

Socio-Economic Enablers of E-Government in Bulgaria

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Abstract

The successful implementation of e-government solutions hinges critically on numerous factors. While research has been abundant, no consensus has emerged on their relative importance. This paper aims to fill this knowledge gap by exploring a number of socio-economic determinants for new e-government developments and investigating their influence. This is done by distributing a self-administered online questionnaire to groups of relevant stakeholders in Bulgaria and then ranking their responses. An agreement emerged across the sample that the availability of qualified human resources, organizational context and technological factors are seen as the key enablers. This view is shared across both professionals in the field of e-government, as well as users of e-services. Results are further confirmed by a factor analysis showing that the three underlying themes of resources, organizational context, and implementation figure prominently. These results point to the importance of shifting e-government policy away from issues of budgeting and procurement and focusing it more on issues of human and organizational development.

Keywords: e-government, digital governance, digital transformation of public administration, survey

JEL: H10, H83

1. Introduction

The provision of e-governance services is now widely seen as one of the functions of modern government (Twizeyimana & Andersson, 2019). The digital transformation of the public sector bears much possibility for optimizing the internal workings of government, thus improving efficiency and supporting democratic processes for the democratic subjects – the citizens (Janssen & Wimmer, 2015). The adoption of e-governance has been rather unequal, both in terms of different countries, as well as within the same country. Such surprising empirical regularities clearly beg the question of what determinants will increase the adoption of e-government. A resource-based approach would be to point out the larger availability of resources should speed up the digital transformation of the public sector (Manoharan, 2013). An alternative needs-based approach would argue that the larger the strain on the public sector in terms of needed transaction, the more incentive there will be for automating service provision processes (ibid.). This short research paper will investigate further those two approaches.

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The paper begins by outlining the accepted definitions of e-government, e-governance, and e-democracy and further emphasizes why e-government with its public value implications would be the most appropriate concept to study. It then continues by presenting a short overview of the relevant literature that aims to identify the determinants of e-government development. Section II also outlines the major research gaps that we seek to fill. We then proceed with the research aim and objective, the specific research questions, and the limitations of the proposed approach. Section III proceeds to present the methodology and data collection and analysis, Section IV presents the analysis itself and the main conclusions that can be drawn from it. Section V then presents a discussion of the obtained results, and Section VI concludes.

2. Literature Review and Research Questions

The concept of e-government is defined in a number of different ways in the literature focusing from an introspective government-centered approach to an ICT transformation enabling citizen participation, collaboration and participation (Grönlund, 2010). It seems that the participatory aspects of e-government (e-democracy) largely rely on a set of institutional and cultural factors (see e.g. Lidén, 2012) which are only indirectly determined by resources or needs. It is the ICT infrastructure and the e-services provision that should be most affected by supply side considerations (e.g. resources and needs). This is why we would focus very much on the concept of Type 2 e-government as defined by Grönlund (2010) and for the purpose of this paper we use his definition: "E-government is equated to the use of ICTs in government. While the focus is generally on the delivery of services and processing, the broadest definition encompasses all aspects of government

activity". It is worth mentioning that in its practical implementation, e-government includes concrete e-services such as e-voting, e-procurement, e-participation, as well as a nation e-service portal (Veit & Huntgeburth, 2014).

The transformative capacity of e-government can hardly be overstated, promising to revolutionize the relationship between the state and the citizen, and thus to promote efficiency, well-being, prosperity, and uphold democratic ideals (Janssen & Wimmer, 2015). Twizeyimana & Andersson (2019) focus on the particular social value that e-government brings about and summarize it across three main dimensions, namely: improved public services, improved administration, and improved social value. As such the rapid adoption of e-government is seen as a desirable social goal, that needs to be supported and upheld. It is thus of crucial importance to understand the determinants for the development of new e-government solutions across countries so as to accelerate their adoption and be able to unlock more social value through them (Ziemba et al., 2016). A resource-based (supply-side) view may argue that sufficient resources are needed for a sophisticated and full-functioning e-government. A needs-based view (demand-side) may argue that the needs for processing determine the pace of e-service advancement. At any rate, the empirical record is rather mixed. Singh et al. (2007) provide support for the view that socio-economic development (and thus available resources) have a strong and positive effect on e-governance adoption. In their study the Gross Domestic Product strongly influences ICT infrastructure and governance, and through this channel – e-government maturity. Kim (2007), on the other hand, finds a more direct connection between economic wealth and e-government. Al-Adawi et al. (2005)

make the similar observation that countries with a higher level of GDP tend to exhibit more sophisticated e-government development.

Srivastava and Teo (2010), on the other hand, find that socio-economic development does not exert a statistically significant effect on e-governance, thus failing to find proof for a resource-based view. Mixed results of this effect are found on the sub-national level as well – Monoharan (2012) finds a link between economic variables and measures of e-government but this link fails to reach statistical significance in all cases. In contrast, Serrano-Cinca et al. (2000) find strong support that resources play a crucial role in the adoption of e-governance at the county level.

The evidence for the needs-based view is similarly mixed. In their study Serrano-Cinca et al. (2000) show that the size of municipality (hence its population) has a beneficial effect on the introduction and proliferation of digital government. In a similar vein, Monoharan (2012) more recently finds that population size does have a positive effect on e-governance. Other authors (Siau & Long, 2015) would argue that not size per se but the level of development of human capital and ICT sophistication are the real drivers behind the acceleration of the public sector digital transformation. Franke et al. (2015) investigate e-government implementation in Saudi Arabia and underline the importance of culture that may vary significantly across countries for the success of e-government initiatives. Twizeyimana et al. (2018) focus on the importance of institutional factors and trust, as well as purely infrastructural and managements ones.

In a meta-analysis Rana et al. (2013) review a total of 78 articles that survey factors, influencing the development of e-government and also make a crucial distinction between demand-side factors and supply-side factors,

showing that the barriers on the supply side (public administrations) are three times as numerous as those on the demand side (citizens). In another related work, Rana et al. (2015) show the importance of citizen perception on the success of e-government, underling the social embeddedness of e-government information systems. Rallis et al. (2019) add further behavioral nuances to the choice to adopt e-government, showing the importance of citizen perceptions. More concretely, the authors (ibid.) collect data form a sample of internet users in Greece and show that adoption is crucially dependent on four main factors: Perceived Usefulness, Peer Influence, Computer Self-efficacy, and Perceived Risk. Similar results are echoed in research by Veeramootoo et al. (2019). Mkude & Wimmer (2015) use semi-structured interviews to elicit key stakeholders' perception of the drivers behind e-government and show that both economic and social ones are perceived to be of importance, with proper management of the effort being a top priority.

In a detailed review of 61 pre-selected and curated research articles, Mueller & Skau (2015) identify six main types of e-government implementation drivers:

- *External environment* – the overall context in which e-government solutions take place and are implemented, including legislation, culture, level of social and economic development, and political and administrative reform;
- *Organization* – issues of organizational characteristics, financial resources, infrastructure, collaboration, and stakeholders figure prominently here. On a lower organizational level, the main organizational drivers revolve around expectations and proper prioritization of projects and tasks;
- *Management* – the importance of appropriate initiative management

can hardly be overstated, with the literature taking particular recourse to the characteristics and commitment of management, as well as their strategy and the actual ability to manage projects;

- *Employees* – among the most important groups of stakeholders, employees are viewed through three main lenses: as human resources that enable e-government, as possibly opposing stakeholders, and as users in need of further training and education;
- *Citizens* – issues of the digital divide (unequal access to, and benefit from, e-government), and upskilling citizens figure prominently. However, a large and looming topic is whether citizens' needs are catered to and whether there is a sufficient level of trust to carry on e-government projects and services;
- *Technology* – initially a key concern, technological drivers revolve around the infrastructure, design and access, and more recently – privacy and security.

A more recent meta-analysis of extant literature about e-government critical success factors by Othman and Razali (2018) finds a broadly similar pattern of implementation drivers, which points at the relative consistence of the type of challenges encountered. This, however, gives little recourse as to their relative importance and its possible variation over time. Approximately the same groups of factors are also identified in a number of recent e-government case studies such as the one by Al-Rawahna et al. (2018) in Jordan.

In another study of e-government implementation factors, Anthopoulos et al. (2016) rely on an extensive literature review to outline the key reasons for project success or failure, namely organizational power, politics, education and skills, project management issues, ambiguous business needs and unclear visions, security and privacy, operations and

costs, and ICT development processes. In a study on a US healthcare website, the authors (ibid.) find that most of these are present in this particular case study with the exception of resource issues (e.g. privacy and security and finance and operational costs).

In short, both the availability of sufficient resources, as well as the presence of enabling social, political and organizational factors should in theory accelerate the pace of e-government adoption (Napitupulu, 2018). While research on these issues has been extensive, results are mixed and some conclusions, especially those of meta-analysis, need to be interpreted with sufficient care (Wirtz & Daisel, 2018). What is more, it may be possible that the relative importance of individual factors is not time invariant but rather fluctuates with the changing social, economic, and technological conditions. For instance, Claver-Cortes et al. (2018) uncover that over time the importance of IT-related issues has been diminishing in a longitudinal sample of Spanish CIOs. It may well be the case that some of the results are determined by the sample taken and the period studied. Therefore, a more recent and more detailed analysis on how socio-economic factors influence the development of new e-government solutions is particularly needed. We delimit the scope of the research to Bulgaria, a EU member state, in order to ensure that enough data at a sufficient level of detail can be collected.

The lack of understanding of the precise socio-economic determinants of e-government development has negative repercussions for both policy formulation and practical implementation. It is thus the incomplete understanding of main drivers and barriers for e-government development that hinders the process and precludes nations from realizing the full benefits of digital processing (Rana et al., 2013; Savoldelli

et al., 2014; Napitupulu et al., 2018). This research paper focuses on this problem and investigates how socio-economic factors affect the development of new e-government solutions in order to successfully intervene and eliminate obstacles to this process. To better understand this relationship, we first need to operationalize the definitions and find appropriate data that fits the operationalization of variables. Second, relevant data on the variables under investigation needs to be collected and processed. Then we proceed with descriptive and statistical data analysis to further investigate the impact of socio-economic factors on e-government. Finally, key conclusions and recommendations are outlined.

The research question motivating this short paper is thus what are the social, political, cultural, and economic factors that influence the development of new e-government solutions in one European country, and how important is each of these drivers relative to the other ones. To answer this question, we formulate a number of research sub-questions. First, we must understand and operationalize the different process drivers by relying on previous relevant literature (e.g. Rana, 2013; Mkude & Wimmer, 2015). A second research sub-question is what data needs to be additionally gathered in order to respond to the research question. A third sub-question would be to see if what is the relative importance (or ranking) of the different process drivers and if there is any statistically significant difference between the importance of economic and social-political factors among different stakeholders. The main conclusions from these sub-questions will shed further light on the nexus between resources and social-political factors on the one hand, and digital government on the other.

The concept of e-government is both complicated, and multi-faceted (Lidén,

2012; Manoharan, 2013) and the level of its implementation and maturity is influenced by a large number of factors (Othman & Razali, 2018; Al-Shuaili, 2019). Ziemba et al. (2015) alone propose 55 critical success factors for e-government that are strictly socio-economic in nature. The reviews by Mueller & Skau (2015) and Othman & Razali (2018) outlines an even richer set of possible influences. By focusing on socio-economic determinants alone, the paper is likely to miss other important determinants such as the institutional setup, history, national specifics, and many others (see e.g. Mueller & Skau, 2015; Abu-Shanab et al., 2016; Alenezi et al., 2017; Pappas et al., 2018). This important limitation should be borne in mind as the reader interprets our key results. An additional limitation stems for the relatively limited scope of the project itself.

Due to time and resource constraints we will investigate only a limited number of variables within the broad group of socio-economic determinants. In addition to that, there is only one EU country under investigation – Bulgaria. Both of these may have implications as to the generalizability of the presented results. Since conclusions are derived only from one European country they can hardly be generalized to e-governance in other continents with markedly different development patterns, such as Africa or Asia. Additionally, the period what the survey was administered was rather short. Even though by the end of the period no additional subjects were willing to participate, the length of administration may have repercussion on the sample size and composition and thus conclusions need to be interpreted with due care. Furthermore, the focus on a limited number of socio-economic determinants may hinder generalizability to all socio-economic variables that may have influence.

The third limitation is of more conceptual nature. As this research focuses on the

narrower field of e-government it does not include critical concepts of e-governance such as collaboration, participation, and shared decision-making (Hansson, 2015). It may very well be possible that such social and political aspects have an influence on, and are influenced by, e-government. The scope of the current research prevents us from fully discovering such complex relations. It is important that this knowledge gap be filled by additional research.

3. Methodology and Data Collection

The research question focuses on explicating what factors influence the development of new e-government solutions, and we aim to outline those in a rigorous and analytic way. There are a number of approaches that can yield valuable data relevant for the study aims. More specifically, the questions can be answered by using in-depth interviews with relevant stakeholder, by participant observation methods, by distributing a survey questionnaire, or by collecting aggregated data on relevant variables (see Denscombe, 2010). In-depth interviews have many advantages in that they allow the interviewer to collect a large amount of very rich data, to explore topics as they come, to elucidate and clarify the opinion of respondents. While this option is viable it will entail significant time, invested for interviewing, recording, coding, and analyzing the data. Additionally, it may be very difficult to gain access to a sufficient number of relevant interviewees in order to reach saturation.

Participant observation can in principle allow the researcher to observe the usual processes in the field while he or she participates in them and draw conclusions through an experiential process (Denscombe, 2010, p. 206). This also brings the risk that some pre-conceived notions on the part of the researchers may skew the analysis.

Furthermore, the amount of time required until saturation is achieved is uncertain and may be prohibitively large. An alternative approach would be use a survey questionnaire that can be utilized to gather a large amount of structured information from dispersed groups of different stakeholders that are relevant to the research at hand (Denscombe, 2010, p. 156). Since the time and resources needed here are significantly lower than in the in-depth interview or the participant observation, this method provides for a feasible way to collect needed data for our research question.

Secondary data analysis can also be helpful to shed light on the factors influencing e-governance development. There is a large amount of publicly available datasets such as the UN E-government data (UN, 2016) or the European Commission Digital Economy and Society Index, DESI (EC, 2018). Such data can fruitfully be used in social research (Denscombe, 2010, p. 217). They have the advantage that are already publicly available and relatively easy to analyze. On the other hand, they are rarely collected for the specific purpose of the research at hand and oftentimes present a very coarse-grained view of what is measured. Specific data pertaining to the research question considered here cannot be found and thus new data has to be collected.

The overview of the possible methods leads to the conclusion that data collection through a self-administered survey with structured questions will fit the time, scope, and requirement of this short research paper. This is also in line with existing literature on e-government, in which researchers leverage structured and unstructured questions (such as Mkude & Wimmer, 2015), as well as utilizing large-scale structured survey questionnaires, as in the UN's E-government Survey (see UN, 2016, p. xviii).

The questionnaire method gathers information by asking people directly about the

points under investigation and is essentially a list of written questions collecting data for further analysis (Denscombe, 2010, p. 155-156, Sue & Ritter, 2007, p. 1-9). The online questionnaire has numerous advantages – it is low-cost, fast, efficient, allows for contingency questions, and wide geographic reach (ibid.) Balancing those against the possible disadvantages – coverage bias, and uncertainty about respondents, we reach the conclusion that this type of survey administration is suitable for the current research, as will provided the needed information, while it is still feasible to be conducted. Such an approach is common in the literature and useful when studying the implications of IT and e-governance solutions (see e.g. Ayele & Juell-Skielse, 2015).

The specific questions were designed following online survey best practice. An initial battery of demographic questions (age, education, gender, sector of employment) is included in order to filter segments, and in addition to these, we also add a screening question as to what role in e-government the respondent has (user, developer, researcher, official). This is then followed by a group of questions directly pertaining to a number of social and economic factors that were found to have relevant influence on e-government. According to the literature (Rana et al., 2013; Savoldelli et al., 2014) these are the availability of resources (monetary, human, technical), the presence of legacy systems, the number of customers, process complexity, organizational culture, legal requirements, and political will. The survey questions provide respondents with recognizable Likert scales where they can rate how important they think different drivers are on a scale from 1 (Not at all important) to 5 (Very important).

From a theoretical standpoint, we would prefer to use random sampling to answer the research question in this short paper

as it allows making valid inferences and statistically controlling errors (Denscombe, 2010, p. 23-51). However, in the case of online research, it is hardly possible to implement probabilistic sampling as the sample frame is unknown (ibid., p 26). For this research, we would like to have either people that have first-hand experience with the development of new e-government solutions or are potential users of those, but a complete list of all such individuals does not exist and thus there is no clear sampling frame. Because of such difficulties to use probabilistic sampling in online research, Sue & Ritter (2007, p. 32) propose using non-probabilistic sampling as a way to practically select respondents for online surveys. Since the required data suggests that respondents need to have specific characteristics (access to internet, willingness and capability to use e-services, ability to evaluate drivers of new development solutions) to answer adequately, the optimal approach would be to use purposive sampling (Denscombe, 2010, p. 34-35), in which the participants are picked on the basis of their knowledge and relevance to the topic.

Purposive sampling is made easier in Bulgaria as there is an online forum and mailing list – the eGov Forum – which tries to connect all relevant e-government stakeholders (users, public officials, vendors, contractors, developers, researchers, and students). Collecting responses from the members of the Forum ensures appropriate purposive sample for this research. In addition to that, the author is familiar with academics and practitioners in the field of e-governance and could distribute the questionnaire (either via online channels or via offline channels). To expand the reach of the questionnaire, we also use the social networks of the author.. This is again non-random sampling, but together with the purposive sampling employed, we hope to reach a large and diverse group

of respondents, which is often what such survey designs can realistically achieve (Sue & Ritter, 2007). These respondents are also guaranteed to have access to the internet, which is also a prerequisite for using and thus having experience with e-services.

Such distribution runs the risk that a non-intended respondent can fill the questionnaire. To avoid this, we include a screening question on the involvement of the respondent in e-government initiatives and filter out those have never used e-services. Following the literature (Alreck & Settle, 1995), we aim for a sample size of at least 30. While, it may be argued that such a number may not be fully representative, one should bear in mind that the general population that we survey is rather limited. Such a sample selection approach may suffer from a number of other biases, as well. Most notably, it may very well be the case that the personal network of the author is not representative of the total population of e-government experts in the country. While every effort is made to reach out to different and relevant stakeholders such bias cannot be eliminated completely and thus results need to be interpreted with care. The collected survey data will be quantitative in nature and will thus lend itself to analysis by standard statistical methods (see Denscombe, 2010, pp. 241-271; Sue & Ritter, 2007, pp. 109-120).

The current research design does its utmost to follow good practice and research ethics. Denscombe (2010, p. 331) underlines that research needs to be done in a way that protects participants interests, ensure voluntary participation, avoids deception, and is lawful. The administration of the proposed online questionnaire does not entail any discomfort to the participants, and once the data is collected, it is stored as completely anonymous and confidential in encrypted format on a external hard drive under the physical control of the researcher. Results are

shared with participants on demand. Data will not be distributed to third parties to avoid any negative consequences for the respondents due to an opinion they hold or an evaluation they made. To ensure proper information, all these conditions are made clear, together with the aims of the research, the estimated time, and contact details in an informed consent form (see Sue & Ritter, 2007, p. 22). No populations of particular risk were surveyed, as the sample included only adults. There are no conflicts of interest to report, and the study is self-funded.

4. Analysis and Results

Leveraging the survey instrument, we were able to obtain data on respondents' perceptions of the main drivers of e-government development. This data was analyzed to outline the key factors that enable new e-gov solutions, thus responding to the outlined research question. Results of this analysis are presented in this section. We first briefly outline the process of data collection and the analytic tools used, and then proceed to outline the main results from the quantitative analysis using descriptive statistics, t-tests, and factor analysis.

4.1. Context of the Analysis: Short History of e-Government in Bulgaria

Countries in Central and Eastern Europe (CEE) have witnessed a relatively long transition from a centralized public administration under communism towards a modern rational ICT-enabled state over the past thirty years. Randma-Liiv & Drechsler (2017) point out that this transition of the public administration has taken the following stages:

- 1989-1996 – the Transition period, which is characterized by the New Public Management (NPM) paradigm. The wide reliance on NPM concepts has rather led to both the rationalization and

the fractionalization of administrative systems that leaves a controversial legacy for later efforts to implement e-government;

- 1997-2004/7 – EU Accession period that is largely dominated by efforts to synchronize national legislation and practices with the common European law. This is set against the back-drop of post-NPM public administration activities and increased focus on efficiency and effectiveness of public service provision. However, this period is largely dominated by external incentives in lieu of endogenous country motivations.
- 2004/7-2014 – the Post-EU fine tuning – this period reversed the trend of agencification in CEE and witnessed the rise of ideas that support the intensive introduction of centralized IT systems. This is most notably the aggregation of public service, driven by the ideas for Joined-up Government (JuG) and Whole-of-Government (WoG) approaches. At this stage there is also the divergence of CEE administrative practice that make it impossible to discern a common CEE trajectory.
- 2015 – to this day – the e-Government and Public Sector Innovation stage focuses primarily on leveraging ICT in providing outstanding public service. This refers not only to the increased use of information systems in the public administration but leveraging big data and innovations such as smart cities to deliver value. The trend of wide divergence in CEE regarding e-government is becoming increasingly apparent during this period (Warf, 2018).

Against this backdrop of divergent developments in CEE, Bulgaria seems to be lagging behind in its e-government implementation initiatives. Novakova et al. (2016) note that objective indicators for Bulgaria's progress such as the UN

e-Government Development index show a marked slowdown for the country. Even among its peer group of CEE countries, Bulgaria's usage e-gov usage results are far from stellar (Szopiński & Staniewski, 2017). Initially, the country attempted to implement a centralized model by creating a Ministry for Public Administration in 2001. This was later transformed to a Ministry for State Administration and Administrative Reform and an executive e-government agency over 2005-2009 (ibid). The decentralized implementation model persisted until 2016 when a State eGovernment Agency (SEGA) was created. This whole period witnessed initial steps for e-government implementations, limited public services online, and a few failed attempts to create a common shared infrastructure such as a one-stop online portal for e-services, e-payments, data centers, etc. Since 2017 the SEGA is implementing an ambitious e-government implementation roadmap but the results are yet to be seen.

4.2. Data Analysis and Processing

The online questionnaire was self-administered by the respondents in an online environment. All the questions as presented in Appendix 1 were faithfully transferred to electronic form, using the Google Forms utility. Following the purposive sampling strategy, the author sent the link to the questionnaire to the E-government forum on 14th December 2017, briefly informing the participants of the purpose of the research, the time needed, and the availability of the results. As respondents click the link, they are presented with the complete Informed Consent Form, giving them all the necessary information on the purpose of the research, risks, data privacy and confidentiality, ethical implications, contacts to the researcher, etc. After the form, the questions are presented, and participants are asked to fill them out

themselves. Data is then stored automatically in a spreadsheet utility.

To increase the scope of the sample and to correct for possible biases due to the composition of the E-government forum, the survey link was also made available on the researcher's Facebook profile, inviting those with experience in e-government to contribute to the research. As they follow the link, they are presented with an Informed Consent Form, followed by the questions. Such a strategy risks that people with little relevant knowledge can access the survey. To control for this, we utilize the screening question of the respondent's involvement in e-government, and filter out those who have none.

In order to increase the response rate, a thank you note to those who participated and a reminder to those who did not was sent on 18th December 2017. This was in the form of an e-mail to the E-government forum and an update on the author's Facebook profile page. Such approaches are found to be very effective in increasing the response rate (Sue & Ritter, 2007, pp. 93-94). The survey continued to accept responses up to 24th December but the last five days of this period yielded no new responses. On the 24th December, the survey was closed with 64 filled questionnaires. Results were then exported to statistical programs for further analysis.

The processing also included the recoding of the variable Role (question: How do you come in contact with e-government services) into the new one – Professional. This variable measures whether the respondent is professionally involved in the development of new e-government solutions (as a vendor, researcher or student, or public official

in charge of e-gov, coded 1), is merely a user (coded 0), or has no experience with e-government solutions at all (coded 9). This recoding is necessary for further analysis of differences in perceptions between professional and non-professionals, and for filtering the dataset. All other variables are coded with their respective responses. The automatically generated time-stamp of the response was deleted so as not to risk compromising the anonymity of the respondent (some days yielded very few responses). After processing is done, the resulting database contains 64 complete responses.

4.3. Descriptive Analysis

The obtained data is leveraged to outline what the most important factors for the development of new e-government solutions are. The sample attempts to collect the opinion from experts and users of such solutions, and while the sampling strategy was not random, it does seem that the obtained sample is somewhat representative of the population of e-gov developers and users under study. For one, there is a relatively balanced split between males and females – the former comprise 55.9% of the respondents, while the latter – 44.1%. The sample is mostly young – the overwhelming majority (45.8%) is between 26 and 35 years old, and the second largest group (33.9%) is between 36 and 50 years. The sample is highly educated – 76.3% have a Master's degree, and further 5.1% - a Ph.D. Our respondents come primarily from the private sector, followed by the public sector, and academia (see Figure 1). Concluding, the respondents fit the likely profile of the typical e-solutions stakeholders – young, employed and highly educated (Veit & Huntgeburth, 2014).

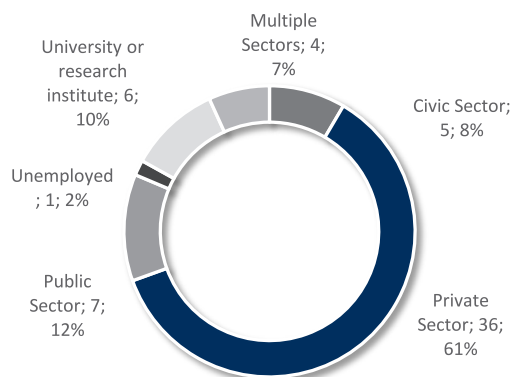


Figure 1. *Sector of Occupation of Survey Respondents*

A last caveat that should be brought in mind is whether the respondents are suitable for evaluating influences on e-gov development. The screening question of how they come in touch with e-services shows that we have 29 professionals (vendors, researchers, e-gov students, public officials), 30 citizens that

use e-government services and an additional five people who have never used e-services. Those five are filtered out of the sample as their responses are likely noise and the final sample for study remains with $N = 59$ respondents. Following the literature (Ayele & Juell-Skielse, 2015; Sue & Ritter, 2007), we firstly rank the most important factors, and then investigate their implications.

4.4. Most Important Factors

The respondents to the survey could rank nine key factors for e-government development on a scale from one to five, and the results of this are presented in Table 1. It seems that the most important drivers for development of e-gov solutions in Bulgaria is the availability of qualified human resources. It should be noted that this factors also has the lowest standard deviation, hinting at agreement among respondents about its effects.

Table 1. *Descriptive Statistics of Most Important Factors for E-government development, ordered*

Short Variable Name	N	Minimum	Maximum	Mean	Std. Deviation
Qualified HR	59	3.00	5.00	4.8305	0.42151
Political Will	59	1.00	5.00	4.5424	0.95271
Technology	59	2.00	5.00	4.5085	0.67907
Culture	59	1.00	5.00	4.4068	0.93068
Legal	59	2.00	5.00	4.0847	1.00496
Enough Money	59	2.00	5.00	3.8814	0.83221
Complexity	58	1.00	5.00	3.8621	0.96333
Number of Customers	58	1.00	5.00	3.7759	1.12458
Legacy IT Systems	59	1.00	5.00	3.4746	1.07248

The second place goes to the political will of elected officials, closely followed by the availability of technological resources and sufficient connectivity. The fourth factor that has sizable repercussions on new development is the organizational culture. Those four factors clearly lead in terms of mean scores and the other five notably lag behind. We conjecture that this means that their relative importance is much less that the

key drivers. Legal constraints and budget gain some prominence but clearly not as focal points. It seems that the least important factors are the process and environmental ones. The complexity and number of customers of a given e-service, together with the presence of legacy IT systems play a relatively smaller role in e-gov development decisions.

4.5. Differences between Professionals and Non-professionals

It may very well be the case that professionals in the field of e-government have a more intimate knowledge of process operations and are positioned to better evaluate the important drivers, while non-professional users have only the outside perspective that is possibly skewed. We plot the average scores that the two groups give to the drivers under study in the following Figure 2.

There seems to be by and large an agreement between the two groups on the relative importance of factors, with few exceptions. However, these exceptions may point towards a divergence of opinions and it is thus important to see if there are any statistically significant differences between the scores of e-gov professionals and non-professionals. To formally test this, we conduct a series of 9 t-tests (see Rice, 2006, pp. 421-433). In seven of the nine tests, the difference between the two groups did not reach any conventional levels of statistical significance ($p > 0.1$). The only statistically significant differences were in the case of culture, and legacy IT systems.

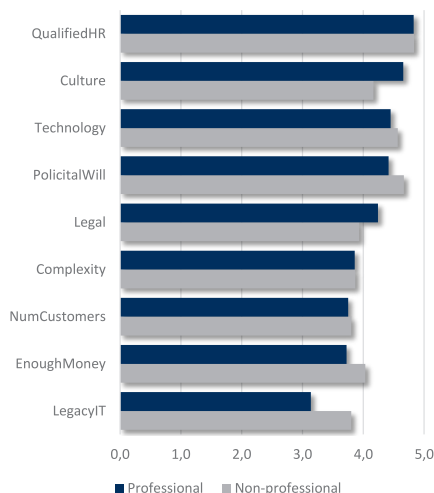


Figure 2. Average Scores for E-government Drivers across Professionals and Non-professionals

Conducting the t-test (hypothesis of equal variances rejected with $p = 0.006$) for differences on the ratings of culture between professionals and non-professionals yielded a t-statistic of $t = -2.091$, $df = 45.372$. This translates to a p-value of 0.042, thus reaching statistical significance at the 5% level. It seems that e-gov professionals consider culture to be much more important (mean of 4.66) than non-professionals (mean of 4.17). On the other hand, there is also a significant difference in perceptions for the importance of legacy IT systems. The t-test (equal variances assumed) here resulted in a t-statistic of $t = 2.473$, $df = 57$, translating into $p = 0.016$. It seems that non-professionals attach greater importance to the presence of legacy IT systems (mean of 3.80) than professionals (mean of 3.14). In short, non-professionals underestimate the importance of culture but overestimate the importance of existing IT solutions with respect to professionals.

4.6. Key Underlying Themes

Using the data collected we can aggregate the different answers into underlying themes of importance by means of a Factor Analysis. This approach is useful to cluster common ideas together, to sharpen the focus of results, and to present actionable implications for practitioners (Child, 2006). This method is also used in the literature and common for the field of e-governance (e.g. Ayele & Juell-Skielse, 2015). The analysis is again conducted in the SPSS statistical packages, using the Principal Components method, and showing the unrotated solution (Child, 2006; Gray & Kinnear, 2012, pp. 601-627). Since some researchers advise the use of a rotation method (Child, 2006, p. 51), an alternative solution with Varimax Rotation with Kaiser Normalization – the most common approach to rotation (ibid.) – was implemented. Results remained practically the same. The unrotated solution also seems to fit data well, with a KMO measure of 0.48, falling within the acceptable range of this statistic (ibid.).

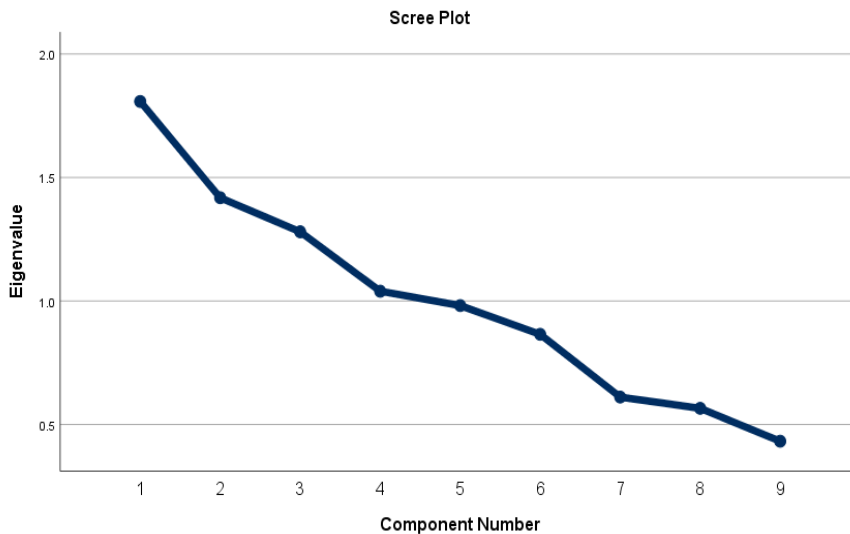


Figure 3. *Scree Plot for Factor Analysis*

Looking at the scree plot of the Factor Analysis solution (see Figure 3) there seems to be a clear point where the graph plateaus, which is after the third factor. Factors after that have eigenvalues of around or much less than one. Following the literature (Gray & Kinnear, 2012, pp. 601-627), it seems that both graphically, and numerically in terms of eigenvalues, the optimal number of principal components for our sample is three. Table 2 presents the factor loadings for the first most important three extracted components.

Table 2. *Factor Loadings of the Factor Analysis, method: Principal Component Analysis*

Component	1	2	3
Enough Money	.594	-.309	.205
Qualified HR	-.053	-.389	.436
Technology	.692	-.225	-.039
Legacy IT Systems	.724	.068	.317
Number of Customers	.023	.690	.317
Complexity	.144	.330	-.563
Culture	.077	.504	-.068
Legal	.641	.328	-.235
Political Will	-.103	.411	.684

Principal component 1 is characterized by high loadings of the variables, connected with legacy IT systems, IT resources, legal requirements, and monetary resources. These loadings seem to characterize the large theme of resources and constraints in general, thus giving support to the importance of the resource-based view. The number of customers, the organizational culture, and the political will have high loadings on Principal component 2, making it reflect concerns about the organizational context of implementing new e-government solutions. Finally, Principal component 3 marks high loadings of the political will, complexity of service, and qualified human resources variables. We conjecture that this component reflects implementation challenges.

In short, the major themes uncovered in the factor analysis are that questions cluster around three important groups of concerns – available resources, organizational context, and implementation issues. The former reflects the importance of economic and other resources for the development of new e-government solutions, while the latter two

correspond to the importance of organizational and political factors.

5. Discussion

Global ranking initiatives for the development of e-government such as the UN E-government Survey (UN, 2016) clearly show that while some progress in the field of e-government has been made, there remains a lot more that needs to be done, particularly in less socio-economically developed countries. The low level of e-governance precludes those countries from fully reaping the benefits of the digital transformation of the public sector. This clearly begs the question of what factors are important for the development of new e-government solutions, which is what this research focused on.

The empirical evidence is rather mixed, pointing to the importance of both resource-based drivers (Sing et al., 2007; Kim, 2007; Al-Adawi et al., 2005) and social, political and cultural drivers (Serrano-Cinca et al., 2000; Monoharan, 2012). Recent research has underlined the importance of both, but emphasized the crucial role of process and project management (Mkude & Wimmer, 2015). This wealth of (sometimes diverging) insight poses difficulties for practical implementation as e-governance practitioners only have the resources to focus on a few key issues that unlock most value. This research paper has leveraged the rich literature (Rana et al., 2013, Mueller & Skau, 2015, Anthoupoulos et al., 2016) to outline nine key economic, social, political and legal challenges and investigate and rank their relative importance for new e-government solutions development. This was done by studying e-government stakeholders' opinions in a relatively less developed member state of the European Union – Bulgaria. The research was conducted via means of self-administered web questionnaire and then data was quantitatively analyzed via means

of ranking average values, executing t-tests, and conducting a factor analysis. Efforts were made to minimize the ethical implications to the participating respondents by ensuring anonymous and confidential conduct of the research, and following good practice in data storage and analysis.

For the Bulgarian case it seems that monetary resources, legal constraints, number of customers, complexity of the processes, and the presence of legacy solutions play a relatively minor role. The key unlocking factors for new e-government solutions development is the availability of enough qualified human and IT resources, together with a supportive intra-organizational environment (in terms of culture and political will). Using a factor analysis, we observe that the responses nicely cluster among three main dimensions – resource availability, organizational context, and implementation possibilities. Furthermore, there is large agreement on the relative importance of different factors between professionals in the field of e-government and non-professionals with only two exceptions – non-professionals overstate the importance of legacy systems and understate the importance of administrative culture. Those results clearly show that non-technological and non-budget considerations are the main driving forces behind e-government development in Bulgaria, according to the studied sample. This answers our exploratory research question and underlines the greater importance of “soft” factors (non-resource determinants) such as people and organizational environment rather than hard factors (resource determinants) such as budgets and presence of legacy systems. Such research has not been conducted for the Bulgarian case (and indeed for most of CEE) and clearly underlines that a major shift of policy focus is needed. Those novel findings point at the importance of soft factors for

rolling out e-government solutions in Bulgaria and can give guidance to both academics and practitioners on how to accelerate this process.

Those results are the theoretical contributions of this paper and are also in agreement with other studies with different sample frames (e.g. Siau & Long, 2015, Mueller & Skau, 2015, Anthouopoulos et al., 2016). We should note that recent literature also considers a broader set of factors beyond socio-economic determinants, most notably behavioral characteristics (see e.g. Rana et al., 2015; Rallis et al., 2018), that have impact on e-government implementation. However, the growing consensus in the literature seems to be that structural socio-economic factors have large impact on e-government implementation in the ideation, design, and development phases (Ziemba et al., 2015) while individual-level characteristics of citizens have a large impact on later usage and impacts during the operational phase. Given the structural deficits of e-government in Bulgaria, this paper aims to contribute insight into how to jumpstart e-government projects, while acknowledging that further work will need to be done to understand additional drivers. An additional consideration for this paper's focus on socio-economic determinants is that these are mostly amenable to public policy interventions. While behavioral factors and cultural context and perceptions change only slowly in response to policy, socio-economic determinants such as financial and human resources, political, and legal issues can be changed more rapidly in order to support the accelerated development of e-government solutions.

While these results are useful, they should be interpreted with proper care, as the study has some limitations. First, the sample was not collected as a random sample and may thus turn out to be not representative of the

general population. The study was conducted in Bulgaria alone – a country at an average level of socio-economic development – and thus results may not be readily generalizable to less or more developed countries. Finally, the study here explicitly focused on the concept of e-government thus neglecting the issue of e-democracy. It may very well be the case that different drivers are important for e-government (provision of public services online) than are for e-democracy (enabling citizen participation through ICT-enabled tools). Within those limitations, the study was designed to provide both valid and reliable data. To ensure validity, we used a common and well-tested instrument to collect data from a relevant sample of stakeholders. The agreement of the obtained results with previous research (Rana et al., 2013; Siau & Long, 2015) suggests that there is external validity, while the research design and implementation following best practice (Denscombe, 2010; Sue & Ritter, 2007) aimed to ensure internal validity. In terms of reliability, again best practices were followed (ibid.) using the same instrument under the same conditions for measurement. The almost unanimous agreement on the importance of factors between the two study sub-samples (professionals and non-professionals) suggest that measurement has been reliable in practice.

Conclusion

Concluding, the current research focused on investigating the organizational, political, and economic factors of the development of new e-government solutions in a country of an average level of socio-economic development. This study builds upon existing and sometimes contradictory literature on this issue and further enriches the field by investigating a previously unexplored case – Bulgaria. We find that social, cultural and

organizational factors are leading drivers for the development of e-government solutions according to our group of respondents. While there are certain limitations to the study, results are in agreement with other research in this area.

The practical policy implications of these findings are clear – the focus of e-gov policy needs to radically shift away from budgeting and procurement and emphasize human and organizational development instead. Doing this holds the potential to accelerate the development of e-government solutions and unlock tangible social value for the implementing countries. A note on the ethical implications of these findings needs to be made here. A possible refocusing of resources in the field of e-government following a political decision to act on these recommendations will lead to a redistribution that will leave some e-governance actors with less resources than they have now, while leaving others with more. These effects might impinge negatively on some agents, and this needs to be carefully mitigated in the process of policy-making and implementation.

There are further directions of research that will enrich the conclusions presented here. Firstly, it would be useful to conduct a similar survey in countries of different levels of socio-economic development, both within the outside the EU context. This will allow us to discern if there are universal drivers (and which they are) or if they are country-specific. Secondly, a larger pool of different factors may be tested with possibly larger samples to boost both the information pool and the statistical power of tests. Thirdly, such research questions can aptly be extended to e-participation to outline what drives e-democracy solutions.

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Appendix 1: Survey Questionnaire

1. What is your gender?

- Male
- Female
- Prefer not to say

2. What is your age?

- 18-25 years
- 26-35 years
- 36-50 years
- 50-65 years
- 65+ years

3. What is your level of education?

- Less than high school degree
- High school degree
- Bachelor degree
- Master degree
- PhD degree

4. What sector of the economy do you work in?

- Private sector
- Public sector
- Civic sector
- University or research institute
- Unemployed

5. How do you come in contact with e-government services?

- As a citizen or user of e-services
- As a vendor or developer of e-services
- As a public official in charge of e-government and IT solutions
- As a researcher in the field of e-government and IT solutions
- As a student of e-government and IT solutions
- I have never used or been in contact with e-services

6. How important do you think is the availability of enough monetary resources for the development of new e-government solutions?

1	2	3	4	5
Not at all important				Very important

7. How important do you think is the availability of sufficiently qualified human resources for the development of new e-government solutions?

1	2	3	4	5
Not at all important				Very important

8. How important do you think is the availability of technological resources and connectivity for the development of new e-government solutions or functionalities?

1	2	3	4	5
Not at all important				Very important

9. How important do you think is the presence of legacy IT systems for the decision to develop new e-government solutions or functionalities?

1	2	3	4	5
Not at all important				Very important

10. How important do you think is the number of internal and external customers for the development of new e-government solutions?

1	2	3	4	5
Not at all important				Very important

11. How important do you think is the business process complexity of the paper-based service for the decision to develop a new e-government solution that simplifies processing?

1	2	3	4	5
Not at all important				Very important

12. How important do you think is the organizational culture for the development of new e-government solutions?

1	2	3	4	5
Not at all important				Very important

13. How important do you think are the legal requirements and imperatives for developing new e-government solutions?

1	2	3	4	5
Not at all important				Very important

14. How important do you think is the political will of elected officials for the development of new e-government solutions or the upgrade of old ones?

1	2	3	4	5
Not at all important				Very important