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IMPACT OF THE DEVELOPMENT OF E-GOVERNMENT ON CIVIC PARTICIPATION IN FORMER SOCIALIST STATES, WITH PARTICULAR REFERENCE TO THE COUNTRIES JOINING THE EUROPEAN UNION

SUMMARY

After the changes of regimes in Eastern Europe, joining to the western, democratic states as soon as possible, has become a cardinal issue in almost all affected states. In our study, we examine the relationship between joining to the European Union and the development of e-Government, in particular e-participation.

keywords: e-government, ICT, e-participation, e-readiness, e-administration

INTRODUCTION

The subject of our study is essentially an examination of the development of electronic government and its implications for democratic participation in the former socialist European countries. One of the main questions of the investigation is **whether accession to the European Union has a relevant impact on the development of e-Government in these countries.**

To this end, states have been divided into two groups: on the one hand, we have separate EU-member countries in order to identify the impact of the implementation of EU programmes and action plans on the general development of e-Government. On the other hand, we are looking at countries that have not yet fully acquired membership in the community, but are members of the United Nations. The latter criterion, as explained in details later, is important because, for the general examination of e-Government, we will use the relevant reports and rankings of the UN on a number of occasions.

In this connection, we are setting up a hypothesis (H1): *Accession to the European Union had a positive effect onthe development of e-Government, the overall e-Government development of the member states is higher than in the non-EU countries.*

Thereafter, we will limit our inquiry to the first group and attempt to identify the effects of e-Government on democratic participation in individual states. Our second hypothesis (H2): *In a country with a higher level of general e-Government development, citizens manage their*

everydays queries electronically more often, i.e. e-participation is essentially higher (in our study we describe that with a citizen-to-government connection number, in short, C2G connection number).

Finally, we examine whether there is a sharp difference between the ex-socialist states that joined the EU in the 2000s and the founding or former countries in the development of the electronic government. In this regard our third hypotesis (H3): *As a consequence of accession, the differences in the e-Government development of each state will become increasingly negligible as time progested, while differences are growing between member states and countries without member state status.*

During the study, we present the specificities of the socialist history for some countries, and then use the relevant literature to clarify the basic concepts needed for further examinations (e-Government, democratic participation).

Following that, we will present the European Union's action plans for the development of e-Government and the measurement methods for quaning the development of e-Government.

The overall e-Government development of individual EU and non-member states and e-participation is examined in detail on the basis of the methodology of the UN's annual or biennial e-Government Survey reports (using the EGDI and EPI indicators).

Finally, on the basis of the relevant data series of the EUROSTAT database, we will present the average number of C2G interactions and identify their correlation with the rates of EGDI and EPI.

1. Specificities of the countries covered by the investigation

As indicated in the introduction, we have focused on the UN member countries in central,South-Eastern Europe, and the Baltic states, which have previously beenthe part of in the so-called Eastern bloc, so the effects of the system change were directly affected, but they have already joined to the European Union by now. Eleven such states have been identified, namely: Bulgaria, Czechia, Estonia, Croatia, Poland, Latvia, Lithuania, Hungary, Slovakia, Slovenia and Romania. We can distinguish the following groups based on their geographical location:

(1) Eastern Central Europe: Czechia, Poland, Hungary, Slovakia (current „V4 countries”),

(2) South-Eastern Europe: Bulgaria, Croatia, Romania and Slovenia, and finally the

(3) Baltic: Estonia, Latvia, Lithuania

Many of the former socialist countries are still not considered members of the European Union. In this case Ukraine, as well as some ex-Yugoslavian countries such as Albania, Bosnia and Herzegovina, Montenegro, North Macedonia (The Former Yugoslavian Republic of Macedonia) and Serbia, were selected for research.

What characterized these states before the change of regime?

Perhaps the most important feature is the specific socialist (other authors: Communist) definition of civic role:In the socialism, the citizens of the state generally had no choice in this capacity, but they had to behave only as a crowd.It is a fundamental feature of a totalitarian state that it controls most areas of life and constantly fights against autonomous non-state activities (Coffé & van der Lippe, 2010, p. 480).

As a consequence, the social or civic engagement in these countries is understated in comparison to their Western counterparts.

However, several studies, mainly motivated by sociology, pointed out that the impact of communism on fundamental citizenship values could vary from one country to another.Coffé and van der Lippe, in their work cited above, stated that there were significant differences between states in the way the communism was introduced, the individual rights of the citizens were limited, and finally, the way the regime fell and the process of democratization was experienced (Coffé & van der Lippe, 2010, p. 481).These regimes generally exercised a lighter impact on social values and standards, where they met considerable civilian opposition.Accordingly, Hungary, Yugoslavia and Poland seemed to be much more free with their reformer, socialist market-economy models.In other countries, such as Romania, the influence of the totalitarian regime was substantially higher.

In addition to the above, research supports the phenomenon that economic development, religious beliefs and uninterruptedly democratic structures strengthen the willingness and volunteering of civil society to participate in preparing the higher democratic participation rate (Curtis at al., 2001, pp. 800-801).

In these areas, the countries investigated were clearly at a disadvantage compared to their Western counterparts.

Following the dissolution of the Soviet Union, the former socialist states typically sought to join the dominant international organisations in the Western world, so a significant proportion of them already gained a NATO membership in the 1990s or the early 2000s years (example for the former is Hungary or Poland, for the latter are the Baltics states). After about a decade of preparation, in May 1st 2004 Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia finally joined to the European Union.

EU accession has brought a number of changes to the lives of the new member states. In this study, we focus on the impact of the accession on e-Government and e-Participation.

2. Conceptual Fundamentals

In order to look deeper into the development of electronic government and electronic participation, we need to clarify some basic concepts.Accordingly, we are making an attempt to seize the concepts of democratic participation, electronic participation and electronic government in this chapter.

2.1. The concept of democratic participation

In the early definition of Arnstein, democratic ("civic") participation is interpreted in the context of civic power. Citizen participation in this respect means, in addition to others, the redistribution of the force needed to determine how information is shared, to formulate policies or to determine taxes (Arnstein, 1969, p. 216).

According to Macintosh, democratic participation isan effective channel between local, regional or national governments and civil society using innovative information and communicationtechnologies (ICT) to deliver more open and transparent democraticdecision-making processes (Macintosh, 2008, p. 86).

By another definition participation relates mainly to inputs to policy- and decision-making for political or publicpolicy purposes, both within formal systems but also through informal systems where these can have a real impact at any stage of the policy lifecycleis (Smith & Dalakiouridou, 2009. p. 2.).

The common, fundamental point of conceptual definitions is the exercise of the impact on decision-making for citizens. As predicted by Macintosh's position above, the development of technology (including primarily ICT solutions) has opened up new perspectives for

participatory mechanisms in the recent years. However, before we reach out to electronic participation, we should be familiar with the concepts of e-Government andelectronic administration.

2.2. Conceptual attempts to define e-Government

The notion of electronic government is very difficult to determine.Studying the professional literature, electronic (in short: "e-") governement, digital government, e-governance, or digital governance concepts are used by some authors to grasp the same phenomenon.As we pointed out earlier (Csáki-Hatalovics, 2015. pp. 71-103), 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, the most important definitions, most generally quoted, are briefly described below:

The United Nations consistently 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 (UN, 2002, 53-54).

This European Commission uses the term eGovernment, which is, in fact, 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 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. (European Comission, 2016).

One of the oldest publications of the OECD on e-Government is The E-Government Imperative, published in 2003, 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 (OECD 2003, pp. 3-11.).

Bannister and Conolly, in a study published in 2012, recognised the problems arising from the difficulties of determination and 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 studye-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 (Bannister & Connolly, 2012).

As we have pointed out in our previous works (Csáki-Hatalovics, 2015, p. 61), we see that in the course of the definitions above, the subject they cover is not only a public administration in the classical sense, but also a wide spectrum of administrative activities (such as judicial administration or education administration). Where one actor is a citizen or an undertaking, and the other is the state or local government organisation or the public service institution, and the interaction between them (C2G or B2G[1] type) is achieved through the use of modern infocommunication technologies.This interaction can be described as electronic administration, and later in the study (mainly in chapter 6) we will concentrate on this aspect of e-Government.

2.3. The concept of e-participation

Electronic participation enhanced from democratic participation, as an expression, is not new. The UN's annually or biennially published E-Government Survey reports since 2001, discussed in more detail later, have been using the concept since 2003.According to the United Nations (UN, 2013 p. 16), e-participation is defined as a participatory, inclusive, deliberative process for decision-making.This type of decision-making is facilitated by:

a) Use of ICT technologies to increase the availability of useful information for consultation and decision-making processes;
b) The use of ICT technologies to reinforce, broaden the consultation and
c) Use of ICT technologies to support decision-making by helping people to participate in G2C and C2G interactions.

[1] Business-to-Government

In an another definition from 2008, e-participation could be interpreted as a contribution to the political and administrative decision-making processes of individuals and legal entities and their groups using ICT technologies (Albrecht at al., 2008, p. 5).

The European Commission believes that e-participation helps people engage in politics and policy-making and makes the decision-making processes easier to understand, thanks to Information and Communication Technologies (European Comission, 2018).

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

In our previous work (Molnár & Varga, 2019)we have already demonstrated that the importance of international research into the electronic government has been recognised by some states, international organisations in the 1980s. In this time the first relevant strategies appeared, such as the European Commission's ESPRIT (European Strategic Programme for Research and Development in Information Technology) programme, launched in 1984. To mention not only an European example, the first National information society plan prepared by the Singapore National IT Plan Working Party in 1986 (Teo & Lim, 1999, p. 29).It is important to note that these documents have linked the development of the information society primarily to the competitiveness of the state or international area.A state can be competitive if it brings as many technologies as possible to serve the ICT industry (European Comission, 2019).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 (Comission of the European Communities, 1992, p. 5).

These initial documents have been followed by a number of other strategies and reports.For example the White paper (European Comission, 1994a) which released in Europe,or as a result of White paper, the Bangemann report presented at the Corfu European Council in 1994(European Comission, 1994b).The process ultimately led to the European pathway to the information society (European Comission, 1994c), which was replaced by the eEurope 2002 Action Plan in 2000 (European Comission, 2000.).

The action plan’s actions could be clustered around three main objectives: A cheaper, faster, secure Internet, investing in people and skills, and stimulating the use of the Internet. It is one of the main virtues that it has already identified electronic access to public services as an objective, primarily to increase efficiency and reduce costs.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 adopted in 2002: the eEurope 2005 Action plan (European Comission, 2002)The programme has the following main objectives:

1. Broadband connection: Member States should aim to have broadband connections for all public administrations by 2005.
2. Interoperability: By end 2003, the Commission will issue an agreed interoperability framework to support the delivery of pan-European e-government services to citizens and enterprises.
3. Interactive public services: By end 2004, Member States should have ensured that basic public services are interactive, where relevant, accessible for all, and exploit both the potential of broadband networks and of multi-platform access. This will require back-office reorganisation which will be addressed in the good practice exercise.
4. Public procurement: By end 2005, Member States should carry out a significant part of public procurement electronically.
5. Public Internet Access Points (PIAPs): All citizens should have easy access to PIAPs, preferably with broadband connections, in their communes/municipalities.
6. Culture and tourism: The Commission, in co-operation with Member States, the private sector and regional authorities, will define e-services to promote Europe and to offer userfriendly public information.

The i2010 eGovernment action plan was published in 2006 (European Comission, 2006). The Action Plan focuses on five major objectives for eGovernment with specific objectives for 2010:

1. No citizen left behind: advancing inclusion through eGovernment so that by 2010 all citizens benefit from trusted, innovative services and easy access for all;
2. Making efficiency and effectiveness a reality – significantly contributing, by 2010, to high user satisfaction, transparency and accountability, a lighter administrative burden and efficiency gains;

3. Implementing high-impact key services for citizens and businesses - by 2010, 100% of public procurement will be available electronically, with 50% actual usage[5], with agreement on cooperation on further high-impact online citizen services;
4. Putting key enablers in place - enabling citizens and businesses to benefit, by 2010, from convenient, secure and interoperable authenticated access across Europe to public services;
5. Strengthening participation and democratic decision-making - demonstrating, by 2010, tools for effective public debate and participation in democratic decision-making.

In 2006 we witnessed the publication of another powerful document: Directive 2006/123/EC of the European Parliament and of the Council.

According to the directive, the most important legislative obligations of the member states in the context of electronic administration can be summarised as follows:

1. Establishment of points of single contact;
2. 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.The relevant data are up to date and easily accessible remotely and electronically;
3. The establishment of electronic procedures whereby member states shall ensure that all procedures and formalities relating to the right to the provision and execise of a service activity can be easily completed remotely and electronically at the relevant points of single contact and at the competent authorities.

The digital agenda for Europe is one (European Comission, 2010a)of the seven main initiatives of the EUROPE 2020 strategy (European Comission, 2010b).Its main areas of action are:

1. An active digital single market,
2. Interoperability and common standards,
3. Creating trust and security (data protection, fight against cybercrime),
4. Ensuring high-speed and super-fast internet for citizens and businesses alike,
5. Supporting research and innovation,
6. Improving digital literacy, digital skills and digital inclusion.

As indicated above, specific detailed programmes aimed at the creation of electronic government have been published in the 2000s, while rather than preserving competitiveness, the focus is increasingly shifted to ensuring access to government services (i.e. relations between government and population, also known as G2C[2] or C2G).

In view of the above, it is also considered that the objectives set out in the EU action plans and the various actions taken under the action plans are beneficial on the development of e-Government in the member states. Thus, the e-Government and e-participation indicators in these countries are considerably above those of states which are not members of this international organisation.

4. Measuring the development of e-Government

The programmes and action plans described in the previous paragraph were essentially concerned with the members of the issuing organisation and did not include real, detailed and well-defined comparative analyses.

This was changed at the UN Forum in March 2001.The Third International Forum, with the participation of 122 countries, has already been a key objective of sharing e-Government good practices and ideas, aiming at the new foundations for governance (Roche, E. M., 2017, pp.1-2).On the basis of this, the UN's Department of Economic and Social Affairs (UNDESEA) first made a comparative analysis of member states electronic administrative preparedness (United Nations, 2002).In addition to the UN, other organisations, such as the World Economic Forum (World Economic Forum, 2002)or Brown University (West, D. M., 2001)issued their first international comparative analysis for the same time periods.

In many cases, reports with rankings have become extremely popular.As we pointed out in our previous research (Molnár, 2018 pp.152-153), the reporting organisations are the focal point of attention as a result of the publication of their results and their professional prestige is clearly increasing.On the other hand, there is no doubt a positive rating in an international comparison is the interest of governments in the countries concerned. In this way, we can say that the reports also have an impact on the orientations of specific government investments in e-Government, beyond influencing the scientific discourse (Lněnička, 2015, p. 75). In this context, it is not surprising that more and more reports have been published every year. In

[2] Goverment-to-citizen interactions

astudy from 2017, Afyonluoglu and Alkaralready identified 16 organisations that issued, at least once, an international comparative analysis of an electronic government, in whole or in part (Afyonluoglu & Alkar, 2017).

Among the available methodologies, we use the United Nations E-govenment Survey to present the e-Government development level and e-participation indicators in the 11 pre-selected countries, in the EU-15 member states as well as in the pre-determined non-member states. The reason for the choice of methodology, apart from the high level of general acceptance, is that the UN survey is the most comprehensive and including non-EU member states among others.

5. European countries' performance on e-administration based on UN methodology

5.1. EGDI and EPI as composite indicators of the UN e-Government Survey

Above, we have shown that one of the first complex definitions for e-Government was published by the United Nations. From the outset, the UN measures the performance of member states in the field of e-Government. The primary indicator of this measurement is the e-readiness index, which has been called the e-government development index (EGDI) since the 2008 report. 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).

EPI as an additional indicator has three dimensions (United Nations, 2004, p. 19):

(1) **E-information** is used to describe the extent to which government websites provide access to specific policies, programmes, budgets, taxes, legislation and other public-interest information. In addition to access, it is an important objective for citizens to actually use these services. Widespread dissemination may require continued access to public information, web forums, mailing lists, newsletters and chat rooms.

(2) In terms of**E-consultation**, government websites provide information on E-consultation mechanisms and about the tools of consultation. The E-consultation should provide for the possibility of access to real-time and archived discourses in the areas of individual public policies, while encouraging citizens to participate.
(3) On the basis of **E-decision making**, the government makes it clear that citizens' comments and suggestions are validated during the decision-making process.

In summary, the UN defines E-participation as follows:The willingness, on the part of the government, to use ICT to provide high quality information (explicit knowledge) and effective communication tools for the specific purpose of empowering people for able participation in consultations and decision-making, both in their capacity as consumers of public services and as citizens. The Survey of 2003 (United Nations, 2003, p. 11) names this as e-participation.

In the course of the investigation, the member states in the survey (which reported 191 countries in 2014) have assessed the information and participation services and institutions of six key sectors per country on a 0-4 scale according to the three aspects above. The final elements of EPI are defined by standardisation, with values similar to the EGDI between 0.0000 1.0000 value (1.0000 represents the highest EPI value).

If we take a closer look on the creation of EGDI and EPI their structure suggests that they focus more on the government-provided possibilities of participation rather than on actual civic participation. The indicator does not contain information on how much of the population actually takes advantage of these opportunities. Accordingly, as indicated in the introduction, they can only serve as a basis for comparing the overall administrative development of the countries surveyed.

5.2. The beginning: Results of the first three reports (2001, 2003 and 2004)

The main indicator of the 2001 Benchmarking E-Government study (United Nations, 2001) was the e-Government Index (EGI)as defined by the Web Presence Measure, the Human Capital Measureand the Infrastructure Measure.The report is less suitable for comparative analysis, given that method of calculation differs significantly from the e-Government Readiness Index (EGRI) and the EGDI indicators what we are going to use later.As a result, EGI could have a value between 0.00-3.00 instead of the later 0.0000-1.0000. Another

problem is the investigation in 2001 has not yet been covered the Yugoslav successor States. Despite this, the report clarifies that there is a huge gap between the level of e-Government development in the EU15 and the eleben selected former socialist states. The former were able to present an average EGI of 2.29 and the latter of 1.76 (overall European average was 2.01).

As the main indicator for the 2003 report (United Nations, 2003), EGRI was defined as the direct history of the future EGDI (introduced from 2010 in United Nations, 2010), the calculation methodology for the two indices is essentially the same.Perhaps the most important difference is over the years, several secondary indicators have been added to each of the main indicators, but this has not resulted any structural changes. The EGRI rankings are summarised in detail in the following table:

The previously chosen 11 former socialist states

Rank	Country	Web presence	Infrastructure	Human Capital	Readiness
16	**Estonia**	0,642	0,498	0,95	0,697
28	**Slovenia**	0,441	0,513	0,94	0,631
32	**Poland**	0,541	0,248	0,94	0,576
34	**Lithuana**	0,524	0,218	0,93	0,557
35	**Bulgaria**	0,537	0,207	0,9	0,548
36	**Czech Republic**	0,349	0,386	0,89	0,542
39	**Croatia**	0,424	0,291	0,88	0,531
40	**Slovakia**	0,38	0,294	0,91	0,528
44	**Hungary**	0,312	0,307	0,93	0,516
48	**Latvia**	0,266	0,321	0,93	0,506
50	**Romania**	0,419	0,149	0,88	0,483
	AVERAGE:	**0,440**	**0,312**	**0,916**	**0,556**

EU-15

Rank	Country	Web presence	Infrastructure	Human Capital	Readiness
2	**Sweden**	0,683	0,846	0,99	0,84
4	**Denmark**	0,694	0,787	0,98	0,82
5	**UK**	0,777	0,675	0,99	0,814
9	**Germany**	0,683	0,632	0,97	0,762
10	**Finland**	0,603	0,691	0,99	0,761
11	**Netherlands**	0,539	0,71	0,99	0,746
17	**Ireland**	0,336	0,809	0,96	0,697

19	**France**	0,57	0,529	0,97	0,69
20	**Italy**	0,616	0,499	0,94	0,685
21	**Austria**	0,476	0,591	0,96	0,676
23	**Belgium**	0,507	0,514	0,99	0,67
25	**Luxemburg**	0,408	0,66	0,9	0,656
26	**Portugal**	0,507	0,49	0,94	0,646
29	**Spain**	0,428	0,409	0,97	0,602
37	**Greece**	0,328	0,372	0,92	0,54
	AVERAGE:	**0,544**	**0,614**	**0,964**	**0,707**

Table 1: Readiness in the e-Government Survey 2003

The following conclusions can be drawn from the statistical data:

The smallest difference between the eleven former socialist countries and the EU15 is the Human Capital Measure and the most significant differences are due to the lack of infrastructure. The average EU15 score in the latter area is close to the double the results achieved by the eleven selected states.

Considering the Global leaderboard (the survey covered 191 states this year), Europe was doing well in the survey. While the EU15 provided five out of the ten most successful countries, none of the eleven former socialist countries has been listed.

Overall, the EGRI values of these two groups have a 0.151 exact difference.

In the field of EPI, the average score for the EU15 was 0.4493 in 2004, in 2015 was 0.4503. Compared with the results of the eleven formal socialist states' 0.2538 and 0.2533. Between these two groups in the two years examined 0.1955 and 0.1969 points of difference were observed.

The analysis from 2004 (United Nations, 2004) may seem relatively significant, as we can date the accession of the vast majority of the examined former socialist states (Czechia, Estonia, Poland, Latvia, Lithuania, Hungary, Slovakia and Slovenia) to this year. Although the data in the report was from the previous year, during the pre-accession phase, the countries had to comply to a number of condition to become a member states.

The previously chosen 11 former socialist states

Rank	Country	Web measure index	TTI	HCI	Readiness
20	**Estonia**	0,699	0,450	0,960	0,703
27	**Slovenia**	0,514	0,498	0,940	0,651
28	**Czech Republic**	0,548	0,406	0,910	0,621
29	**Poland**	0,579	0,279	0,950	0,603
33	**Hungary**	0,537	0,291	0,930	0,586
37	**Slovakia**	0,490	0,279	0,900	0,556
38	**Romania**	0,606	0,165	0,880	0,550
39	**Latvia**	0,390	0,306	0,950	0,549
41	**Bulgaria**	0,506	0,209	0,910	0,542
43	**Lithuana**	0,432	0,238	0,940	0,537
48	**Croatia**	0,394	0,294	0,880	0,523
	AVERAGE:	**0,518**	**0,310**	**0,923**	**0,584**

EU-15, 2004.

Rank	Country	Web measure index	TTI	HCI	Readiness
2	**Denmark**	0,934	0,770	0,990	0,905
3	**UK**	0,973	0,693	0,990	0,885
4	**Sweden**	0,772	0,860	0,990	0,874
9	**Finland**	0,807	0,675	0,990	0,824
11	**Netherlands**	0,718	0,700	0,990	0,803
12	**Germany**	0,795	0,607	0,960	0,787
16	**Belgium**	0,772	0,495	0,990	0,752
17	**Austria**	0,699	0,577	0,970	0,749
19	**Ireland**	0,656	0,501	0,960	0,706
24	**France**	0,541	0,505	0,960	0,669
25	**Luxemburg**	0,429	0,651	0,900	0,660
26	**Italy**	0,552	0,497	0,930	0,660
31	**Portugal**	0,394	0,422	0,970	0,595
34	**Spain**	0,390	0,393	0,970	0,584
36	**Greece**	0,409	0,335	0,930	0,558
	AVERAGE:	**0,656**	**0,579**	**0,966**	**0,734**

Table 2: Readiness in the e-Government Survey 2004

By analyzing the numbers, we can conclude that the EU15 (0.027 points) and selected states (0.028) developments were broadly similar, and the difference is therefore only minimally improved (by 0.001 points). It is striking, however, more than half of the latter states have

improved their placement on the world ranking, while more and more EU15 countries are being overtaken.

In the year 2004, we already have quantified figures for several states that have not joined the community until now. These states are presented in the following table:

Rank	Country	Web measure index	TTI	HCI	Readiness
45	**Ukraine**	0,556	0,112	0,93	0,532
87	**Serbia & Montenegro**	0,336	0,131	0,694	0,387
93	**Bosnia-Herzegovina**	0,22	0,087	0,83	0,379
97	**TFYR Macedonia**	0,124	0,126	0,86	0,37
110	**Albania**	0,162	0,058	0,8	0,34
	AVERAGE:	**0,295**	**0,107**	**0,821**	**0,407**

Table 3: Readiness of the chosen non-EU member former socialist states in the e-Government Survey 2004

It is well perceived, the majority of these states (except Ukraine) are in a huge lag in all areas compared to the other two groups. The difference between the first two indicators is particularly striking.

In the field of EPI, the selected eleven member countries achieved an average score of 0.2533, compared with the average number of 0.4503 achieved by the EU15. The difference between the examined states increased by 0.197 points. The average result of the third group is 0.1353, which is 0.118 points lag compared to the results of the eleven countries audited.

5.3. Reports from 2005 to 2010

Between 2005 and 2010, three reports were issued (United Nations, 2005; United Nations, 2008 and United Nations, 2010).

The results of EGRI in the EU15 countries (EGDI from 2010) are summarised in the following table:

Country	EGRI 2005	Rank 2005	EGRI 2008	Rank 2008	EGDI 2010	Rank 2010
Austria	0,7602	16	0,7428	16	0,6679	24
Belgium	0,7381	18	0,6779	24	0,7225	16
Denmark	0,9058	2	0,9134	2	0,7872	7

Finland	0,8231	9	0,7488	15	0,6967	19
France	0,6925	23	0,8038	9	0,7510	10
Germany	0,8050	11	0,7136	22	0,7309	15
Greece	0,5921	35	0,5718	44	0,5708	41
Ireland	0,7251	20	0,7296	19	0,6866	21
Italy	0,6794	25	0,6680	27	0,5800	38
Luxembourg	0,6513	28	0,7512	14	0,6672	25
Netherlands	0,8021	12	0,8631	5	0,8097	5
Portugal	0,6084	30	0,6479	31	0,5787	39
Spain	0,5847	39	0,7228	20	0,7516	9
Sweden	0,8983	3	0,9157	1	0,7474	12
UK	0,8777	4	0,7872	10	0,8147	4
Average scores	**0,7429**		**0,7505**		**0,7042**	

Table 4: Readiness of the EU15 states between 2005 and 2010

It can be seen, the average EGRI (EGDI) value has improved in the first two years, while in the 2010 report (i.e. in the 2008-2009 period) has dropped considerably. Among the reasons for this decline, we need to look at the global economic crisis and the related state constraints as well as the loss of citizens' trust (United Nations, 2010, pp. 9-10), but the methodology has also changed considerably. EGRI has been replaced in this report by the EGDI, which continues to be based on the online services – telecommunication infrastructure – human capital indicators, but the OSI survey has expanded by 25 new questions, while 29 questions were modified and 16 were deleted (United States, 2010, p. 111).

In the 2010 survey, a decline similar to the EU-15 is also seen in the 11 selected ex-socialist countries:

Country	EGRI 2005	Rank 2005	EGRI 2008	Rank 2008	EGDI 2010	Rank 2010
Bulgaria	0,5605	45	0,5719	43	0,5590	44
Croatia	0,5480	47	0,5650	47	0,5858	35
Czech Republic	0,6396	29	0,6696	25	0,6060	33
Estonia	0,7347	19	0,7600	13	0,6965	20
Hungary	0,6536	27	0,6494	30	0,6315	27
Latvia	0,6050	32	0,5944	36	0,5826	37
Lithuania	0,5786	40	0,6617	28	0,6295	28
Poland	0,5872	38	0,6134	33	0,5582	45

Romania	0,5704	44	0,5383	51	0,5479	47
Slovakia	0,5887	36	0,5889	38	0,5639	43
Slovenia	0,6762	26	0,6681	26	0,6243	29
Avarage scores	**0,6130**		**0,6255**		**0,5987**	

Table 5: Readiness of the previously chosen eleven former socialist states between 2005 and 2010

The differences between the EGRI and EGDI values of the two groups, together with the numbers above, decreased further over the entire period (0.1300 in 2005, 0.1250 in 2008,and 0.1055 in 2010).

Surprisingly, the results of non-EU member countries, including the critical year 2010, have been minimally improved:

Country	**EGRI 2005**	**Rank 2005**	**EGRI 2008**	**Rank 2008**	**EGDI 2010**	**Rank 2010**
Albania	0,3732	102	0,4670	86	0,4519	85
Bosnia and Herzegovina	0,4019	84	0,4509	94	0,4698	74
Montenegro			0,4282	100	0,5101	60
Serbia (in 2005 with Montenegro)	0,1960	156	0,4828	77	0,4585	81
TFYR Macedonia	0,4633	69	0,4866	73	0,5261	52
Ukraine	0,5456	48	0,5728	41	0,5181	54
Avarage scores	**0,3960**		**0,4814**		**0,4891**	

Table 6: Readiness of the chosen non-EU member former socialist states between 2005 and 2010

It is questionable whether this is due to a more lenient application of the effects of the economic crisis or to the development of these states. In summary, however, the discrepancy between the EU15 and the eleven former socialist countries, as well as the latter group and the non-EU countries, in terms of the EGRI and EGDI points has become negligible after the fallback in 2005 year by year (the latter values: 0.2170 in 2005, 0.1441 in 2008 and 0.1096 in 2010).

Developments in the area of EPI for the EU-15 have been observed in all the years audited (0.4328 in 2005, 0.4394 in 2008 and 0,4399 in 2010). The eleven former socialist countries reached 0.2713 in 2005, 0.2356 in 2008, and 0.3364 in 2010. The results of the non-EU

countries investigated were as follows: 0.1175 points in 2005, 0.1439 in 2008, and 0.1405 in 2010.

Surprisingly in two different years, the differences in EPI between the EU15 states and the eleven former socialist countries have exceeded the gap between the latter group and non-EU member states.

5.4. Reports after 2010

Starting with the survey from 2012 (United Nations, 2012)the average overall result of the EU15 on EGDI was once again evolving, with a slight decline in only 2014 (United Nations, 2014):

Country	EGDI 2012	Rank 2012	EGDI 2014	Rank 2014	EGDI 2016	Rank 2016	EGDI 2018	Rank 2018
Austria	0,7840	21	0,7912	20	0,8208	16	0,8301	20
Belgium	0,7718	24	0,7564	25	0,7874	19	0,808	27
Denmark	0,8889	4	0,8162	16	0,851	9	0,915	1
Finland	0,8505	9	0,8449	10	0,8817	5	0,8815	6
France	0,8635	6	0,8938	4	0,8456	10	0,879	9
Germany	0,8079	17	0,7864	21	0,821	15	0,8765	12
Greece	0,6872	37	0,7118	34	0,691	43	0,7833	35
Ireland	0,7149	34	0,781	22	0,7689	26	0,8287	22
Italy	0,7190	32	0,7593	23	0,7764	22	0,8209	24
Luxembourg	0,8014	19	0,7591	24	0,7705	25	0,8334	18
Netherlands	0,9125	2	0,8897	5	0,8659	7	0,8757	13
Portugal	0,7165	33	0,69	37	0,7144	38	0,8031	29
Spain	0,7770	23	0,841	12	0,8135	17	0,8415	17
Sweden	0,8599	7	0,8225	14	0,8704	6	0,8882	5
UK	0,8960	3	0,8695	8	0,9193	1	0,8999	4
Average scores	**0,8034**		**0,8009**		**0,8132**		**0,8510**	

Table 7: Readiness of the chosen non-EU member former socialist states between 2012 and 2018

A similar phenomenon can be observed when studying the EGDI values of the eleven former socialist countries: The average EGDI score after improving in 2012, dropped marginally in 2014, but again in the reports from 2016 (United Nations, 2016) and 2018 (United Nations, 2018) we can see an increase.

Country	EGDI 2012	Rank 2012	EGDI 2014	Rank 2014	EGDI 2016	Rank 2016	EGDI 2018	Rank 2018
Bulgaria	0,6132	60	0,5421	73	0,6376	52	0,7177	47

Croatia	0,7328	30	0,6282	47	0,7162	37	0,7018	55
Czech Republic	0,6491	46	0,607	53	0,6454	50	0,7084	54
Estonia	0,7987	20	0,818	15	0,8334	13	0,8486	16
Hungary	0,7201	31	0,6637	39	0,6746	46	0,7265	45
Latvia	0,6604	42	0,7178	31	0,681	45	0,6996	57
Lithuania	0,7333	29	0,7271	29	0,7747	23	0,7534	40
Poland	0,6441	47	0,6482	42	0,7211	36	0,7926	33
Romania	0,6060	62	0,5632	64	0,5611	75	0,6671	67
Slovakia	0,6292	53	0,6148	51	0,5915	67	0,7155	49
Slovenia	0,7492	25	0,6505	41	0,7769	21	0,7714	37
Average scores	**0,6851**		**0,6528**		**0,6921**		**0,7366**	

Table 8: Readiness of the previously chosen eleven former socialist states between 2012 and 2018

As a result of the comparison with the EU15, it is concluded that the difference in average EGDI results at the time of the four reports examined increased until 2014 and then dropped to 0.1211 in 2016 and 0.0963 in 2018.

2012 brought a significant improvement for the selected non-EU countries, a trend that continued after the stagnation in 2014.

Country	EGDI 2012	Rank 2012	EGDI 2014	Rank 2014	EGDI 2016	Rank 2016	EGDI 2018	Rank 2018
Albania	0,5161	86	0,5046	84	0,5331	82	0,6519	74
Bosnia and Herzegovina	0,5328	79	0,4707	97	0,5118	92	0,5303	105
Montenegro	0,6218	57	0,6346	45	0,6733	47	0,6966	58
Serbia (in 2005 with Montenegro)	0,6312	51	0,5472	69	0,7131	39	0,7155	49
TFYR Macedonia	0,5587	70	0,472	96	0,5886	69	0,6312	79
Ukraine	0,5653	68	0,5032	87	0,6076	62	0,6165	82
Average scores	**0,5710**		**0,5221**		**0,6046**		**0,6403**	

Table 9: Readiness of the chosen non-EU member former socialist states between 2012 and 2018

At the same time, there is a surprising phenomenon: the differences in average EGDI scores between EU15 and eleven former socialist countries countries (0.1183; 0.1481; 0.1211; and 0.1144) over all periods exceed those calculated in the same way between the latter group and the non-EU countries (0,1141; 0,1307; 0,0876; 0,0963).

In the area of average EPI, we can experience the same thing even more: the differences between the first two groups (0.2311; 0.2405; 0.1307; 0.1502) are abnormally higher than those of the two last groups (0.1268; 0.0882; -0.0154; 0.0918).

5.5. Conclusions to be obtained from the study of average EGDI and EPI values

At the beginning of our study, we set up three hypotheses, as follows:

(H1): Accession to the European Union is positively influenced the development of e-Government, theoverall e-Government development of the member states is higher than in the non-EU countries.

Based on the analysis above, **this hypothesis can be substantiated by the EGDI and EPI indicators based on the UN E-government Survey methodology**. Since the average results of the EU15 and the elevenformer socialist states are higher in almost all reports than in the non-EU countries.

Our second hypothesis is recorded as follows*(H2): In a country with a higher level of general e-Government development, citizens manage their everydays queries electronically more often, i.e. e-participation is essentially higher.*

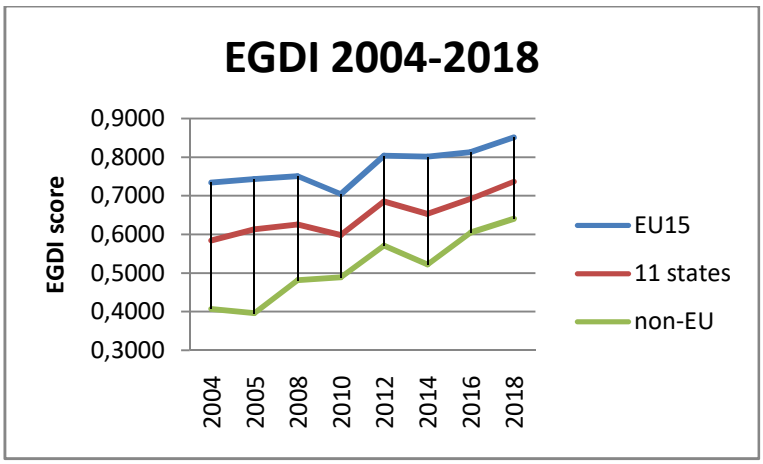
This hypothesis cannot be verified or refunted by the mere use of the available UN indicators, and we will return to this later.

However, we can also examine our third hypothesis by using the data above:

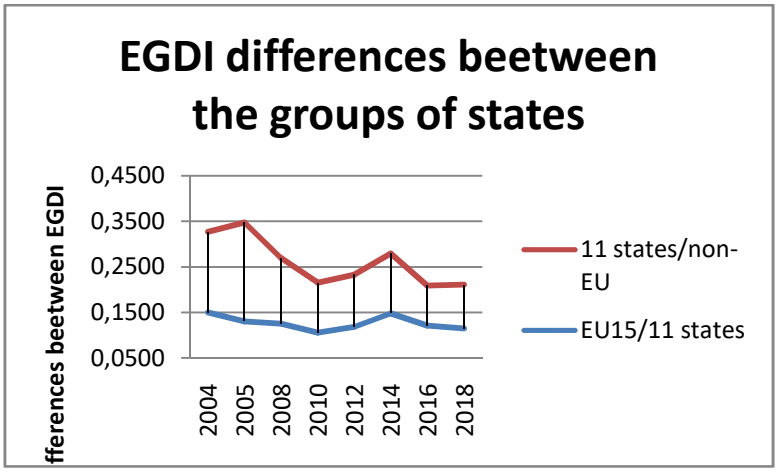
(H3): As a consequence of accession, the differences in the e-Government development of each state will become increasingly negligible as time progested, while differences are growing between member states and countries without member state status.

In order to examine the hypothesis, we set two-two graphical functions, starting with the average values of EGDI and EPI: The first plots the average value of the EGDI and the time series of the reports, broken down by the groups of states examined.The second function focuses on the difference between the indices of group of states.

Therefore the EGDI graphics functions can be plotted as follows:



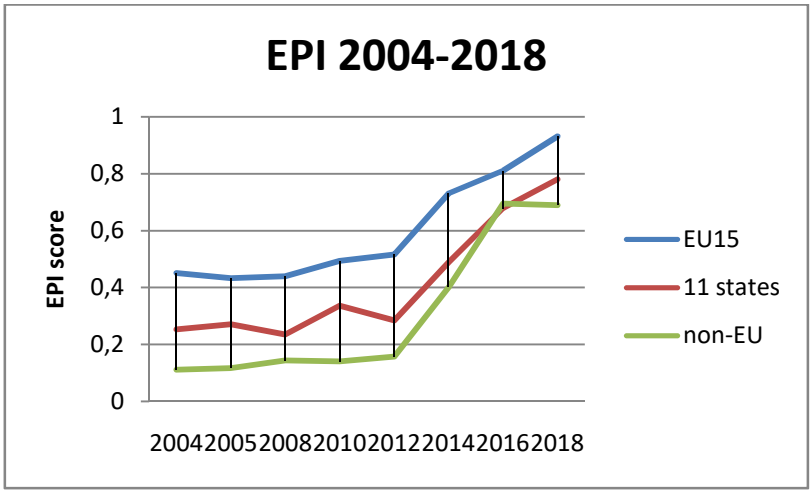
Graph 1: average values of EGDI in the previously defined groups of countries



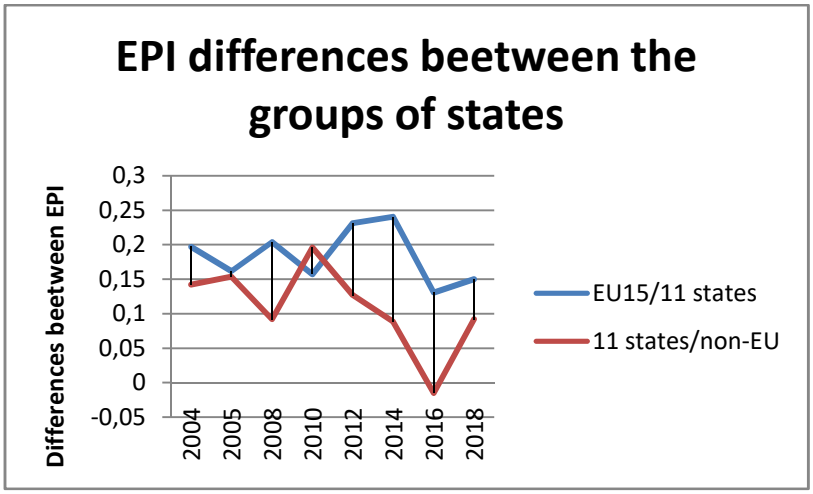
Graph 2: EGDI differences between the indices of group of states

It is clear from the diagrams,the differences between EGDI (EGRI) indicators have not decreased significantly over time, and in some cases have shown an opposite trend in between the EU-15 and the 11 ex-socialist member states, as well as between the latter group and the selected non-European countries.

In terms of average EPI, this phenomenon is pronounced even more:



Graph 3: average values of EPI in the previously defined groups of countries



Graph 4: EPI differences between the indices of group of states

On this basis, **it can be stated that the H3 hypothesis was clearly refuted using the UN's EGDI (EGRI) and EPI indicators, so the accession to the European Union did not increase the e-Government development of each state in excess of countries without member status.**

5. Measuring C2G connections

To examine our second hypothesis, we need a database that can measure citizen-to-government relationships. Among the data available in the EUROSTAT database, we selected the 'E-government activities of individuals via websites' study. From 2009 onwards, the report shows the percentage of individuals in a country who have used an Internet tool to interact with public authorities.

In view of the fact the UN's reports mentioned above basically cover a period of two years, the average number of interactions for the two years concerned by the report was compared with the EGDI and EPI values from there. As the database is limited to EU member states, with a few exceptions, and most of the states without member status from our selection not having a sufficient number of data, we could not perform the analysis for them.

In the course of the investigation, the following results were obtained for the EU15:

Country	2010/2011	EGDI 2012	EPI 2012	2012/2013	EGDI 2014	EPI 2014	2014/2015	EGDI 2016	EPI 2016	2016/2017	EGDI 2018	EPI 2018
Austria	51,00	0,7840	0,3684	53,50	0,7912	0,6275	58,00	0,8208	0,8814	61,00	0,8301	0,8258
Belgium	46,00	0,7718	0,1316	50,00	0,7564	0,6275	53,50	0,7874	0,6441	55,00	0,8080	0,7584
Denmark	79,50	0,8889	0,5526	84,00	0,8162	0,5490	86,00	0,8510	0,8136	88,50	0,9150	1,0000
Finland	68,00	0,8505	0,7368	69,50	0,8449	0,7059	79,50	0,8817	0,9153	82,50	0,8815	1,0000
France	57,00	0,8635	0,5789	60,50	0,8938	0,9608	63,50	0,8456	0,8983	67,00	0,8790	0,9663
Greece	21,50	0,8079	0,7632	35,00	0,7864	0,7059	45,50	0,8210	0,7627	48,00	0,8765	0,9213
Germany	50,00	0,6872	0,3421	50,00	0,7118	0,8039	53,00	0,6910	0,6102	54,00	0,7833	0,8764
Ireland	40,50	0,7149	0,1316	47,00	0,781	0,6471	50,50	0,7689	0,7119	53,50	0,8287	0,9326
Italy	22,50	0,7190	0,2632	20,00	0,7593	0,7843	23,50	0,7764	0,9153	24,50	0,8209	0,9551
Luxembourg	63,50	0,8014	0,3947	58,50	0,7591	0,5490	68,50	0,7705	0,6949	75,50	0,8334	0,9382
Netherlands	63,00	0,9125	1,0000	73,00	0,8897	1,0000	75,00	0,8659	0,9492	77,50	0,8757	0,9888
Portugal	31,50	0,7165	0,3684	38,50	0,69	0,6471	42,00	0,7144	0,6610	45,50	0,8031	0,8989
Spain	38,00	0,7770	0,5000	44,00	0,841	0,7843	49,00	0,8135	0,9322	51,00	0,8415	0,9831
Sweden	71,00	0,8599	0,6842	78,00	0,8225	0,6078	77,00	0,8704	0,7627	81,00	0,8882	0,9382
United Kingdom	44,00	0,8960	0,9211	42,00	0,8695	0,9608	50,00	0,9193	1,0000	51,00	0,8999	0,9831
Average	**49,80**	**0,8034**	**0,5158**	**53,57**	**0,8009**	**0,7307**	**58,30**	**0,8132**	**0,8102**	**61,03**	**0,8510**	**0,9311**

Table 10: Citizen interactions with authorities in EU15, compared with EGDI and EPI scores

For the eleven pre-selected former socialist countries, the results are summarised in the following table:

Country	2010/2011	EGDI 2012	EPI 2012	2012/2013	EGDI 2014	EPI 2014	2014/2015	EGDI 2016	EPI 2016	2016/2017	EGDI 2018	EPI 2018
Bulgaria	24,50	0,6132	0,0263	25,00	0,5421	0,2549	19,50	0,6376	0,6949	20,00	0,7177	0,8708
Croatia	18,00	0,7328	0,2895	25,50	0,6282	0,3333	33,50	0,7162	0,7797	34,00	0,7018	0,7697
Czechia	32,50	0,6491	0,2632	30,00	0,607	0,2549	34,50	0,6454	0,5593	41,00	0,7084	0,6180
Estonia	51,50	0,7987	0,7632	51,00	0,818	0,7647	66,00	0,8334	0,8136	77,50	0,8486	0,9101
Hungary	36,00	0,7201	0,4474	39,50	0,6637	0,4510	45,50	0,6746	0,4915	47,50	0,7265	0,7079
Latvia	40,50	0,6604	0,2105	41,00	0,7178	0,7059	53,00	0,6810	0,5254	69,00	0,6996	0,6854
Lithuania	26,50	0,7333	0,5263	35,00	0,7271	0,6471	42,50	0,7747	0,8305	46,50	0,7534	0,8034
Poland	28,00	0,6441	0,1842	27,50	0,6482	0,4902	27,00	0,7211	0,8814	30,50	0,7926	0,8933
Romania	7,50	0,6060	0,0789	18,00	0,5632	0,4706	10,50	0,5611	0,6271	9,00	0,6671	0,7079
Slovenia	45,00	0,6292	0,1316	50,00	0,6148	0,6275	49,00	0,5915	0,5424	47,50	0,7155	0,8090
Slovakia	49,00	0,7492	0,2105	37,50	0,6505	0,3922	54,00	0,7769	0,7288	47,50	0,7714	0,8146
Average	**32,64**	**0,6851**	**0,2847**	**34,55**	**0,6528**	**0,4902**	**39,55**	**0,6921**	**0,6795**	**42,73**	**0,7366**	**0,7809**

Table 11: Citizen interactions with authorities in the former socialist states, compared with EGDI and EPI scores

We can see that without a more in-depth study, the higher EGDI or EPI value has a beneficial effect on the use of internet tools using by the individuals to interact with public authorities.

However, the assertion can also be statistically verified by correlation analysis. During the analysis, the average number of users was used as variable 'A', and the variable 'B' was first considered as EGDI and then EPI. For the EU15, we received a correlation coefficient of 0.8242 for EGDI and 0.9739 for EPI. For the eleven pre-selected states, the correlation coefficient is 0.8010 (EGDI) and 0.9720 (EPI).

Thus, by the above method, **we confirmed our second hypothesis (H2): In a country with a higher level of general e-Government development, citizens manage their everydays queries electronically more often, i.e. e-participation is essentially higher.**

This is, of course, only true if we accept that EGDI and EPI provide a realistic picture of the development of the country's e-Government.

6. Summary and conclusions

In the course of our study, we examined the development of the e-Government of the former socialist states, which have now joined to the European Union, in particular the level of electronic participation. At the start of our research, we assumed that the accession to the European Union, mainly as a flow of regularly issued e-Government action plans and other regulatory tools, greatly increased the e-Government and e-participation indicators.

In the course of the investigation, we used the United Nations framework, so the overall e-Government development was characterised by EGDI and e-participation by the extent of the EPI.

Most importantly, we conclude that the differences between the indicators above in the selected elevenformer socialist member countries and the EU15 countries decreased to a lesser extent between 2004 and 2018 compared with the selected countries with a similar historical past outside the EU versus the previously chosen former socialist member states.

Based on the above, it can be stated accession to the EU alone will have a lesser effect than previously assumed on the development of the newly joining state's e-Government and e-participation.

We hope that our study will encourage more research on the subject to explore the reasons for the finding and, in the longer term, be suitable for engaging in extensive scientific discourse on the subject.

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