы внутри экономических отношений в сфере ИКТ. По результатам влияние интернет-услуг (тыс. манатов) на дотации (млн. манатов) в местные бюджеты (муниципалитеты) положительное.

Ключевые слова: электронный муниципалитет, электронный гражданин, цифровой, ИКТ, субсидия.

Elxan Adil Salayev
Azərbaycan Dövlət İqtisad Universiteti (UNEC)
Biznes və menecment fakültəsi

RƏQƏMSAL BƏLƏDIYYƏ SƏVIYYƏSINDƏ ELEKTRON VƏTƏNDAŞ MODELI VƏ INTERNET XIDMƏTLƏRININ MAKROIQTISADI TƏHLILI

Xülasə

Məqalədə e-bələdiyyənin tətbiqində mühüm rol oynayan vətəndaş cəmiyyətinin formalaşması, makroiqtisadi müstəvidə təsir çalarlarının öyrənilməsi məsələləri aktual əhəmiyyət kəsb edir. Bu baxımdan məqalədə 2000-2020-ci illər üçün internet xidmətlərinin Azərbaycanın sosial-iqtisadiyyatına töhfəsi təhlil edilmişdir. Bu tədqiqatın məqsədi bələdiyyələrdə rəqəmsal vətəndaşlığı sosial sahə üzrə araşdırmaq, iqtisadi tərəfdən ekonometrik təhlil üsullarından istifadə edərək internet xidmətləri, əsas kapitala investisiyalar, əhalinin hər nəfərinə düşən gəlirlər və yerli büdcələrə (bələdiyyələrə) verilən dotasiyalar arasında münasibətləri araşdırmaq və əlaqələrin istiqamətini müəyyənləşdirməkdir. Tədqiqatın metodologiyasının əsasını ARDL (avtomatik regressiv paylanmış paylanmış geriləmə modelleri) kointeqrasiya metodu və Granger səbəb təsir əlaqəsi testi edilib. ARDL kointeqrasiya analizindən tapılanlara görə, internet xidmətlərinin (min manat) yerli büdcələrə (bələdiyyələrə) verilən dotasiyalar (milyon manat) arasında birtərəfli səbəb-təsir əlaqəsi mövcuddur. Elmi araşdırmanın məhdudiyyətliliyi e-bələdiyyədə vətəndaş münasibətlərinin qurulması və İKT sahəsində iqtisadi əlaqələr çərçivəsində prosesləri əhatə edir. Əldə edilmiş nəticələrə görə, internet xidmətlərinin (min manat) yerli büdcələrə (bələdiyyələrə) verilən dotasiyalara (milyon manat) təsir müsbətdir.

Açar sözlər: e-bələdiyyə, e-vətəndaş, rəqəmsal, İKT, dotasiya.

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