A self-reflection of municipal IT professionals in small Romanian city administrations

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Abstract
E-government usually studies focus on outcomes or user opinion. Our attempt is to see this also from the point of view of IT professionals that work in public institutions. Big cities will always be on the forefront of using new technologies in their day-to-day work and, because of that, they are usually the subject of researchers wanting to study this field. But most Romanians live in small cities, towns and villages. We are also interested in the pace of e-government development in these municipalities.

After the 2017 study that focused on big Romanian cities, this year we follow up with a more comprehensive research, which aims to find out how e-government is implemented in small urban municipalities in Romania. Our research aims to learn how successful the implementation of e-government services in Romanian local government is in the eyes of those tasked with rolling out these services. E-government is no longer a new development in the public institutions' continuing search for better service. The interaction between citizens and companies, as well as the government, are constantly evolving, and new ways of doing things are regularly tested and adopted or discarded.

Keywords: *e-government, local government, public servants' view, Romania*

1. Introduction

Any digital interaction requires at least two parties, which, in the case of digital government, are usually citizens or companies (accessing services offered online) and public servants or public institutions (as the providers of said services). When trying to find out the success of one e-government project or another, most researchers turn, understandably, to the beneficiaries. Citizens' opinions on the level of government digital development feature prominently in a fair number of studies. The voices of public servants seem to be less heard, even if they are also using the services in their day-to-day work. Among the public employees, ICTs professionals are instrumental in designing, implementing, upgrading, and troubleshooting the digital offerings of the public institutions. Following the 2017 research, which focused on Romanian big cities, this time we are taking a closer look at city halls from small cities and towns and their ICTs specialists and analyzing their opinions on e-government development in Romania, both in their institutions and at the national level.

Like any important concept, e-government has an increasing number of definitions. Back in the day, when e-government was a new topic, those definitions dealt mainly with technological aspects and insisted on the process (web usage, the role of the internet infrastructure) [7] [9]. After the novelty wore out, researchers began looking into the perceived benefits of e-government, focusing their

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characterizations on the improvements it could bring for the public institutions and in their relationships with the other actors [6], and how this new innovative way of doing things is benefitting citizens, companies or other public institutions [11]. What all these definitions have in common is an undercurrent of optimism about the benefits that the increasing sophistication of the digital services offered by the government, both local and central, can bring to society at large. Those benefits include increasing the productivity of public servants with the help of new technologies, increased transparency and accountability, better services offered to ”clients” (in the parlance of New Public Management proponents), and cost reductions, spurred by the increased automatization of processes inside institutions [8] [12].

This sunny outlook is dimmed a little nowadays, with some researchers pointing out that the hyped revolution in governance did not come to pass. Big differences between the expected and actual results made some experts to critique the technological determinism undertone that permeates this study field and to discount almost entirely any influence of ICTs on public institutions [13]. Even if they do not go that far, a number of studies point to the complications e-government projects encountered when moving from the drawing board to real life [14] [16]. A lot of these obstacles are embodied not by technological hurdles, but by the way people tasked with implementing these changes chose to treat the transformations that the increasing digitalization of public services brings (on a spectrum that stretches from enthusiastically embracing these changes to fiercely opposing them). Human capital in general is largely seen as essential for the success of digital projects and every effort should be made to increase the digital literacy of citizens so as to be able to understand and use the new services [3]; a higher level of digital knowledge also helps people in their day to day lives (online shopping, internet banking, on-demand media, online education are just some of the services that would be impossible without the last technological revolution and equally impossible to benefit from without at least basic digital skills).

For digitalization of government to work, the computerization of the public institutions (installing the technological infrastructure and creating or buying the necessary software) is not enough. The trickiest problem e-government projects usually encounter is convincing the public servants that this transformation is for the better, not only for citizens, but for the institution and for them as well [5]. The few studies on the attitudes of IT professionals from government institutions regarding e-government projects show that management support, interoperability and digital skills are seen as the main obstacles encountered in the quest to digitalize services [1].

If we look at e-government success stories throughout the world, countries that advance rapidly in this field are usually those that implement a well thought-out national strategy [2] [14], with as little political horse-trading on this topic as possible; such a national strategy usually takes much more than the typical 4 years of a ministerial term.

Electronic government development is mainly measured at country level. This preference stems partially from the type of organizations that have the knowledge and resources to do such studies and that are mostly international bodies of one kind or another – United Nations, The European Union, The Organization for Economic Co-operation and Development. These rankings provide a very good general overview, but, inevitably, lack the granularity to show differences between regions or municipalities inside countries. These differences matter, especially in countries such as Romania where the drive to modernize government and implement online services is not mainly a centralized effort, but a patchwork of local movements, each with its somewhat different characteristics.

Citizens are more interested in what happens inside their community because those developments have a direct effect on their well-being. The relationships between citizens, NGOs and companies, on the one hand, and local government institutions, on the other, are essential in making a community work. As such, studies that focus on local e-government or the way municipalities adapt to the changing technological and societal environment have started to become more common in the last 15 years [4] [10] [15].

2. The Situation in Romania

Romania offers a mixed bag in term of e-government successes. The first coherent national strategy on e-government development was published in 2008. Afterwards, the subsequent strategies were driven by the requirements of the European Commission and the targets Romania agreed to inside the Digital Agenda and the Europe 2020 strategies. However lofty the ideals espoused in those documents, in reality a centralized effort to implement the required tools, so that the different particular IT solutions adopted by Romanian public institutions could interconnect, was almost non-existent from 2008 onwards. There are some successful national initiatives (the public procurement platform, a payment platform for public institutions), but even those are not properly integrated into a national system.

Partly because of the slowness in developing digital government at the national level, many local government institutions developed their own bespoke solutions that, inevitably, could not be seamlessly integrated because of lack of shared standards and compatible infrastructure. Even inside local public institutions, there are seldom standards in place that require intra-institutional compatibility (for example rules demanding that the software bought by one department should follow a set of requirements so as to be possible to interconnect it with software already in place in other departments).

Romania is constantly ranked at the bottom of various classifications related to electronic government in Europe, in spite of a well-developed ICT sector and available European funds specifically allocated to digital government development. This image is a coarse one, and can hide very different levels of sophistication regarding the online services offered to citizens and companies by the different municipalities in Romania. In this regard, it is no surprise that big cities fare better. Their public institutions (mainly the city halls, because most of the services offered by the local governments are provided by city halls) have gradually increased the number and quality of online services delivered to citizens and companies. They are not on par with digital champions such as Barcelona, New York or Singapore, but they are steadily (although slower than a Romanian would like) moving in the right direction [15].

But not all Romanians live in big cities. More than 43% of people in Romania live in rural areas (among the highest proportion in the European Union). Even in the case of urban dwellers, only a little over half of Romanians live in cities bigger than 100,000 inhabitants. We were interested to see how e-government is perceived in small cities and towns that usually do not have the resources, know-how and trained workforce that bigger cities enjoy. We were interested in the inside view of public servants and not in the opinion of citizens this time, and for this we chose to ask the ICTs professionals in city halls in these towns their views on e-government progress, both inside their institutions and in Romania as a whole.

3. Methodology

We sent questionnaires (both online and by mail) to towns and cities in Romania with a population of under 40,000. The survey was aimed at the heads of IT departments (whatever they were called) in their city halls and, if no such department existed, the person responsible with answering citizens' questions was asked to respond to our queries. In some cases we talked on the phone with the responsible public servant to clarify some of their answers.

There are 263 towns and cities in Romania that fit that profile. For this study, we selected just the city halls that had a functional IT department (with at least 1 person working there at the moment of filling in the questionnaire). From the 125 responses we collected, 54 had no IT department in their institutions, and 11 more had some positions in their organizational chart, but they were not filled. After pruning some incomplete answers, we were left with 56 usable responses.

The towns and cities varied in size from 1,684 inhabitants to 38,970 and all regions of the country are represented in this sample. Data were cleaned with Google Refine and analyzed with the help of Microsoft Excel and Tableau Desktop.

In the 56 city halls that constitute our study population, most had only one IT specialist in their institution. In just 12 cases their IT unit consisted of two or more (just 2 instances) people.

We started our research with 4 hypotheses:

1. Romanian public institutions (in our case, City Halls) experience difficulties in filling IT positions;

2. Management support and internal reorganization of the institution are seen by the IT professionals as very important in e-government development;

3. The main obstacles in e-government development are lack of interinstitutional interoperability and the differences between pay in private versus public organizations;

4. Public pressure is an important factor in implementing electronic government.

But first, some general findings that became apparent after analyzing the responses we got. The problems faced by public institutions in small cities are somewhat different from those encountered by those in bigger cities in Romania.

4. Findings

To gauge the stage of their local electronic government, we asked them to tell us the online services they provide and their usage count. The most numerous online services present on their websites were, in order: paying taxes online (34 of them said they have such a system but only 19 were able to give us any user numbers); paying fines online (32 cities offer this service, but only 18 had any hard numbers) and filing a complaint online (with 13 institutions providing this option and 12 of them giving us statistics).

Regarding paying taxes online, which is seen by many as the most sought-after online service, the numbers show that a small percentage of citizens take advantage of this even when it is available:

City Hall	% of population paying taxes online
Roznov	1.94
Câmpia Turzii	1.59
Târgu Neamț	1.38
Boldești-Scăeni	1.22
Pantelimon	1.12
Reghin	0.75
Câmpulung	0.66
Gura Humorului	0.49
Vălenii de Munte	0.46

Table 1: Percentage of population paying taxes online

In their evaluation of the current state of government digitalization, 11 respondents think that the national level is lower than the local level, 10 think the opposite, while the remaining 35 consider that both the national and their own city are at about the same level of development. This contrasts with the results from last 2017 (which looked at the big cities in Romania), where the IT professionals who responded were much prouder of the achievements of their own institution compared to the perceived national level.

We asked the respondents if they had any previous work experience in a private IT company before coming into a public administration organization. Of the 56 usable answers, we found out that only 10 of them had worked in a private organization. Their marks on the level of electronic government development, both in their town, and in Romania as a whole, hovered around 2.65-2.70 out of 5, irrespective of their working experience. We were also a little surprised to find out that there are relatively few young people responsible for taking care of the technological infrastructure of the responding city halls: 55 shared their age, and only 8 were under 35 (only one under 30).

A pleasant surprise was the big increase in the number of agreements for data exchange between the city halls and other public institutions. More than 50% have such arrangements, and 14 out of those share data with more than one institution. The champion here is again the National Agency for Fiscal Administration (NAFA), but the field is increasingly crowded, with links between public organizations being created at a rapid pace. We must keep in mind that we are talking about small cities and towns that, presumably, have less interest and resources to forge such ties.

There is a sense of urgency in the responses from IT professionals in public institutions. For instance, 64% of respondents think that increasing the sophistication and breadth of online services in Romania is urgent or very urgent, and only 9% say that we should pace ourselves. The results are consistent with our own experience in interviewing IT experts from public and private institutions, who are almost universally exasperated by the slow pace of innovation in government. This is also evident from the proliferation of civic tech organizations (such as Code4Romania, Geeks4Democracy and others) that try to help public institutions design, implement, troubleshoot and improve ICT solutions to different problems inside communities with more speed than the glacial pace usually encountered in government.

Each Romanian municipality is required by law to have a strategic plan for its development. Electronic government was not mentioned in any of those we found, which is in sync with the low priority that digital transformation is given from the central level of government. Data are also non-

existent regarding the intended recipients of online services: no city hall knows how many of its citizens use the internet and how (for example, what is the percentage of mobile users, to be able to design services accordingly), what the level of digitalization of companies and especially small and medium enterprises is (which would benefit most from an easing of the bureaucratic burden) and what the served citizens or companies would want. This dearth of data is encountered not only in small cities and towns, but in big cities also, and is replicated in most Romanian public institutions, not only city halls.

Finally, the gender of respondents is fairly balanced, with 42 percent females and 58 percent males.

5. Testing the hypotheses

One of the starting hypothesis was confirmed, while for two others the answer is more nuanced, the responses suggesting the problems are more complicated than we thought. One was refuted altogether.

The following two tables show the main obstacles encountered by the respondents in implementing online services in their institutions, and the main beneficial factors that help in this goal of digitizing local government in their communities (the grades are from 1 to 5, with five being the highest value).

	Average score
Lack of financial resources	4.20
Difficulty in competing on pay with private companies	4.00
Lack of trained personnel	3.95
Lack of interinstitutional interoperability	3.78
Lagging internal IT infrastructure	3.71
Outdated internal procedures	3.66
Obsolete internal structure of the city hall	3.55
Lack of management support	3.50
Lack of openness and transparency	3.22
Lack of public pressure	3.07
Lack of immediate results	2.95
Slow internet connections	2.89

Table 2: The most important obstacles in implementing online services in Romanian public institutions

	Average score
Well-trained people in the IT department	4.37
Management support	4.30
Legal constraints	4.24
Sufficient ITC equipment	4.23
Sufficient financial resources	4.22
Good relationships with ITC and digital solutions providers	4.13
Citizen's increasing usage of private online services	3.74
Ties with other public institutions	3.72
Obtaining visible results fast	3.65
Rethinking internal processes	3.49
Pressure from the public	3.17
Internal reorganization of the city hall	3.13

Table 3: The most important beneficial factors helping online services implementation

First hypothesis: *Romanian public institutions (in our case, City Halls) experience difficulties in having IT positions filled.*

This hypothesis is confirmed by the responses we collected. Managers are having difficulties filling ICT positions in their institutions, and they are aware that this is an important problem – the highest average marks of all the beneficial factors was having well-trained people in the institution's IT department. From discussions with people that filled in the questionnaire, we found out that the reasons that small cities and towns are having trouble finding good people for specialized positions are, if anything, more insoluble that those encountered in big cities.

Public administration organizations in small cities and towns find that they have to fight for an increasingly smaller number of IT professionals (because most of them have moved in bigger cities, where they have better prospects) with private companies that can offer a bigger salary, extra benefits and more opportunities for career development. There is a general lack of trained specialists in all technical fields, but, because of the great expansion in the ICT sector in Romania, these experts are more sought-after than ever. It does not help that small municipalities overwhelmingly lack tertiary education so the best and brightest tend to move for university studies in bigger cities and tend to stay there, snatched by IT companies. Even if there are available job-seekers with the necessary skills, the pay that can be offered by a public institution is stipulated by law and, for people with little or no work experience especially, is pretty low.

A possible answer would be for more governmental institutions to pull resources together and use common solutions developed with interoperability in mind from the start. For this, the legal framework would have to be adapted to accommodate such an initiative and turf wars to be minimized. Civic tech organizations could help too, but they are not a panacea, they are a Band-Aid to be used in select cases.

Second hypothesis: *Management support and internal reorganization of the institution are seen by the IT professionals as very important in e-government development.*

This hypothesis was only partially confirmed. The two items related to this in our question about the obstacles in electronic government development (obsolete internal structure of the city hall, and outdated internal procedures) scored 3.66 and 3.55, respectively, out of a maximum of five. The item in our question about the beneficial factors helping the digitalization of their institution (internal reorganization of the city hall) scored dead last – 2.5 out of five. This has to do also with the lack of authority of the head of the IT department from within the institution (for example, heads of other departments can usually buy hardware and software without the approval of the specialists in the institution). Because there was, in the vast majority of cases, no study about the internal processes and workflows of the organization, there is no theory about how these could be redesigned and improved.

Because of this lack of clout of the IT professionals inside public organizations, it comes as no surprise that management support comes at the top of perceived beneficial factors. In a hierarchical organization such as a Romanian city hall, power and authority come from the boss (the mayor); if she or he understands a little about technological change and the transformations it brings and is willing to support such projects, things stand a much better chance to be implemented; if not, their odds of being brought to fruition are usually slim to none.

Third hypothesis: *The main obstacles in e-government development are lack of interinstitutional interoperability and the differences between pay in private versus public organizations.*

This hypothesis was partially confirmed. The two obstacles we expected to impede most were in the top 4 of those ranked by our respondents, but what is perceived as the biggest problem is the lack of financial resources. This worry is bigger in towns than in big cities for a number of reasons: most municipalities in Romania are dependent on money disbursed discretionarily by the central government even for day-to-day operations, not only for investments. This saps projects that span over years and need clear commitments and resources (among them – money) to come to fruition. This only exacerbates the difficulties public institutions face in recruiting good people that can implement digitalization and can design and put into practice solutions to link their databases and software with other governmental organizations in order to offer better services to citizens and companies.

It is true that in 2017 pay in the public sector increased on average, but the difference in pay between the private IT companies and public ones is far from being bridged. Another problem is the lack of attractiveness of public sector jobs: such a career is seen mostly as dull, repetitive and lacking personal improvement opportunities. No city hall in Romania had the audacity and the resources to create something like Boston's New Urban Mechanics unit; small cities and towns can only dream of something like that.

The fourth hypothesis: *Public pressure is an important factor in implementing electronic government.*

This hypothesis was not confirmed. Both in our list of obstacles in electronic government implementation and in that of beneficial factors that could help digitalization, the item related to public pressure was ranked in top three from the bottom. This surprising (for us) result may have to do with the lack of established communication channels between local public institutions and the communities they serve. Changing this culture, reinforced throughout the communist times, is hard. Governmental organizations are mostly insulated from the public and they find it hard to fathom

that people or companies might have an important role to play in devising and implementing public policies.

The first signs of change started to appear (a number of city halls have started participatory budgeting projects, for example), but these changes are taking place predominantly in big cities. It does not help that the average level of digital skills in small municipalities is lower than in big ones, and people are not that familiar with what can be achieved with the help of new technologies.

6. Limitations and further research

The results could be refined by conducting in-depth interviews with some of the respondents, because the responses could, in this way, be greatly expanded, and the insights gathered greatly enriched. Another avenue of research is collecting responses (through surveys, interviews or both) from other types of local public institutions besides city halls and seeing if things differ in one way or another in other parts of the government.

At the same time, responses collected from IT professionals in central government organizations could bring a different perspective, and possibly shed some light on trends noticed during data collection (for example, the lack of centralized digitalization projects in Romania).

7. Conclusion

It is tempting to berate public servants working in the IT departments in Romanian small municipalities for the slow pace of technology-driven transformation in their institutions. Our opinion is, on the contrary, that they are doing, by-and-large, all that could be expected from them, with the resources they have available. In fact, even the name ”IT department” is a misnomer: in the vast majority of cases, it consists of a single person, and their job is much more one of tech support than designer of the digitalization strategy. The low priority given to electronic government and the respondents’ frustration with this is apparent in most surveys and much more so in the one-to-one conversations we had.

The lack of basic tools to be used in all Romanian governmental organizations that can help with integrating existent or future digital solutions (for example standards or national registries, to name but two) is a big hurdle and it will plague electronic government in Romania for as long as it will stay valid.

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