

Digitalization of Public Services and the Services Quality Perception

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Abstract

The digital era has changed all sides of our life. Citizens expect a greater number of digital services not just in their personal life, but also when interacting with government agencies. Despite its multiple advantages, the digitization of Romania's public sector is still difficult to achieve. Adoption barriers range from privacy concerns and user opposition to individualized ability limitations. To get the most on the positive impacts of digitalization in public services, the crucial first phase is likely to be setting up digital trust. Therefore, public administrations ought to take part in digital trust building to get over current obstacles to digitalizing public services and to build a modern, efficient, and citizen-oriented administration. Another important aspect is the degree of digitization of civil servants, but also the digital education level of citizens, combined with the socio-economic context, access to new technologies and the presence of specific equipment. In this context, I conducted a study in one of the counties of Romania characterized by a low economic level. The majority of research participants (N=323) indicate the use of social networks with a daily frequency, in the current activity, the transfer does not occur. Also, the lack of concern of the local authority to increase the digitization level of civil servants makes the use of modern means of interaction not possible.

Keywords: digitalization, public services, services, quality perception.

JEL classification: M31.

1. Introduction

In the current global context, public administration faces a major challenge. This challenge concerns the way in which the citizen interacts with the state institutions. Most of the time, the citizen-public institution interaction can also be managed in a format where the benefits of modern technology solve many of the requests.

2. Research objectives

In this sense, we will carry out a quantitative research in Călărași county. In this sense, we will carry out an opinion poll based on a questionnaire to which all representatives of the UATs from Călărași and Teleorman counties will be invited to participate. Through the questionnaire, we aim to capture elements essential to the concept of digitization, namely: the

degree of digital education of UAT representatives, the existence of concrete projects regarding the digitization of public services, the perception of the importance of migrating to the digital area, the use of specific tools this field etc.

3. Results

Starting from the previously presented objectives, we created a questionnaire in which we sought to capture the following aspects:

1. The frequency of using digital services in personal activity to pay bills, fees and taxes;
2. Use of social networks for personal purposes;
3. The existence of a web page of the institution that the respondent represents;
4. The existence of Cloud resources/applications of the institution that the respondent represents;
5. The percentage of employees who use the Internet to perform tasks specific to the activities/processes within the institution you represent;
6. The average age of employees in the institution;
7. The degree of digital literacy of the institution's employees;
8. The percentage of employees who participated in training courses aimed at increasing employees' digital skills;
9. Services offered to citizens for payments/access in digital format;
10. Percentage of fees and taxes paid digitally in 2020 and 2021;
11. Appreciation of the level of digital education of the community to which it provides public services;
12. The role of digital literacy of civil servants in the process of relating to the local community;
13. Possession of a digital skills attestation certificate at the level of civil servants;
14. The perception of digitization – factor for improving the public services offered;
15. The level of institutional digitization;
16. Competences of public service customers to use digital public services;
17. Socio-demographic elements.

According to public data, Călărași County has a number of 55 UATs (municipalities and cities), the organizational structure respecting the algorithm Mayor, Vice Mayor (between 1 and 3 positions depending on the size of the community), General Secretary, Deputy General Secretary, Administrator. According to the data provided by the National Institute of Social and Economic Statistics (INSSE), the structure of the population of Călărași County is as follows:

Table 1. The structure of the population of Călărași County

Age	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
Urban	6.122	5.996	8.906	8.963	9.649	9.460	12.202	6.514	27.860
Rural	11.102	10.258	12.922	11.970	6.878	7.604	16.933	8.101	41.793
Male	8.859	8.476	11.375	10.946	11.146	12.258	14.825	7.398	28.717
Female	8.365	7.778	10.453	22.899	23.968	11.710	14.310	7.117	40.936

Source: Authors.

Therefore, we note the fact that, at the level of Călărași county, 57.14% of the total population comes from the rural environment, while 42.86% comes from the urban environment. At the same time, we note a higher share of female persons (56.41%) compared to male persons (43.59%). Starting from these data we notice a large share of the population in the rural area, therefore it is assumed that there is not a very high level in terms of the use of tools specific to the concept of digitalization of services offered by public institutions (online

payment of taxes and local taxes , the use of resources such as the online registry, the one-stop shop, etc.). In this sense, for the quantitative research, the sample used includes a number of 323 people (N=232), of which 56% are female and 44% male. The age of the respondents is between 22 and 68 years.

Table 2. Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	323	22	68	48,24	8,255
Valid N (listwise)	323				

Source: Authors.

From the point of view of completed studies, we note that the highest percentage is that of university graduates (61.9%), followed by high school graduates (19.2%), master's studies (9.9%) and graduates of vocational school (8.4%). Next, the participants in the quantitative research were asked to evaluate the frequency with which they use the tools specific to digitized services (paying invoices, paying fees and taxes, obtaining various documents provided by the local authority) on a personal level. In other words, we aimed to identify the existence of a predisposition to use digital services. Thus, the recorded results revealed that 77.4% of the respondents are users of digitized services ("often", "very often", "always"), while 15.8% use them only with a very low frequency and not at all.

Table 3. Evaluation of the frequency with which they use the tools specific to digitized services

How often do you use digital services in your personal work?			
		Frequency	Percent
Valid	Never	15	4,6
	Rarely	7	2,2
	Rare	29	9,0
	Frequently	159	49,2
	Very often	73	22,6
	Always	18	5,6
	I can't appreciate it	22	6,8
	Total	323	100,0

Source: Authors.

We note that, among women, there is a higher predisposition to use digitized services, compared to men.

Table 4. The use of digital services by gender

How often do you use digital services in your personal work? * Sex Crosstabulation				
		Sex		
		Female	Male	Total
How often do you use digital services in your personal work?	Never	3	12	15
	Rarely	5	2	7
	Rare	19	10	29
	Frequently	84	75	159
	Very often	42	31	73
	Always	15	3	18
	I can't appreciate it	13	9	22
	Never	181	142	323

Source: Authors.

We underline the fact that the highest frequencies regarding the use of digitization services are recorded at the age of 52 years (12), 50 years (12), 48 years (11), 40 years (14).

According to the "last school graduated" criterion, we note that the highest frequency of use of digital services is registered among university (faculty) graduates, respectively 101.

Table 5. The use of digital services according to the criterion "last school graduated"

How often do you use digital services in your personal work? * Last school completed Crosstabulation							
Last school completed							
How often do you use digital services in your personal work?		Vocational school	High school	Faculty	Masteral	PhD	Total
Never		4	6	5	0	0	15
Rarely		0	2	4	1	0	7
Rare		3	9	15	2	0	29
Frequently		14	30	101	13	1	159
Very often		3	8	50	11	1	73
Always		0	1	13	4	0	18
I can't appreciate it		3	6	12	1	0	22
Total	Never	27	62	200	32	2	323

Source: Authors.

Regarding personal digital behavior (use of social networks), we find that 94.7% of respondents are users of social networks, while only 5.3% say they do not use these tools. Furthermore, 85.76% identify a daily frequency, while 7.43% identify a weekly frequency, and 1.86% a monthly frequency. The recorded data reveal a more frequent use among women (173) compared to men (133), but also a higher share among university graduates (189).

The representatives of the UATs from Călărași County who participated in this research indicated, in proportion of 90.7%, that the institution they represent has a WEB page. Therefore, we can assume that the existence of the WEB page has a purely informative role. This assumption is based on the fact that for the item related to the use of Cloud solutions, only 26% of UATs indicate their existence, while 32.8% mention the fact that they intend to turn to such solutions. Therefore, the assertion that the simple WEB page of the institution does not meet specific needs such as digitalization of services is correct. However, a percentage of 30.7% mentions the fact that "u is the case" in the use of Cloud solutions. In other words, it is assumed that, within the respective communities, the number of citizens who benefit from public services is very low in terms of the use of modern solutions. This aspect will be investigated in depth in the qualitative study.

Table 6. The use of Cloud solutions

Does your institution use cloud resources?			
		Frequency	Valid Percent
Valid	No, but we plan to move to the Cloud area	106	32,8
	Yes	84	26,0
	No, that's not the case	99	30,7
	I don't know the term cloud	34	10,5
	Total	323	100,0

Source: Authors.

At the same time, we also note the percentage of 10.5% of respondents who state that they do not know the term Cloud. Or, in the context in which the National Recovery and Resilience Plan (PNRR) was launched at the level of the European Union, having a significant component along the lines of the digitalization of public services vector, we can conclude that at the level of the respective UATs that identified this response, the level of digital literacy is very low. Therefore, the existence of a very low level of digital literacy among decision-makers (mayor, vice-mayor, local council, public administrator, etc.) leads to the impossibility of modernizing the public services offered. And therefore, at the level of the beneficiaries, it can

be assumed that there is a low degree of satisfaction with regard to the services provided. However, taking into account the socio-demographic structure of the localities (age, level of education, lack of modern payment instruments, low level of digital literacy) it can be assumed that the lack of digitization in the public administration does not represent an element that generates a low degree of satisfaction.

At the same time, the recorded data revealed that the average age of the employees in the UATs in Călărași County is 45 years (St.D = 4.635), while 39.6% of the employees are 50 years old. In this context, we note that for the item "Appreciate the degree of digital literacy of the employees in the institution" the officials between 50%-75% represent 41.2% of the total participants.

Table 7. Degree digital literacy employees institution

Degree digital literacy employees institution		Frequency	Valid Percent
Valid	<10%	11	3,4
	10%-25%	22	6,8
	25%-50%	64	19,8
	50%-75%	133	41,2
	>75%	93	28,8
	Total	323	100,0

Source: Authors.

Referring to the scale above 50% and below 50% digital literacy degree of public institution employees, we observe the fact that 30% of civil servants are not digitally literate. Therefore, the transition to the digitalization of public services offered by UAT represents a major challenge in the sense that the first stage of this process should be represented by their qualification. Thus, the number of civil servants who have attended digital skills improvement courses is very low. 22.9% of civil servants did not attend any course. Therefore, the very primary use of the computer or related software can be a major challenge, while only 6.19% have attended such courses. The recorded responses also demonstrate the fact that, at the level of some UATs in Călărași county, there is no real concern regarding the qualification of civil servants to increase their professional skills so that it is reflected in the quality of the public services offered. Or, in the context in which the direction, at the national level, is to make the transition to digitalization, we can appreciate that, in the absence of an orientation towards the qualification of the workforce in public institutions, the services provided cannot be at the expected level either.

Next, we analyzed the trend of the percentage of the population that chose to pay taxes and fees online. Thus, at the level of 2020, given the existence of the Covid-19 pandemic context, the recorded data show that the percentage of the population (below 10%) who chose to pay taxes digitally was 57.3%. In other words, of the total taxes, only 5.73% came from the use of digital platforms. Therefore, we can conclude that there is no predisposition of citizens to use these modern means. The explanation of this state of affairs could be given either by the advanced age of the beneficiaries (correlated with the fact that the majority are pensioners and, due to the lack of financial education, but also the lack of bank machines) who largely opt for receiving financial rights (pensions) in the classic format (postman) to the detriment of bank transfer.

Table 8. Percentage payment of local taxes and duties 2020

Percentage payment of local taxes and duties 2020			Frequency	Valid Percent
Valid	<10%		185	57,3
	10%-25%		61	18,9
	25%-50%		39	12,1
	50%-75%		25	7,7
	>75%		13	4,0
	Total		323	100,0

Source: Authors.

In 2021, there is a slight increase in the use of digital means of paying taxes and fees, being an upward trend, but not significant.

Table 9. Percentage payment of local taxes and duties 2021

Percentage payment of local taxes and duties 2021			Frequency	Valid Percent
Valid	<10%		165	51,1
	10%-25%		67	20,7
	25%-50%		57	17,6
	50%-75%		28	8,7
	>75%		6	1,9
	Total		323	100,0

Source: Authors.

Regarding the perception of the degree of digital literacy of the beneficiaries of public services, we find that 16.7% are indicated as having a "very low and low" level, while 52.7% are "undecided". In other words, the literacy level of the beneficiaries of public services cannot be assessed. In this sense, in the absence of a high level of digital literacy, it can be assumed that the transition to digitized public services does not represent an element that increases the degree of satisfaction of the beneficiaries. On the contrary, it can generate dissatisfaction and frustration in relation to the local authority.

Table 10. Assessment of the level of education and digital literacy of citizens

		Frequency	Valid Percent
Valid	Very low level	35	10,8
	Low	19	5,9
	Undecided	168	52,0
	Medium	54	16,7
	Above average level	6	1,9
	High level	13	4,0
	Very high level	28	8,7
	Total	323	100,0

Source: Authors.

However, 91.6% of respondents emphasized that the digital literacy of civil servants can represent an element that brings added value in terms of the relationship with the local community. In other words, the respondents appreciate the fact that the public services offered could register a qualitative increase through the digital literacy of civil servants.

Table 11. Digital literacy of civil servants

Appreciation digital literacy of civil servants is useful in the process of relating to the local community		Frequency	Valid Percent
Valid	No	4	1,2
	Yes	296	91,6
	I don't know	23	7,1
	Total	323	100,0

Source: Authors.

On the other hand, we note that 7.7% of the respondents indicate that they did not think about the possibility that "digitalization represents an improvement of the public services provided". This percentage demonstrates the fact that at the level of the respective UATs there is no pro-active approach aimed at increasing the quality of the services provided. At the same time, 85.6% of respondents indicate that "the digitization of services can represent an increase in the quality of public services provided." We mention that, from a strictly technical point of view, the digitization of public services involves a high degree of transparency and traceability of documents. In this context, the existence of subjective and interpretable situations decreases significantly.

Table 12. The services offered by the institution you represent could be improved if it were to go digital

		Frequency	Valid Percent
Valid	No	25	7,7
	Yes	2	,6
	I don't know	277	85,8
	Total	19	5,9

Source: Authors.

On the other hand, if we correlate this aspect with the low level of literacy of civil servants in certain UATs in Călărași County, we can assume that the resistance to change could also be determined by subjective reasons. Thus, the high level of age, combined with a low level of adaptability to the new socio-economic context can generate frustrations in terms of job loss, especially since the region is characterized by a high level of unemployment. At the same time, we note that only 40.9% of the participants state that they hold a digital skills certificate, while 27.6% appreciate that they intend to follow similar courses. In other words, for 40.9% of the respondents there is a concern along the lines of the professional skills development vector.

Table 13. Possession of a certificate of digital skills

		Frequency	Valid Percent
Valid	No	102	31,6
	No, but I intend to take such a course	89	27,6
	Yes	132	40,9
	Total	323	100,0

Source: Authors.

Starting from the data presented above, we formulated a first research hypothesis, respectively: the higher the level of education and digital literacy of the citizens viewed in the key of consumers of public services, the higher the percentage of payment of local taxes and fees picked up. In this regard. Using the SPSS software, we calculated the Pearson correlation coefficient ($r=0.477$, $p<0.01$), which indicates a statistically significant moderate positive correlation. Therefore, we can appreciate that the payment of fees and taxes (seen as forms of

institutional digitization) correlates with a high level of education and digital literacy of citizens.

Table 14. Correlations

		Level of education and digital literacy of citizens	Percentage payment of local taxes and fees
Level of education and digital literacy of citizens	Pearson Correlation	1	0,477**
	Sig. (2-tailed)		0,001
	N	323	323
Percentage payment of local taxes and fees	Pearson Correlation	0,477**	1
	Sig. (2-tailed)	0,001	
	N	323	323

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Authors.

At the same time, the analyzed data also revealed the existence of significant statistical correlations between the "age" variable and VAR 1 -VAR 2 variables.

Table 15. Correlations

		Age	VAR 1	VAR 2
Age	Pearson Correlation	1	-0,012	-0,403**
	Sig. (2-tailed)		0,823	0,001
	N	323	323	323
VAR 1	Pearson Correlation	-0,012	1	0,594**
	Sig. (2-tailed)	0,823		0,001
	N	323	323	323
VAR 2	Pearson Correlation	-0,403**	0,594**	1
	Sig. (2-tailed)	0,001	0,001	
	N	323	323	323

** . Correlation is significant at the 0.01 level (2-tailed).
 VAR 1: The services offered by the institution you represent could be improved if it were to go digital
 VAR 2: Possession of the digital skills certificate

Source: Authors.

In other words, we note the existence of a statistically significant moderate, negative correlation ($r=-0,403^{**}$, $p<0.01$) between "age" and "improvement of the services that the institution offers". In other words, the younger the age, the more the appreciation that digitalization can lead to the improvement of the public services offered. Similarly, "holding a digital skills certificate" (ie, a high level of education and digital literacy) correlates significantly positively with "improving the services the institution provides" ($r=0.594^{**}$, $p<0.001$).

Conclusions

We can conclude that most of the surveyed subjects have above average training and are constant users of digital services. Of the 323 respondents, 77.4% use digital services very often or always, compared to those who use them with a low frequency or not at all, which are 15.8%. At the same time, we showed that women have a predisposition to use digital services. Research has shown that people who have graduated from a university, use digital services the most, with a higher frequency than the others. A good part of the employees of UATs are not digitally literate. After analyzing the data in SPSS, I noticed that there is a correlation between the payment of taxes and the degree of education and literacy of the citizens. Another variable analyzed is age, being able to conclude that the lower it is, the more the appreciation for the digitization of public services increases.

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