Developing a theory of full democratic consolidation: Exploring the links between democracy and digital transformation in developing eastern European countries

Doina Stratu-Strelet [*], Hermenegildo Gil-Gómez, Raúl Oltra-Badenes, Juan Vicente Oltra-Gutierrez

Universitat Politècnica de València, Camí de Vera, s/n, 46022 València, Spain

A B S T R A C T

This paper analyzes the impact of the adoption of an information system on the consolidation process of a fully democratic system for eastern European countries. The interactions between the adoption of *e-management policies* and democracy are examined as a strategic approach to managing future, dynamic organizations. Fuzzy-set qualitative comparative analyses (fsQCA) were conducted to assess the combined effect of the conditions. The fsQCA analysis considered a sample of 26 case studies of eastern European countries with post-communist, in transition regimes as the unit of analysis.

During the research the factors that were necessary or sufficient to consolidate a full democratic system in developing countries were detected, analyzed, and explained. The output is presented as a result of applying the strategic approach given by the current *sociotechnical transition* based on improving the management of societies through information technology capabilities. The objective is to consolidate the output in developing countries given the institutionalization of a society's *e-management core value system*. As a response to the current crisis and detected anomalies *(IS, Globalization and Power Concentration)* in democratic consolidation theory this research empirically demonstrates the need to create a **technology-based system** with the goal of presenting high performance and capability to support the heavy processing of economic, societal, and political challenges among businesses, citizens, and governments as the main actors in a democratic system. As a result of the research a *'Theory for Full Democratic Consolidation through IS'* is proposed based on the *'magic'* pathway or model developed using a qualitative, comparative analysis methodology.

The novelty of this research lies in the fact that in contrast to the current academic literature, it turns the consolidation of the democratic system and its components into a result while the process's approach is offered by the strategic approach offered by the transformative discourse of information technologies.

1. Introduction

Efforts to expand and develop information and communication technology (ICT) infrastructures in countries all over the word are advancing, given the importance and impact on a country's economic, social, and political development. A study by Hardy (1980) detected by Ali (2020) as the first of its kind, showed the importance of the development of the telephone for economic development by stressing its supporting role in the organization of economic activity. According to Ali (2020) recent studies, both theoretical and empirical, show the importance of the adoption of ICT, mainly in the form of the Internet and mobile phones for different facets of the economy and political activities. For example, from the point of view of the public sector, many governmental services are now electronic which helps to improve communication and interaction between the public administration and citizens (Mahmood, 2004) increasing the administration's transparency

and therefore accountability as well as the reduction of costs. Ciborra and Navarra (2005) identified three levels of impact in political and administration organizations through an information system approach: the first one is the relationship (transactions) between the administration and the citizens and the related re-engineering of the activities internal to administration (Bellamy & Taylor, 1998), A second level regards the way in which the boundaries between the state and the market are redrawn by the creation of an electronic minimal state, which is more transparent, agile and accountable (Heeks, 1999; Stiglitz, 2000). A third level deals with the purpose of aid and aid policies aimed at introducing e-government into developing countries. For Ciborra and Navarra (2005) the main objectives of this approach are to (1) restructure administrative functions and processes; (2) overcome barriers to coordinating and cooperating within the public administration (3) monitor government performance and (4) improve the relationship between government and citizens.

* Corresponding author.
  E-mail addresses: doistst@doctor.upv.es (D. Stratu-Strelet), hgil@ai2.upv.es (H. Gil-Gómez), rauloltra@doe.upv.es (R. Oltra-Badenes), jvoltra@omp.upv.es (J.V. Oltra-Gutierrez).

As far as democracy is concerned, policymakers, citizens, businesses, and civil society are interested in how using technology can positively impact their lives in their own political regimes. Democracy could be understood in a simple way as a form of political organization where all citizens can freely participate, express their thoughts, and take part in the public decision-making process: this means the rule of the majority or government by citizens (Ali, 2020). A question that is worth asking is, whether ICT adoption could impact a country's level of democracy as ICT contributes to making it easier to report administrative abuses and register complaints which can improve people power and the impact of individual actions.

2. Literature review

2.1. Theoretical framework

The ongoing socio-technical transition driven by digital innovations and ICT technology is becoming one of the major transitions of human development of civilization as digitalization is changing society, creating new patterns of interactions and interdependences between technology and citizens, organizations and citizens and technology and organizations (Barbosa et al., 2019; Stratu-Strelet et al., 2021). The new pattern arising from digital transformation is boosting several interlaced transitions materialized as a multilevel, multiphase, and cross-scale process (Gell-Mann et al., 2010; Stratu-Strelet et al., 2021). In view of the above, technological factors and political institutions have interactive effects (Pérez-Morote et al., 2020) affecting the political model creating a correlation between democracy and technology usage by citizens, businesses, and governments as the three main actors of our current society structure. A new government-citizen relationship can be created by emphasizing the efficiency of e-management understood as a

system composed of function-oriented technologies such as e-government, e-citizens, and e-business services. In this context, e-democracy is an emerging research area, which involves the transformation of a democratic model and its consolidation process mediated by information and communication technologies (ICTs).

To understand the interrelations between the factors involved in consolidating democracy in eastern European countries during the socio-technical change that current regimes are experiencing, Kuhns's model of scientific paradigms is used to build the theoretical model of the current research. According to Kuhn (1970) mature science experiences alternating phases of normal science and revolution. During the phase of normal science, the key theories, instruments, values, and metaphysical assumptions comprising the disciplinary matrix are fixed, permitting the cumulative generation of puzzle-solution. Whereas, in the scientific revolution phase the disciplinary matrix experience is flexible and depends on new improvements to allow new solutions of the anomalous puzzles that disturbed the preceding period of normal science. Kuhn's thesis on the Structure of Scientific Revolutions focuses on paradigms as a specific, key component of the knowledge matrix. The process of creating a new paradigm is based on the application of the existing theories and laws in the solution of important problems with new experimental and mathematical techniques. Based on this, the objective of this research is to establish a new paradigm through the creation of a new pattern adapted to the current sociotechnical transformation that can boost a full consolidation of the democratic system in eastern European countries. The current theory in the field is the *Unified Theory of Democratic Change* by (Linz & Stepan, 1996). Using the Kuhn's circle of science, the mentioned theory will be updated though the application of new experimental and mathematical techniques running new variables stated by the current Sociotechnical transformation. The result of proposed new theory based on a QCA methodology is both
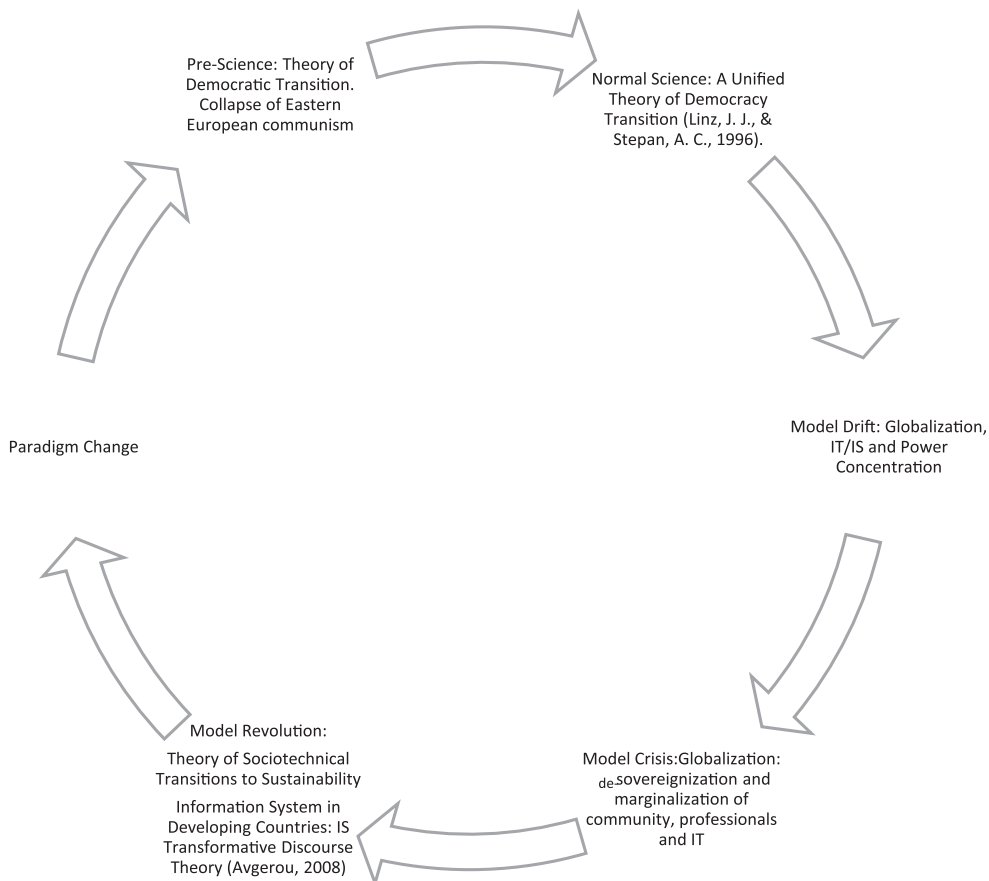

Fig. 1. Kuhn's Model of Scientific Revolutions Adapted to Democracy System Consolidation Theory.

unprecedented and open-ended enough to leave all sorts of problems to solve. Following Kuhn, the achievements that share the mentioned two characteristics can be referred to as the 'new paradigm' (Fig. 1).

The pre-science of the *Unified Theory of Democratic Change* was precipitated by the collapse of eastern European communism as it sent collateral tremors through political science, undermining established models, fostering theoretical innovation by incorporating institutional, structural, international, economic, and cultural factors (Kullberg, 1998). During the process the differences were outlined in the pre-transition regime and the nature of the transition that had direct consequences for the nature of the democratic experiment, and it forced authors to change the perspective used. As the normal science, following Linz and Stepan (1996) the authors dichotomized the paradigm of the democratic system into two stages: (1) completed transition understood to be the successful establishment of a viable, effective government through competitive elections and (2) full consolidation of the system which is reached only when the democratic institutions are accepted by all relevant political actors such as the mass public. The former theory determines five essential competences defined as 'interacting arenas' or conditions needed to complete the consolidation of the system: (i) A lively civil society which should be actively 'self-organized', (ii) an autonomous political society for meaningful electoral contestation and representation (political parties, electoral laws and legislatures(, (iii) the rule of law ensured by an independent judiciary and a strong legal culture, (iv) a usable stability - meaning a loyal, effective bureaucracy, (v) an institutionalized economic society mediating between state and market. The authors established that the five arenas were interconnected, and each is essential for the optimal performance of the others. While for Linz and Stepan the arenas are essential conditions of the democratic systems, the interacting arenas (civil society, political society, a usable state, rule of law, and economic society) are not truly independent variables as they are rather the supporting pillars of consolidated democracy that may be intentionally created after the first stage of democratization (Kullberg, 1998). Though the authors dedicated a great effort to the theoretical framework they did not formulate testable hypotheses and operationalizing variables, meaning that without specific conditions the analysis of cases cannot test the validity of the specific variables in the model or demonstrate the utility of the approach as a system. Linz and Stepan proceed inductively, using cases to illustrate the importance of variables and therefore the analysis seems to be driven more by the unique features of each case than by the theoretical framework, using the variables as descriptive labels of transitions instead of explanatory factors (Kullberg, 1998).

Model drift is the second phase of Kuhn's circle and is caused by unexpected anomalies that the established paradigm cannot explain, including problems that the paradigm cannot solve. According to Abbas (2012) three developments interpreted as unexpected anomalies are pressuring democracy: (1) Globalization: De-sovereignization and marginalization of communities; (2) IT: The fragmentation of public space and (3) Power: Concentration of wealth and influence. The outcome of the three anomalies is the erosion of optimism among the wider population, the emergence of permanent underclass, the shrinking of the middle class in traditionally industrial nations, limited social class mobility and solidifying of elite power and rising moral and spiritual disintegration. This has given rise to the extremism and/or apathy of citizens (Goede, 2019). Much has been said about the failure of democracies, as many of their citizens are discontented even if the model brings wealth and growth. Following Zak, P. J., & Feng, Y. (2003) who based their results on the Lipset (1959) idea that modernization leads to democracy stating that the growth rate of output- either positive or negative - affects the pace of democratic transitions and is determined by individuals saving decisions and government policies. On the other hand, Goede (2019) following Feng and Zak (1999) states that democracy as a system is in crisis and there is no relationship between the levels of economic growth and the transition to democracy. Following Goede (2019) the factors that are endangering democracy system are

explained as follow (Table 1):

The mentioned anomalies, mainly globalization and technology are occasioning institutional disfunction, citizens unequipped for practical judgment and the detorsion of corporate power (Goede, 2019). Following the same idea, De Chosal (2017) stated in the 'End of Democracy' that democracy will end because it has served its purpose which was to bring an organized minority to power to rule over the disorganized majority and the current crisis cannot be solved because four or six years is too short a period to establish the transformation of the model into a totalitarian system. Therefore, the democratic systems constructed based on the previous paradigm allow autocratic leaders to emerge and systematically break down institutions to remain in power

Table 1
Model Anomalies.

Corporation (Globalization: de-sovereignization and marginalization of community)	• Neoconservative ideology has helped to dismantle state regulations. • By applying the shock doctrine (Klein, 2007) government serving corporations implement measures to benefit the elite. • As private property is the golden calf of capitalism and unregulated capitalism has become the bible of the ruling class, they can mobilize policy forces and ultimately the military. • The national state and its government remain important agencies as they can easily be played off against each other (e.g., tax evasion) • Some authors stated the definite takeover of plutocracy (Hamm, 2015). • The corporation via donations to political parties has caged politicians to serve the interest of the corporations (Hickel, 2016) • Neoliberal reforms have underdetermined democratic sovereignty over the past 40 years. • Following Lessing, (2015) the elected candidates serve the financers and democracy is no longer for the people.
Social control model: Professionals; unions; religion	• Neoliberalism has reduced all the relationships with financial transactions, and everything is about money and the accumulation of wealth. Professionals sell their advice and services for money. • Professionals sell their advice and services for money leading to a moral erosion and corruption. • There are indicators that Transnational Organized Crime has contaminated the democratic process and therefore the democratic society (Bullough, 2018). • The corruption scandals illustrate how worldwide corruption is and directly affects democracy. • The bottom line is that professionals are not independent and do not serve the general interest. • Unions have lost most of their power and they have been trapped by the social dialogue. • There is a correlation between religion and economic development (Fahmy, 2018).
Information Technology	• The interrelated factors of globalization and technology have created the biggest challenges as the human way of communicating has changed questioning the organization of society. • Social Media has created the illusion of transparency and appeared to be a platform for democracy but has become a weapon to attack democracy by abolishing privacy.

regardless of their ideology. At this point the model is in crisis mainly since the sustainability of democracy is questioned and the foundation of the paradigm for solving central problems has been shattered by the discovery of too many anomalies which the central theory cannot explain.

The fourth step of the Kuhn circle is model revolution whose main objective is to understand the undergoing revolutionary change. Based on Köhler et al. (2019) sociotechnical transitions to sustainability will be applied to propose a new paradigm. The unit of analysis is primarily situated at the *meso*-level of sociotechnical systems (Geels, 2004) and the founding theoretical framework is the Transition Management approach as the systemic perspective that permits capturing co-evolutionary complexity and key phenomena such as democracy's path-dependency, emergence, and non-linear dynamics. The former framework is policy-oriented which combines ideas from complexity science and governance studies stating that policy makers can shape transitions through four sequential steps (Loorbach, 2010): 1. Strategic activities in 'transition arena' aimed at vision development and the identification of potential transition pathways. 2) Tactical activities develop more specific plans for concrete routes and build agendas. 3) Operational activities including on-the-ground activities. 4) Reflexive activities which should lead to adjustments in visions and the articulation of best practices. Classic work on governance states that governing is 'the total of interactions in which public and private actors participate, aimed at solving societal problems or creating societal opportunities, attending to the institutions as contexts for the governing interactions and establishing a normative foundation for all those activities (Kooiman, 2003). This definition is suitable to analyze the model revolution of democracy consolidation as it acknowledges nature and normative ambitions as a multi-actor.

2.2. Building the new paradigm and its theoretical model: The definition of the conditions

According to Avgerou (2008) there are three discourses in IS (Information System) studies applied to developing countries (ISDC) which attempt to represent what IS innovation in developing countries is primarily for and, what kind of effort it involves. The first discourse assumes that IS innovation in developing countries is mainly concerned with catching up with technologically advanced rich economies through the dissemination of technology based on the diffusion of IS knowledge transferred theory. The second discourse assumes that IS innovation in developing countries is about constructing new techno-organizational structures within a given local social context focusing its attention on the social embeddedness of IS innovation in the context of developing countries. The third discourse takes IS innovation to be mainly concerned with creating opportunities for the development of life conditions in a particular region among the global socio-economic order and is interested in the practices through which IS innovation influences large scale and deep socio-economic change. The transformative ISDC discourse associates IS innovation with social, economic, and political change in developing countries. The main characteristic of this discourse, despite sharing the theoretical background of the above-mentioned discourses (theories based on social embeddedness), is the explicit concern about how information systems are implicated in the dynamics of the change (Akpan, 2003; Kanungo, 2003).

For this paper transformative discourse will be used to define the conceptual conditions based on a critical literature research methodology.

On the other hand "good governance" is essential for sustainable development (Ciborra & Navarra, 2005). There is a relationship between good governance and e-government. E-government implementation promotes major innovations in the way in which ICTs are used in government as well as how government activities are organized. There are three levels (Ciborra & Navarra, 2005): The first level is the relationship (transaction) between the administration and the citizen (customer) and

the related re-engineering of the activities internal to the administration (Bellamy & Taylor, 1998). A second level regards the way in which the boundaries between the state and the market are redrawn by the creation on an electronic minimal state, more transparent, agile, and accountable (Heeks, 1999). A third level deals with the purpose of aid policies aimed at introducing e-government into developing countries.

Finally, based on the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), which holds that there are four key constructs that influence the construction of a system and the adoption of technology which is the core of our study. These variables are: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions. The first three are direct determinants of usage intention and behavior, and the fourth is a direct determinant of user behavior. Gender, age, experience, and voluntariness of use are posited to moderate the impact of the four key constructs on usage intention and behavior.

In order to obtain the output (Democracy) through an information system developing approach, using UTAUT variables (Venkatesh et al., 2003) is important to analyze what the social sectors (public, private and citizens) are really using and accept this kind of catalyst. For that reason, we introduce the variables: 'Individuals ICT usage', 'Business ICT usage' and 'Government ICT usage'.

2.3. Technology

The first condition is technology as the heart of the network economy. Several studies analyzed and reviewed how developing countries have benefitted from information and communication technologies (Oderra-Straub, 1993; Roche & Blaine, 1998; Gardner, 1994; Avgerou & Walsham, 2017; Avgerou, 2008) creating a truly favorable environment by developing a digital project with the aim of promoting democracy by embracing citizen-centered government. Starting from the premise that IS infrastructures create a potential development for democracies and following Castells and Cardoso (2006) idea of society and economy as global networks, the technology condition is used as the catalyst for the transformations which are happening in the contemporary world (Braa et al., 2004; Grossman, 2004). This pillar measured by the Network Readiness Index (World Economic Forum, 2020) is based on three sub-pillars: access (based on mobile tariff indicators, handset prices, internet access, mobile network coverage, fixed broadband subscriptions, international internet bandwidth and internet access in schools); content (based on GitHub commits, Wikipedia edits, internet domain registrations and mobile app development); and future technologies (based on the average of the adoption of emerging technologies, the average of investment in emerging technologies, the number of ICT patent applications, computer software spending as the % of GDP, and the number of robots in manufacturing industries).

2.4. Individuals using ICT

According to Internet World Stats (2021) 65.6 % of the world's population had access to the Internet in Q1 of 2020. Since 2000, the internet penetration rate, defined as the percentage of a population with internet access for the world population grew by more than 1.271 %. Today, even in lesser-developed countries citizens can access the Internet for news and social-networking sites, even those without an internet service may have text-messaging capabilities reducing the burden associated with the coordination of mass events (Stein, 2017). The OECD countries have the highest level of internet penetration but countries in Africa and the Middle East boast the highest combined growth rates of internet use.

Vu (2011) shows that the Internet has a greater growth effect than other communication technologies, but that influence depreciates as penetration rates increase. Although studies in nondemocratic societies represent a new border in political research, ICT serve as a new forum or means of disseminating information and coordinating mass actions.

Activists have revealed the usefulness of the Internet in launching opposition campaigns in a variety of countries pressuring for democratization of political regimes (Van de Donk et al., 2004). Stein (2017) analyzed the effects of disseminating information through ICT. First, as more people gain access to ICTs, they improve their access to information even where censored, which allows citizens to better evaluate the political regime that rules over them, making it increasingly difficult for governments to keep pace with monitoring and censoring alternative information sources. So, where ICT penetration is greater, people are more likely to expose the truth of government corruption and repression when it happens. Second, ICTs facilitate the coordination of mass actions. Even if ICT are unlikely to replace personal connection mobilizations, social-networking platforms can facilitate the organization and implementation of mass actions by speeding up the information about the time and place of opposition actions. Nevertheless, Stein (2017) shows that anti-regime protests and ICT access do not have an impact on political change: The higher level of internet access corresponds to a higher probability of maintaining the status quo as the Internet might make people more content in general and less likely to push for change.

The ICT usage condition is based on the NRI indicator which measures how individuals use technology and how they leverage their skills to participate in the network economy. This pillar is measured by the proportion of individuals who used the Internet in the last 12 months; the active mobile-broadband subscriptions; the number of active social media users; the gross enrollment ratio of total tertiary education; the adult literacy rate; and ICT skills.

2.5. Businesses using ICT

The availability and level of technology is meaningful when its population and organization have the access, resources, and skills to use it productively. Economic growth also prevents political change. Stein (2017) proves following Przeworski et al. (Przeworski et al., 2000) that wealthier countries have a lower probability of political retrogression but not a higher probability of political liberalization highlighting that countries in which oil income comprises a larger percentage of the GDP have lower probabilities of political liberalization. On the other hand, Kassen (2019), following Estonia's example, determined that technological and social domains are interconnected with the economic one as the lack of vast reserves in mineral resources and natural wealth might be regarded as a key factor that explains the desire to develop a knowledge economy that would rely mostly on innovation and advanced technologies. Whether it is in the food industry, agriculture or telecommunications sphere, Estonian businesses try to resort to the latest technological developments in those fields to make production cost-efficient and sustainable in the market environment. This pragmatic economic policy proved to be very effective to advance both economic and technological aspects allowing quick prosperity (Drechsler, 2009).

The condition measures how businesses use ICT and participate in the network economy. The NRI Index uses the number of firms with websites for this indicator; the facility of doing business indicator; professionals as a share of the total workforce; the % of technicians and associate professionals; the business use of digital tools; and the R&D expenditure by businesses as a % of GDP.

2.6. Governments using ICT

The emergence of ICT has brought many new assumptions concerning radical social changes in various areas of public management and the operation of administrations such as the ways of collecting, integrating and sharing information, and communicating with citizens. This vision is named e-government, ICT assists governments in operating more effectively and efficiently improving public participation in decision-making (Wimmer et al., 2007). The main function of e-government is to facilitate communication between governments and citizens and to offer new possibilities and advantages for various groups of

stakeholders such as government agencies (G2G), citizens (G2C) and businesses (G2B) (Gajendra et al., 2012; Krishnan & Teo, 2012). Likewise, Ciborra and Navarra (2005) state that the main objectives of e-government are to (1) restructure administrative functions and processes; (2) overcome barriers to coordinate and cooperate within the public administration; (3) monitor government performance and (4) improve relationships between governments and citizens.

Advantages include a reduction in the cost of administrative operations, reduction in bureaucracy and improvement of the administration's image (Szopiński & Staniewski, 2017). Initiatives on e-government may strongly contribute to making public services more effective, strengthening democracy, reducing corruption, intensifying competition between business, economic growth and improving environmental quality (Szopiński & Staniewski, 2017). As developing countries seem to show lower transparency in the public sector and more serious corruption, ICTs offer the citizen and media a relatively simple means to track the affairs of the government and its agencies in almost real-time, making its activity more transparent (Elbahnasawy, 2014; Song & Lee, 2016; Szopiński & Staniewski, 2017). Transparency achieved by e-government policies increases the public's trust in the administration as third parties can scrutinize activities and that leads to a more democratic and trustworthy government (Grimmelikhuijsen, 2012). Szopiński and Staniewski (2017) determined that corruption is a common problem of all post-communist countries and the civic society is also very fragile (Zakaria, 2013). In the group of post-communist European countries, the leader in terms of e-government is Estonia: financial, legislative, and social factors have contributed to attaining such a high position.

This condition measures how governments use and invest in ICT for the benefit of the general population. The index is based on an NRI sub-pillar which measures government online services: the publication and use of open data; government promotion of investments in emerging technologies; and R&D expenditure by governments in higher education.

2.7. Governance

Knack and Keefer (1995) find that good governance in developing theory could be understood as the form in which institutions establish a predictable, impartial, and consistently enforced set of rules, converting the institutions into the main variable in the fight against corruption. This is considered crucial for sustained per capita incomes. Good governance requires that the state is involved in the creation, protection, and enforcement of property rights by providing a sound macroeconomic regime and by creating institutions that limit state capacity for arbitrary action in order to improve its ability to support broad based markets. Accordingly, Ciborra and Navarra (2005) state that the United Nations (2001) e-government initiatives should be measured by the degree to which they contribute to good governance.

This condition measured by the NRI Index intends to capture how conducive the national environment is for a country's participation in the network economy based on trust, regulation and inclusion. Trust is understood to be how safe individuals and firms are in the context of the network economy as reflected by an environment conducive to trust and the trusting behavior of the population and measured by secure internet servers; a global cybersecurity index; online access to financial accounts; and internet shopping. Regulation means the extent to which the government promotes participation in the network economy though regulation which is measured by a regulatory quality indicator; ICT regulatory environment; the legal framework's adaptability to emerging technologies; e-commerce legislation and privacy protection by the law. The inclusion of sub-pillars measures the digital divides within countries based on gender, disabilities and socio-economic status and it is measured by the e-participation index; the socioeconomic gap in the use of digital payments; the availably of local online content; the gender gap in internet use; and the rural gap in the use of digital payments.

2.8. Impact

The ICTs applied to the development model presuppose the creation of processes and structures to address state failure though e-government initiatives. From an economic point of view, good governance promoted by ICT involves the creation of well-functioning institutions to smooth the operations of the market and allow free relationships of exchange to prosper within the boundaries of the nation (Ciborra & Navarra, 2005; Santinha & Castro, 2010).

3. Method, conditions and data

3.1. Method: Fuzzy-Set qualitative comparative analysis (Fsqca)

In this study, fuzzy-set qualitative comparative analysis (fsQCA) is used to identify recipes and pathways that are necessary or sufficient for an outcome to happen. The outcome which is analyzed in this paper is democracy based on the Democracy Index 2019 (2020).

A condition is sufficient if it explains the outcome by itself, meaning that the presence of a sufficient condition is enough to cause the outcome. However, Ragin (2008) states that multicausality of different combinations of a condition may explain the same outcome. A condition is necessary if this condition must be present when the outcome occurs; nevertheless, very few real-life phenomena are explained by a single condition. For this reason, most outcomes are presented as a combination of the conditions. FsQCA identifies all combinations of conditions that cause the same outcome (Garcia-Alvarez-Coque et al., 2019).

FsQCA was originally developed by Charles Ragin (Ragin, 2009, 2014) using a novel research method in which the academic community is increasingly interested (Schneider et al. (2010), Schneider and Wagemann (2012) and Roig-Tierno et al. (2017). FsQCA is a variant of qualitative comparative analysis (QCA) being one of the three approaches explained by Ragin (2008): csQCA, mvQCA and fsQCA. Ragin (2008) explained that fsQCA is more precise than all variants. Following Ragin (2008, 2009, 2014) and Ragin and Fiss (2008) theoretical summary of the characteristics which was resumed by (Garcia-Alvarez-Coque et al., 2019) among others, the main aspects of the method are: (1) fsQCA is based on set theory and Bolean logic rather than a correlation-based approach; (2) fsQCA relies on qualitative evidence based on small or medium-size samples, though there is no restriction that prevents researchers from using large data sets (Vis, 2012); (3) fsQCA allows for multiple causality which is not linear and non-probabilistic as it rejects permanent causality and allows equifinality (more than one path is possible to reach the outcome); (4) fsQCA is used in regional analysis, among other disciplines because of its advantages over correlation based methods (Garcia-Alvarez-Coque et al., 2019; 2009).

To conduct an analysis using fsQCA, Ragin (2008) and Schneider and Wagemann (2012) identified the main steps. The first one is the identification of the sample of relevant cases and the list of causal conditions to be assumed as variables which are involved in the selected specific outcome. In this paper, as explained before, the causal conditions are based on quantitative indicators taken from the Network Readiness Index Model (World Economic Forum, 2020). The first condition for the outcome is the level of technology in the selected countries measured by different sub-indexes including the fundamental level of ICT access in countries, the infrastructure and affordability, the content that can be deployed using that infrastructure, and the preparation and adoption of future technologies in the countries' network economy). The second condition is the level of ICT usage by individuals measured using ICT by individuals including their skills to participate in the network economy. The third is the level of ICT usage by businesses measured by how businesses use ICT and participate in the network economy. The fourth is the level of ICT usage by governments understood to be the level of investment and the usage of ICT by the government for the benefit of the general population. The fifth condition is the level of governance based

on issues of trust by the population in the context of the network economy, the extent to which the government promotes participation in the regulation of the network economy and the digital divides within countries based on inequality in gender, disabilities, and socioeconomic status. The last condition is the assessment of the impact of the network economy on the growth and well-being of society and the economy (measured by the economic impact, the social impact and the SDG contribution using ICT).

The second step is the calibration of the conditions and the outcome. Calibration means identifying whether a condition is present or absent by assigning a value between 0 and 1, this means that raw data are transformed into fuzzy-set data. FsQCA permits the use of continuous values varying from 0 (fully-out) to 1 (fully-in). Ragin (2008) recommended the direct calibration method: the value 0 is assigned to denote the absence of the condition, 1 is assigned to denote the presence, and 0.5 is assigned to denote the point of maximum ambiguity (Ragin, 2008). Following the example of Greckhamer et al. (2013) and as the raw data is based in quantitative indicators, calibration is accomplished by taking the inverse of the outcome and conditions or membership in the set by setting three qualitative anchors that guide the software transformation (fully in $\geq$ 90th percentile; crossover = median ROA; fully out $\leq$ 10th percentile). Any empirical variation beyond the thresholds is de-emphasized. Countries receive similar fuzzy values beyond the thresholds for full exclusion and full inclusion.

After the calibration process, a truth table is generated which contains all logically possible combinations of the available conditions. The size of the truth table is 2 K, where K is the number of conditions. The combinations that are not covered by real cases are logical remainders. A logical remainder is a logically possible combination not covered by the sample (Garcia-Alvarez-Coque et al., 2019). The analysis was performed using the Quine-McCluskey minimization algorithm having three different solutions: parsimonious, complex and intermediate which supply the possible combinations of conditions that lead to the outcome. Following Fiss (2011) and Ragin (2008) a minimum of 0.35 was applied as a minimum level of coverage and at least 0.75 of consistency to accept the solution as valid.

3.2. Sample, data and calibration

In this paper, the sample was based on 26 case studies-countries (N = 26) equivalent to eastern European countries following the regions classification by (2020): The Russian Federation, Ukraine, Belarus, Azerbaijan, Georgia, Bulgaria, Slovakia, Hungary, Armenia, Poland, The Czech Republic, Latvia, Lithuania, Moldova, Estonia, Romania, Tajikistan, Kazakhstan, Kyrgyzstan, Slovenia, Croatia, Serbia, North Macedonia, Montenegro, Albania, Bosnia and Herzegovina.

Table 2 provides the source and description of the outcome and conditions that were used in the study.

Table 3 shows the primary statistics and cut-off points for the calibration of the conditions and the outcome. As mentioned, direct calibration (Ragin, 2008) was used. Calibration and the remaining analyses were conducted using the R package developed by Medzihorsky et al. (2016).

4. Results and discussion

FsQCA was conducted to test general propositions that democracies in eastern European countries have digital transformation attributes. Democracy is a multidimensional concept, so the authors cannot claim that the findings identify all determining factors that have been extensively examined in democracy studies and the transformative ISDC discourse. Instead, the paper analyzes whether the presence of digital transformation characteristics in each region are necessary or sufficient for that region to transform itself into a democratic regime. According to the conceptual framework, the following conditions are relevant: the level of technology in a country, individual ICT usage, business ICT

Table 2
Description and data sources.

Outcome/ Conditions	Description/Measured by	Source and year
Democracy (Outcome)	Democratic Index: Electoral process and pluralism; Functioning of Government; Political participation; political culture; civil liberties.	The Democratic Index (2020)
Technology	ACCESS: Mobile tariffs; Handset prices; Internet access; 4G mobile network coverage; Fixed-broadband subscriptions; International Internet bandwidth; internet access in schools. CONTENT: GitHub commits; Wikipedia edits; Internet domain registrations; Mobile apps development. FUTURE TIC: Adoption of emerging technologies; Investment in emerging technologies; ICT PCT patent applications; Computer; software spending; Robot density.	Networked Readiness Index (World Economic Forum, 2020)
Ind. ICT usage	INDIVIDUALS- ICT: Internet users; Active mobile-broadband subscriptions; Use of virtual social networks; Tertiary enrollment; Adult literacy rate; ICT skills.	Networked Readiness Index (World Economic Forum, 2020)
Business. ICT usage	BUSINESS-ICT: Firms with website; Ease of doing business; Professionals; Technicians and associate professionals; Business use of digital tools; R&D expenditure by businesses.	Networked Readiness Index (World Economic Forum, 2020)
Gov. ICT usage	GOVERNMENT-ICT: Government online services; Publication and use of open data; Government promotion of investment in emerging technologies; R&D expenditure by governments and higher education.	Networked Readiness Index (World Economic Forum, 2020)
Governance	TRUST: Secure internet servers; Cybersecurity; Online access to financial accounts; Internet shopping. REGULATION: Regulatory quality; ICT regulatory environment; Legal framework's adaptability to emerging technologies; e-commerce; legislation; Privacy protection by law content. INCLUSION: E-Participation; Socioeconomic gap in use of digital payments; Availability of local online content; Gender gap in internet use; Rural gap in use of digital payments.	Networked Readiness Index (World Economic Forum, 2020)
Impact	ECONOMY: Medium and high-tech industry; High-tech exports; PCT patent applications; Labor productivity per employee; Prevalence of gig economy, QUALITY OF LIFE: Happiness; Freedom to make life choices; income inequality; Healthy life expectancy at birth. SDP CONTRIBUTION: SDG 3: Good Health and Well-Being; SDG 4: Quality Education; SDG 5: Gender Equality; SDG 7: Affordable and Clean Energy; SDG 11: Sustainable Cities and Communities	Networked Readiness Index (World Economic Forum, 2020)

Table 3
Calibration of variables.

Outcome/ Conditions	Fully in	Crossover point	Fully out	Max	Min	Mean (SD)
Democracy (Outcome)	0.95	0.50	0.04	0.97	0.02	0.33
Technology	0.98	0.50	0.05	0.98	0.01	0.34
Ind. ICT usage	0.95	0.48	0.05	0.99	9E-08	0.34
Business. ICT usage	0.95	0.48	0.05	0.99	9E-08	0.34
Gov. ICT usage	0.94	0.49	0.04	0.98	0.007	0.35
Governance	0.95	0.50	0.05	0.98	0.007	0.32
Impact	0.95	0.49	0.04	0.97	0.009	0.35

usage, GOV ICT usage, the governance, and the impact of all of this on the economy and the quality of life.

4.1. Are there any individual necessary conditions?

First, the fsQCA analysis explores whether there is any necessary individual condition to reach the outcome, whether the presence or absence of each of the digital transformation conditions is a necessary condition for eastern European countries to be democratic or non-democratic. The analysis of necessity shows that in no case was the presence of a single attribute a necessary condition for democracy. For a condition to be considered necessary, consistency must be higher than 0.9 (Ragin, 2008; Schneider et al., 2010). However, based on the theory, further analysis showed that the absence of Technology (+) the absence of Gov ICT usage (+) and the absence of governance are necessary conditions for the absence of democracy [~Fs_Tec+~Fs_GovICT+~Fs_GOV] with a consistency of 0.91 and coverage was 0.65. Moreover, the presence of Technology (+) the presence of Governance (+) the presence of Gov ICT usage are necessary conditions for the presence of democracy [Fs_Tec + Fs_GOV + Fs_GovICT] with a consistency of 0.91 and a coverage of 0.75. Both results suggest that having a good infrastructure, governance based on trust, regulation and inclusion and ICT leadership from the government, are necessary conditions to implement democracy in eastern European countries. Table 4 shows the necessity analysis.

According to Ragin (2014) and Garcia-Alvarez-Coque et al. (2019) under the necessity relationship, instances of the outcome constitute a subset of the instance of the cause (s). Once the necessary condition was detected, the analysis explored the same question for combinations of attributes. Table 4 shows the conditions tested for necessities to reach the outcome.

4.2. Magic recipes: Analysis of sufficiency

Observing which combinations of attributes are present in subsets of competitive regions illustrates the strategies and recipes that lead to democratization through digital transformation in eastern European countries. These recipes are configurations that are sufficient for the presence of a high democracy value.

Numerous authors consider that consistency values greater than 0.8 may be acceptable (Crilly, 2011; Sascha et al., 2018). Nevertheless, some authors use 0.75 as an acceptable minimum value for consistency. Five of the six models had consistency values that surpassed this threshold. There is no established minimum value for coverage, but coverage indicates empirical evidence, so greater coverage implies the greater empirical relevance of the solution (Crilly, 2011; Ragin, 2008; Sascha et al., 2018).

Table 5 shows the successful pathways to democracy though digital transformation. The sufficient configuration **Tec*IndICT*BusICT*GovICT*GOV** stands out as the magic recipe for the consolidation of democracy in eastern countries. These characteristics form a configuration

Table 4
The conditions tested for necessities to reach the outcome.

Conditions tested: Fs_dem	Consistency	Coverage	Table 3. Conditions tested: ~Fs_dem	Consistency	Coverage
Fs_Tec	0.806	0.861	Fs_Tec	0.430	0.374
~Fs_Tec	0.415	0.471	~Fs_Tec	0.841	0.777
Fs_IndICT	0.693	0.755	Fs_IndICT	0.576	0.511
~Fs_IndICT	0.551	0.614	~Fs_IndICT	0.724	0.658
Fs_BusICT	0.693	0.755	Fs_BusICT	0.576	0.511
~Fs_BusICT	0.551	0.614	~Fs_BusICT	0.724	0.658
Fs_GovICT	0.738	0.830	Fs_GovICT	0.448	0.411
~Fs_GovICT	0.476	0.514	~Fs_GovICT	0.815	0.717
Fs_GOV	0.712	0.782	Fs_GOV	0.572	0.512
~Fs_GOV	0.555	0.614	~Fs_GOV	0.756	0.682
Fs_Impact	0.743	0.824	Fs_Impact	0.404	0.365
~Fs_Impact	0,427	0,468	~Fs_Impact	0,806	0,719

Table 5
Analysis of sufficient conditions for the presence of democracy. intermediate solution.

Outcome/Conditions	1	2	3	4	5	6
Technology	○	○	●		●	●
Ind. ICT usage	○	○	●	●	●	○
Business. ICT usage	○	○	●	●	●	○
Gov. ICT usage		●	○	●	●	●
Governance	○	●	○	○	●	●
Impact				●		●
Consistency	0.89	0.78	0.86	0.85	0.89	0.94
Raw coverage	0.23	0.28	0.28	0.28	0.50	0.28
Unique coverage	0.01	0.06	0.05	0.03	0.22	0.03
Overall solution consistency 0.80						
Overall solution coverage. 0.77						

Note: As in Fiss (2011), ● means presence of the condition and ○ means absence of the condition; Consistency cutoff: 0.78; Frequency cutoff: 1.00; Calculated as per Medzihorsky et al. (2016); Analysis of the absence of the outcome was performed but has not been included in the paper.

that the literature also describes as crucial. The cases with greater than 0.5 membership in that term are: **Estonia, Lithuania, Slovenia, Poland, Armenia, and the Russian Federation.**

The recipe Tec*~IndICT*~BusICT*GovICT*GOV*Impact is another sufficient pathway that does not require the use of ICT for businesses or individuals, the leadership of the government in ICT usage and good governance followed by a strong economy and quality of life being essential. Consequently, there are recipes for the eastern countries to achieve the institutionalization of democracy despite not having a developed private sector. Cases with greater than 0.5 membership in term Tec*~Fs_IndICT*~Fs_BusICT*Fs_GovICT*Fs_GOV*Fs_Impact are Slovakia and the Czech Republic.

5. Conclusions

This paper assesses the impact of ICT adoption on democracy for a sample of 26 case studies which are eastern European countries. Different conditions were considered to obtain the outcome. Our findings show that as the literature advanced, the ICT have a transformative potential with processes of change for the social, economic, and political conditions in developing countries. That means, the paper addresses the development struggle in which IS innovation is fully implicated but goes further with the contribution, as the results presented determine the exact conditions that need to be accomplished to achieve the output: Consolidate a democratic system.

This research seeks to deconstruct the theory of the consolidation of democracy with the aim of contributing to the creation of a new paradigm that leads to the same outcome but using updated variables considering the current sociotechnical regime transformation.

The first empirical model (Tec*~IndICT*~BusICT*GovICT*GOV*Impact) implies that public leadership and transformation driven by

policies that lead to an improvement in governance, combined with the promotion of ICT in the public sector and economic development policies, lead to democratic consolidation.

The second empirical model (Tec*IndICT*BusICT*GovICT*GOV) implies that policies that lead to good governance combined with the use of ICT by citizens, companies, and the government, lead to democratic consolidation.

The third one (Tec*~Fs_IndICT*~Fs_BusICT*Fs_GovICT*Fs_GOV*Fs_Impact) also presents a scenario in which public leadership in the use of new technologies combined with development policies of good governance and economic development leads to the same objective, which is democratic consolidation.

These results are revolutionary as they imply that the elements analyzed by the previous authors who developed the theory of democratic consolidation, once carried out to empirical validation, do not confirm the theoretical model that is used to develop countries.

CRediT authorship contribution statement

Doina Stratu-Strelet: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Hermenegildo Gil-Gómez:** Supervision, Resources. **Raúl Oltra-Badenes:** Supervision, Software. **Juan Vicente Oltra-Gutierrez:** Software.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Akpan, P. I. (2003). Basic needs to globalization: Are ICTs the missing link? *Information Technology for Development, 10*(4), 261–274.

Ali, M. S. B. (2020). Does ICT promote democracy similarly in developed and developing countries? A linear and nonlinear panel threshold framework. *Telematics and Informatics, 50,* Article 101382.

Avgerou, C. (2008). Information systems in developing countries: A critical research review. *Journal of information Technology, 23*(3), 133–146.

Avgerou, C., & Walsham, G. (2017). *Introduction: IT in developing countries. Information technology in context.* Taylor and Francis.

Barbosa, O. X., Assis, W. L. S., Garcia, V. S., & Alvarez, G. B. (2019). Computational simulation of gliomas using stochastic methods. *Pesquisa e Ensino em Ciências Exatas e da Natureza, Cajazeiras, 3*, 199–215.

Bellamy, C., & Taylor, J. A. (1998). Governing in the information age. *Public Policy and Management.*

Braa, J., Monteiro, E., & Sahay, S. (2004). Networks of action: Sustainable health information systems across developing countries. *MIS quarterly*, 337–362.

Bullough, O. (2018). *Nevis: how the world's most secretive offshore haven refuses to clean up.* The Guardian. Available at: www.theguardian.com/news/2018/jul/12/nevis-how-the-worlds-mostsecretive-offshore-haven-refuses-to-clean-up?CMP=share_btn_fb.

Castells, M., & Cardoso, G. (2006). *The network society: From knowledge to policy.* Jhu-Sais: Center for Transatlantic Relations.

Ciborra, C., & Navarra, D. D. (2005). Good governance, development theory, and aid policy: Risks and challenges of e-government in Jordan. *Information Technology for Development, 11*(2), 141–159.

Crilly, D. (2011). Predicting stakeholder orientation in the multinational enterprise: A mid-range theory. *Journal of International Business Studies, 42*(5), 694–717.

De Chosal, C. B. (2017). *The end of democracy*. Tumblar House.

Drechsler, W. (2009). The rise and demise of the New Public Management: Lessons and opportunities for South East Europe. *Admin., 7*, 7.

EIU (2020). Democracy Index 2020 whitepaper. 13 edition. The Economist Intelligence Unit. Available at https://www.eiu.com/topic/democracy-index/. Acceso 13/10/2021.

Elbahnasawy, N. G. (2014). E-government, internet adoption and corruption: An empirical investigation. *World Development, 57*, 114–126.

Fahmy, D. (2018). *Americans are far more religious than adults in other wealthy nations*. Pew Research Center. Available at: www.pewresearch.org/fact-tank/2018/07/31/americans-are-farmore-religious-than-adults-in-other-wealthy-nations/.

Fiss, P. C. (2011). Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal, 54*(2), 393–420.

Gajendra, S., Xi, B., & Wang, Q. (2012). E-Government: Public participation and ethical issues. *Journal or E-Governance, 35–4*, 195–204.

Garcia-Alvarez-Coque, J. M., Mas-Verdú, F., & Roig-Tierno, N. (2019). Life below excellence: Exploring the links between top-ranked universities and regional competitiveness. *Studies in Higher Education, 46*(2), 369–384.

Gardner, B. R. (1994). Ensuring successful IT utilization in developing countries. *South African Computer Journal, Number, 11*, 1994.

Geels, F. W. (2004). From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory. *Research Policy, 33*(6–7), 897–920.

Gell-Mann, M., Ramond, P., & Slansky, R. (2010). Complex spinors and unified theories. In Murray Gell-Mann: Selected Papers (pp. 266–272).

Goede, M. (2019). The future of democracy: The end of democracy as we know it. *Kybernetes*, 48–110.

Greckhamer, T., Misangyi, V., & Fiss, P. (2013). The two QCs: from a small-N to a large-N Set Theoretic Approach. Chapter 3. Configurational theory and methods in organizational research. Vol. 38.

Grimmelikhuijsen, S. (2012). Linking transparency, knowledge and citizen trust in government: An experiment. *International Review of Administrative Sciences, 78*(1), 50–73.

Grossman, D. S. (2004). Putting Technology on the Road. *Research Technology Management*, 41–48. March–April 2004.

Hardy, A. P. (1980). The role of the telephone in economic development. *Telecommunications Policy, 4*(4), 278–286.

Heeks, R. (1999). Information and communication technologies, poverty and development. *Development Informatics Working Paper, 5*.

Internet World Stats (2021). https://www.internetworldstats.com/stats.htm. Acceso. 13/10/2021.

Kanungo, S. (2003). Information village: Bridging the digital divide in rural India. *The Digital Challenge: Information TECHNOLOzGY in the Development Context, 103*, 124.

Kassen, M. (2019). Open data politics in Estonia: Advancing open government in the context of ubiquitous digital state. In *Open Data Politics* (pp. 37–67). Cham: Springer.

Knack, S., & Keefer, P. (1995). *Institutions and Economic performance: Cross-country tests using alternative institutional measures*. Economics and Politics.

Köhler, J., Geels, F. W., Kern, F., Markard, J., Onsongo, E., Wieczorek, A., … Wells, P. (2019). An agenda for sustainability transitions research: State of the art and future directions. *Environmental innovation and societal transitions, 31*, 1–32.

Kooiman, J. (2003). *Governing as governance*. Sage.

Krishnan, S., & Teo, T. (2012). Moderating effects of governance on information infrastructure and e-government development. *Journal of the American Society for Information Science and Technology*.

Kuhn, T. (1970). *The structure of scientific revolutions* (pp. 176–177). Princeton University Press.

Kullberg, J. (1998). *A unified theory of democratic change*.

Linz, J. J., & Stepan, A. C. (1996). Toward consolidated democracies. *Journal of Democracy, 7*(2), 14–33.

Loorbach, D. (2010). Transition management for sustainable development: A prescriptive, complexity-based governance framework. *Governance, 23*(1), 161–183.

Mahmood, R. (2004). Can information and communication technology help reduce corruption? How so and why not: Two case studies from South Asia. *Perspectives on Global Development and Technology, 3*(3), 347–373.

Medzihorsky, J., Oana, I., Qaranda, M., & Schneider, C. (2016). R package version 2016.

Oderra-Straub, M. (1993). Critical factors affecting success of CBIS: Cases from Africa. *Journal of Global Information Management*.

Pérez-Morote, R., Pontones-Rosa, C., & Núñez-Chicharro, M. (2020). The effects of e-government evaluation, trust and the digital divide in the levels of e-government use in European countries. *Technological Forecasting and Social Change, 154*, Article 119973.

Przeworski, A., Alvarez, R. M., Alvarez, M. E., Cheibub, J. A., Limongi, F., & Neto, F. P. L. (2000). *Democracy and development: Political institutions and well-being in the world, 1950–1990* (Vol. 3). Cambridge University Press.

Ragin, C. C. (2008). *Redesigning social inquiry: Fuzzy sets and beyond* (pp. 190–212). Chicago: University of Chicago Press.

Ragin, C. C. (2014). *The comparative method: Moving beyond qualitative and quantitative strategies*. Univ of California Press.

Ragin, C. C., & Fiss, P. C. (2008). Net effects analysis versus configurational analysis: An empirical demonstration. In C. C. Ragin (Ed.), *Redesigning social inquiry: Fuzzy sets and beyond* (pp. 190–212). Chicago: University of Chicago Press.

Ragin, C. C. (2009). Qualitative comparative analysis using fuzzy sets (fsQCA). Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques. 51, 87–121.

Rihoux, B., & Ragin, C. (Eds.). (2009). *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques*. Sage Publications.

Roche, E. M., & Blaine, M. J. (Eds.) (1998). *Information technology, development and policy (book review) third world planning review*. Proquest.

Roig-Tierno, N., González-Cruz, T., & Llopis- Martínez, J. (2017). An overview of qualitative comparative analysis: A bibliometric analysis. *Journal of Innovation and Knowledge, 2*(1), 15–23.

Santinha, G., & Castro, E. (2010). Creating more intelligent cities: The role of ICT in promoting territorial governance. *Journal of Urban Technology, 17*(2), 77–98.

Sascha, K., Ribeiro-Soriano, D., & Schüssler, M. (2018). Fuzzy-set qualitative comparative analysis (fsQCA) in entrepreneurship and innovation research – the rise of a method. *International Entrepreneurship and Management Journal, 14*, 15–33.

Schneider, M., Schulza, C., & Paunescu, M. (2010). Mapping the institutional capital of high-tech firms: A fuzzy- set analysis of capitalist variety and export performance. *Journal of International Business Studies, 41*, 246–266.

Schneider, C. Q., & Wagemann, C. (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge University Press.

Song, C., & Lee, J. (2016). Citizens' use of social media in government, perceived transparency, and trust in government. *Public Performance & Management Review, 39* (2), 430–453.

Stein, E. A. (2017). Are ICTs democratizing dictatorships? New media and mass mobilization. *Social Science Quarterly, 98*(3), 914–941.

Stiglitz, J. E. (2000). Capital market liberalization, economic growth, and instability. *World Development, 28*(6), 1075–1086.

Stratu-Strelet, D., Gil-Gómez, H., Oltra-Badenes, R. F., & Oltra-Gutierrez, J. V. (2021). Critical factors in the institutionalization of e-participation in e-government in Europe: Technology or leadership? *Technological Forecasting and Social Change, 164* (2021), Article 120489.

Szopiński, T., & Staniewski, M. W. (2017). Manifestations of e-government usage in post-communist European countries. *Internet Research*.

United Nations 2001: DPEPA, U.N. (2001). Benchmarking E-government: A Global Perspective. United Nation Division for Public Economics and Public Administration – American Society for Public Administration: USA.

Van de Donk, W., Loader, B. D., Nixon, P. G., & Rucht, D. (Eds.) (2004). *Cyberprotest: New media, citizens and social movements*. Routledge.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly, 27*(3), 425–478. https://doi.org/10.2307/30036540

Vis, B. (2012). The comparative advantages of fsQCA andregression analysis for moderately large-N analyses. *Sociological Methods & Research, 41*(1), 168–198.

Vu, K. M. (2011). ICT as a source of economic growth in the information age: Empirical evidence from the 1996–2005 period. *Telecommunications Policy, 35*(4), 357–372.

Wimmer, M. A., Codagnone, C., & Ma, X. (2007, September). Developing an e-government research roadmap: method and example from E-GovRTD2020. In *International conference on electronic government* (pp. 1–12). Berlin, Heidelberg: Springer.

World Economic Forum (2020). The Network Readiness Index (NRI). Second edition. Available at https://networkreadinessindex.org/ (Acceso: 13/10/2021).

Zakaria, P. (2013). Is corruption an enemy of civil society? The case of Central and Eastern Europe. *International Political Science Review., 34*(4), 351–371.

Doina Stratu-Strelet. PhD Candidate in Business Organization. M.S in Economic Internationalization. Jurist and Political Scientist.

Hermenegildo Gil-Gómez. PhD. Full Professor at Universitat Politècnica de València-Business Organization Department. Telecommunication engineer. Researcher at Institute of Automation and Industrial Computing.

Raúl Oltra-Badenes. PhD. Assistant Professor at Universitat Politècnica de Valencia-Business Organization Department. Researcher in the Integration of Information Technologies in Organizations.

Juan Vicente Oltra-Gutierrez. PhD. Full Professor at Universitat Politècnica de València-Business Organization Department. Computer engineer. Researcher in the Integration of Information Technologies in Organizations