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IMPACT OF NATIONAL CULTURE ON QUALITY OF GOVERNANCE DEVELOPMENT: THE ROMANIAN REALITY

Abstract. In this paper, in order to understand how cultural values influence the quality of governance, alternative ways of measuring the cultural values and different indices to measure the quality of governance: Hofstede's model for cultural dimensions level and E-government Development Index are considered. In a certain sense, E-government Development is seen as an input, which, modified by a series of contextual variables, interconnected from the point of view of infrastructure, economics, juridics and social, it is transformed into output, i.e. Good Governance. By using statistical methods of correlation and multivariate statistical analysis, such as cluster analysis, we consider that the national cultural practices influence the institutional environment, which, in its turn has an influence on macro-social variables. The approach of E-Government adoption and implementation is analyzed from the point of view of two theoretical perspectives: endogenous growth theory and institutional theory. Consistent with the theory, we find a strong relationship between these concepts ; from the cultural dimensions only, power distance, uncertainty avoidance, individualism versus collectivism and indulgence versus restraint affect the acceptance of E-government for Romania as an Eastern European Union country.

Keywords: Hofstede culture modes, E-government Adoption and Development, Romania.

JEL Classification: H11, M15, O52

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1   Introduction

The culture is approached as a product of humanity, developed in such a way as to   influence in layers a society, through a system of historically inherited conceptions, norms and dominating values which decide its economic, social and political perspectives. Therefore, the culture should be approached as an   evolving, adapting and developing concept in time, according to the way of living of a nation, or to the exact procedures used by a society to voluntarily or involuntarily modeling or rendering the conditionings of the current social events.

In the present paper, by taking into consideration the two dimensions – the social events and the culture – we mention the stage of cultural dialogue developed after the 1981's, i.e. the culture and the democracy promoting the active tolerance among cultures, the rule of law, participative citizenship, minorities' rights, plural co-existence and intercultural dialogue. Placing Romania in the European context, we are aware of the fact that cultural diversity was and still is a status quo characteristic to European societies, and we approach it as a democratic society based on human rights values and equal opportunities.

However, before starting the proposed analysis, we should clarify the conceptual framework of the present research generated by the profound ambiguity of the concept of culture, which, at the same time, points out either a basic similarity of individuals or a co-existence of plurality in diversity. The paper is organized as follows: section 2 provides the background and the context of the research, by presenting an overview of cultural dimensions and e-government interpretation. Section 3 introduces methods used in this study to explore if the national cultural practices influence the institutional public sector environment, which in its turn has an influence on macro-social variables. The results obtained are reported and discussed in section 4 in light of the literature review and the aim of this research. Finally, section 4 concludes the paper.

2   Literature review

Although we do not intend to focus on terminological debates regarding the conceptualization of a series of dichotomies between connected concepts, we can only place ourselves fairly and equally towards the binom of concepts *multicultural - intercultural***.** The multiculturalism is understood as a state of affairs, i.e. the cultural diversity, as a theory and as a model of integrating policy through the cohabitation of numerous groups of the same society. Inter-culturalism focuses on the interaction between the groups perceived as different in society and it is defined as a set of processes through which relations among different cultures are built.

Therefore, as a policy of managing the diversity, according to the theory of multiculturalism, the state should be neutral towards the cultural values and tolerant towards the ways of living and towards the minority cultural identities, protecting those marginal cultures through specific measures, while the theory of inter-culturalism focuses on communication, education and on the implications of

linguistic pluralism, on the interaction between the minority and majority population. These clarifications being brought to light, the present paper focuses on the dynamic character of the intercultural processes. Equally speaking, the EU speech regarding the integration policies is an intercultural one. Given the geographical, historical, cultural complex and dynamic context, Romania is a place where it is manifested the same current trend of outlining the social structural diversity by comprehensive mutuality, reciprocity and equality.

Based on studies which take into consideration a multitude of factors influencing the cultural differences among countries, nations, geographical regions and organizations, we have identified two "classical" value orientations mentioned since the 50's by Parsons and Shils (1951), who state that value orientations explain behavior and that people learn the values in the socialization process and make their behavioral choices unconsciously, hence those highlighted by Kluckhohn and Strodtbeck (1961), who have suggested as value orientations: relation to nature (mastery, harmony, submission), basic human nature (good, bad, neutral), time orientation (past, present, future), activity orientation (being, doing, becoming), relationship among people (group, individual).

For a better understanding of how cultural values influence the quality of governance, we must consider the alternative ways of measuring the cultural values and governance indices. Kim et all (1994) and Nardon and Steers (2009) managed to synthesize and describe the most important cultural dimensions identified and developed into a series of research studies, including: human relationship with nature and social word, mastery-harmony; ascription vs. achievement or activity orientation; relationship with time or long-term vs. short-term orientation; power distance or hierarchy vs. egalitarianism; uncertainty avoidance; individualism-collectivism, conservatism-autonomy, survival vs. self-expression; masculinity-femininity, gender egalitarianism; universalism-particularism; neutral-affective; specific-diffuse; performance orientation; traditional - secular-rational.

We notice that in several cases, multiple dimensions in the original models can be merged into a single more general or unifying cultural dimension. Nardon and Steers (2009), tried to identify resemblances and differences in the case in which there are such things between the different cultural dimensions offered by the above mentioned authors, and they have synthesized five core cultural dimensions (CCDs) to reflect both their centrality and commonality in cross-cultural organizational research: hierarchy-equality, individualism-collectivism, mastery-harmony, monochronism-polychronism, and universalism-particularism. We observe that these five synthesized dimensions seem to reproduce the five cultural dimensions of Hofstede, but in a modern presentation of the contemporanity. Of course that by reducing culture to an overly simplistic five dimension conceptualization has represented the main argument in criticizing the cultural dimensions highlighted by Hofstede following the analysis of a single multinational.

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A supplementary confirmation in respect to the validity of Hofstede's cultural dimensions comes from Kirkman et al. (2006) who, after taking into consideration 180 studies published in 40 journals of management and applied psychology fields and two international annual volumes, between 1980 and June 2002, to consolidate what is empirically verifiable about Hofstede's cultural values framework, make recommendations for researchers who use Hofstede's framework in the future.

Recently, Reis et al. (2013) sought to review the use of the main cultural models or cultural taxonomies, in extant IB research and to identify the broad areas in which they are used, resorted to the bibliometric analysis of over 3,600 articles published in seven top ranked IB journals and entailed the analysis of citations and co-citations: international business research, managerial decisions and behaviors, consumers' behaviors.

The results show a prevalence of Hofstede's (1980) model over the other works considered in the study, therefore in this paper we will relate to the same model in the analysis we have suggested. Starting from the cultural dimensions highlighted by Hofstede (1980), other two researchers, Bond and Minkov, as co-authors (Hofstede et al., 2010 and Hofstede and Bond, 1988) have defined and refined the following cultural dimensions for 93 countries: power/authority distance, individualism vs. collectivism, masculinity vs. femininity, uncertainty avoidance, long-term orientation versus short term orientation and indulgence versus restraint.

This study focuses on national cultures, more specifically on cross-national cultural differences in relation to governance, more precisely E-governance. National culture functions as a proxy for societal culture and comprises values, beliefs, norms, and behavioral patterns of national group (Leung et al., 2005). Hofstede (1993) and Trompenaars (1994) developed studies through which they have showed the fact that there are certain "cultural models@ that are influenced, amongst others, by ecological factors, history, language, wars, and religions". Hofstede (1983) also brings into discussion another strong argument in favor of national culture, he argues that due to the fact that nations are political entities, they are different in their institutions, forms of governance, legal systems, educational systems, work and employment systems.

What it is particular to the Romanian culture is the folk component, the peasant one, as a consequence of the acute lack of an organized culture, written in ecclesiastic or laic centres, which perpetuates archaic forms, pre-Christian ones, in a fundamentally oral culture that was transmitted from one generation to another. Going through Hofstede's model, we can see the Romanian specific identity in a plural way, considering the state unity as the framework for its cultural identity.

In this context, that we try to examine the influence of culture on the acceptation process of E-government services in the Romanian informational society. Most researchers agree on the fact that there is a positive reciprocal connection between the quality of democratic governance and a series of cultural attributes – values, norms beliefs, and knowledge. In this case we refer to E-

government in a broader meaning, by using IT as a means for improving activity in the public sector, both on the relational part and on the operative one. E-governance helps to shape a specific type of public governance, where the presence of information and web services proves not necessarily the presence of a channel, but the emergence of a new philosophy of participative management of the bureaucracy.

Contextually speaking, at the level of the public sector, especially in public administration, computerization directly involves culture and the vision of public power, strongly connected to the choice of satisfying the principles of democracy and decisional transparency. However, a conceptual delimitation is needed between the notions of E-Governance and E-Government, as E-Governance is a broader topic that deals with the whole spectrum of the relationship and networks within government regarding the usage and application of Information and communications Technology (ICT). E-Governance encompasses a series of necessary steps for government agencies to develop and administer to ensure successful implementation of E-Government services to the public at large. Different organizations define E-government as a generic term for web-based services, in different ways and the area of study has many names including "online government", "digital government", "electronic government", "connected government" and "E-governance", thus creating the terminological confusion.

The "E" part of both E-government and E-governance stands for the electronic platform or infrastructure that enables and supports the networking of public policy development and deployment. A parallel observation of the two terms clearly highlights that E-Government is an institutional approach to jurisdictional political operations, while E-Governance is a procedural approach to co-operative administrative relations. Although E-government is a relatively new area of study in the Information Systems (IS) field, according to Carter and Belanger (2005) the relationship of government with recipients of its electronic services is characterized at four levels: government to citizen (G2C), government to business (G2B); government to employees (G2E); government to government (G2G). And, in this reality, according to Oui-Suk (2010) mobile technology is significantly expanding the capacity of government to deliver services at individual level for m-Government to citizen (mG2C) and m-Government to employee (mG2E) or at organizational level for m-Government to business (mG2B) and m-Government to government (mG2G).

A common term stands out in the above-mentioned definitions given by a series of international organizations and international agencies' reports, i.e. the use of information technology, and especially the Internet, to improve the delivery of government services in online to citizens, businesses, and other government agencies: World Bank's E-Government website, Working Group on E-government in the Developing World, Global Business Dialogue on E-Society website, OECD, InfoDev and The Center for Democracy & Technology and Accenture.

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So, it will almost entirely concentrate on E-Government (as defined by the above mentioned organizations) but because the definitions are to some degree overlapping, E-Governance may be covered as well. A series of factors influence E-government services adoption from technological, social, cultural and organizational perspectives: innovation, uncertainty, civic mindedness, citizen's trust, national culture, gender differences as one aspect of socio-cultural differences between people, political factors, education, telecommunication networks, size and bureaucracy of Government. Titah and Barki (2006) identified that the influence of organizational characteristics and individual beliefs has an influence on E-government use and acceptance.

A review of the literature, however, shows the importance of both national and organizational culture to the success of *Information Systems/Information Technologies* adoption has been also widely recognized (Erumban and Jong, 2006; Leidner and Kayworth, 2006; Twati, 2006; Al-Hujran et al., 2011). These studies underscored the importance of the culture, and how it is linked to the success of IS/IT complex and multidimensional adoption and use. We believe that the use of information technology varies across different cultures through the fact that the evolution of technology can be rejected on the grounds of its incompatibility with cultural practices, values, traditions and gender and age.

The importance of studying the correlation between culture and E-government adoption is also outlined in the impact studies of determinants of E-Government Maturity, such as technological infrastructure, rule of law and human capital development, developed by Ifinedo and Singh (2011) for a 5-year panel data of 16th Transition Economies of Central and Eastern Europe (TEECE). The authors have proven that resources as national wealth, human capital development, technological infrastructure and rule of law matter in accelerating a country's the ability and willingness to advance its E-governance initiatives with features that promote citizens' participation and engagement.

Therefore, considering the E-Government only from the perspective of technological solutions, would be a mistake, as computerization and technologization will not change the mentality of bureaucrat's in decision-making process. The IT/IS must be seen as means to accomplish reform by fostering transparency, eliminating distance and other divides and empowering and integrating the citizen's engagement in the political processes that affect their lives.

3   Methodology, data and model

Due to the fact that the present paper considers the social change, development and improvement in culture, traditions and technology are relevant, it is important to relate our analysis to the modernization theory (MT) care explain how society progresses (McClelland, 1967). Modernization theory includes economic development, literacy and cultural development, national identity development. This study's research framework also highlights the E-government

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maturity model because the concept of "maturity" denotes the level of progress made by a country regarding its development and the sophistication of the features present on its government websites (West, 2007). Various E-governance maturity models have been provided by international organizations and essentially specify four major stages of E-government maturity: information, interaction, transaction and transformation. It is also important to understand the difference from "maturity" and "readiness" on the basis that the former refers to demonstrated behaviour, while the latter provides an idea of a country's potential to achieve E-government, and argue that maturity is a more accurate measure of a country's realized progress. Our aim is to present the involved correlation of cultural dimensions of a society and the quality of governance.

The main purpose of this paper is to examine empirically whether national culture has an impact on E-government development in Romania, as an Eastern European Union country. Inspired by (Capgemini, 2006, 2010) for our approach we have used data from web surveys with comparable E-government indicators and associated standards in the European Union. In order to measure and compare the incidence of E-government, a set of feasible, relevant and comparable, indicators is required. Such indicators are useful inputs to the formulation of policies and strategies for effective government.

Among the models that have been developed to analyze cultural differences, we have decided that Hofstede's model of cultural indexes is one of the most widely known and used. To the same extent, Shi and Wang (2011) focuses on the comparison between the cultural dimensions with scores of Hofstede Model and GLOBE (the Global Leadership and Organizational Behavior Effectiveness) Model find that the two studies had similarities and, of course, differences, in many ways as the data selection, the origins of dimension and the way they viewed culture.

Moreover, Cattell (1950) in a study of national cultural similarities and differences (and hence cultural clustering), applying factor analytic methods to the data collected, identified 12 common factors, among which cultural clusters is the Eastern European cluster. In the GLOBE study (House et al., 2004) identified 10 cultural clusters, and the Eastern European cluster is one of them. To the same extent, according to United Nations E-Government Survey (2012), the EU member states are ranked in accordance with the E-Government Development Index (EGDI), a composite indicator measuring the willingness and capacity of national administrations to use information and communication technologies to deliver public services.

The research model designed to guide this study highlights the relationships between cultural dimensions and E-government, starting from the following research hypothesis:

H1: Does the cultural factors affect the acceptance of E-government?

Previous analyses on Internet adoption (Dwivedi and Weerakkody, 2007) and E- commerce (Sait, et al., 2004) have posited that cultural values

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strongly affect the adoption of these technologies; hence we expect that the cultural dimensions to show an influence on the acceptance of E- government in the East European context. The literature in the field shows which is the impact generated by each one of the six cultural variables of Hofstede's Culture Dimension that are influencing ICT adoption, with relevant results to power distance and the uncertainty avoidance dimensions (Erumban and de Jong, 2006). Kovacić (2005) has investigated the impact of National Culture on Worldwide E-Government and found that individualism and power distance, as cultural indicators, have a moderate impact on the E-government readiness.

Starting from the understanding of the fact that country scores on the six dimensions are statistically correlated with a multitude of other data about the countries and implicitly with E-Government adoption, we consider the following realities as sub-hypotheses to be tested from the Kirsch (2004) perspective of soft positivism's ontology:

- ✎ *H1.1:* Cultural developed countries, with a high level of development power distance index will show a lower rate of E-government adoption than countries with a low power distance index because there is difference between nations in the way which they treat inequality;

- ✎ *H1.2:* Cultural developed countries, with a high uncertainty avoidance index show a lower rate of E-government adoption than countries with a low uncertainty avoidance index, due to the society's tolerance for uncertainty and ambiguity;

- ✎ *H1.3:* Countries with a high individualism index show a higher rate of E-government adoption than countries with a low individualism index, depending on the degree to which individuals are integrated into groups and the identity of relations between group and people;

- ✎ H1.4: Countries with a high Masculinity index tend to manifest a normal rate of E-government adoption than countries with a low Masculinity index, in the context in which is evaluated the delegation of responsibilities between males and females in societies;

- ✎ *H1.5:* Countries with a high pragmatism index will show a higher rate of E-government adoption than countries with a low pragmatism index, knowing that the long term perspective is specific for societies which encourage modernization;

- ✎ *H1.6:* Countries with a high indulgence index will show a higher rate of E-government adoption than countries with a low indulgence index, in the context of hedonistic behaviors that show how freely can people satisfy their basic needs and desires, how strict social norms are followed and gratification suppressed and regulated.

As a whole, the formulated hypothesis prove that cultural developed countries have a higher percentage of development, especially in respect to digital inclusion, from the perspective of the degree of acceptance and implementation of the system of E-governance. To prove if the governments of European countries have chosen the paradigm of E-Governance paradigm focused on the citizens

'needs, we used statistic methods of correlation and multiple regressions to analyze the two sets of indexes – E-government Development Index from the UN E-Government Development Database and Hofstede's Culture Dimension Index scores of EU countries from Hofstede Centre Database.

Gross Domestic Product per capita expressed in current US$, from the World Bank Database is used as a control variable in the final part of the analyze we suggest. The reason for including GDP per capita in an analysis examining the effect of national culture is explained by Hofstede (1980). When the effect of economic variables is significant, then the cultural variables are redundant. If the cultural variables are still significant in spite of included economic variables, then the effect of culture on observed phenomenon, as it is for the case of E-Government that could be demonstrated.

The E-Government Development Index presents the state of E-Government Development of the all 193 United Nations Member States is a weighted average of three normalized scores using Z-score standardization procedure on the most important dimensions of E-government: scope and quality of online services, development status of telecommunication infrastructure and inherent human capital, also being the only indicator to offer complete information for all 28 member states.

The Hofstede dimensions of national culture, starting from 2010 (Hofstede et al., 2010) were largely replicated in six cross-national studies on very different populations: power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long term orientation versus short term normative orientation and indulgence versus restraint. The country scores on these dimensions are relative, but quite stable over decades because even if societies are compared to other societies, the factors that cause cultures to shift tend to be complex, affecting many countries at the same time.

We note that the variables *power distance dimension* expresses the degree to which the less powerful members of organizations and institutions accept a hierarchical order and expect that power is distributed unequally, with no further justification; *uncertainty avoidance dimension* deals with a society's tolerance for uncertainty and ambiguity, countries exhibiting high scores try to minimize the possibility of such situations by strict laws and rules, safety and security measures; *individualism* versus its opposite, *collectivism* represents the level at which a culture encourages a person's independence and freedom towards the group s/he belongs to (the level of integration into groups for individuals); *masculinity versus femininity* approaches the preference in society for the distribution of emotional roles between the genders regarding achievement, heroism, assertiveness and material rewards for success, preference to competition and promotion to the expense of cooperation and harmony, or vice-versa; uncertainty avoidance presents the easiness to which a culture faces the new trends and assumes risks; the level of anxiousness of a particular nation; *long-term orientation versus short term orientation*, is related to the period of time for which people make plans and expect

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results, and the extent to which they have the tendency to sacrifice today's gratification for an expected result and *indulgence versus restraint* is related to the gratification versus control of basic human desires related to enjoying life.

Data were pooled on all 4 geographic dimensions of Europe, only for 27 member states of the EU, Cyprus being excluded due to the fact that for this country there are no data available regarding cultural dimensions. The dimensions of national cultures distinguished countries from each other grouped themselves statistically also:

- ✎ Eastern Europe: Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia;
- ✎ Northern Europe: Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, Sweden, United Kingdom;
- ✎ Southern Europe: Croatia (Hrvatska), Cyprus (actually Western Asia), Greece, Italy, Malta, Portugal, Slovenia, Spain;
- ✎ Western Europe: Austria, Belgium, France, Germany, Luxembourg, and Netherlands.

E-government development in countries is at varying stages and the EU still faces a series of differences in the size, wealth and political system of member states. According to The annual Eastern European e|Gov Days, a recognized platform for dialogue and knowledge transfer between Western and Eastern European countries, knowledge transfer in the area of E-government between advanced Western European countries and their counterparts from Central and Eastern Europe is actively encouraged (Eastern European e-Gov Days, 2011).

Even though the European Commission's e-Government Action Plan 2011-2015 aims to help national and European policy instruments work together, supporting the transition of E-Government into a new generation of open, flexible and collaborative seamless E-Government services at local, regional, national and European level, in our present paper we will group countries according to the region, thus considering cultural influences, and cross-national differences in the adoption and implementation of E-government. Although the efforts of most researchers have been focused on using the global clusters to understand differences in cultural dimensions the primary interest of this paper is on Romania, and the Eastern European countries, as Romania is. Our country is located in a region in Europe that comprises former USSR satellite countries and Baltic States, with no particular extreme diversity of its cultural-historic and socio-economic context, on the contrary, extremely homogenous. Thus history certifies the completion of a great number of the member states of the European Union from East Europe of a period of about 50 years, time in which the population was forced to accept inadequate social norms, social systems with false values, imposed political organisms and not chosen democratically. We consider that the approach according to the cardinal points criterion (Western Europe, Eastern Europe, Southern Europe, and Northern Europe) is correct from the perspective that cultural identity in the European civilization is based on a series of historical points.

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4 Findings and conclusions

The preliminary analysis performed using box plot diagram shows that both cultural variables as independent variables and E-Government Development as the dependent variable do not indicate outliers. Moreover, all variables are normally distributed according to the Kolmogorov-Smirnov test.

The primary information about the existence of a relationship between cultural factors and E-governance acceptance are obtained by the correlation analysis based on Pearson coefficient (Table 1).

Table 1. Pearson correlation coefficient between EGDI and cultural variables

Variables	EGDI	PD	IND	MASC	UYA	PRG	INDG
EGDI	1	−0.630▯▯▯	0.557▯(	−0.330▯(0.0	−0.508▯(0	−0.040▯(	0.694▯

* In parentheses is indicated the probability corresponding to the t-test applied for testing the significance of the Pearson correlation coefficient

According to the results presented in Table 1, the E-Government Development Index (EGDI) shows significant correlations with respect to the cultural variables power distance (PD), uncertainty avoidance (UYA), individualism versus collectivism (IND) and indulgence versus restraint (INDG). The variables of power distance and uncertainty avoidance show negative correlations, while the other two variables show positive correlations. These four cultural variables present significant moderate correlation among them.

The masculinity versus femininity variable is correlated with the E-Government Development Index at a 10% risk, while the cultural variable pragmatism (PRG) does not indicate any significant correlations. Consequently, the two cultural variables, masculinity and pragmatism, will be discarded from the analysis due to the fact that they are not significantly correlated with the dependent variable.

The accomplished results are confirmed by a number of other studies showing that the cultural variables of uncertainty avoidance and power distance are the variables which are most correlated with E-Government development. Zhao (2011) found in a study for 84 countries around the world, that there is a correlation to a differing degree between E-government development and the five culture dimensions defined by Hofstede, although only individualism, power distance and long-term orientation are significantly correlated with E-Government development. Warkentin et al. (2002) finds that from the cultural dimensions, only power

distance and uncertainty avoidance were most likely associated with E-Government adoption.

In order to get more information about the way E-Government development is influenced in relation to cultural variables, we analyze the distribution of the E-Government development index in relation to the cultural / geographical region only for the case of the 27 countries of the European Union, Cyprus being excluded from the sample due to the lack of information on cultural variables.

Table 2. Hierarchy of cultural / geographical regions according to the average level of cultural factors, E-Government development and Gross Domestic Product per capita

Region	EGDI[1]	GDP[2]	PD[2]	UYA[2]	IND[1]	INDG[1]
Western Europe	1	1	2	2	2	1
Northern Europe	2	2	1	1	1	2
Southern Europe	3	3	3	4	4	3
Eastern Europe	4	4	4	3	3	4

[1] *The first ranking will be granted to the variable's highest value.*
[2] *The first ranking will be granted to the variable's lowest value.*

The ranking presented in Table 2 indicate general trends of greater acceptance of E-Government in the most advanced regions from an economic and cultural point of view (Western Europe and Northern Europe), holding the top two positions for all variables considered. The other two regions equally share the last two positions. The ranking's degree of instability regarding the positions held raises suspicion regarding the influence on accepting E-Government in the 4 regions, clearly outlined both economically and culturally. E-Government exercises its influence over large areas and has implications for the social, political or economic environment, radically transforming the way citizens and business environments interact with public authorities. Meanwhile, a number of factors facilitate the development of E-Government, among which there is national culture, as shown in the previous analysis, where the variables E-Government Development Index shows significant correlations in relation to the cultural variables of power distance, uncertainty avoidance , individualism versus collectivism and indulgence versus restraint.

In order to achieve a comprehensive vision on the E-Government situation in the case of the European Union we verify if the average level of E-Government Development differs significantly according to Europe's geographical regions. The ANOVA one-factor method is applied for testing the equality of two or more means, under the following assumptions: the populations' variances from which the samples were extracted are equal (the homoscedasticity hypothesis); the population distributions are normal (the normality hypothesis).

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For the preliminary analysis of the E-Government variation according
to cultural regions, the means and standard errors of the four groups are graphically
represented (Figure 1). There can be noted that the mean level of E-Government in
Eastern Europe region is much lower compared to the other three regions. The
variation measured by the standard errors differs from one region to another.
Therefore, we expect the numerical tests to indicate heteroscedastic distributions
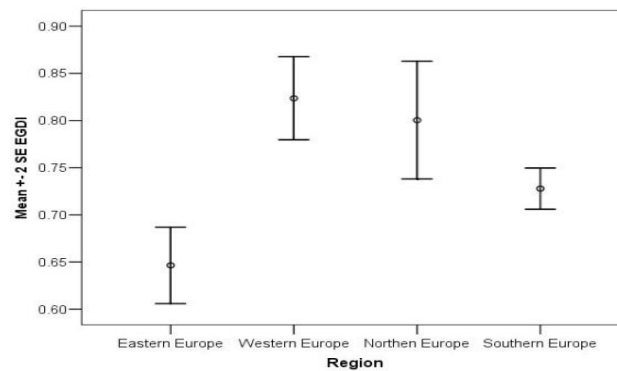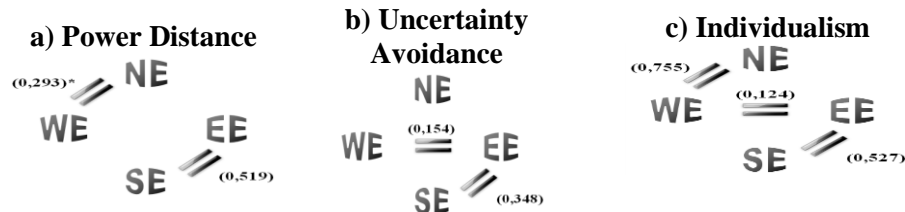for populations.

**Figure 1. The mean and standard errors of EGDI according to
cultural regions**

The Levene test rejects the null hypothesis of homoscedasticity, so the
distributions are heteroscedastic at a 5% risk: $(prob = 0.017) < (\alpha = 0.05)$. In these
circumstances, the test for equality of means is achieved by the Brown-Forsythe
test and the Welch test. The probabilities corresponding to the two tests are lower
than 5%, therefore the null hypothesis of equal means among the geographic
regions is rejected, so the region significantly influences E-Government Adoption.

We analyze the structure of these differences by testing the equality of
the EGDI mean values for pairs of regions. For this purpose, the *t test* is applied,
for testing the equality of means for two independent samples, under the
assumption of unequal variances.

The test results are shown in Figure 2, the arrows between the regions
indicating that, for the variable considered, the mean values of the two regions do
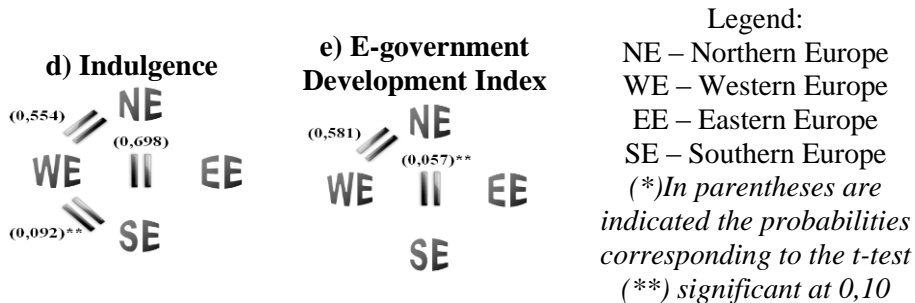not differ significantly for a 5% risk.

a) Power Distance

**b) Uncertainty
Avoidance**

c) Individualism

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| | | Legend: |
| **d) Indulgence** | **e) E-government Development Index** | NE – Northern Europe |

NE – Northern Europe
WE – Western Europe
EE – Eastern Europe
SE – Southern Europe
(*)In parentheses are indicated the probabilities corresponding to the t-test (**) significant at 0,10

d) Indulgence

(0,554)   NE
        (0,698)
WE   ‖   EE
(0,092)**   SE

e) E-government Development Index

(0,581)   NE
        (0,057)**
WE   ‖   EE

SE

Figure 2. The structure of mean differences for geographical regions according to cultural variables and E-Government Development

E-Government Adoption in Eastern Europe (Figure 2) differs significantly from the degree of acceptance in the regions of Northern Europe and Western Europe, where the following paired similarities can be noted: the regions of Northern Europe and Western Europe, respectively the regions of Northern Europe and Southern Europe. For the actual development of E-Government customer focus is essential, as the beneficiary of the administrative decision and for fostering active participation of citizens in the process of administrative decision-making and development of regulation. Considering that, among the principles of E-Government, there is trust and security and decisional transparency, we can explain the prominence of the countries of Eastern Europe due to a distinct manifestation, compared to the other countries in the European Union, because of their communist cultural and historical context. The nuanced, contextualized approach can allow us to correctly interpret the peculiarities of this region which is characterized by the continuance of the value system imposed by the communist regime and which was, with few exceptions, homogeneous and country-specific for the region of Eastern Europe.

In terms of cultural variables, a similar behavior can be observed only for the Indulgence versus Restraint variable. In fact, the Indulgence variable reflects the highest degree of correlation in relation to the E-Government Development Index, compared to other cultural variables. For the region corresponding to Eastern Europe the average level of the variables power distance, uncertainty avoidance and individualism versus collectivism does not significantly differ from that of the Southern Europe region. Such similarities can be observed between the regions of Northern Europe and Western Europe, for the cultural variables power distance, individualism versus collectivism and indulgence versus restraint.

Considering the European context in terms of the European Union and customizing the approach of cultural differences according to the cultural-historical and socio-economic European space we note that it is characterized by duality - in the countries of Northern Europe and Western Europe prevailing the universalism, the attitude of living in harmony with nature, the specific and neutral character, the gained status, the individualism and sequential perception of time, while Eastern

Europe and Southern Europe is characterized by a high valuation of the group, of the family, the emotional character, predominance of particularity, collectivism, the synchronous perception of time and an attitude of domination towards nature.

The concluded similarities and differences between geographic regions suggest a possible regrouping of countries in relation to cultural variables, which, implicitly, would define more precisely the areas of E-Government acceptance and areas where this phenomenon should be stimulated.

The determination of more homogenous groups of countries in relation to the indicated criteria can be done by exploratory means of multivariate statistical analysis: principal component analysis and cluster analysis.

For the sample consisting of the 27 EU member states applied was the hierarchical classification method (*Hierarchical clustering*) in relation to the four cultural variables which were found to be significant in the performed analysis. The analyzed variables are standardized in order to improve the amplitude variation. Considering the sample size, the choice is for a maximum of six clusters for the results' presentation, this being thereafter reduced according to the obtained results. The distance between the units is measured by the Squared Euclidean Distance.

The results highlight that Slovakia is not grouped with any cluster, forming one cluster to the penultimate stage. We propose the elimination of Slovakia from the analysis and application of hierarchical classification (Hierarchical clustering) for the sample consisting of 26 countries.

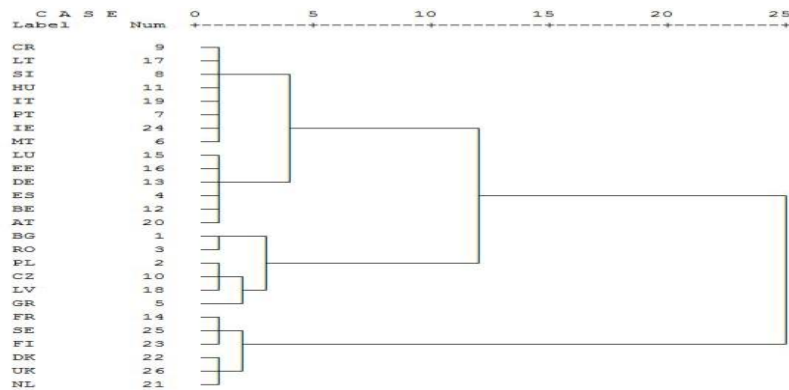The accomplished hierarchical tree (*Dendrogram*) is shown in Figure 3:

Figure 3. The dendrogram (The tree diagram)

The optimal number of clusters identified by the analysis of the Dendrogram and of the Agglomeration Schedule is equal to 3. In order to verify the hypothesis put forward in this paper, we are interested in analyzing the statistical units in each cluster based on the average levels of the variables according to

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cluster. For this purpose, we use the method of average analysis on clusters (K-Means Cluster), for a total of three clusters, previously identified by the *hierarchical clustering* method (Pintilescu, 2007, 193-235).

        The statistical units are initially divided, based on the Euclidean distance, in three clusters, for which we calculated the mean levels of statistical variables. Based on these initial mean values, during successive iterations, the observations are regrouped, considering the nearest Euclidean distance to the cluster's average.

        These clusters are obtained, having the following composition:

↪ *Cluster 1 (n=7):* Austria (AT), the Netherlands (NL), Denmark (DK), Finland (FI), Ireland (IE), Sweden (SE), United Kingdom (UK);

↪ *Cluster 2 (n=10):* The Czech Republic (CZ), Hungary (HU), Belgium (BE), Germany (DE), France (FR), Luxemburg (LU), Estonia (EE), Lithuania (LT), Latvia (LV), Italy (IT);

↪ *Cluster 3 (n=9 countries):* Bulgaria (BG), Poland (PL), Romania (RO), Spain (ES), Greece (GR), Malta (MT), Portugal (PT), Slovenia (SI), Croatia (CR);

        Afterwards, we test the equality of means of the E-Government Development Index among the 3 clusters using the ANOVA method.

        Prior to the application of the ANOVA method, we verify the hypothesis of homoscedasticity of the population dispersions based on the Levene test. The probability attached to the test is greater than the accepted α risk, $prob = 0912 > (\alpha = 0.05)$ and the null hypothesis is not rejected. Therefore, the hypothesis of homoscedasticity of the populations' distributions is validated.

        The Fisher test for checking the equality of means indicates the rejection of the null hypothesis, $prob = 0.001 < (\alpha = 0.05)$, so there are significant differences in the averages of E-Government Development Index for the 3 identified clusters. The graphical representation of the mean values of the E-Government Development Index by clusters (Figure 4) supports the conclusions of the Fisher test. It is important to check whether the differences according to averages on clusters are statistically significant.
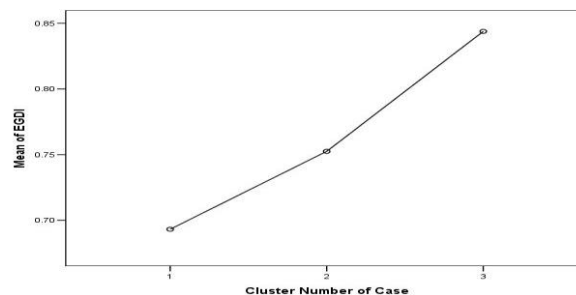

Figure 4. The mean levels of E-Government Development according to the 3 clusters identified by hierarchical clustering

The ANOVA procedure indicates significant differences between the average levels of cultural variables and E-Government Development, according to the 3 clusters. The analysis of differences between the average levels of cluster is accomplished with the Student test for independent samples. The Levene test indicates equal variances of sample pairs for a 5% risk, with prob.> α. The Student test results are shown in Figure 5.
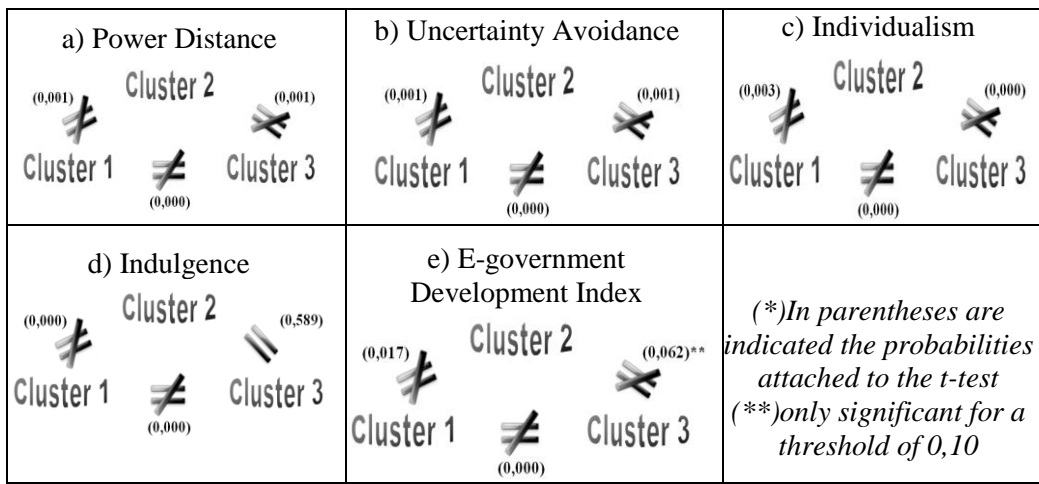

Figure 5. Structure of differences among the average level of cultural variables and E-Government Development, according to clusters

The ranking of clusters according to the average level of the considered cultural variables is shown in Table 3. There can be observed that the hierarchy of clusters defined in relation to cultural variables coincides almost entirely with the cluster hierarchy accomplished in relation to the average level of E-Government Development, and respectively, the Gross Domestic Product per capita.

Table 3. Hierarchy of clusters according to the average level of power distance, individualism versus collectivism, uncertainty avoidance, indulgence versus restraint, E-Government Development and Gross Domestic Product per capita

Number Cluster	EGDI[1]	GDP[1]	PD[2]	UYA[2]	IND[1]	INDG[1]
1	1	1	1	1	1	1
2	2	2	2	2	2	3
3	3	3	3	3	3	2

[1] *The first ranking will be granted to the variable's highest amount.*

[2] *The first ranking will be granted to the variable's lowest amount.*

To conclude, the E-Government Development analysis based on the regrouping of countries on the three clusters, support the hypotheses stated for the cultural variables - power distance (PD), uncertainty avoidance (UYA), individualism versus collectivism (IND), and the analysis of E-Government Development on geographical / cultural regions supports the hypothesis on the correlation with the cultural variable indulgence versus restraint (INDG).

The results analyzed from the perspective that E-Government Development shows how E-government policies and strategies are applied in general and in specific sectors for delivery of essential services, we focus on drafting an Action Plan on E-Government for Development for any country that wants to avoid marginalization from the globalization process.

The cultural dimensions identified as significant variables - power distance, uncertainty avoidance, individualism versus collectivism and indulgence versus restraint, show us that the level of individualism prevalent in society does not influence the adoption of electronic governance, unlike power distance or uncertainty avoidance. Thus, the larger the power distance, the lower the availability towards E-government, and the more intransigent the attitude related to uncertainty avoidance, the lower the level of E-Governance adoption.

Of course, the concept of E-government seems to vary from one situation to another, from one country to another, not only by semantics but also as representation and approach: i) a way to use information technology within government proceedings; ii) a system of service supply to citizens via the Internet; iii) new information technologies used to improve public administration. In the context of ideas' convergence we note that social-historical developments are different when comparing the Western world to that of Eastern Europe, especially in terms of Eastern Europe's collectivist identity, which still rejects state provisions and ignores the purpose of the competition society organization.

We notice that the perspective of an analysis gives us insight towards the organizational content of the phenomenon in terms of its effectiveness, as well as the identification of a public administration's capacity to transform its finalities and its service delivery systems through the use of Information Technology (IT) systems in relation to the beneficiaries.

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