Péter MOLNÁR[1]

E-GOVERNMENT DEVELOPEMENT IN THE EUROPEAN UNION

ABSTARCT

The subject of this study is an examination of the development of electronic government in the European Union. From the beginning the EU realized that the governmental use of the ICT technologies is one of the key elements of the succesful Single Market many programmes, action plans and even directives had been announced. In this paper I review these documents and identify their impacts on the member states' electronic government developement.

I. Introduction

The main questions of the paper is the examination is whether accession to the European Union has a relevant impact on the development of e-Government in the countries joined the EU after 1995.

The European Union handling electronic government (e-government) as a top proirity, so a number of basic documents in this area have come to light in the past decades.

My hypothesis is that these documents have had a major impact on the relevant legislative and enforcement activities of the Member States, so the differences between the e-administrative development indicators of the newly acceded States and the older Member States (EU15) have a continuous decrease over the examined period.

During the study, I use the relevant literature to clarify the basic concepts of e-government (which is needed for further examinations). Following that, I will present the European Union's relevant programmes and action plans as well as their impacts on the level of the e-government developement of the EU15 and the states joined after 1995.

The overall e-Government development of individual states is examined in detail on the basis of two different methodologies: the UN's EGDI scores and (as a comparison) the European Union's DESI framework which have been presented annually since 2014.

II. The involved countries

According to the introduction, I have focused only on the member states of the European Union. I have created two main groups: the fifteen „old" members, and the thirteen states joined after 1995. In the first group we can find the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. In the second group we can make some sub-categories based on the states' *geographical location*:

- Eastern and Central Europe: Czechia, Hungary, Poland and Slovakia (the current „V4-countries),
- Baltic states: Estonia, Latvia and Lithuana,
- Southern and Balkan states: Bulgaria, Croatia, Cyprus, Malta, Romania and Slovenia.

[1] Témavezető: Dr. Csáki-Hatalovics Gyula Balázs, PhD. Egyetemi docens, KRE ÁJK.

Another – and from the viewpoint of the study maybe the most appropriate – grouping is based on the *time of gaining membership*:
- First wave after 1995: Cyprus, Czechia, Estonia, Latvia, Lithuana, Hungary, Malta, Poland, Slovakia and Slovenia (2004),
- Second wave: Bulgaria and Romania (2007),
- Third wave: Croatia (2013).
After the description of the relevant countries we have to clear the defintion of e-government for further researches.

III. The definition of e-Government

Defining e-government is not an easy task. According the professional literature, e-governement, digital government, e-governance, or digital governance concepts are used by some authors to grasp the same phenomenon. Among others, Csáki-Hatalovics had pointed out earlier[2] that this is mostly the result of the fact that the relevant terms and phrases are undergoing a continuous report change in scientific terms, in parallel with advances in technology. However, there are some important definitions we have to get familiar with for the further researches:
The OECD's publication, The E-Government Imperative[3], focused on the difficulties faced by governments in introducing e-Government solutions. E-Government was first defined by the organisation in this document as follows: the use of information and communication technologies and particularly the Internet, as a tool to achive better government.[4]
Carter and Belanger gave us a wider, but yet similar definition in 2004 focusing on the *clients* of the public services: The e-Government is the use of information technology, especially telecommunications, to enable and improve the efficiency with which government services and information are provided to citizens, employees, business and government agencies.[5]
The United Nations uses the concept of electronic government and whereas governance is the most common process in its interpretation, characterised by interactions between the public and society in the interests of collective decision-making, describes it as a governmental use of the most innovative infocommunication technologies. The ultimate goal is to provide more advanced public services, reliable information and wide-ranging knowledge for all citizens.[6]
This definiton clearly focuses on the government-to-citizen interactions.
This European Commission uses the term eGovernment, which is an indirect definition that focuses on the impact on the common market: The electronic government supports administrative procedures, improves the quality of services and increases the internal efficiency of public administrations. E-Government supports administrative processes, improves the quality of the services and increases internal public sector efficiency. Digital public services reduce administrative burden on businesses and citizens by making their

---

[2] CSÁKI-HATALOVICS, Gyula Balázs: Az elektronikus közigazgatás tartalma és egyes gyakorlati kérdései, HVG-ORAC, Budapest, 2010, 123.
[3] OECD: The e-Government Imperative. OECD e-Government Studies, OECD Publications, Paris, France, 2003.
[4] OECD 2003. 11. o.
[5] CARTER, Lemuria – BELANGER, France: The influence of perceived characteristics of innovating on e-Government adoption. Electronic Journal of e-Government Volume 2 Issue 1. 11. o.
[6] UNITED NATIONS: Benchmarking E-government: A Global Prespective. [Report] 2002. 53-54.o. Retrieved from https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/English.pdf (2019.09.11.)

interactions with public administrations faster and efficient, more convenient and transparent, and less costly. In addition, using digital technologies as an integrated part of governments' modernisation strategies can unlock further economic and social benefits for society as a whole. The digital transformation of government is a key element to the success of the Single Market.[7]

Bannister and Conolly, in a study published in 2012, recognised the difficulties, so they used the broadest possible definition to facilitate the interpretation range of the analysis, even if it was not technically considered to be the most appropriate approach. Against this background, in their study e-Government is understood to mean all administrative and governmental applications of infocommunication technologies that have been used as described above since the introduction of the Internet in the 1990s.[8]

Maybe this definition is the most flexible and usable amongst all I mentioned above.

IV. Programs and action plans of the European Union concerning e-Government

In this topic, I examine the relevant programmes and action plans of the European Union's organizations connected to the phenomenon of e-Government defined above.

The first e-Government Programme of the European Commission was the ESPRIT (European Strategic Programme for Research and Development in Information Technology), launched in 1984. It is important to note that the document have linked the development of the information society primarily to the competitiveness of the EU. On this basis, it is understandable that the basic objectives of ESPRIT are not yet for citizens, but the strengthening of businesses as their primary objective.[9]

The ESPRIT have been followed by a number of other strategies, programmes, action plans and reports, such as the White paper[10] and the Bangemann[11] report presented at the Corfu European Council in 1994. The process ultimately led to the European pathway to the information society[12], which was replaced by the eEurope 2002 Action Plan in 2000.[13]

The action plan's key areas could be clustered around three main objectives. First, the need for a cheaper, faster, more secure Internet. The second goal is to invest in people and skills,

---

[7] EUROPEAN COMISSION: EU eGovernment Action Plan 2016-2020. Accelerating the digital transformation of government, 2016. 179.

[8] BANNISTER, Frank - CONNOLLY, Regina: Forward to the past: Lessons for the future of e-government from the story so far. *Information Polity 17*. 211-226.

[9] COMISSION OF THE EUROPEAN COMMUNITIES: ESPRIT – Specific research and technological development programme int he field of information technology – Results and progress 1991/1992. Comission of the European Communities, Luxembourg, Luxembourg, 1992. 5.

[10] EUROPEAN COMISSION: Growth, competitiveness, employment. The challenges and ways forward into the 21st century – White Paper. Office for Official Publications of the European Communities, Luxembourg, Luxembourg, 1994.

[11] EUROPEAN COMISSION: Growth, cometitiveness and employment White Paper follow-up – Report on Europe and the global information society – Interim report on trans-European networks – Progress report on employment – Extracts of the conclusions of the Presidency of the Corfu European Council. Office for Official Publications of the European Communities, Luxembourg, Luxembourg, 1994. 5-39.

[12] EUROPEAN COMMISSION: Europe's way to the information society. An action plan. Communication from the Comission to the Council and the European Parliament and to the Economic and Social Comittee and the Comittee of Regions, 1994.

[13] EUROPEAN COMISSION: eEurope 2002: An Information Society For All. COM (2000) 330, 2000.

and the third is to stimulate the use of the Internet. The document also contains a specific list of services, which should be made available electronically by the member states to citizens and businesses.
A new action programme was appaered in 2002: the eEurope 2005 Action plan.[14] The programme introduced new main objectives, like general broadband acces to the Internet, creating a new, interoperabilty framework, and introducing new, interactive public services.
In 2006, the new, i2010 eGovernment action plan[15] focused on five major objectives for eGovernment with specific objectives for 2010: advancing inclusion through eGovernment so that by 2010 all citizens benefit from trusted, innovative services and easy access for all („no citizens left behind"); making efficiency and effectiveness a reality; implementing high-impact key services for citizens and businesses; enabling citizens and businesses to benefit from convenient, secure and interoperable authenticated access across Europe to public services and finally strengthening participation and democratic decision-making.
In 2006 another powerful document was publicated by the European Parliament and of the Council. The Directive 2006/123/EC effected important legislative obligations of the member states, like the establishment of points of single contact, or the right to be informed on the basis of which member states ensure that information and assistance is provided in a clear and unambiguous manner.
These days, the Digital Agenda for Europe[16] is the most important document on e-Government. The Agenda is one of the seven main initiatives of the EUROPE 2020 strategy.[17] Its main areas are the following: an active digital single market, interoperability and common standards, creating trust and security (data protection, fight against cybercrime), ensuring high-speed and super-fast internet for citizens and businesses alike, supporting research and innovation, and improving digital literacy, digital skills and digital inclusion.
Therefore, based on the above, we can declare that the EU handling e-government as a top proirity.
From this we can also conclude that the Member States have made a spectacular development in e-government development in order to meet the EU programmes and objectives described above.

V. Methods for measuring the developement of e-government

As I pointed out in one of my previous studies[18] there are a number of methodologies to measure the level the development of e-government. Amongst the numerous frameworks I've chose two different methods: The UN's EGDI points and the EU's DESI system.

1. The United Nations' EGDI index

[14] EUROPEAN COMISSION: eEurope 2005: An Information Socitey For All. COM (2002) 263. 2002.
[15] EUROPEAN COMISSION: i2010 eGovernment Action Plan: Accelerating eGovernment in Europe for the Benefit of All. COM (2006) 173. 2006.
[16] EUROPEAN COMISSION: A Digital Agenda for Europe. COM (2010) 245. 2010.
[17] EUROPEAN COMISSION: Europe 2020: A strategy for smart, sustainable and inclusive growth. COM (2010) 2020. 2010.
[18] MOLNÁR Péter: Helyi önkormányzatok a nemzetközi közigazgatási jelentésekben. In.: Miskolczi Bodnár Péter (editor): Jog és Állam 23. kötet. Budapest, Károli Gáspár Református Egyetem Állam- és Jogtudományi Kara, 2018. 151-162.

One of the first comperative study for e-Government was published by the United Nations. The UN's tipically biennialy published e-government benchmark reports[19] focus the performance of it's member states in the field of e-Government. The main indicator of these studies is the e-readiness or e-government development index (EGDI). EGDI is a mathematical reference to the weighted average of normalized numbers represented by the Online Services Index ('OSI', originally: 'Web Measure Index'), the Telecommunications Infrastructure Index ("TII") and Human Capital Index ('HCI'). The main indicators of OSI are the national portal, the e-Government portal, the e-Participation portal and the websites of certain priority ministries. TII is determined by personal computers, Internet users, the main telephone lines, mobile telephones and broadband Internet subscriptions per 100 inhabitants. The indicators of HCI are the percentage of literacy rate of people over the age of 15, the enrollment rate and the expected and actual time spent in education. The EGDI value may fall between 0.0000 and 1.0000 based on the methodology used from 2003 (the latter value indicates higher performance). If we take a closer look on the EGDI it's structure suggests that it focuses mostly on the involved countries' infrastructural readiness on ICT.

2. The European Union's DESI framework

The European Comission also measures it's member states' development of e-Government since the early 2000's. Based on the mostly biennially published e-Government Benchmarking Reports, the Comission set up the Digital Economy and Society Index for the first time in 2015. The DESI itself has five dimensions: Connectivity, Human Capital, Use of internet Services, Integration of Digital Technology by businesses and Digital Public Services.[20]

The dimension of *Connectivity* is based on the following indicators: fixed broadband coverage, fixed broadband take-up, 4G coverage, mobile broadband take-up, 5G readiness, fast broadband (NGA) coverage, fast broadband take-up, ultrafast broadband coverage, ultrafast broadband take-up and broadband price index. The *Human Capital* indicators are the following: at least basic digital skills (percent of individuals), above basic digital skills (percent of individuals), at least basic software skills (percent of individuals), ICT specialists (percent of total employment), female ICT specialists (percent of female employment), ICT graduates (percent of graduates). The *Use of Internet Services* contains information about internet use in a country, the online activities and the relevant transactions. The dimension of *Integration of Digital Technology* based on two sub-indicators: the business digitisation and the e-commerce. The last dimension, the *Digital Public Services* is built up from the indicators of e-Government and e-Health.[21]

---

[19] The methodology is described in this paper by using the latest report: UNITED NATIONS: E-Government Survey 2018 – Gearing E-Government to support transformation towards sustainable and esilient societies. [Report]. 2018. Retrieved from https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/E-Government%20Survey%202018_FINAL%20for%20web.pdf (2019.09.11.)

[20] European Comission: eGovernment Benchmark 2018 – Securing eGovernment for all (Insight Report). European Union, 2018. 21.

[21] Retrieved from: https://digital-agenda-data.eu/datasets/desi/indicators (2019.09.11.)

The authors found that some dimensions are more relevant than others, so they given those a higher weight than the others.[22]

Dimension	Weight
Connectivity	25%
Human Capital	25%
Use of Internet Services	15%
Integration of Digital Technology	20%
Digital Public Services	15%

Table 1. – DESI components
Source: own construction

It's clear from the structure of the indicators and sub-indicators, that the DESI covers more relevant information on a contiry's governmental use of ICT than the EGDI.

VI. Testing the hypothesis

To test the hyposthesis I've created two groups of the EU-member states as mentioned above. The first group contains the EU15 countries and the second one contains the states joined the EU after 1995.
First I've examined the average EGDI scores for both groups. The results are shown by Table 2 below:

	2005	2008	2010	2012	2014	2016	2018
EU15	0,7429	0,7505	0,7042	0,8034	0,8009	0,8132	0,8510
13 NEW STATES	0,6178	0,6262	0,5976	0,6846	0,6483	0,6891	0,7444
EU28 (AVERAGE)	0,6803	0,6884	0,6509	0,7440	0,7246	0,7511	0,7977

Table 2. – The EGDI scores of the member states of the EU (2005-2018)
Source: own construction

To illustrate the changes of the EGDI in the thirteen states joined the EU after 1995 I've also created a chart:

[22] EUROPEAN COMISSION: DESI 2019 – Digital Economy and Society Index – Methodolical Note. 2019. Retrieved from: https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=59913. 17. (2019.09.11.)

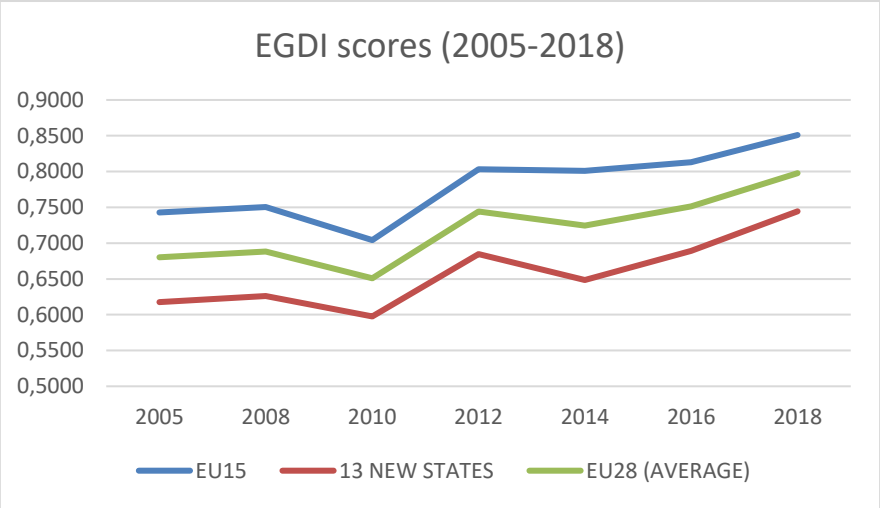

Chart 1. – The EGDI scores of the member states of the EU (2005-2018)
Source: own construction

Examining the results of the DESI-analyzis I've experienced nearly the same trends:

GROUPS	2014	2015	2016	2017	2018	2019
EU15	44,24229	47,22311	49,8481	52,23352	54,88534	57,88217
13 NEW STATES	33,96061	36,86645	39,71173	42,40794	45,38252	47,71466
EU28 (AVERAGE)	39,03369	41,822	44,42234	46,93829	49,81849	52,48561

Table 3. – The DESI scores of the member states of the EU (2014-2019)
Source: own construction

For a graphical presentation, see Chart 2 below:

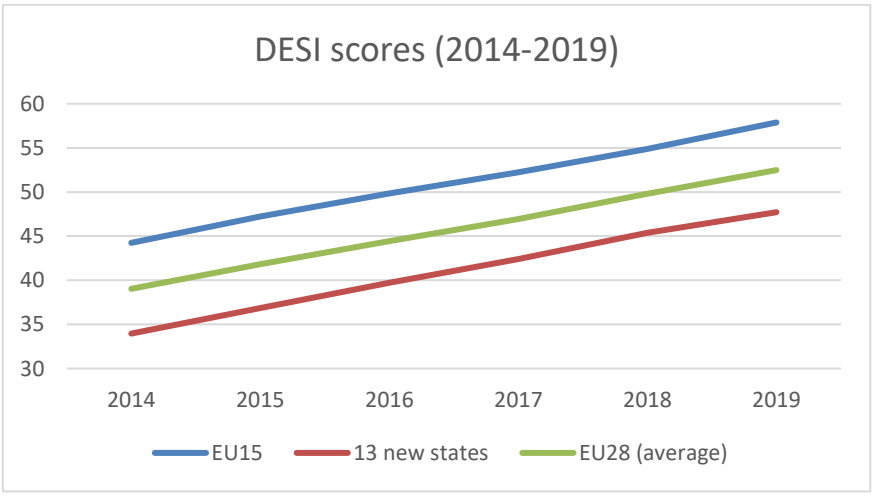

Chart 2. – The DESI scores of the member states of the EU (2014-2019)

Source: own construction based on dataset of the European Comission[23]

VII. Conclusions and findings

Based on the tests shown above we cannot say that the newly joined EU-countries could reach the e-government level of the EU15 states. The average differences beetween the two groups remained nearly the same despite the passage of time. According to this observation we cannot verify our hypothesis.

Despite of this we have to notice that some newly joined countries (like Estonia) clearly overtook many „old" member states (like Greece or Italy) in almost every years.

It could mean that the national instruments of e-government develeopement could effect stronger changes than the programme sor directives of the European Community. Based on this impression it would be an interesting task to find the reasons behind.

Sources

BANNISTER, Frank - CONNOLLY, Regina: Forward to the past: Lessons for the future of e-government from the story so far. *Information Polity 17*. 211-226.

CARTER, Lemuria – BELANGER, France: The influence of perceived characteristics of innovating on e-Government
adoption. Electronic Journal of e-Government Volume 2 Issue 1. 11. o.

CSÁKI-HATALOVICS, Gyula Balázs: Az elektronikus közigazgatás tartalma és egyes gyakorlati kérdései, HVG-ORAC, Budapest, 2010, 123.

COMISSION OF THE EUROPEAN COMMUNITIES: ESPRIT – Specific research and technological development programme in the field of information technology – Results and progress 1991/1992. Comission of the European Communities, Luxembourg, Luxembourg, 1992. 5.

EUROPEAN COMISSION: Growth, competitiveness, employment. The challenges and ways forward into the 21st century – White Paper. Office for Official Publications of the European Communities, Luxembourg, Luxembourg, 1994.

EUROPEAN COMISSION: Growth, cometitiveness and employment White Paper follow-up – Report on Europe and the global information society – Interim report on trans-European networks – Progress report on employment – Extracts of the conclusions of the Presidency of the Corfu European Council. Office for Official Publications of the European Communities, Luxembourg, Luxembourg, 1994. 5-39.

EUROPEAN COMMISSION: Europe's way to the information society. An action plan. Communication from the Comission to the Council and the European Parliament and to the Economic and Social Comittee and the Comittee of Regions, 1994.

EUROPEAN COMISSION: eEurope 2002: An Information Society For All. COM (2000) 330, 2000.

[23] Source of vizualisation for DESI: https://digital-agenda-data.eu/datasets/desi/visualizations

EUROPEAN COMISSION: eEurope 2005: An Information Socitey For All. COM (2002) 263. 2002.

EUROPEAN COMISSION: i2010 eGovernment Action Plan: Accelerating eGovernment in Europe for the Benefit of All. COM (2006) 173. 2006.

EUROPEAN COMISSION: EU eGovernment Action Plan 2016-2020. Accelerating the digital transformation of government, 2016. 179.

European Comission: eGovernment Benchmark 2018 – Securing eGovernment for all (Insight Report). European Union, 2018. 21.

EUROPEAN COMISSION: DESI 2019 – Digital Economy and Society Index – Methodolical Note. 2019. Retrieved from: https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=59913. 17. (2019.09.11.)

MOLNÁR Péter: Helyi önkormányzatok a nemzetközi közigazgatási jelentésekben. In.: Miskolczi Bodnár Péter (editor): Jog és Állam 23. kötet. Budapest, Károli Gáspár Református Egyetem Állam- és Jogtudományi Kara, 2018. 151-162.

OECD: The e-Government Imperative. OECD e-Government Studies, OECD Publications, Paris, France, 2003.

UNITED NATIONS: Benchmarking E-government: A Global Prespective. [Report] 2002. 53-54.o. Retrieved from https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/English.pdf (2019.09.11.)

Legal Sources

DIRECTIVE 2006/123/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on services in the internal market, Official Journal of the European Union.

Other Sources

The European Comission's webpage for „DIGITAL SINGLE MARKET" - https://digital-agenda-data.eu/datasets/desi/indicators

Source of vizualisation for DESI: https://digital-agenda-data.eu/datasets/desi/visualizations