INFLUENCE OF THE ECONOMIC GAP ON THE LEVEL OF E-GOVERNMENT IN THE DEVELOPING COUNTRIES - REPUBLIC OF MOLDOVA

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Abstract

The digital divide of developing countries vis-à-vis developed countries is also reflected in the level of e-Government development. Developing countries face the challenges of e-Government with fewer capacities and resources but also strong incentives for growth prospects.

Developing e-Government as a complex phenomenon involves multidisciplinary efforts: the development of electronic communications infrastructures and data infrastructures, the transformation of internal business-processes of governance, increased democracy and education, as well as a sustained economic level, etc.

The research analyzes the level of e-Government development in the Republic of Moldova in a regional context of a group of developing countries in an attempt to find particularities and similarities in the evolution of e-Governance in this space and to identify the development potential and opportunities and to overcome the gap in this area.

The study also addresses the prospect of alignment with European standards on e-government development, especially with regard to the single digital market, the European Interoperability Framework and others, as levers and drivers for increasing the socio-economic level of the Republic of Moldova, and building an open, participative and performing government.

1. Introduction

Electronic government is a great challenge for the traditional model of public administration. It has an overwhelming influence on how to organize internal government processes and on the services provided by citizenship and business governance.

Over the years, the issue of implementing eGovernment in developing countries and especially in transition countries has been the subject of numerous studies [2], [3], [4], [5], [6]. Research has focused on the specificities of e-Governance development in these countries, on the causes of failure of e-government projects [4], [5], [6] 7, barriers to e-Government implementation [2] [3], [6] on issues such as government policies in the field [4], [6], [7] ICT infrastructure, education, research, culture, democratic freedoms, etc.

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The purpose of this paper is to examine the situation regarding the e-Government development in the Republic of Moldova in an attempt to understand to what extent this process takes place in line with the general trends in the digitization of government, but also to help identify development opportunities.

In our study, we have been particularly interested in how the level of economic development of the country influences the phenomenon of e-Government and whether there are specific characteristics for developing countries in comparison to developed countries.

2. Reason of research

Several studies highlight factors whose influence on the e-Government implementation process is critical [2], [7], [12], [13], [14], [16], [17]. These include, for example, lack of infrastructure [7], lack of awareness of the role and opportunities of e-Government [2], funding of e-Government projects, political and legal issues, political support, resilience to change, vision and implementation strategy [14].

The most frequently mentioned and considered as critical factors are financing, IT infrastructure, legal issues, awareness and political support [14]. For example, in the case of developing countries, funding for e-Government projects is much more critical, as they have limited resources [7]. As a rule, e-Government projects in these countries are largely funded by external donors, and with the ending of these funding, project sustainability can no longer be ensured. On the other hand, projects funded in this way do not provide an approach that will lead to incremental improvements in which functionalities are improved over time so that efforts are not lost if funding is reduced.

In our research we took into account the economic aspect of the problem, the level of economic development being the basic criterion according to which countries are classified in different categories of development. We focused on a number of developing countries, according to the classification of the International Monetary Fund [18], [19] in the ex-communist area, in fact, countries that are or were in transition, in the idea that these countries have a somewhat common past, certain cultural features and other common features that would allow us to identify certain laws in the process of implementing eGovernment. These countries are: Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, Romania, Serbia, Tajikistan, Former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine, Uzbekistan.

We also intend to examine the dependence between the level of economic development and the level of e-Government in an expanded context, taking into account the relationship between the e-Government and the economic one in a group of developed countries in the European area , namely Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, United Kingdom. On the one hand, we considered it necessary to have a broader view on the relationship between e-Governance and economic development and, on the other hand, we wanted to see what are the particularities of developing countries in general and of the Republic Moldova in particular, in this picture of the relations between e-Government and economic development.

The Republic of Moldova is a country closer tied to European practices in all areas of economic and social life both in geographical proximity and especially through the association agreement. The Moldovan e-Government model will have to take this link into consideration, and technological

solutions for transforming governance will develop in an increasingly integrated information space with the European one, harmonization of the normative framework and alignment with European norms in this respect on the order of day, more and more current and important.

3. E-Government in Moldova

The Republic of Moldova is a developing country, a country in transition, detached from the former Soviet Union in 1991. At the end of the Soviet period, there were a significant number of local technological institutions and enterprises. They activated in the Soviet industry, especially in the military industry. For example, more than 35,000 specialists were employed in the electronics industry at the end of the 1980s [20] (for comparison, in 2018, the ICT sector employed 20,000 specialists [21]). During this time a human potential with experience and culture in the field of ICT has been created. The achievements of the Republic of Moldova in the field of ICT, especially in the electronic communications infrastructure, are largely due to this potential. The ICT sector contributed about 8.7% to GDP. Total exported ICT services amounted to US $ 270 million in 2012, which represents about 10% of exports.

Moldova is part of the group of countries with a high level of EGDI, between 0.50 and 0.75, with an e-Government Development Index of 0.6590. Also, Moldova, being a lower midle-income country (GNI per capitas – 5670 US dollars), records very high values of the On-line Services Index (0.7708) and the e-Participation Index (0.8596, global position - 37) and is one of 10 countries of this category, which have values of the e-Government Development Index above the global average. [1].

An important feature at this stage is that the means of communication and use of information applications are becoming more accessible, especially this refers to mobile telephony which has a coverage of about 125% and the penetration rate of the broadband mobile Internet of about 85% (http://www.anrceti.md/). This makes it possible to capitalize on great opportunities for development and better provision of on-line public services.

	EGDI	Online Service Component	Telecomm. Infrustrcture Component	Human Capital Component
High income countries average	*0.7838*	*0.8120*	*0.7018*	*0.8375*
Europe	*0.7727*	*0.7946*	*0.6765*	*0.8471*
Republic of Moldova	**0.6590**	**0.7708**	**0.4787**	**0.7274**
World	*0.5491*	*0.5691*	*0.4155*	*0.4155*
Lower middle income	*0.4411*	*0.4688*	*0.2703*	*0.5843*

**Table 1. E-Government Development Index in Moldova, 2018 [1]**

Despite the fact that until now the progress made by the Republic of Moldova in implementing e-Government is obvious, there are, however, fears that the situation is not very high, the reasons for this being a series of limit factors.
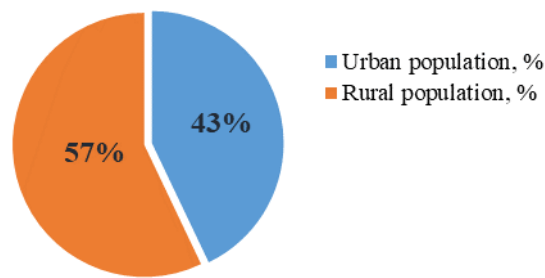
Figure 1. Urban / rural components in the population structure of the Republic of Moldova, 2018.
Source: www.staistica.md

World Economic Forum highlights the most problematic factors for doing business in Moldova. These include, first of all, corruption, political instability, government instability, inefficient government bureaucracy and access to finance.
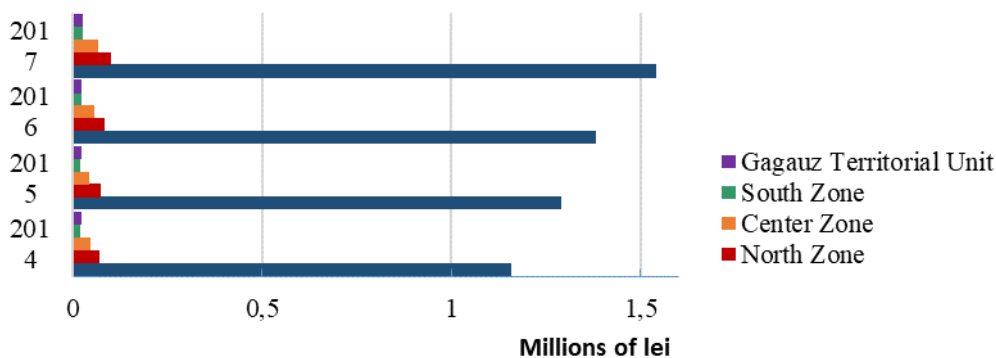
Figure 2. Expenditure of legal entities for IT, in territorial profile, 2017.
Source: www.staistica.md

Moldova has characteristics specific for developing countries [4], [6], [7]:

-   Reduced funding opportunities for e-Government projects. The most important program of e-Government, Strategic Program for technological modernization of governance (e-Transformation) [12], adopted in 2011, was supported by the International Development Association (IDA) in a rate of over 85%, and, for example, expenditure on computerization of government, defense and compulsory insurance is just over 0.2% of GDP [8]<

-   Demografic and territorial disparities. Over half of the country's population, 57% (Figure 1), live in rural areas. About 89% of the total IT expenditure of legal entities are made in Chisinau (Figure 2);

-   Sporadic and uncoordinated use of electronic services[23];

-   A poorly developed ICT market, in particular the IT market and low ICT absorption by companies [10];

-   Low level of government procurement of advanced technologies (136th place from 138 countries) [10];

-   Digitizing front-office processes, while back-office is still out of digitization [9].

4. Data sources

In order to establish a functional relationship between the economic development level and the level of development of e-Government in the group of countries that make up the research sample, current data with free access were used, namely:

- e-Government Development Index (EGDI), according to the United Nations [1],[22]

- GDP per capita, according to the World Bank (http://api.worldbank.org);
- Global Competitiveness Index (GCI), according to the World Economic Forum [18];

- Population structure of the Republic of Moldova, 2018. Source: www.staistica.md;

- Expenditure of legal entities for IT, in territorial profile, 2017. Source: www.staistica.md.

5. Data analysis and model estimation

We understand the notion of level of eGovernment development in a particular country, as defined in [1], as the availability and capacity of national institutions to use ICT to provide public services, and the E-Government Development Index (EGDI) as a measure which is used by government officials, policy makers, researchers and representatives of civil society and business to better understand the relative position of a country in using e-Government to deliver public services.
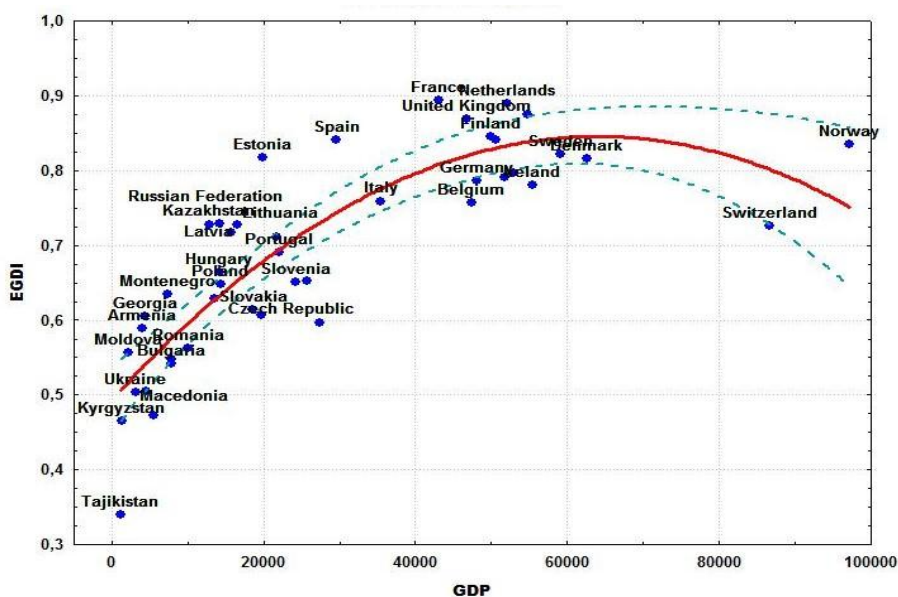

Figure 3. EGDI against GDP p/c, 2014

As an indicator of the level of development of e-Government, the composite E-Government Development Index (EGDI) indicator was taken, and as an independent variable and indicator attesting the level of economic development of the countries was taken into account GDP per capita.
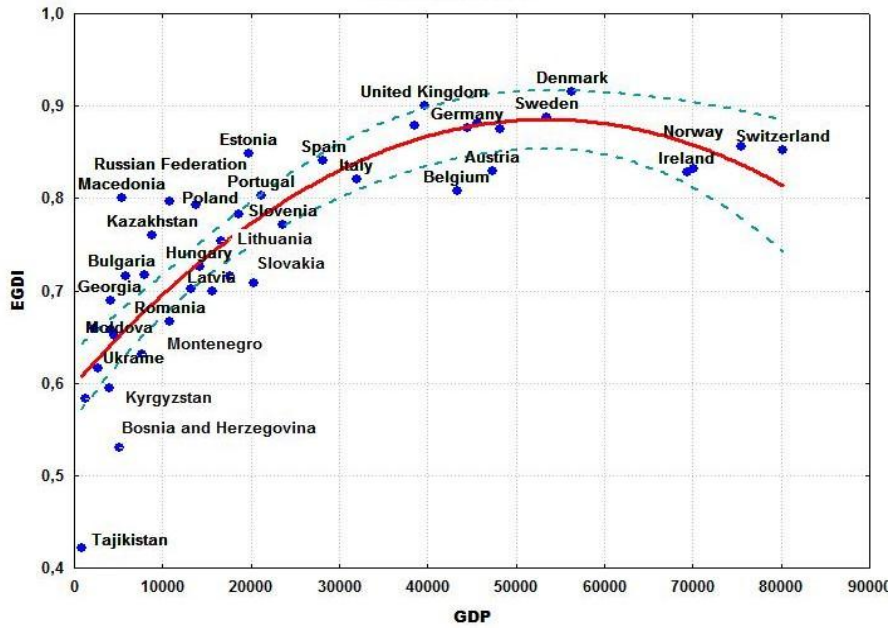
Figure 4. EGDI against GDP p/c, 2018

The analysis also used another development indicator - Global Competitiveness Index, calculated and maintained in the Global Competitiveness Reports 2014, 2018 of the World Economic Forum. The idea of analyzing the relationship between EGDI and GCI comes from the fact that the latter would reflect the level of development more complexly and would take into account far more factors than the level of economic development.
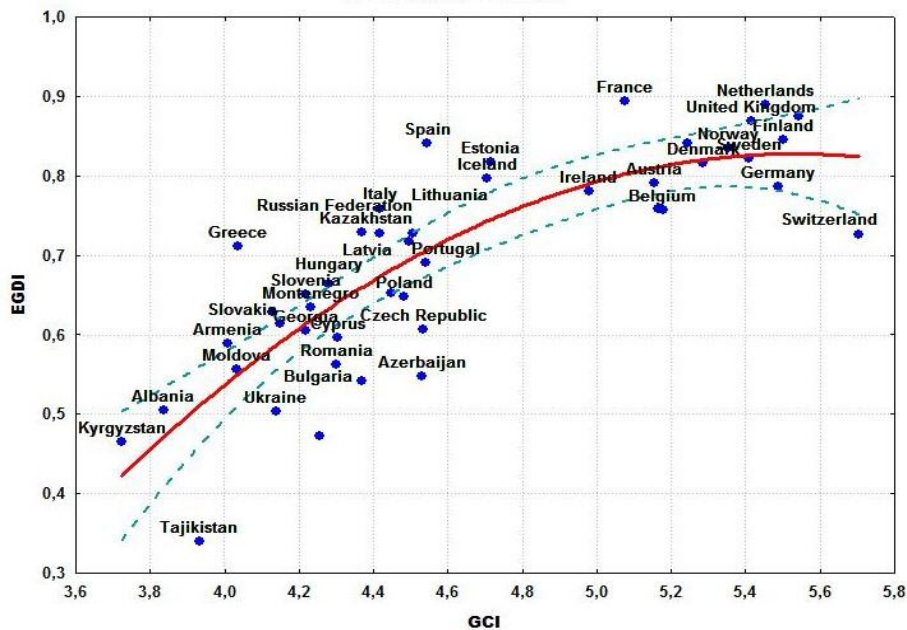

Figure 5. EGDI against GCI, 2014

We used to compare the data from the 2014 and 2018 reports to verify the relationship between the GDP per capita economic development indicators (Figure 3 and Figure 4) and the Global Development Index – GCI (Figure 5 and Figure 6).
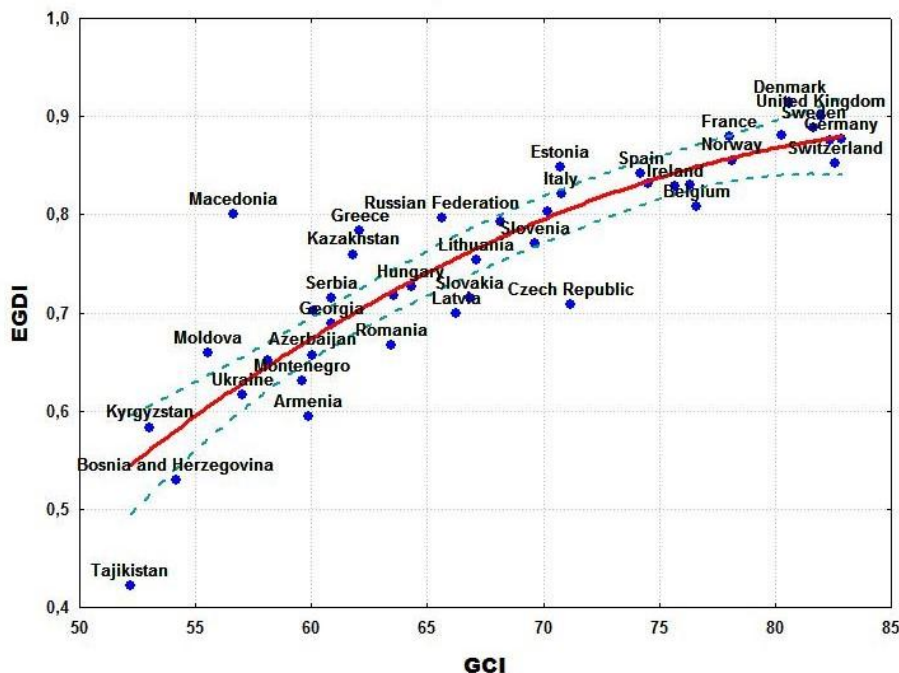
Figure 6. EGDI against GCI, 2018

The nature of the EGDI-GDP relations, on the one hand, and EGDI-GCI, on the other hand, is similar to the distance of 4 years: 2014 and 2018. The obtained diagrams confirm a direct relationship between the level of economic development of the country and the level of development eGovernment.

Over the 4 years, from 2014 to 2018, the value of EGDI has increased in both groups of countries. The average growth rate of EGDI in the developing countries was 0.09937, and the developed group - 0.05706, both increases being statistically significant.

The increase in the level of EGDI is generally slightly higher for the group of developing countries which may suggest that the countries in this group are more motivated at this stage to develop their own e-Government systems.

From a mathematical point of view, EGDI, like many similar composite indicators, is a weighted average, in this case, of three sub-indices: the Online Service Index (OSI), the Telecommunication Infrastructure Index (TII) and the Human Capital Index (HCI). The preference for EGDI came from the fact that it is established as a result of complex questionnaires (140 questions), in which the emphasis is on the identification of multiple aspects of the eGovernment concept, in close connection with the Sustainable Development Objectives.

The level of economic development is primarily represented by the broad general indicator used in development process research such as Gross Domestic Product (GDP) per capita in USD in current prices, and secondly by the composite Global Competitiveness Index as a measure of the level of the competitiveness of national economies, which in turn determines the productive level of these economies. Built on 98 variables that describe different aspects of country economies, GCI highlights the determinants of long-term development.

6. Observations and conclusions

The study aimed to investigate the dependence between the level of economic development of Modova Republic and the level of development of e-Governance in the context of a group of developing countries in the ex-communist space. The choice of this group of countries is not coincidental, with several common features between these countries, such as the economic model, social relations, similarities in how to organize and perceive governance, and so on. On the other hand, it has been interesting to see how these countries are positioned in relation to economically advanced countries. The option was for the immediate neighborhood countries - developed countries in Europe, some of which have already gone through a transition from a planned economy to a market economy.

In parallel with the dependence between the e-Government development and the level of revenues, another dependence was taken into account, the level of e-Governance and the level of economic competitiveness. The reason for choosing to include GCI in research is that it is a much more complex variable that takes into account several aspects of economic development, some of which, in our opinion, may give us a slightly more appropriate picture of the essence of the economic factor.

Research finds a clear dependence of e-Governance on the level of economic development, which is in line with studies in the field [2, 4, 6, 7, 14, 16]. At the same time, there is a visible distinction between the level of e-Governance and the level of income between deloping countries and developed countries. This finding suggests that, although there are various other infuences about the level of e-Government development, income levels are decisive. Although the studies did not find significant quantitative influences between the level of development of e-Government and specific components of GCI such as Public-sector performance, Entrepreneurship, Digital skills among the population, Government policy stability policy, Government's long-term vision, Government's responsiveness to change, with the exception of the E-Participation Index, the influence of composite factor Global Competitiveness Index 4.0, is a significant one.

The challenge for the Republic of Moldova in this respect is both the gap with other countries and the internal disparities of economic and social development that do not tend to be overcome very soon and this can be very significant in the context of the global development competition that will be largely devoted to the digitization of social activities both within the government and in the private space. IT investments in the government sector and businesses are far too limited.

The Republic of Moldova is a country closer tied to European practices in all areas of economic and social life both in geographical proximity and especially through the association agreement. The Moldovan e-Government model will have to take this link into consideration, and technological solutions for transforming governance will develop in an increasingly integrated information space with the European one, harmonization of the normative framework and alignment with European norms in this respect on the order of day, more and more current and important.

The research was carried out on data that is the current situation of the countries in the sample. We consider it is of interest to investigate the evolution of the level of development of e-Governance, both depending on the level of economic development and on various other aspects, taking into consideration, for example, the temporal aspect of the phenomenon, but also a broader context of research subjects, which we hope to be able to achieve further.

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