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Data Article

Survey data on the attitudes towards digital technologies and the way of managing e-governmental tasks

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ABSTRACT

A representative sample of 2520 people was surveyed by completing an online questionnaire using the Tablet Assisted Personal Interviewing (TAPI) method to measure the digital readiness and administrative habits of the population. The data are available in tabular form from an open repository. Some topics were processed by measuring several latent variables and latent class analysis was applied. The database facilitated understanding of the stratification of the population according to digital literacy, preferences with regard to device usage, the purpose of Internet usage, fear of smart systems as well as technophilic and technophobic attitudes. The database revealed the population's administrative practices, particularly their attitudes towards e-government and future development needs. The survey is useful for planning e-government developments. Knowledge of the digital readiness of the population is useful for designing training programs, mapping labor market competencies in the era of Industry 4.0 and developing channels of communication campaigning. Through the regional demographic variables, all of the aforementioned topics can also be used in regional science to measure indices at NUTS 2 or NUTS 3 levels.

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Specifications Table

Subject	Social science
Specific subject area	digital technology-related behavior, technology-driven administration, paperless administration, definition of target groups
Type of data	Table in .csv and data labels in .txt format.
How the data were acquired	Survey data were gathered using the LimeSurvey survey tool hosted on our server.
Data format	Raw, processed
Description of data collection	The survey was answered by 2520 respondents by following the TAPI (Tablet Assisted Personal Interviewing) method. This sample of Hungarian society is representative of gender, age, place of residence and level of education among the population over the age of 18. 1259 individuals from the sample, which is representative in itself, were asked a series of questions related to smart applications and the use of smart devices. Another 1261 individuals from the sample were asked about the importance of some digital developments related to public administration. The sample was split to reduce the burden on respondents. The addresses of those involved in the research were selected by multistage, proportionally stratified probability sampling. Data were collected between 7 March and 15 April 2020 in person from the address of the respondents. Regarding the COVID-19 pandemic, the company conducting the survey provided the opportunity to respond by telephone following a personal inquiry, which was taken up by 76% of the respondents.
Data source location	Country: Hungary City/Region: all over regions of Hungary
Description of data location	The data originated from University of Public Service, Budapest, Hungary.
Data accessibility	Demeter, Endre; Petényi, Sára; Kaiser, Tamás; Gadár, László (2022): "Survey data on the attitudes towards digital technologies and the methods of doing citizens' (governmental) administration tasks", Mendeley Data, V3, doi: 10.17632/typp3nymmr.3 https://data.mendeley.com/datasets/typp3nymmr/3

Value of the Data

- The database is representative of society in terms of gender, age, type of settlement and level of education.
- It covers a wide range of topics to help understand the spread of digitalization in terms of using smart devices and applications, especially in administration as well as shows the interest in technological openness, Internet usage habits and behavior, e-government developments and demographic characteristics and provides novel insights into the background of digital devices and applications used in terms of e-government developments.
- The information extracted from the database can fine-tune the objectives and performance evaluation of future digital development projects.
- The database is useful for regional researchers, public administration experts, back offices of ministries, researchers, agencies, think tanks and consultancies to get to know their clients better. as well as smart device and application developers.
- The background behind international and regional indicators (e.g. from the World Bank, OECD) can be identified and explanatory factors found by taking regional data into account because NUTS 2 and 3 codes of residence are included in the database.

1. Objective

The rise of digital solutions and devices is bringing a lot of changes and challenges to our everyday lives. Citizens react to these changes in different ways. Public administration is also going digital and should not exclude any citizen. The purpose of this survey was to compile a multi-faceted measurement tool that can capture societal responses to digitization in the context of eGovernment developments. The database will add value to much research on the spread of digitalization knowledge, preparing eGovernment developments, and determining the target and excluded groups to understand their background better.

2. Data Description

Systematically surveying stakeholders can assess attitudes towards digital developments and technological systems. The topics investigated are presented in Fig. 1. The measures of each factor help to identify novel correlations. The database can be used to formulate several research questions and answers.

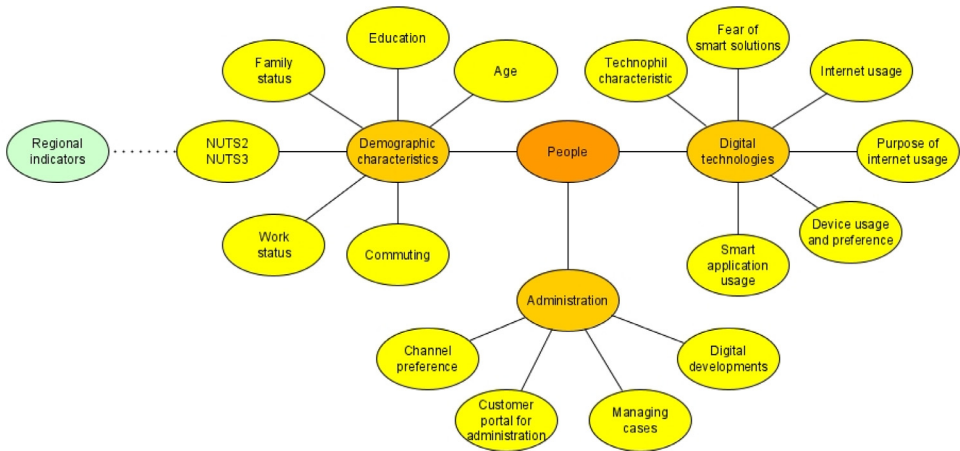


Fig. 1. Subject areas covered by the database.

2520 people participated in our survey. The respondents are representative of the population of Hungary in terms of age, gender, type of settlement and level of education. Respondents were contacted by telephone concerning the COVID-19 pandemic. The questionnaires were completed using the TAPI method. Although a Likert scale was used for the majority of questions, categorical responses were requested in several cases and in some cases multiple choice questions were appropriate when measuring certain topics. In the following three subsections, the topics assessed are described and the distributions of the response categories given.

The measured variables can be grouped as follows:

- Demographic variables
 - Region and subregion (D1, D2)
 - Classification of settlement (D3, D12)
 - Gender (D4)
 - Age (D5)
 - Level of education (D6)
 - Family status (D7)
 - Size of household, number of children under 18 years old (D8, D9)

- Employment status, income level (D10, D11)
- Commuting characteristics of rural people (D13–D20)
- Attitudes towards digital technologies
 - Technophile - technophobe (part 1 of sample) (T1–T5)
 - Fear of digital technologies (part 1 of sample) (T6–T15)
 - Internet usage (T16–T19)
 - Purpose of Internet usage (who use the Internet at least every two weeks, T17=1) (T20–T33)
 - Preferred and used device when using the Internet (who use the Internet at least every two weeks) (T34–T39)
 - Use of smart applications (part 1 of sample) (T40–T51)
- Administration
 - Preferred channel for administration (who use the Internet at least every two weeks) (A1–A4), avoid the use of any channels (A5–A8), and preference for a particular channel (A9)
 - Having (A10) and using (A11) at least one phone number or web page (A12–A13) for public administration
 - Usage of a customer portal for public administration (A14–A16)
 - Aspects considered important for maintaining administrative efficiency, channel (A17–A32) and rank (A33–A48) (part 2 of sample)
 - Openness to trying out some improvements (A49–A52)
 - Demands for some degree of development in administration (A53–A65)

The questionnaire was split so part 1 of the sample were asked some questions, while part 2 were asked others to reduce the burden on respondents. Identifying correlations between these question blocks was challenging.

The survey data were supplemented with clustered variables (D19, D20, T4, T33, A4, A65), which was beneficial to reduce the information content and smooth out the variance in responses by considering some similar variables. An efficient and powerful statistical method was applied for clustering, namely Latent Class Analysis (LCA), which has been successfully used in other fields of social science research given its many advantages. The technique measures a so-called latent variable by taking categorical indicators into account and classifies each set of measurements, in our case, the respondents, into classes according to the latent variable. LCA creates mutually exclusive latent classes, i.e. groups of individuals, based on similar response patterns to the indicator variables.

2.1. Demographic data

The names of the variables describing demography in the database start with 'D' denoting the word 'demography'. The variation in the demographic characteristics of respondents by question is shown below.

D1: County of residence (NUTS 3)

Answers	Number of respondents	Proportion of respondents (%)
1: HU331 (Bács-Kiskun)	134	5.3
2: HU231 (Baranya)	93	3.7
3: HU332 (Békés)	90	3.6
4: HU331 (Borsod-Abaúj-Zemplén)	166	6.6
5: HU333 (Csongrád)	112	4.4
6: HU221 (Fejér)	108	4.3
7: HU221 (Győr-Moson-Sopron)	103	4.1
8: HU321 (Hajdú-Bihar)	134	5.3

(continued on next page)

Answers	Number of respondents	Proportion of respondents (%)
9: HU312 (Heves)	84	3.3
10: HU322 (Jász-Nagykun-Szolnok)	96	3.8
11: HU212 (Komárom-Esztergom)	77	3.1
12: HU313 (Nógrád)	44	1.7
13: HU120 (Pest, excluding the capital city of Budapest)	323	12.8
14: HU232 (Somogy)	93	3.7
15: HU323 (Szabolcs-Szatmár-Bereg)	139	5.5
16: HU233 (Tolna)	51	2.0
17: HU222 (Vas)	67	2.7
18: HU213 (Veszprém)	93	3.7
19: HU223 (Zala)	74	2.9
20: part of HU120 - the capital city of Budapest	439	17.4

D2: Region of residence (NUTS 2)

Answers	Number of respondents	Proportion of respondents (%)
1: HU11 (Budapest)	439	17.4
2: HU31 (Észak-Magyarország)	294	11.7
3: HU32 (Észak-Alföld)	369	14.6
4: HU33 (Dél-Alföld)	336	13.3
5: HU12 (Pest megye)	323	12.8
6: HU22 (Nyugat-Dunántúl)	244	9.7
7: HU21 (Közép-Dunántúl)	278	11.0
8: HU23 (Dél-Dunántúl)	237	9.4

D3: Administrative classification of the settlement

Answers	Number of respondents	Proportion of respondents (%)
1: The capital city of Budapest	439	17.4
2: County seat	523	20.8
3: Other city	809	32.1
4: Village	749	29.7

D4: Gender

Answers	Number of respondents	Proportion of respondents (%)
1: Male	1184	47.0
2: Female	1336	53.0

D5: Age

Answers	Number of respondents	Proportion of respondents (%)
1: 18–29 years old	424	16.8
2: 30–39 years old	404	16.0
3: 40–49 years old	475	18.8
4: 50–59 years old	395	15.7
5: 60–69 years old	423	16.8
6: 70+ years old	399	15.8

D6: Highest Level of Education

Answers	Number of respondents	Proportion of respondents (%)
1: Primary or lower school	854	33.9
2: Vocational school	522	20.7
3: Secondary school	798	31.7
4: Higher education or higher	346	13.7

D7: Family status

Answers	Number of respondents	Proportion of respondents (%)
1: Single	437	17.4
2: Cohabiting	419	16.6
3: Married	1171	46.5
4: Divorced	253	10.1
5: Widower	237	9.4
88: Do not know	2	-
99: No answer	1	-

D8: How many people live in your household?

Answers	Number of respondents	Proportion of respondents (%)
1: 1 person	443	17.6
2: 2 people	994	39.4
3: 3 people	550	21.8
4: 4 people	378	15.0
5: 5 people	110	4.4
6: 6 people or more	45	1.8

D9: How many in your household are children under 18?

Answers	Number of respondents	Proportion of respondents (%)
0: 0 people	1420	68.4
1: 1 person	374	18.0
2: 2 people	224	10.8
3: 3 people or more	59	2.8
99: No answer	443	-

D10: Which employment status is most descriptive of you?

Answers	Number of respondents	Proportion of respondents (%)
1: Full-time worker	1317	52.3
2: Part-time worker	50	2.0
3: Entrepreneur	113	4.5
4: Public worker (financed by the government)	8	0.3
5: Unemployed	62	2.5
6: Full-time mother, home care worker	24	1.0
7: On maternity leave at home	52	2.1
8: Pensioner	689	27.3
9: Disability pensioner	88	3.5
10: Student	107	4.2
11: Other	10	0.4

D11: Level of Income

Answers	Number of respondents	Proportion of respondents (%)
1: 0 – 150,000 HUF (considered poor)	303	15.5
2: 150,001 – 300,000 HUF (below-average)	803	41.1
3: 300,001 – 500,000 HUF (above-average)	678	34.7
4: 500,001 – 1000,000 HUF (considered to be a high standard of living)	159	8.1
5: 1000,001+ HUF (considered rich)	12	0.6
99: No answer	565	-

D12: Please classify your place of residence.

Answers	Number of respondents	Proportion of respondents (%)
1: Farm	17	0.7
2: Village	680	27.0
3: Low-income part of the municipality (e.g. in gipsy colony)	14	0.6
4: Suburb with detached houses	889	35.3
5: Suburb with apartment buildings	243	9.6
6: Housing estate	485	19.2
7: City center	192	7.6

D13: How often do you travel to the county seat? (respondents not living in a county seat or the capital city, D3=3 or D3=4) 780 people continuous variable (0–35)

99: No answer

D14: How often do you travel to the center of the subregion? (respondents not living in a county seat or the capital city, D3=3 or D3=4) 780 people continuous variable (0–35)

99: No answer

D15: How often do you travel to the nearest city? (respondents not living in a county seat or the capital city, D3=3 or D3=4) 780 people continuous variable (0–35)

99: No answer

D16: How often do you travel to the county seat? (categorical version of D13)

Answers	Number of respondents	Proportion of respondents (%)
1: 0 (never)	235	30.7
2: 1–5 (once a week)	372	48.6
3: 6–14 (several times a week)	73	9.5
4: 15–35 (often, almost every day or every weekday, commuters)	85	11.1
99: No answer	1755	-

D17: How often do you travel to the center of the subregion? (categorical version of D14)

Answers	Number of respondents	Proportion of respondents (%)
1: 0 (never)	300	40.0
2: 1–5 (once a week)	335	44.7
3: 6–14 (several times a week)	51	6.8
4: 15–35 (often, almost every day or every weekday, commuters)	64	8.5
99: No answer	1770	-

D18: How often do you travel to the nearest city? (categorical version of D15)

Answers	Number of respondents	Proportion of respondents (%)
1: 0 (never)	143	19.0
2: 1–5 (once a week)	411	54.6
3: 6–14 (several times a week)	91	12.1
4: 15–35 (often, almost every day or every weekday, commuters)	108	14.3
99: No answer	1767	-

D19: Summary variable with regard to the intensity of commuting of rural residents, clustered by LCA using variables D16–18. (for further details, see below)

Answers	Number of respondents	Proportion of respondents (%)
1: Never commutes	69	8.8
2: Rarely commutes	65	8.3
3: Rarely commutes to the county seat	130	16.7
4: Rarely commutes to the nearest city	294	37.7
5: Medium level of commuting	55	7.1
6: Frequently commutes to the nearest city	44	5.6
7: Frequently commutes to the county seat	40	5.12
8: Very frequently commutes	83	10.6
99: No answer	1740	-

D20: Summary variable with regard to the intensity of commuting of rural residents, clustered by LCA using variables D16–18.

Answers	Number of respondents	Proportion of respondents (%)
1: Never commutes	69	8.8
2: Rarely commutes	544	69.7
3: Frequently commutes	167	21.4
99: No answer	1740	-

Variable D19 is clustered considering the variables D16–18. Our aim was to determine the frequency of commuting and destination of rural residents to summarize as well as simplify related continuous variables. In our case, the indicator variable was the frequency of travel to a given destination (D16–18) and the latent variable was commuting (D19). The calculations were performed using LCA in R with *poLCA* [1] package. The distribution of the responses of respondents in each group is shown in Fig. 2. The categories of variable D19 were named based on Fig. 2.

2.2. Digital technologies

The names of the variables describing demography in the database start with 'T', denoting the word 'technology'. The distribution of respondents' attitudes towards and characteristics with regard to digital technologies by question are shown below:

T1: I like trying new technological tools.

Answers	Number of respondents	Proportion of respondents (%)
1: Strongly disagree	212	17.0
2: Disagree	282	22.6
3: Agree	460	36.9
4: Strongly agree	292	23.4
88: Do not know	13	-
99: No answer	1261	-

T2: I am afraid of using technologies that I am not familiar with.

Answers	Number of respondents	Proportion of respondents (%)
1: Strongly disagree	220	17.7
2: Disagree	389	31.2
3: Agree	342	27.5
4: Strongly agree	294	23.6
88: Do not know	14	-
99: No answer	1261	-

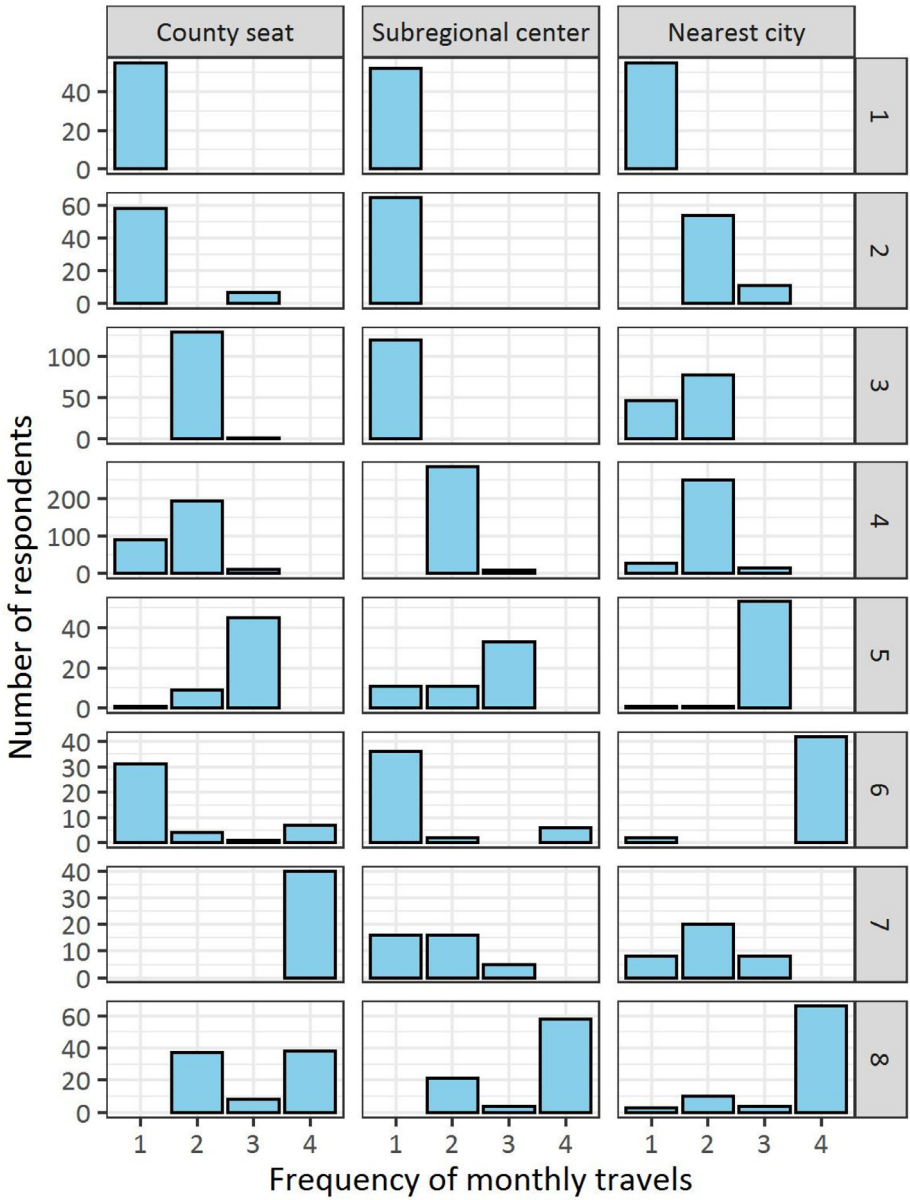


Fig. 2. Distribution of the responses of respondents in different commuting clusters (rows denote groups of respondents exhibiting different commuting behaviors, while columns represent the city type of the destination).

T3: Usually the amount of energy required to learn about technological innovations outweighs their benefits.

Answers	Number of respondents	Proportion of respondents (%)
1: Strongly disagree	184	15.6
2: Disagree	405	34.3
3: Agree	386	32.7
4: Strongly agree	207	17.5
88: Do not know	77	-
99: No answer	1261	-

T4: I don't want to miss out on new smart solutions.

Answers	Number of respondents	Proportion of respondents (%)
1: Strongly disagree	199	16.2
2: Disagree	340	27.7
3: Agree	505	41.2
4: Strongly agree	182	14.8
88: Do not know	33	-
99: No answer	1261	-

T5: Summary variable of technological openness (technophilic or technophobic behavior), clustered by LCA using variables T1–4.

Answers	Number of respondents	Proportion of respondents (%)
1: Laggards	213	18.3
2: Late adopters	256	22.0
3: Early adopters	450	38.6
4: Innovators	246	21.1
99: No answer	1355	-

Variable T5 is the result of variables T1–4 and is a summary of them. Variable T5 is constructed in the same way as D19, using LCA, which summarizes the respondents' openness to technology, that is, their technophilic or technophobic behavior. The distribution of responses with regard to the respondent clusters is shown in Fig. 3, which can be used to distinguish between the Rogersian-like categories [2] of innovators, early adopters, late adopters and laggards.

T6: Which of the following factors prevent you from using smart solutions: accessibility/availability

Answers	Number of respondents	Proportion of respondents (%)
0: No	1003	79.7
1: Yes	256	20.3
99: No answer	1261	-

T7: Which of the following factors prevent you from using smart solutions: difficult to use

Answers	Number of respondents	Proportion of respondents (%)
0: No	744	59.1
1: Yes	515	40.9
99: No answer	1261	-

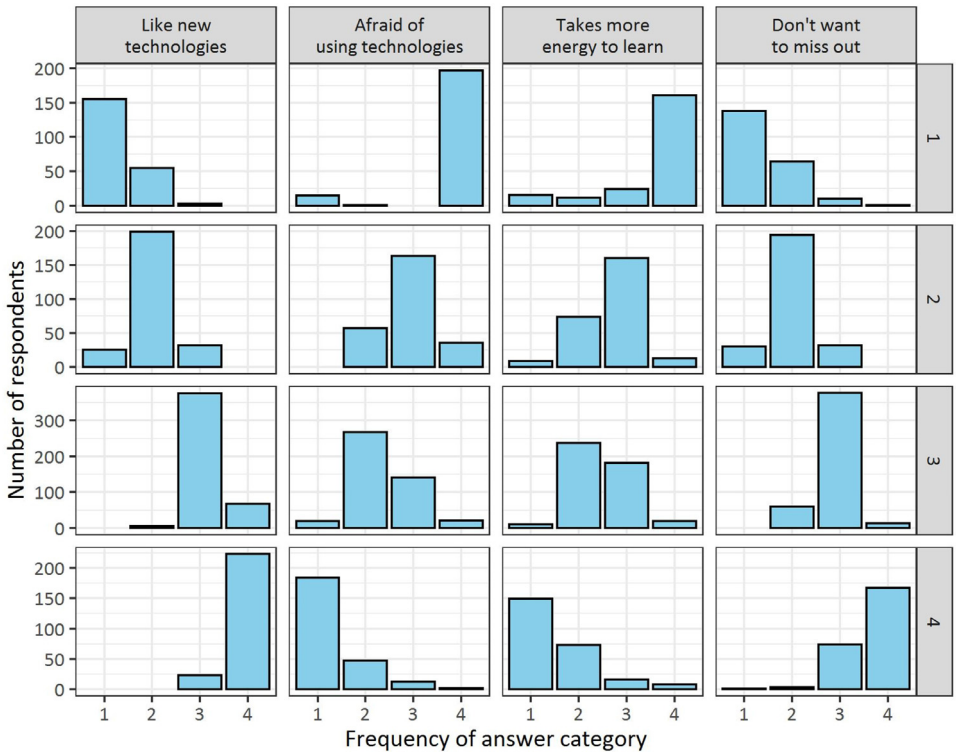


Fig. 3. Distributions of the answers of respondents exhibiting different levels of openness to technologies (rows denote groups of respondents, while columns represent variables related to technological openness: T1–4).

T8: Which of the following factors prevent you from using smart solutions: no native language menu

Answers	Number of respondents	Proportion of respondents (%)
0: No	1014	80.5
1: Yes	245	19.5
99: No answer	1261	-

T9: Which of the following factors prevent you from using smart solutions: data security not guaranteed

Answers	Number of respondents	Proportion of respondents (%)
0: No	1088	86.4
1: Yes	171	13.6
99: No answer	1261	-

T10: Which of the following factors prevent you from using smart solutions: personal fears (e.g. making a mistake)

Answers	Number of respondents	Proportion of respondents (%)
0: No	1060	84.2
1: Yes	199	15.8
99: No answer	1261	-

T11: Which of the following factors prevent you from using smart solutions: unreliability of the manufacturer

Answers	Number of respondents	Proportion of respondents (%)
0: No	1063	84.4
1: Yes	196	15.6
99: No answer	1261	-

T12: Which of the following factors prevent you from using smart solutions: discontinuous operation

Answers	Number of respondents	Proportion of respondents (%)
0: No	997	79.2
1: Yes	262	20.8
99: No answer	1261	-

T13: Which of the following factors prevent you from using smart solutions: aversion to smart solutions

Answers	Number of respondents	Proportion of respondents (%)
0: No	1092	86.7
1: Yes	167	13.3
99: No answer	1261	-

T14: Which of the following factors prevent you from using smart solutions: lack of willpower

Answers	Number of respondents	Proportion of respondents (%)
0: No	1102	87.6
1: Yes	157	12.5
99: No answer	1261	-

T15: Which of the following factors prevent you from using smart solutions: other

Answers	Number of respondents	Proportion of respondents (%)
0: No	1091	86.7
1: Yes	168	13.3
99: No answer	1261	-

T16: How often do you use the Internet?

Answers	Number of respondents	Proportion of respondents (%)
1: Never	496	19.7
2: Not used for a year	12	0.5
3: Once or twice in the last six months	4	0.2
4: Once a month	8	0.3
5: Once every two weeks	7	0.3
6: Once a week	31	1.2
7: Two-three times a week	102	4.0
8: Four-five times a week	192	7.6
9: Every day	1094	43.4
10: Continuously online	574	22.8

T17: Internet usagat least once every two weeks. (dummy variable derived from variable T6: 1 if answer is equal to 5–10, 0 otherwise).

Answers	Number of respondents	Proportion of respondents (%)
0: No	520	20.6
1: Yes	2000	79.4

T18: Is your household connected to the Internet (wired or wireless)?

Answers	Number of respondents	Proportion of respondents (%)
0: No	637	25.3
1: Yes	1875	74.4
2: Type of connection is unknown	8	0.3

T19: Do you use Mobile Internet?

Answers	Number of respondents	Proportion of respondents (%)
0: No	1006	39.9
1: Yes	1503	59.6
2: Type of connection is unknown	11	0.4

T20: How often do you do the following activities online: use search engines

Answers	Number of respondents	Proportion of respondents (%)
1: Never	27	1.4
2: Rarely	227	11.3
3: Once or twice a week	695	34.8
4: Every day, almost every day	1051	52.5
99: No answer	520	-

T21: How often do you do the following activities online: view news portals

Answers	Number of respondents	Proportion of respondents (%)
1: Never	86	4.3
2: Rarely	262	13.1
3: Once or twice a week	652	32.6
4: Every day, almost every day	1000	50.0
99: No answer	520	-

T22: How often do you do the following activities online: send and receive emails

Answers	Number of respondents	Proportion of respondents (%)
1: Never	181	9.1
2: Rarely	645	32.2
3: Once or twice a week	634	31.7
4: Every day, almost every day	540	27.0
99: No answer	520	-

T23: How often do you do the following activities online: instant message, e.g. Viber, Messenger, etc.

Answers	Number of respondents	Proportion of respondents (%)
1: Never	176	8.8
2: Rarely	251	12.6
3: Once or twice a week	506	25.3
4: Every day, almost every day	1066	53.3
88: Do not know	1	-
99: No answer	520	-

T24: How often do you do the following activities online: use social networks, e.g. Facebook, Twitter, etc.

Answers	Number of respondents	Proportion of respondents (%)
1: Never	164	8.2
2: Rarely	123	6.2
3: Once or twice a week	404	20.2
4: Every day, almost every day	1308	65.4
88: Do not know	1	-
99: No answer	520	-

T25: How often do you do the following activities online: make online calls, e.g. on Skype

Answers	Number of respondents	Proportion of respondents (%)
1: Never	508	25.4
2: Rarely	558	27.9
3: Once or twice a week	620	31.0
4: Every day, almost every day	313	15.7
88: Do not know	1	-
99: No answer	520	-

T26: How often do you do the following activities online: do online training courses

Answers	Number of respondents	Proportion of respondents (%)
1: Never	1339	67.1
2: Rarely	326	16.3
3: Once or twice a week	201	10.1
4: Every day, almost every day	131	6.5
88: Do not know	3	-
99: No answer	520	-

T27: How often do you do the following activities online: work

Answers	Number of respondents	Proportion of respondents (%)
1: Never	1112	56.0
2: Rarely	265	13.3
3: Once or twice a week	242	12.2
4: Every day, almost every day	367	18.5
88: Do not know	14	-
99: No answer	520	-

T28: How often do you do the following activities online: shop online

Answers	Number of respondents	Proportion of respondents (%)
1: Never	630	31.5
2: Rarely	1171	58.6
3: Once or twice a week	177	8.9
4: Every day, almost every day	20	1.0
88: Do not know	2	-
99: No answer	520	-

T29: How often do you do the following activities online: trade online

Answers	Number of respondents	Proportion of respondents (%)
1: Never	1283	64.2
2: Rarely	604	30.2
3: Once or twice a week	88	4.4
4: Every day, almost every day	22	1.1
88: Do not know	3	-
99: No answer	520	-

T30: How often do you do the following activities online: online banking

Answers	Number of respondents	Proportion of respondents (%)
1: Never	946	47.3
2: Rarely	795	39.8
3: Once or twice a week	228	11.4
4: Every day, almost every day	29	1.5
88: Do not know	2	-
99: No answer	520	-

T31: How often do you do the following activities online: pay utility bills online

Answers	Number of respondents	Proportion of respondents (%)
1: Never	1183	59.3
2: Rarely	655	32.8
3: Once or twice a week	139	7.0
4: Every day, almost every day	17	0.9
88: Do not know	5	-
99: No answer	521	-

T32: How often do you do the following activities online: online administration

Answers	Number of respondents	Proportion of respondents (%)
1: Never	1150	57.8
2: Rarely	712	35.8
3: Once or twice a week	103	5.2
4: Every day, almost every day	23	1.2
88: Do not know	12	-
99: No answer	520	-

T33: Summary variable with regard to the purpose of Internet usage clustered by LCA using variables T8–20.

Answers	Number of respondents	Proportion of respondents (%)
1: Rarely used	362	18.4
2: Consumers	239	12.1
3: Consumers who shop	456	23.1
4: Consumers who shop and do administration	279	14.1
5: Very rarely productive	153	7.8
6: Rarely productive	58	2.9
7: Productive	322	16.3
8: Very productive	103	5.2
99: No answer	548	-

Variable T33 is the result of variables T8–20 and is a summary of them. Variable T33 is constructed in the same way as T5 and D19 by applying LCA. Variable T33 separates respondents whose habits with regard to Internet usage are different. For different reasons, everyone uses

the Internet for different purposes to satisfy various personal needs in their everyday lives. Consumers are referred to as those who only use search engines, read news stories as well as send and receive emails. Productive respondents work, shop, bank and carry out administrative tasks online on at least a weekly basis. This database offers an opportunity to explore causal effects in terms of behavior and can be used to analyze the consequences of different purposes of Internet usage.

T34: Do you use a smartphone?

Answers	Number of respondents	Proportion of respondents (%)
0: No	728	28.9
1: Yes	1785	70.8
2: Do not know what a smartphone is	7	0.3

T35: Do you use a smartwatch?

Answers	Number of respondents	Proportion of respondents (%)
0: No	2272	90.2
1: Yes	212	8.4
2: Do not know what a smartwatch is	36	1.4

T36: Which device do you use to access the Internet: a desktop computer or a laptop

Answers	Number of respondents	Proportion of respondents (%)
0: No	471	23.6
1: Yes	1529	76.4
99: No answer	520	-

T37: Which device do you use to access the Internet: a smartphone or a tablet

Answers	Number of respondents	Proportion of respondents (%)
0: No	330	16.5
1: Yes	1670	83.5
99: No answer	520	-

T38: I prefer to do tasks on a desktop computer or laptop rather than on a smartphone.

Answers	Number of respondents	Proportion of respondents (%)
1: Strongly disagree	476	24.3
2: Disagree	316	16.1
3: Agree	457	23.3
4: Strongly agree	710	36.2
88: Do not know	41	-
99: No answer	520	-

T39: I do more tasks on a desktop computer or laptop rather than on a smartphone.

Answers	Number of respondents	Proportion of respondents (%)
1: Strongly disagree	512	26.1
2: Disagree	319	16.3
3: Agree	457	23.3
4: Strongly agree	671	24.3
88: Do not know	41	-
99: No answer	520	-

T40: Do you know about and use the following smart solutions: apps to manage utility bills, e.g. to read meters

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know what apps are	597	47.4
2: Know about them but have never used them	525	41.7
3: Have used them at least once	25	2.0
4: Have used them several times	112	8.9
99: No answer	1261	-

T41: Do you know about and use the following smart solutions: health monitoring apps, e.g. to monitor sleep

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know what health monitoring apps are	555	44.1
2: Know about them but have never used them	625	49.6
3: Have used them at least once	32	2.5
4: Have used them several times	47	3.7
99: No answer	1261	-

T42: Do you know about and use the following smart solutions: receive emergency alerts, make emergency calls

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know about smart alerts	593	47.1
2: Know about them but have never used them	636	50.5
3: Have used them at least once	21	1.7
4: Have used them several times	9	0.7
99: No answer	1261	-

T43: Do you know about and use the following smart solutions: to make complaints in public spaces, e.g. to report potholes

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know about such smart solutions	834	66.2
2: Know about them but have never used them	391	31.1
3: Have used them at least once	24	1.9
4: Have used them several times	10	0.8
99: No answer	1261	-

T44: Do you use online banking?

Answers	Number of respondents	Proportion of respondents (%)
0: No	1546	61.3
1: Yes	941	37.3
2: Do not know what online banking is	33	1.3

T45: Do you use a digital bank?

Answers	Number of respondents	Proportion of respondents (%)
0: No	2201	87.3
1: Yes	82	3.3
2: Do not know what a digital bank is	237	9.4

T46: Do you know about and use the following smart solutions while travelling: online maps

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know about online maps	294	23.3
2: Know but them but have never used them	355	28.2
3: Have used them at least once	94	7.5
4: Have used them several times	516	41.0
99: No answer	1261	-

T47: Do you know about and use the following smart solutions while travelling: route planner

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know about route planners	258	20.5
2: Know about them but have never used them	335	26.6
3: Have used them at least once	100	7.9
4: Have used them several times	566	45.0
99: No answer	1261	-

T48: Do you know about and use the following smart solutions while travelling: electronic tickets on public transport

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know about electronic tickets	419	33.3
2: Know about them but have never used them	616	48.9
3: Have used them at least once	74	5.9
4: Have used them several times	150	11.9
99: No answer	1261	-

T49: Do you know about and use the following smart solutions while travelling: carpooling services

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know about carpooling services	404	32.1
2: Know about them but have never used them	757	60.1
3: Have used them at least once	58	4.6
4: Have used them several times	40	3.2
99: No answer	1261	-

T50: Do you know about and use the following smart solutions while travelling: shared transport (scooters, bikes)

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know about shared transport	501	39.8
2: Know about this but have never used it	716	56.9
3: Have used this at least once	26	2.0
4: Have used this several times	16	1.3
99: No answer	1261	-

T51: Do you know about and use the following smart solutions while travelling: purchase of digital parking tickets

Answers	Number of respondents	Proportion of respondents (%)
1: Do not know about digital parking tickets	425	33.8
2: Know about them but have never used them	566	45.0
3: Have used them at least once	70	5.6
4: Have used them several times	198	15.7
99: No answer	1261	-

2.3. Administration

A1: To what extent do you agree with the following statement regarding public administration: I prefer to do day-to-day tasks in an office rather than online.

Answers	Number of respondents	Proportion of respondents (%)
1: Not at all	323	16.2
2: Mostly disagree	478	24.0
3: Mostly agree	393	19.8
4: Totally agree	794	40.0
88: Do not know	12	-
99: No answer	520	-

A2: To what extent do you agree with the following statement regarding public administration: I prefer to do my day-to-day tasks online rather than over the phone.

Answers	Number of respondents	Proportion of respondents (%)
1: Not at all	518	26.8
2: Mostly disagree	426	21.5
3: Mostly agree	493	24.9
4: Totally agree	542	27.4
88: Do not know	21	-
99: No answer	520	-

A3: To what extent do you agree with the following statement regarding public administration: I prefer to do my day-to-day tasks in an office rather than over the phone.

Answers	Number of respondents	Proportion of respondents (%)
1: Not at all	280	11.3
2: Mostly disagree	482	19.5
3: Mostly agree	564	22.8
4: Totally agree	1151	46.4
88: Do not know	43	-

A4: Summary variable of people's preferred means of public administration clustered by LCA using variables A1–3.

Answers	Number of respondents	Proportion of respondents (%)
1: 1st Online; 2nd Over the phone; 3rd In an office	334	16.9
2: 1st Online; 2nd In an office; 3rd Over the phone	399	20.2
3: 1st In an office; Joint 2nd Over the phone & Online	368	18.7
4: 1st In an office; 2nd Online; 3rd Over the phone	270	13.7
5: 1st In an office (almost everyone); 2nd Over the phone; 3rd Online (almost nobody)	600	30.4
99: No answer	549	-

The variable A4 summarizes the variables A1–3 in the same way as D19, T5 and T33 do using LCA. Variable A4 makes a distinction between respondents whose preferred means of public administration differ. The three variables measure the preferred means of public administration by a pairwise comparison, which can be used to rank the three means. The categories of this variable show the differences between the rankings of the three means. A group of respondents (334 people in category 1) prefer to do day-to-day tasks online rather than over the phone and least of all in person in an office.

A5: To what extent do you agree with the following statement regarding public administration: If possible, I avoid contacting the customer service team.

Answers	Number of respondents	Proportion of respondents (%)
1: Not at all	766	30.8
2: Mostly disagree	654	26.3
3: Mostly agree	618	24.8
4: Totally agree	452	18.1
88: Do not know	30	-

A6: To what extent do you agree with the following statement regarding public administration: If possible, I avoid handling matters over the phone.

Answers	Number of respondents	Proportion of respondents (%)
1: Not at all	361	14.5
2: Mostly disagree	663	26.6
3: Mostly agree	630	25.3
4: Totally agree	834	33.5
88: Do not know	32	-

A7: To what extent do you agree with the following statement regarding public administration: If possible, I avoid handling matters by post.

Answers	Number of respondents	Proportion of respondents (%)
1: Not at all	641	25.7
2: Mostly disagree	729	29.3
3: Mostly agree	659	26.4
4: Totally agree	463	18.6
88: Do not know	28	-

A8: To what extent do you agree with the following statement regarding public administration: If possible, I avoid handling matters online.

Answers	Number of respondents	Proportion of respondents (%)
1: Not at all	521	26.2
2: Mostly disagree	472	23.7
3: Mostly agree	425	21.3
4: Totally agree	574	28.8
88: Do not know	8	-
99: No answer	520	-

A9: I consider it extremely important to be able to choose the means of public administration that is the most convenient for me.

Answers	Number of respondents	Proportion of respondents (%)
1: Not at all	145	5.9
2: Not really	212	8.6
3: Usually	698	28.2
4: Always	1419	57.3
88: Do not know	46	-

A10: Do you know a phone number to call to handle your public administration?

Answers	Number of respondents	Proportion of respondents (%)
0: No	2101	84.1
1: Yes	398	15.9
88: Do not know	21	-

A11: Have you ever handled your public administration over the phone? (If A10=1)

Answers	Number of respondents	Proportion of respondents (%)
0: Never	111	28.0
1: Only once	148	37.4
2: Several times	137	34.6
88: Do not know	2	-
99: No answer	2122	-

A12: Do you know a web page to handle your public administration?

Answers	Number of respondents	Proportion of respondents (%)
0: No	1265	64.3
1: Yes	701	35.7
88: Do not know	34	-
99: No answer	520	-

A13: Have you ever used a webpage to handle your public administration? (If A12=1)

Answers	Number of respondents	Proportion of respondents (%)
0: Never	134	19.2
1: Only once	85	12.2
2: Several times	480	68.6
88: Do not know	1	-
99: No answer	1820	-

A14: Do you have access to a customer portal to handle your public administration?

Answers	Number of respondents	Proportion of respondents (%)
0: No	1532	61.0
1: Yes	978	39.0
88: Do not know	7	-
99: No answer	3	-

A15: Which of the following statements is characteristic of your access to a customer portal to handle public administration? (If A14 = 1)

Answers	Number of respondents	Proportion of respondents (%)
1: I only use one when necessary	800	81.8
2: I use one and so do others on my behalf	91	9.3
3: Only others use one on my behalf	29	3.0
4: I never use one	58	5.9
99: No answer	1542	-

A16: Private access to a customer portal to handle public administration.

Answers	Number of respondents	Proportion of respondents (%)
0: No	1720	68.3
1: If A10 = 1 and A11 = 1	800	31.7

Would achieving the following improvement objectives help you to manage your public administrative affairs more efficiently? (multiple-choice question)

Subquestion	0: No	1: Yes	99: No answer
A17: Shorter waiting times in offices	739	522	1259
A18: Shorter travel times	1097	164	1259
A19: Possibility to deal with cases outside working hours	1110	151	1259
A20: Reduction in the number of documents	807	454	1259
A21: Reduction in administrative time	896	365	1259
A22: Reduction in procedural costs	870	391	1259
A23: Increase in the number of possibilities for managing administrative tasks over the phone	1152	109	1259
A24: Increase in the number of mobile phone applications (apps)	1195	66	1259
A25: Increase in the possibility of online administration	1111	150	1259
A26: Possibility of personal contact with an administrator	1028	233	1259
A27: Making the administrative process clearer	916	345	1259
A28: Simplifying the filling in of forms	797	464	1259
A29: Making forms easier to read	1036	225	1259
A30: Accessibility to an office	1206	55	1259
A31: Provision of a play area in the customer lounge	1230	31	1259
A32: Proactive services (e.g. email notifications before documents expire)	1176	85	1259

Which two development goals are most important to you? (ranking-type question)

Subquestion	0: Not ranked	1: Rank 1	2: Rank 2	99: No answer
A33: Shorter waiting times in offices	800	239	99	1382
A34: Shorter travel times	1057	33	48	1382
A35: Possibility to deal with cases outside working hours	1050	58	30	1382
A36: Reduction in the number of documents	858	146	134	1382
A37: Reduction in administrative time	929	100	109	1382
A38: Reduction in procedural costs	885	144	109	1382
A39: Increase in the number of possibilities for managing administrative tasks over the phone	1095	20	23	1382
A40: Increase in the number of mobile phone applications (apps)	1112	11	15	1382
A41: Increase in the possibility of online administration	1053	47	38	1382
A42: Possibility of personal contact with an administrator	1026	71	41	1382
A43: Making the administrative process clearer	954	99	85	1382
A44: Simplifying the filling in of forms	841	131	166	1382
A45: Making forms easier to read	1078	12	48	1382
A46: Accessibility to an office	1121	4	13	1382
A47: Provision of a play area in the customer lounge	1131	1	6	1382
A48: Proactive services (e.g. email notifications before documents expire)	1107	12	19	1382

A49: To what extent would you like to try the following improvement with regard to managing your public administrative tasks: using an online chatbot to get information

Answers	Number of respondents	Proportion of respondents (%)
1: I would never try it	339	36.7
2: I would only try it if it would benefit me (e.g. save time)	350	38.0
3: I would like to try it	233	25.3
88: Do not know	88	-
99: No answer	1510	-

A50: To what extent would you like to try the following improvement with regard to managing your public administrative tasks: online administration via a video call with an administrator

Answers	Number of respondents	Proportion of respondents (%)
1: I would never try it	303	31.6
2: I would only try it if it would benefit me (e.g. save time)	381	39.7
3: I would like to try it	276	28.7
88: Do not know	50	-
99: No answer	1510	-

A51: To what extent would you like to try the following improvement with regard to managing your public administrative tasks: use of an administration terminal at a customer service desk instead of face to face with an administrator

Answers	Number of respondents	Proportion of respondents (%)
1: I would never try it	351	37.2
2: I would only try it if it would benefit me (e.g. save time)	352	37.3
3: I would like to try it	240	25.5
88: Do not know	67	-
99: No answer	1510	-

A52: To what extent would you like to try the following improvement with regard to managing your public administrative tasks: via a video call with an administrator at a customer service desk

Answers	Number of respondents	Proportion of respondents (%)
1: I would never try it	356	37.2
2: I would only try it if it would benefit me (e.g. save time)	321	33.5
3: I would like to try it	281	29.3
88: Do not know	52	-
99: No answer	1510	-

A53: How important is the following to you in terms of public administration: to book an appointment

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	286	11.5
2: Not very important	543	21.9
3: Quite important	785	31.6
4: Very important	870	35.0
88: Do not know	36	-

A54: How important is the following to you in terms of public administration: to get help from an office when filling in forms and completing paperwork

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	200	8.0
2: Not very important	394	15.8
3: Quite important	861	34.6
4: Very important	1037	41.6
88: Do not know	28	-

A55: How important is the following to you in terms of public administration: to receive an e-mail or text message when a document is about to expire

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	149	7.5
2: Not very important	285	14.3
3: Quite important	740	37.2
4: Very important	815	41.0
88: Do not know	11	-
99: No answer	520	-

A56: How important is the following to you in terms of public administration: to receive an e-mail or text message when the document you have requested is ready

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	317	12.7
2: Not very important	310	12.5
3: Quite important	796	32.0
4: Very important	1065	42.8
88: Do not know	32	-

A57: How important is the following to you in terms of public administration: to be able to pay by credit card at a customer service desk

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	531	21.3
2: Not very important	398	16.0
3: Quite important	748	30.1
4: Very important	812	32.6
88: Do not know	31	-

A58: How important is the following to you in terms of public administration: to be able to pay online

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	545	27.5
2: Not very important	459	23.1
3: Quite important	546	27.5
4: Very important	435	21.9
88: Do not know	15	-
99: No answer	520	-

A59: How important is the following to you in terms of public administration: to receive a confirmation e-mail when a document has been sent electronically

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	278	14.1
2: Not very important	242	12.3
3: Quite important	663	33.6
4: Very important	788	40.0
88: Do not know	29	-
99: No answer	520	-

A60: How important is the following to you in terms of public administration: to be able to save all electronic documents on your own computer

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	333	16.9
2: Not very important	309	15.7
3: Quite important	656	33.2
4: Very important	676	34.2
88: Do not know	26	-
99: No answer	520	-

A61: How important is the following to you in terms of public administration: to be able to have all your documents printed and posted to you

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	261	10.5
2: Not very important	425	17.1
3: Quite important	673	27.0
4: Very important	1132	45.4
88: Do not know	29	-

A62: How important is the following to you in terms of public administration: to be able to track the status of your case online

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	346	17.4
2: Not very important	422	21.2
3: Quite important	712	35.9
4: Very important	506	25.5
88: Do not know	14	-
99: No answer	520	-

A63: How important is the following to you in terms of public administration: to communicate with an office in real time via an online interface (e.g. chat, Skype, Facebook)

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	555	28.1
2: Not very important	573	29.0
3: Quite important	529	26.8
4: Very important	319	16.1
88: Do not know	24	-
99: No answer	520	-

A64: How important is the following to you in terms of public administration: to manage your affairs online from anywhere

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	882	35.8
2: Not very important	613	24.9
3: Quite important	590	24.0
4: Very important	377	15.3
88: Do not know	38	-
99: No answer	20	-

A65: Summary variable of the demand for the development of convenience services calculated according to the importance of development and clustered by LCA using variables A53–64.

Answers	Number of respondents	Proportion of respondents (%)
1: Not important	365	18.9
2: Quite important	852	44.1
3: Very important	715	37.0
99: No answer	588	-

The variable A65 summarizes the variables A53–64 in the same way as D19, T5, T33 and A4 using LCA. Variable A65 separates respondents that demand developments in administration to different extents. The first group does not consider improvements to be necessary in public administration, the second group expresses a medium level of demand and the third group demands improvements in all the options offered.

3. Experimental Design, Materials and Methods

The presented survey was designed to follow the Social Construction of Technology (SCOT) theory highlighting the social aspects and conditions of technological development [3]. The starting point in the experimental design was to go beyond the technological determinism approach based on the decisive role of technology in societal development by considering the social elements and context of technology [4]. The literature on SCOT highlights (1) the importance of the flexible social interpretation of technology by relevant social groups, (2) the influence of social learning on technology-related attitudes and behavioral patterns as well as (3) the key role of the technological frame in encouraging the spread of digital innovation in society [5]. Reflecting on inequality in society, the concept of the digital divide is discussed in detail in the literature with a particular focus on connectivity, accessibility, literacies, content, networks and communication [6,7]. Openness to technological systems is an essential influencing factor in the digital transformation of society, as has long been recognized [8].

Nowadays, the digitalization of public administration is taking place worldwide. Members of an innovative society have different attitudes towards new systems. The challenge is that public administration, as a whole, must be accessible to everyone and digitalization must not exclude any marginalized groups of people. The use of e-government developments, stakeholders and potential users should be continuously monitored. An important question is what factors influence the use of e-government systems, that is, what helps and hinders them? Identifying the pull factors will help to describe the potential customers of e-government developments, moreover, clients who cannot be targeted by e-government developments should also be identified.

To the best of our knowledge, by relying on this theoretical basis, no studies have sought and recognized correlations between the proliferation of digital (smart) technologies, changing platforms, channels through which people manage their cases in practice, as well as the relevant demographic and residential factors. The aim of the present survey was to understand the background on the usage of e-government systems in the digital era. In addition, to fill the knowledge gap by applying the overarching measurement methodology, a monitoring system was de-

veloped that examines the impacts of e-government-related operational programs supported by the European Union (2014–2020) at the social level. The results of the programs played an important role in implementing the Hungarian Public Administration and Public Service Development Strategy (PAPSDS). The priorities of PAPSDS aim to increase the efficiency of public administration, streamlining its structure and performance as well as reducing administrative burdens, thereby contributing to the creation of a business-friendly economic environment. The program included interventions such as reducing red tape, strengthening e-governance, increasing transparency, reinforcing human resources as well as plans to develop a comprehensive information database for decision-makers in local authorities.

According to the three main elements of SCOT, a dual goal was defined, namely to create groups based on the knowledge and use of smart devices as well as solutions, moreover, to show the relationship between the attributes of respondents (age, place of residence, type of residence, level of education, income, mode of transport, Internet usage and innovation). The questions were formed by considering suggestions from different disciplines, namely technology studies, public administration, management, urban studies and sociology. Data was collected to explore the attitudes of the population towards public administration and the characteristics of public administration (frequency of use, types of channels used, consumer attitudes) based on a nationwide census of the Hungarian adult population.

Ethics Statements

The interviewers provided information to respondents with regard to the aims of the survey and how the data would be used. Respondents voluntarily and fully anonymously participated in the research. The authors declare that there are no ethical issues with the data presented. The research was carried out following the procedures outlined by the Declaration of Helsinki. The questionnaire design comply with the personal data protection requirements established in the Hungarian Act CXII of 2011 on the right to information self-determination and freedom of information. All research participants worked according to the protocols declared in Code of Ethics of the University of Public Service, Budapest, Hungary. Ethics approval by the institutional committee is not required specifically for this research.

Declaration of Competing Interest

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

Data Availability

[Survey data on the attitudes towards digital technologies and the methods of doing citizens' \(governmental\) administration tasks \(Original data\)](#) (Mendeley Data).

CRedit Author Statement

Tamás Kaiser: Conceptualization, Supervision, Writing – original draft; **László Gadár:** Data curation, Writing – original draft, Visualization, Writing – review & editing.

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