

# **Adoption of e-government by the Bulgarian citizens : current state and general trends at the end of the COVID-19 pandemic**

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*Abstract: This paper contributes to the e-government adoption research by analyzing the results of our Bulgarian national representative survey conducted between June and August 2021, based on restricted survey participants had not accessed any Bulgarian e-government service in the past 12 months prior to the survey. (n = 385). An exploratory factor analysis (EFA) was conducted with Varimax rotation and a critical factor assignment value of 0.5. The obtained results define as the largest group of respondents (37%) for whom the leading factor is the quality of the e-government services, and the other factors have significantly less importance for them. For the second largest group (24%), the most significant reason for not using e-government services is a lack of digital identity. The third most important factor is related to the perception of e-government services as risky.*

*Keywords: COVID-19, digitalization, e-government, public services*

*JEL: O38, H11*

## **1. INTRODUCTION**

European governments have adopted the policy of implementing e-government services as an efficient way to protect their populations in pandemic conditions, to optimize the costs of service delivery by reducing the need for costly face-to-face interactions, and to lower the cost of citizens' interaction with the administration. However, up-to-date European Commission research shows large regional differences in shares of e-government users. (1).

Following procedures for systematic analyses Hertzum M. reviews 53 papers about citizens' information behavior in relation to e-government. Hertzum M. review finds that citizens: (a) employ a rich set of quality, accessibility, and non-utilitarian criteria in their perception of e-government; (b) use e-government in combination with offline channels; (c) choose channels based on demographic and situational factors; (d) make frequent use of interpersonal sources and (e) may or may not achieve the intended outcome of their e-government information behavior. The author concludes that e-government information behavior has a lot in common with information behaviors in other domains, but he also

highlights certain aspects of information behavior, such as the simultaneous use of multiple channels. (2)

Numerous studies report a strong link between the observed usefulness and the intention to use e-government services. (3) (4) (5) On the other hand, in their recent study, de Menezes V.G. et al. identified the approaches for evaluating services from the perspective of the user, specifically the models and dimensions of evaluation of public services mostly used in the last 15 years. According to the authors of this study, it was verified that most of the studies use or adapt older models, some of them developed in the private sector. The three most used models were the DeLone and McLean Model of Information Systems Success (D&M), the Technology Acceptance Model (TAM), and SERVQUAL. Their literature review identified four approaches of e-government service evaluation considering the user perspective: quality of service, user satisfaction, user experience, and success and acceptance of IS. It also identified three evaluation dimensions: satisfaction, service quality, and information quality. (6)

## 2. METHODS

### 2.1. Data

This paper contributes to the e-government adoption research by analyzing the results of our Bulgarian national representative survey conducted between June and August 2021, based on restricted survey participants had not accessed any Bulgarian e-government service in the past 12 months prior to the survey. (n = 385).

Trained interviewers polled Bulgarian e-government services non-user sample in a survey by tablet-assisted face-to-face interviews. The minimum age for participation was 15 years. The main questionnaire contained questions about reasons of non-usage of e-government services in the past twelve months.

Table 1 Demographic profile

Demographic characteristics		Frequency	Percentage (%)
Gender	Male	163	42%
	Female	222	58%
City	City	215	56%
	Rural	91	24%
	Small town	79	21%
Income	<650	19	5%
	650-1250	34	9%
	1251-1850	46	12%
	1850-2450	37	10%
	2451-3000	37	10%
	>3000	27	7%
	Missing	185	48%
Labor status	Employed	275	71%
	Student	21	5%
	Retired	67	17%
	Unemployed	22	6%

Demographic characteristics		Frequency	Percentage (%)
Level of education	Primary	23	6%
	Secondary	235	61%
	Higher	127	33%
Online shopping	Never	225	58%
	Rarely	143	37%
	Often	17	4%
Technical skills	Low	102	26%
	Middle	152	39%
	High	131	34%

The first section of the questionnaire recorded information associated with respondents' demographic profiles, such as gender, size of the city they live in, income, labor status, level of education, technical skills ( Table 1 ). The participants in the non-user sample were selected at a higher rate in the large cities in Bulgaria.

2.2. Analytic approach

An exploratory factor analysis (EFA) was conducted with Varimax rotation and a critical factor assignment value of 0.5, which was appropriate for the sample size (7). For the purpose of this analysis, 27 questions were used. Varimax rotation, resulted in seven factors with factor loadings of 0.5 and higher being considered practical and acceptable for the analysis. The results are presented in Tables 2, 3, and fig. 1.

Table 2 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0,844
Bartlett's Test of Sphericity	Approx. Chi-Square
	df
	Sig.
	4979,845
	351
	0,000

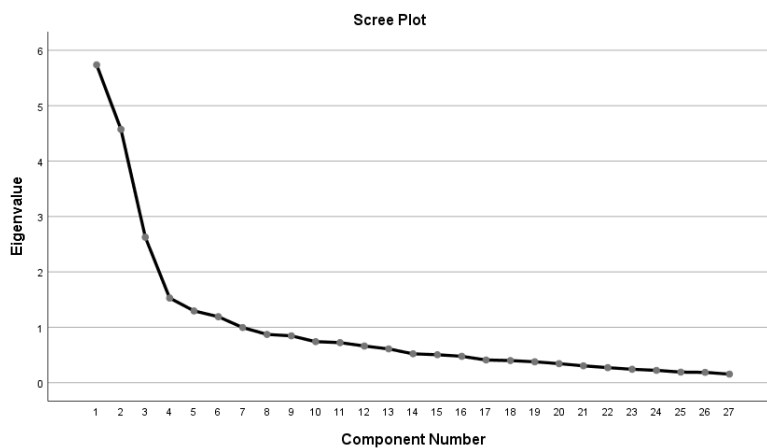


Figure 1 Scree Plot



### 3. RESULTS

The seven factors highlighted are as follows:

1. User experience
2. Risks
3. Self-assessment of skills
4. Digital identity
5. Quality of services
6. Economic status
7. Social status

The obtained results allow us to classify the respondents into four groups using the K-means method. The results of the cluster analysis are given in Table 4 and Table 5.

Table 4 ANOVA Table

Factor		Sum of Squares	df	Mean Square	F	Sig.
1. User experience	Between Groups	40.14	3.00	13.38	14.83	0.00
	Within Groups	343.86	381.00	0.90		
	Total	384.00	384.00			
2. Risks	Between Groups	63.40	3.00	21.13	25.11	0.00
	Within Groups	320.60	381.00	0.84		
	Total	384.00	384.00			
3. Self-assessment of skills	Between Groups	8.77	3.00	2.92	2.97	0.03
	Within Groups	375.23	381.00	0.99		
	Total	384.00	384.00			
4. Digital identity	Between Groups	114.38	3.00	38.13	53.88	0.00
	Within Groups	269.62	381.00	0.71		
	Total	384.00	384.00			
5. Quality of services	Between Groups	180.89	3.00	60.30	113.10	0.00
	Within Groups	203.11	381.00	0.53		
	Total	384.00	384.00			
6. Economic status	Between Groups	199.85	3.00	66.62	137.83	0.00
	Within Groups	184.15	381.00	0.48		
	Total	384.00	384.00			
7. Social status	Between Groups	47.42	3.00	15.81	17.89	0.00
	Within Groups	336.58	381.00	0.88		
	Total	384.00	384.00			

Table 5 Classification

Cluster #	1	2	3	4
%of the sample	23%	16%	24%	37%
<b>Factor</b>	Mean	Mean	Mean	Mean
<b>1. User experience</b>	0.07	0.34	-0.55	0.17
<b>2. Risks</b>	0.57	-0.07	-0.59	0.07
<b>3. Self-assessment of skills</b>	-0.11	-0.26	0.05	0.15
<b>4. Digital identity</b>	-0.27	-0.15	0.95	-0.40
<b>5. Quality of services</b>	-1.17	0.18	0.05	0.63
<b>6. Economic status</b>	0.30	-1.63	0.10	0.45
<b>7. Social status</b>	0.26	-0.32	0.46	-0.33

The obtained results define as the largest group of respondents (37%) for whom the leading factor is the quality of the e-government services, and the other factors have significantly less importance for them. For the second largest group (24%), the most significant reason for non use of e-government services is the lack of digital identity. The third most important factor is related to the perception of e-government services as risky.

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