Hofstede`s model in the context of e-government and open government in EU countries: countries clustering based on similarities and differences

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Abstract
This research tries to answer the question "*How does the Hofstede`s Model of societal cultural differences relate to the development of EU countries e-government and open government?*". This question of interest in the research comes from the growing number of discussions about how the culture impacts the economic growth, but much more because of the literature GAP about the factors of relations among the Hofstede`s Model dimensions and the new governance models in the EU countries. Based on a literature overview and analyze we propose a thesis is that the analyzed EU countries can be clustered into three. The countries, which fall into the same cluster entitled Cluster of Changers, possess cultural similarities and this relates to the progressive development of the open and e-government. This is such because these countries possess the same characteristics defined by the Hofstede`s model. The second cluster of countries, we entitled them Cluster of Observers, are characterized by similar characteristics according to Hofstede`s model, they have slow development in the open and e-government. And the third one, the cluster Cluster of Moderators falls neither into the cluster of Changers or Observers. We propose a matrix model, which explains the Hofstede`s model of cultural dimensions in regards to the e-government development and open government of the EU countries.

Keywords: Hofstede`s Model, e-Government, open data.

1. Introduction

For the last decades, one of the key questions of discussions in the European Union (EU) Public Administration arena is the adoption, development and innovations of e-Government. The core of the analyses is usually related to the extent which it is successfully implemented, technology efficient, used and how progressive it is at the time. Based on this e-Government development, it can be outlined serious differences, not only among the different EU countries but also among regions. The reasons for the differences as a result of opportunities for implementing new governance models are not enough discussed and analyzed in the current literature in an interdisciplinary context. A common assumption is that decisions for new governance models implementation is based on a political will, and sometimes a presence of any financial-economic factors and conditions. But, the practice shows that some countries with similar economic growth have a different advancement of implementation of new governance models. It can be assumed or suggested, that in a long-term aspect of the e-Government development, in the case of equality of all the other conditions, it (e-Government) would impact the business environment and respectively would contribute to the acceleration of the economic growth. Following the understanding of the current Neoclassical theory, this in

turns would create conditions for more efficient usage of the resources of each one of the EU countries.

The aim of the research is to understand if there is a correlation between the EU countries` new governance models (e-Government and Open Government) and the Hofstede`s model of intercultural differences. We introduce the hypothesis that "*In the countries, where there are strong collectivist attitudes in the mind, and high distance between the country's elite on one hand and the citizens on the other, the opportunities for successful implementation of the new governance models are limited, at least for the current time.*". Hofstede defined culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others" [1], [2]. This is not like that because of the elite itself, but because of the specifics of the mind that is more recognized from the population. More important characteristics of the collectivist attitude are: people are supposed to be loyal to the group to which they belong, and, in exchange, the group will defend their interests, the group itself is normally larger, and people take responsibility for one another's wellbeing, wisdom is important, suppress feelings and emotions that may endanger harmony, avoid giving negative feedback in public. Saying "No" can cause loss of face, unless it's intended to be polite. For example, declining an invitation several times is expected. And, on the contrary, in the countries where the individualism is the model of the mind, and where there is a lower level of distance between the elite and the citizens, the opportunities for new models of governance are supposed to be bigger. A reason for this assumption is that the individualism characteristics of the populations are on a national level (more economic development, developed/wealthy modern industry, urbanization) and political level (political power by voter, laws/rights same for all).

Highly individualist cultures believe the individual is the most important unit. In such culture people taking care of themselves (including family only), there is self-orientation, the identity is based on individual, there is a guilt culture. Making decisions is based on individual needs, and there is "I" mentality. Emphasis is on individual initiative and achievement and everyone has a right to a private life [3]. The countries are ranked on criteria high distance of power and low distance of power. It is assumed that the countries from the first group possess characteristics as countries of collectivism and the second ones as countries of individualism. This is like that because the high distance of power supposes the principles such as autocratic leaders, power comes from inheritance or charisma, the use of privileges and the status of power is popular, parents require children to obey, scandals are covered, and politicians involved keep their positions, etc. But, concerning those who possess low distance of power, they in most cases are similar to more individualism oriented countries. Because the main characteristics are: Democratic leader, position and power are given according to their abilities and qualities, privileges and symbols are not accepted well, parents behave with their children as equals, scandals lead to the end of a political career, etc. [4].

These dimensions of Hofstede`s model give us arguments to use these two criteria for our research overview and analyses, where the leading correlation will be the behavior of the population as collectivist or individualist. We suggest that, the first group of countries –

collectivists with high distance of power, objectively there are more opportunities for existence of nepotism, which is explained by higher influence of family and friends' relations among the population, and respectively corruption, in comparison with the countries with individualist model of culture with lower distance of power. An argument for this assumption is also the rate of Gross Domestic Product (GDP) per citizen in the two groups of countries as an impact of the earlier cited characteristics and also the following circumstance that the governance of the public good in the public sector would meet more or fewer problems, including non-traditional models of public good cost management. On one hand, all these circumstances, in turn, could impact the national debt increases. On the other hand, in case of implementing the new models of governance in countries with such characteristics, the technology implementation as a following perspective would limit the debt growth and all the other negative trends. It can be summed up the cultural differences among the EU countries has to be decreasing because of the EU membership. But even this assumption, the difference is still existing and the cultural difference influence the implementation of new governance models. That is why it is important to be identified if there is a correlation between the cultural differences in EU and the rate of use of the new forms of governance, such as e-Government and Open Government.

The research is structured as follows. Part one presents the overview of the Hofstede model and other reasons of influence for cultural differences and EU countries. The countries are grouped based on collectivism vs. individualism and high vs. low level of distance of power. Second part, a research and analyses about e-government and open government development in EU are done. At the end of the second part we propose a matrix model, which explains the correlation between the Hofstede`s model cultural dimensions and the development of e-government and open government of the EU countries clusters.

2. Analyze of the factors of cultural differences in EU countries

2.1. Hofstede` model overview

Hofstede's cultural classification are highly ranked by corporations and Small and Medium sized Enterprises companies. Hofstede's cultural classification model includes six culture dimensions as follow [5]:

- collectivism versus individualism (INV) indicates the degree to which individuals are attached into groups;
- power distance (PWD) refers to "the extent to which the less powerful members of institutions and organizations within a country expect and except that power is distributed unequally" [2].
- uncertainty avoidance (UAI) reflects the extent to which the members of a society feel threatened by ambiguous or unknown situations;
- feminity versus masculinity (MAS) implies the difference between a competition, ambition, performance focus society (masculinity) and a solidarity, equality, consensus seeking and social relationships caring culture (feminity);
- long-term versus short-term orientation (LTO) describes how every society has to preserve its traditional while dealing with the challenges from the present and future;

- indulgence versus restraint (IVR) represents a bipolar dimension with allowing basic and human desires related to happiness, joyful in one side and controlling, restricting that such gratification by strict social norm in another side.

Based on all these criteria, in general, the peoples are characterized as possessing greater attitude towards collectivism or in individualistic thinking. Terms such as “generic cultures (societies)" and "uncultivated cultures (societies)” are used in Bulgarian literature [6]. In the interest of a more complete analysis, in our study, we mainly rely on the first three criteria and the sixth criterion, in particular the first two of them. Our arguments are that, in clarifying the above-mentioned hypothetical correlation, the other criteria either do not have a link, or if they have one, it is too indirect to be able to reflect strongly, including in the long run. Furthermore, it should not be claimed that the criterion of "collectivist" in all circumstances would necessarily have an adverse effect on the above aspects. For example, according to Hofstede's classification, the peoples of most of the Asian countries are collectivist, including even in Singapore [4]. This, however, does not hinder the very high-tech modern sectors development in the economy. Moreover, as it is well known, during the last decades the meritocracy in Singapore has always been a cult, including by governing elites. Moreover, the economic model there, despite the existence of collectivist attitudes among the population, can be broadly defined as a neo-liberal model [7]. Moreover, it was established in the Hofstede classification that, with regard to the avoidance tolerance criterion, there is a high level of tolerance in terms of uncertainty and risk taking among people in Singapore, as opposed to the southern European countries where there is also collectivist cultural attitudes predominance. However, according to our hypothesis, the above-mentioned dependences between cultural differences and the opportunities for introducing new forms of government (e-government and open government) are especially characteristic of the countries of Europe. This is why a comparative analysis is taking place in this study, including the countries of the European Union, as well as some individual non-European countries such as Norway, Russia, Serbia and others. In this regard, firstly, we try to clarify the nature of the main reasons, which in Europe have contributed to these significant differences between the cultures which probably influence the organization of the administrative service and new governance models.

2.2. Geographical reasons for cultural differences

According to some scientists, geographic location and climatic features have had a significant impact on the formation of these intercultural differences, not at last, but on the contrary, over the centuries. For example, it is believed that the peoples living in northern Europe for a very long time had to take into account the unfavorable climate. Therefore, it is more often necessary to save them individually and to work more and more rapidly in separate periods in order not to be overtaken by the harsh winter, which would have fatal consequences for their feeding and survival [8]. These arguments taken as a whole are convincing. Nonetheless, and in no way downgrading them, it may be noted that they do not clarify some objective results obtained in Hofstede classification as well as the existence of exceptions to the general rule. For example, Russia, despite the harsh climate, is classified as a country whose population has a very strong collectivist mindset. On one hand, the fact that in some areas there are still good conditions for

growing cereals, it could hardly be the only explanation. On the other hand, Britain, as a country whose population has strong individualistic thinking, can enjoy climate and fertile soils where wheat also grows well. And last but not least, in England for over the past few centuries there have traditionally been very good conditions for the development of pastoral sheep breeding despite the great cold that has covered Europe for several hundred years which, as it is known, continued until the second half of 19 centuries. Moreover, as more favorable than the climate of some Balkan countries, it could be defined the one of France. Which has not prevented the population there from having significantly more pronounced individualistic attitudes in thinking.

2.3. Historical reasons witch from the distant past

According to some assumptions, there is a great influence, especially in Europe, towards a stronger expressed collectivists mind and stronger expressed distance of power. There were in the far past, including from the times of the Ancient and Middle Centuries ages. For example, such factor is described as the continuity and belonging of those regions to Rome Imperia. Furthermore, in this respect, in later period in the same countries, the greater significance of the elite heavy cavalry in the Middle Ages war played a special role as well [9]. Indeed, this could be explained by the presence of elements of a generational society of today, the presence of nepotism, corruption, the drivers' behavior not stopping the cars the pedestrians to cross the roads. These factors are across the Southern Europe countries. Unlike these regions, both factors of the mentioned earlier either were absent or were much less obvious in the regions covering todays Northern Europe, especially Scandinavia and the northern part of Germany, as well as the Baltic States. This thesis does not cover the discussed issue. There are some exceptions, especially Russia. In addition, it appears that today both Italy and France have both strong individualistic thinking and a relatively high degree of power distance.

2.4. Reasons form the past and the modern history

According to some authors, more collectivist cultures, based on a great power distance, have been formed for a long time because of the existence of despotic and, in the recent past, authoritarian (sometimes even totalitarian) forms of government. In this respect, the existence of the Byzantine culture, its specific model of social relations, the long existence of the Ottoman Empire, of the Russian Empire and others, had a great influence in the past. In the recent past, such a role has been played by the Communist system as well as some other regimes of an authoritarian character [8]. Such cases can be complemented in the recent history of Spain, Portugal and Greece. This treatment is also unable to explain the existence of some exceptions. For example, as has already been mentioned above, the French nation, which for many years developed in the conditions of democracy, is on the one hand with very strong individualistic thinking, but on the other - with a high degree of power distancing. In addition, there are some intercultural differences between the population of Poland and Lithuania, although they have been within a united one for a long time in history.

2.5. Other reasons

Other reasons for collectivist attitudes are based on the higher population density in some European regions in the past, the presence of more different ethnic and religious groups

of the population living on the one hand but living on separate neighborhoods in the cities, the need to defend common cultural and religious values, the need for group and family solution of problems, etc. And last but not least - as a reason for the formation of individualistic cultures, the existence of large unspoiled areas in the northern European countries, especially in the past, as well as in today's Australia and New Zealand, the accepted practice of a household living and surviving only without the presence of neighbors and at a great distance from the nearest settlement and more. The general conclusion is that all the factors can be taken into account as the reasonable for the current intercultural differences in the European countries.

2.6. EU countries grouping based on collectivism vs. individualism and high vs low level of distance of power

If we use only the first two criteria of the Hofstede`s model - collectivism vs. individualism and high vs. low power distances, and considering that it is arranged according to different degrees of presence in each of the two criteria, it can identify different groups of countries. In our research, we apply this assumption only to countries in Europe, and exclude those countries that are outside Europe. Considering that in the model the highest degree of collectivism is shown in some non-Europeans, then in our study, the highest degree of collectivism in Europe should be defined in the cultures characterized in the model as moderately collectivist. From now on, using both of the above criteria, we reach the following order of individual nations in groups shown in Table 1.

Table 1. Collectivists vs Individualism culture in Europe - 2 groups of countries

Collectivists culture in Europe	Individualism culture in Europe
• Greece and Russia – highest level • Croatia, Bulgaria, Serbia, Slovenia and to some extent Romania – middle level • Portugal, Spain, Slovakia and to some extent Poland – the lowest level	• Great Britain, Netherlands, Denmark, Sweden, Norway, Germany, and to some extent Ireland – highest level • Hungry, Italy, Latvia, Finland, Austria and to some extent Czech – second level • France, Belgium and Switzerland – lower level • Lithuania, Estonia and Luxemburg – lowest level

By comparing not only collectivist against individualism, but also high against low power distances, and include additional ones, such as avoiding tolerance of insecurity and restraint against satisfaction, then the grouping changes to a certain extent, but these changes are not drastic (Table 2).

Table 2. Collectivists vs Individualism culture in Europe – 3 groups of countries

Collectivists culture in Europe	Average culture in Europe	Individualism culture in Europe
• Croatia, Serbia, Bulgaria, Slovenia, Russia – highest level • Portugal and Greece – second level • Spain, Slovakia and Romania – lowest level	• France, Poland, Italy, Czech, Hungry	• Great Britain, Denmark, Sweden – highest level • Norway, Netherlands, Finland, Switzerland – second level • Ireland – lower level • Belgium, Austria - 4th level • Latvia, Lithuania, Estonia, Germany and Luxemburg – the lowest level

All these results show not only the existence of significant differences, but also certain degrees of belonging to certain groups according to the relevant criteria, as well as the presence of certain nuances arising from the complexity of the contemporary society. Even though some research analyses how government agencies in developing countries establish effective delivery of e-Government services and influence societal perspectives of these services [10]. We would rather try to determine the extent of the cultural differences influence related to the introduction of new governance models in EU. For this purpose, we analyze four criteria trends related to e-Government development and four criteria trends related to Open Government development in EU and try to understand and identify similarities and differences with the Hofstede`s model. The 1st group criteria are: eGovernment performance across Europe; Growth of internet access in Europe; Regular user of Internet; Digital Public Services scoreboard. The 2nd Group criteria are: Open Government datasets on data portals; Open Barometer EU countries ranking; Open Data Maturity; Global Open Data Index.

3. From e-Government to Open Government in EU countries

3.1. eGovernment performance across Europe

Since the advent of the World Wide Web in the mid-1990s, there has been a surge in the use of e-government by federal, state, and local governments to deliver information, communication, and services to users, with much of this content and services now available only online. As e-government has matured into a dynamic socio-technical system encompassing issues of governance, societal trends, technological change, information management, interaction, and human factors, government-to-citizen service has become one of the central uses of e-government [11]. For the last decades, the EU has developed policies to foster the use of ICTs in the provision of government services to citizens. Government evolved from Government to e-Government, Government 1.0 and Government 2.0 (Table 3). e-Government and cross-border public services that support EU policies have become a necessary condition for a fully realised single market, supporting the rights of citizens to live and work any where in the Union and of businesses to offer services across the EU [12].

Table 3. Government to Government 2.0

Government	**Governance**
Superstructures	Functionality
Decisions	Processes
Rules	Goals
Roles	Performance
Implementation	Coordination
Outputs	Outcomes
e-Government	**e-Governance**
Electronic service delivery	Electronic consumption
Electronic workflow	Electronic controllership
Electronic voting	Electronic engagement
Electronic productivity	Networked societal guidance
Electronic documents	Electronic communications
Government 1.0	**Governance 1.0**
Aloof	Communicative and effective
Bureaucratic	Complex - Hierarchy models

Risk-average	Average Intrapreneur model
Policy focused and Strategic	Predictive
Top-down	Formative approach
Content focused	Share content
Government 2.0	**Governance 2.0**
Open	Transparent and Engaging
Risk-taking	Intrapreneur model
Citizen-centered	Value focused
Pragmatic	Efficient and effective
Cloud based communications	Collaborative
Social media tools usage	Multi-channeled communications
Knowledge management	Sharing Knowledge

For example, in 2010, the European Commission adopted its European eGovernment Action Plan for the 2011-15 period. This plan contributes to achieving two important targets of the Digital Agenda in Europe: first, that 80% of businesses and 50% of citizens make use of eGovernment services; and second, that a number of key cross-border services be offered online by 2015. But, how do individual countries contribute to the eGovernment results? It is no surprise that there is huge variability in eGovernment performance across Europe [13]. See Figure 1. It seems however that performance is polarising: a string of countries from the South-West to the North-East of Europe perform above the European average and are also showing stronger progress than the European average, while most of the other European countries are behind the European average on both indicators. There are hardly countries that – while behind the European average – show strong growth in order to catch up. The standard deviation (between best and worst performers) is growing since the first biennial measurement. On the positive side it can be concluded that a 'Digital Diagonal' of countries could be pushing Europe forward. We should care however that this does not turn into 'dragging', as the gap with lagging countries is growing faster than is acceptable in a Digital Single Market.

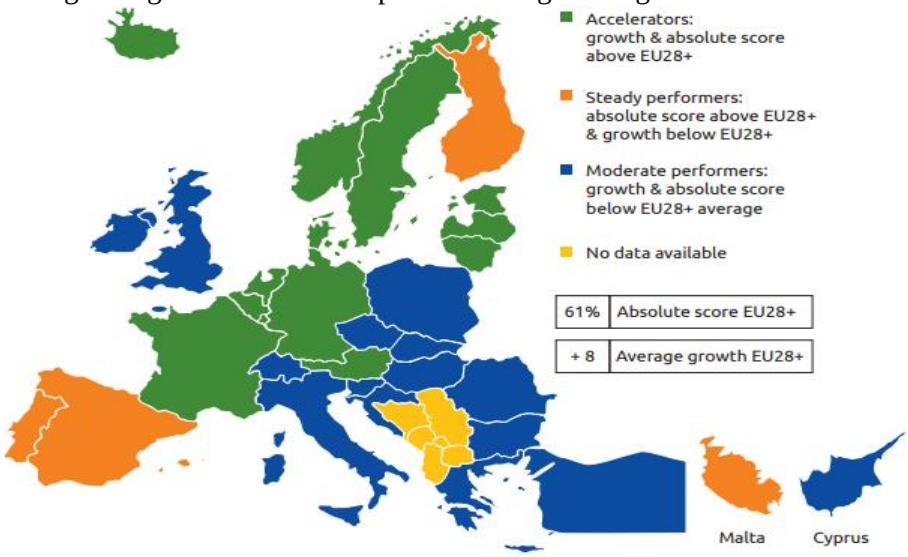

Fig.1. Illustration how countries are progressing compared to the 28+ average
Source: IT Europa

3.2. Growth of internet access in Europe

Research show that in 2016, 85 % of European households had access to the internet from home. This share has been gradually increasing since 2007, when only 55 % of households had access to the internet. At EU-Member State level, the largest shares of households with access to the internet in 2016 (Figure 2) were registered in Luxembourg and the Netherlands (97 % each). Five other Member States presented shares of connected households above 90 %: Denmark and Sweden (94 % each), the United Kingdom (93 %), Germany and Finland (92% each). At the other end of the ranking scale, the lowest proportions were registered in Bulgaria (64 %) and Greece (69 %) followed by Romania and Lithuania (72 % each) [14]. Similar trends are discovered concerning the mobile access to Internet (Figure 3).

Fig. 2. Households with internet access, 2010 and 2016 (as % of all households)
Source: EC, Eurostat

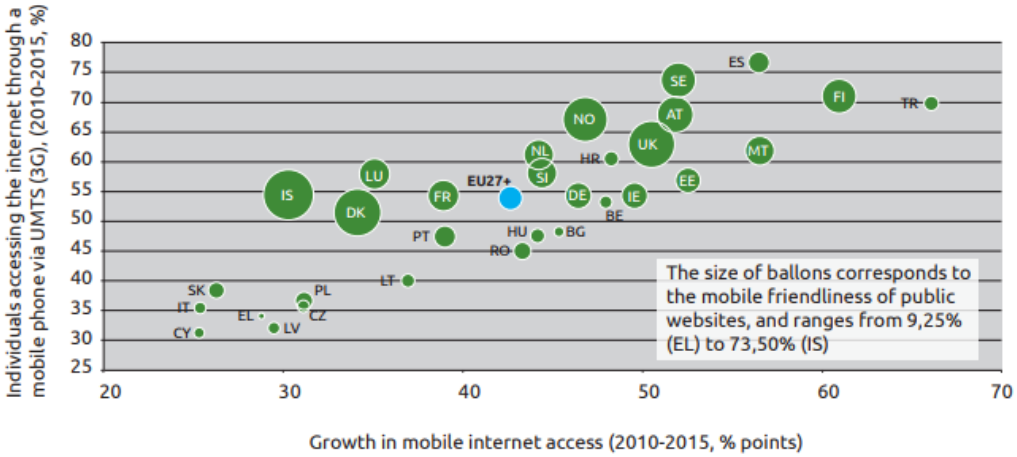

Fig. 3. Mobile access to internet (2010-2015, EU 27+, %) Mobile Friendliness (2015, EU27+, %)

3.3. Regular user of Internet

A more open, social, communicative, interactive and user-centered version of e-government is the Government 2.0, with actively usage of Internet and social media, and web 2.0. It has the potential to reshape the relationship between government and citizens, in a sense that services, control and policy formulation are designed through a cooperation of citizens, governments and civil society. These networks of cooperation

hold an enormous potential to enhance the effectiveness and legitimacy of government and, therefore, Government 2.0 is presented as the appropriate reaction to changes in society. One of the factors, which influence the development of Government 2.0 is the extend of Internet usage by the citizens. Figure 4 shows the portion of EU individuals who were regular users of Internet.

According to Meijer et al. [15] the use of the Government 2.0 potential is still limited. They state that there is an insufficient awareness of the fact that a Government 2.0 requires more than just a good idea: realizing Government 2.0 is a difficult job. It requires a fundamental transformation in relations between government and citizens. For example, in e-Administration field, web 2.0 technologies enable communication, collaboration and content creation, individually or together, and then publish to a workplace community. PA 2.0 can link familiar productivity tools to intranet publishing and search capabilities, thus public administrators can communicate and collaborate more efficiently with greater flexibility and access to information. There are three key characteristics of web 2.0 applicable to PA: open - accessible and transparent; social-based on people and contacts/communications between them and user-oriented.

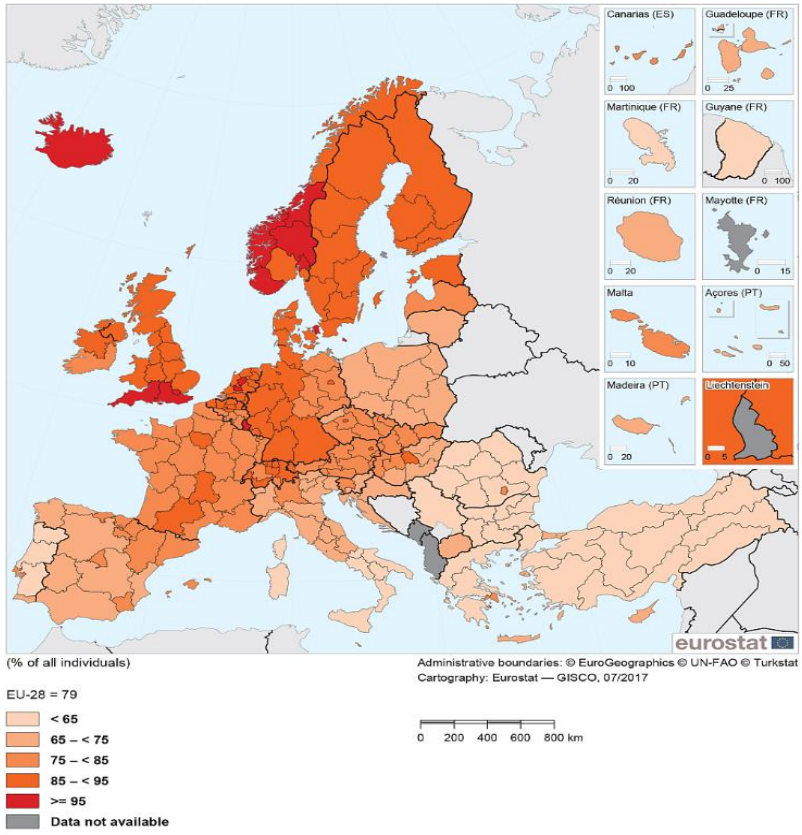

Fig. 4. Portion of individuals who were regular users of Internet (accessed the Internet on average at least once per week) in the three months period prior to the survey, by NUTS 2 regions (% of all individuals) (2016)
Source: EC, Eurostat

3.4. Digital public services scoreboard

The Digital Economy and Society Index (DESI) is a composite index that summarises some 30 relevant indicators on Europe's digital performance and tracks the evolution of EU Member States, across five main dimensions: Connectivity, Human Capital, Use of Internet, Integration of Digital Technology, Digital Public Services. It allows clustering EU countries according to their similarities along the two selected indicators. It illustrates also how much they are correlated. Figure 5 shows the scoreboard comparison of 5 Digital Public Services and how they stand in EU countries. The comparison is based on two indicators. The vertical one is 1c Speed - DESI Speed sub-dimension calculated as the weighted average of the normalised indicators: 1c1 NGA Coverage (50%), 1c2 Subscriptions to Fast BB (50%) [16]. The horizontal one is DESI Digital Public Services Dimension comprising of eGovernment (100%).

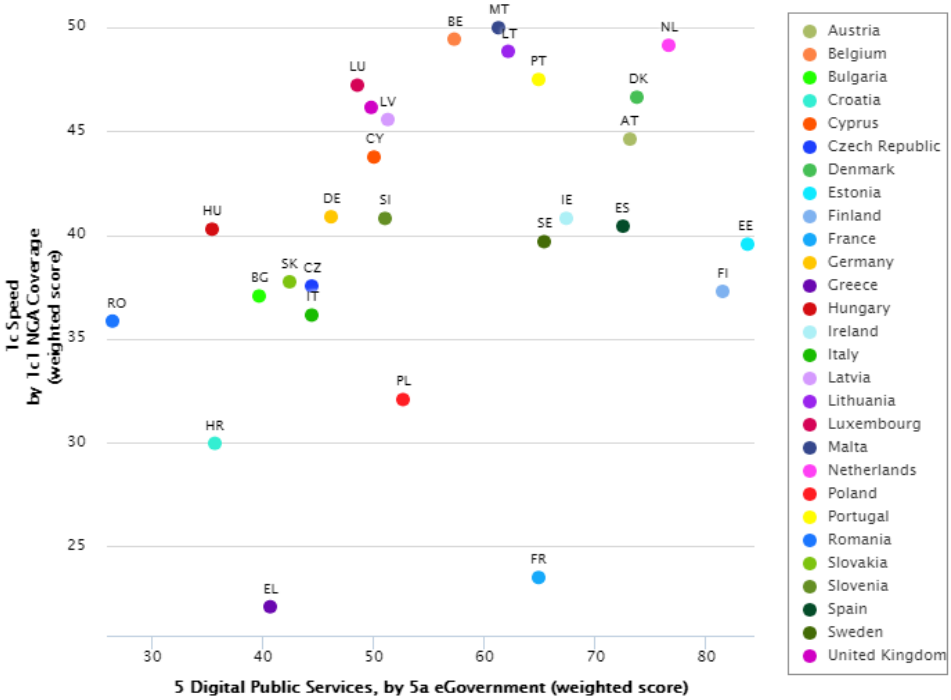

Fig. 5. DESI - 5 Digital public services, European Commission, Digital Scoreboard (2017)

3.5. Open government – Open datasets

Open data is data that can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and sharealike. Open government - increased transparency, citizen participation and collaboration between government and citizens - is a key driver of development in the 21st century. Citizen-centric governance, with openness as a central pillar, improves the use of public resources, facilitates inclusive decision-making processes and increases trust between governments and citizens. Governments that are more open are governments better positioned to act effectively and efficiently, to foster private sector growth and to respond to the true needs of all citizens [17].

The Open Government Partnership is a multilateral initiative that aims to secure concrete commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance. In the spirit of multi-stakeholder collaboration, OGP is overseen by a Steering Committee including representatives of governments and civil society organizations [18]. For example, open government advocates want to know whether the document is online, whether it's in a reasonable place, and whether it's in a machine-readable format such as XML or a proprietary form such as PDF.Government-held and collected data is funded by taxpayers who in turn have the right to this data. The Web Foundation believes that all people should have a Right to Data in the same way that they should have a Right to Information. Policies that deliver affordable broadband for all and ensure adequate data protection for citizens' personal data used are also important to underpin these rights [19], [20], [21]. Open data portals are an important element of most open data initiatives and are mainly used by public administrations at European, national and local level in the Member States. On Table 4 are presented the open datasets on open data portals.

Table 4. Open datasets on open data portals – EU countries (January, 2018)

County	Datasets	County	Datasets	County	Datasets
Austria opendataportal.at	415	Croatia data.gov.hr	517	Denmark portal.opendata.dk	875
Belgium data.gov.be	7722	Republic of Cyprus data.gov.cy	1379	Estonia opendata.riik.ee	75
Bulgaria opendata.government.bg	7271	Czech Republic portal.gov.cz	130779	Finland avoindata.fi	1570
France www.data.gouv.fr	33652	Hungary opendata.hu	54	Latvia data.gov.lv	43
Germany govdata.de	20417	Ireland data.gov.ie	5327	Lithuania opendata.lt	803
Greece data.gov.gr	6413	Italy dati.gov.it	18981	Luxembourg data.public.lu	573
Malta opendatamalta.org	12	Portugal dados.gov.pt	842	Slovenia podatki.gov.si	3753
Netherlands data.overheid.nl	12862	Romania data.gov.ro	1112	Spain datos.gob.es	16443
Poland danepubliczne.gov.pl	868	Slovakia data.gov.sk	2077	Sweden oppnadata.se	507
				UK data.gov.uk	43548

For example, the European Commission offers an open data portal for any type of information held by the Commission and other EU institutions and bodies. The European Union's Open Data Portal is in operation since December 2012. Organizations in Europe use open data across all sectors, with the most in the IT and geospatial, governance, business research and consulting sectors. There is also a greater percentage of open data use by media and communications organizations in Europe and Central Asia than in any other region. The information most used in the region includes geospatial, government operations, transportation, demographic and social data and statistics [22].

3.6. Open Data Barometer EU countries ranking

The Open Data Barometer provides a snapshot of the state of open data around the world. It is designed to help advocates, policy makers and researchers understand and ask questions about how the development of an "open by default" approach to government data is progressing, and how impacts from open data can best be secured [19], [20], [21].(See Figure 6). Based on an evaluation of a number of models, a research selects a four-cluster analysis and, based on a detailed review of qualitative and quantitative data in eachcluster, labelled them: (1) High-capacity; (2) Emerging & advancing; (3) Capacity constrained: and (4) One-sided initiatives. On Table 5 are shown the clusters for European countries an in Figure 6 is shown the EU counties Open Data Barometer Ranking.

Table 5. Country clusters (based on readiness and impact variables)

Cluster	Countries
High capacity	UK, US, Sweden, France, Netherlands, Norway, Denmark, Germany, Finland, Estonia, Korea, Austria, Belgium
Emerging and advancing	Spain, Czech Republic, Italy, Portugal, Greece, Ireland, Hungary, Poland

Country	Barometer Rank	ODB Scaled	Readiness (Scaled)	Implementation (Scaled)	Impact (Scaled)	2013 ODB	ODB Change	2013 Rank	Rank Change
Europe & Central Asia									
UK	1	100	98	100	100	100	0	1	0
Sweden	3	83.7	100	76	88	85.75	-2.05	3	0
France	4	80.21	91	75	84	63.92	16.29	10	6
Netherlands	6	75.79	95	76	57	63.66	12.13	10	4
Norway	7	74.59	88	73	64	71.86	2.73	5	-2
Denmark	9	70.13	94	54	95	71.78	-1.65	5	-4
Germany	10	67.63	85	67	53	65.01	2.62	9	-1
Finland	12	66.49	93	54	78	49.44	17.05	14	2
Estonia	13	60.18	84	51	64	49.45	10.73	14	1
Spain	13	59.89	78	60	42	48.19	11.7	17	4
Austria	15	58.52	83	42	84	46.03	12.49	18	3
Czech Republic	17	58.07	64	61	46	43.18	14.89	22	5
Switzerland	22	51.33	81	38	63	43.24	8.09	22	0
Italy	22	50.58	55	54	36	45.3	5.28	20	-2
Russia	26	48.25	54	48	45	44.79	3.46	20	-6
Belgium	27	47.29	86	30	60	34.8	12.49	31	4
Iceland	27	46.57	73	37	49	51.01	-4.44	13	-14
Portugal	29	46.12	70	50	14	38.63	7.49	27	-2

Fig. 6. Open Data Barometer Ranking (Researched January 2018)

3.7. Open Data Maturity

The Open Data Readiness indicator shows an EU28+ average of 44.7%. In total, 27 countries have a national Open Data portal, leaving 4 countries without a portal. An Open Data Policy is in place in 71% of the countries often as part of a more generic Digital Strategy or eGovernment program. More than 8 events are held in 35% of the countries. The field with the most room for improvement is national coordination [23].

• Beginners: the initial steps have been made, but countries still struggle with basics around availability and accessibility. Portal functionalities remain limited and there is a limited coverage in terms of datasets.
• Followers: the basics are set, including a clear vision and there are advanced features on the portal. However, the approach to the release of data is very much in silo and remains limited.
• Leaders – Trend Setters: these are the most advanced and have solid Open Data portals with elaborate functionalities and coordination mechanisms across domains.

3.8. Global Open Data Index

The Global Open Data Index [24] is an independent assessment of open government data publication from a civic perspective. GODI enables different open data stakeholders to track government's progress on open data release. GODI also allows governments to get direct feedback from data users. The Index gives both parties a baseline for discussion and analysis of the open data ecosystem in their country and internationally. GODI measures the openness of clearly defined data categories. Any open data that does not fall within these categories is not regarded for our assessment. All Index scores exclusively refer to our data categories and should be understood as a proxy for the availability of open government data at large. This has three reasons: GODI assesses open government data that has proven to be useful for the public. User stories helped to define categories that are most useful for the public; GODI is a comparative indicator; a standardised procedure supports our researchers to reduce bias and personal judgement [23]. In Table 6 are presented the countries and the score of ranking according to GODI.

Table 6. EU countries Score (analyzed in January 2018)

Place	Country	Score	Place	Country	Score	Place	Country	Score
2	Great Britain	79%	21	Sweden	53%	28	Slovenia	49%
4	France	70%	22	Belgium	52%	32	Italy	47%
5	Finland	69%	24	Germany	51%	32	Slovakia	47%
10	Northern Ireland	67%	24	Romania	51%	35	Greece	46%
11	Denmark	65%	27	Czech Republic	50%	36	Bulgaria	45%
14	Latvia	64%	28	Austria	49%	44	Croatia	39%
20	Netherlands	54%	28	Poland	49%	45	Portugal	37%

Following our theses, we analyzed the data about the EU countries, the rankings and trends and cluster them into three clusters - Cluster of Changers, Cluster of Observers, Cluster of Moderators. We propose a Matrix Model EU countries clustering based on Hofstede`s dimensions in a correlation of e-Government and Open Government development (Tab.7).

• Cluster of Changers - possess cultural similarities and this correlates with the progressive development of the open and e-government. This is such because these countries possess the same characteristics defined by the Hofstede`s model.
• Cluster of Observers - cluster of countries are characterized by similar characteristics according to Hofstede`s model, they have slow development in the open and e-government.
• Cluster of Moderators - falls neither into the cluster of Changers or Observers.

Table 7. Matrix Model EU countries clustering based on Hofstede`s dimensions in a correlation of e-Government and Open Government development

Countries CLUSTERS: HOFSTEDE`S MODEL		
CHANGERS	MODERATORS	OBSERVERS
Great Britain, Denmark, Sweden – highest level Norway, Netherlands, Finland, Switzerland – second level Ireland – 3rd level Belgium, Austria - 4th level Latvia, Lithuania, Estonia, Germany and Luxemburg – the lowest level	France, Poland, Italy, Czech, Hungry	Croatia, Serbia, Bulgaria, Slovenia, Russia – highest level Portugal and Greece – second level Spain, Slovakia and Romania – lowest level

Countries CLUSTERS: Criteria related to E-Government Development					
	eGovernment performance across Europe	Growth of internet access in Europe	Regular user of Internet	Digital Public Services scoreboard	Clustering based on the 4 criteria together
Cluster of changers	Austria, Belgium, Denmark, Latvia, Lithuania, Liechtenstein, Luxembourg, Netherlands, Norway, France, Sweden, Germany, Estonia, Iceland	Denmark, Ireland, Iceland, Luxembourg, Netherlands, Norway, Great Britain, FinlandSweden, Germany, Estonia	Belgium, Denmark, Ireland, Liechtenstein, Luxembourg, Netherlands, Norway, Great Britain, Finland, Switzerland, Sweden, Germany, Estonia	Austria, Belgium, Denmark, Ireland, Spain, Cyprus, Latvia, Lithuania, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, Great Britain, Portugal, Slovenia, Hungary, Sweden, Germany	Denmark, Sweden, Norway, the Netherlands, Germany, Luxembourg, Liechtenstein, Belgium, Finland, Estonia, Ireland, the United Kingdom
Cluster of moderators	Spain, Malta, Portugal, Finland	Austria, Belgium, Spain, Malta, Poland, Slovakia, France, the Czech Republic	Austria, Spain, Latvia, Slovakia, Slovenia, France, the Czech Republic	Bulgaria, Italy, Poland, Romania, Finland, Croatia, Czech Republic, Estonia, Switzerland	Austria, Spain, Latvia, Lithuania, Malta, Poland, Slovakia, the Czech Republic, Hungary, France
Cluster of observers	Bulgaria, Greece, Ireland, Italy, Cyprus, Great Britain, Poland, Romania, Slovakia, Slovenia, Hungary, Croatia, Czech Republic, Switzerland	Bulgaria, Greece, Italy, Cyprus, Latvia, Lithuania, Portugal, Romania, Slovenia, Hungary, Croatia	Bulgaria, Greece, Italy, Cyprus, Lithuania, Malta, Poland, Romania, Croatia	Greece, France	Portugal, Bulgaria, Italy, Cyprus, Romania, Slovenia, Croatia, Greece

Countries CLUSTERS: Criteria related to Open Government Development					
	Open datasets available on the Open Data Portals	Open Barometer EU countries ranking	Open Data Maturity	Global Open Data Index	Clustering based on the 4 criteria together
Cluster of changers	More 10 000datasets Czech Republic; France; Germany; Italy; Netherlands; Spain; UK	Up 11th place UK, France Denmark Netherland Sweden; Finland; Germany	Trends settlers: France; Finland; Austria; Greece; Bulgaria; Germany; Denmark; Italia; Estonia; UK	High Great Britain; France; Finland; Northern Ireland; Denmark; Latvia	UK, France, Finland, Germany, Denmark, Spain
Cluster of moderators	Up 10 000 datasets Austria; Croatia; Denmark; Belgium; Bulgaria; Finland; Ireland; Lithuania; Greece; Luxemburg; Portugal; Slovenia; Poland; Slovakia; Sweden	Up to 30th place Spain Austria Italy Belgium Estonia Czech Republic Ireland	Followers Hungry; Cyprus; Portugal; Romania; Slovenia; Belgium; Slovakia; Poland; Netherlands; Croatia; Ireland; Sweden	Middle Netherlands; Sweden; Belgium; Germany; Romania; Czech Republic; Austria; Poland; Slovenia	Czech Republic, Italia, Austria, Slovenia, Poland, Ireland, Croatia, Sweden, Luxemburg, Bulgaria, Greece, Romania, Estonia, Latvia, Belgium

▲ Cluster of observers	Up 1500 datasets Cyprus, Estonia, Hungry, Latvia, Malta, Romania	More than 30th place Portugal, Poland, Greece, Slovakia, Hungry	Beginners Lithuania, Luxemburg, Latvia, Malta, Estonia, Czech Republic	Low Italy, Slovakia, Greece, Bulgaria, Croatia, Portugal	Slovakia, Portugal, Cyprus, Malta, Lithuania, Hungry

The discussion of the analyses outlines the major trend that we identify and similarities and differences noticed in the EU countries. The EU countries clustering is based on the Hofstede model and development of e-Government and Open Government. In Figure 7 is presented a visualization of the EU countries clustering.

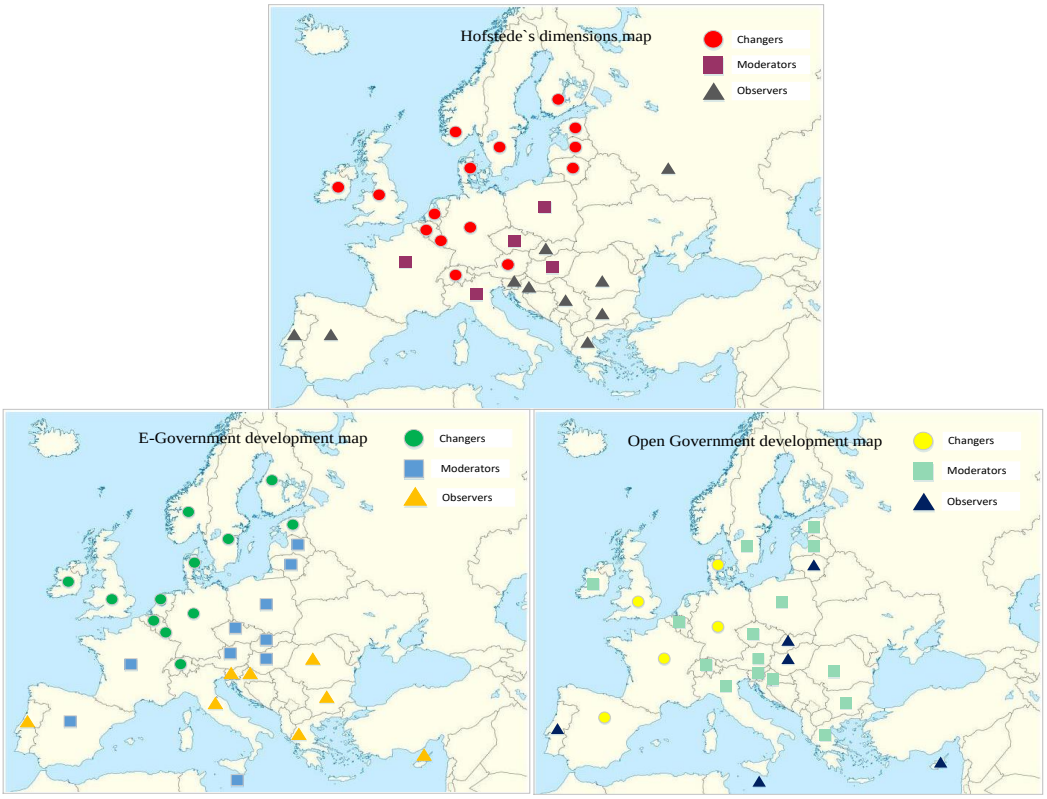

Fig. 7. Visualizing of the Matrix Model EU countries clustering: Hofstede`s dimensions in a correlation of e-Government and Open Government

A classification of the countries assumption concerned under the first four criteria altogether is the very high degree of correlation with the classification of the same countries according to the above four criteria (eGovernment performance across Europe; Growth of internet access in Europe; Regular user of Internet; Digital Public Services scoreboard) of the Hofstede model. As long as there are differences, they are very small and reflect some minor exceptions. For example, Britain is again in the first group of countries, only finally in the ranking. Spain and Italy have changed their seats. The first is in the middle group and the second is in the third group. However, it should not be

forgotten that there is a significant difference in the way of thinking and in the attitudes of the population in Northern Italy and that in southern Italy. France is again among the countries in the intermediate group, but this time is ranked a little below and accordingly closer to the third group of countries. The general conclusion that can be made is that in the first group of countries are all countries that, according to Hofstede's model, are defined as more individualistic and with less power distances. In the third group, all countries with more collective collectivist thinking of the population and, respectively, with higher power distances are present.

The analyses of the four criteria related to open government (Open Government data – datasets on data portals; Open Barometer EU countries ranking; Open Data Maturity; Global Open Data Index) shows that France, for example, is in the upper cluster along with Spain. This is similar to the analyses of the e-government criteria. Bulgaria and Greece are already classified as moderators, and the cluster this time includes the largest number of countries in Europe, including even Sweden. The third cluster of camps is relatively small, but there, together with Portugal and Cyprus, are also Lithuania and Hungary. However, in general, it can be seen that the deviations from the Hofstede model, albeit non-small, could hardly be considered drastic. The main reason for the deviations can be determined by the fact that e-government in the EU spoke significantly earlier, and for an open government - almost a decade later. The latter means that the increase in the degree of integration after the Maastricht Treaty has had some influence in this direction, both in the newly admitted countries and some older members of the integration community, but among the countries of southern Europe.

4. Conclusion

The general conclusions that could be made on the basis of the conducted research and analyses confirm our research hypothesis. According to the four criteria defined on the basis of **e-government development** (eGovernment performance across Europe, Growth of internet access in Europe, Regular user of Internet, Digital Public Services scoreboard), the countries can be classified into three clusters "Changers", "Moderators" and "Observers", where a **high degree of correlation with Hofstede model is observed**. The second main conclusion is concerned with Hofstede`s model and correlation with EU countries clusters based on **open government development** (Open datasets available on the Open Data Portals, Open Barometer EU countries ranking, Open Data Maturity, Global Open Data Index), where **the degree of correlation with the Hofstede`s model is definitely lower** and significant deviations are observed. The differences according to the Hofstede model have a significant impact, especially with regard to e-governance development. However, the economic integration of the countries within the EU itself also has its influence only in the direction of gradually reducing the differences in the introduction and use of new forms of governance, based on modern technologies. It can be assumed that, due to their (EU countries) specific nature, this trend is likely to lead to a gradual narrowing of differences according to the model under consideration, which would have a positive impact on the overall economic development of the countries of Southern Europe and the Balkan region. So far, however, differences according to the above criteria still exist.

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