statistiche report

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LOCAL PUBLIC ADMINISTRATIONS AND ICT | YEAR 2018

Ultrafast connection still not widespread in the local PAs

Entirely online processes, at least for one service out of the 24 observed, available in 54.6% of the Italian Regions and 48.3% of the Italian Municipalities.

Despite the growth of computerization of internal activities, **87.8%** of the local PAs still used **analogue tools** (stamps, signatures, abbreviations) in the **protocol** and among them 45% used these tools for more than half of the documentation.

Internet access with **fast connections** (at least 30 Mbps) for **41%** of the local PAs, **ultrafast** (at least 100 Mbps) for **17.4%**. Shy steps, especially at regional level, towards the use of **artificial intelligence** and **big data analysis**.

20.5%

Municipalities that provided online services with the digital identity (Spid)

Online services were accessed with electronic identity card in 5.5% of Municipalities.

9.5%

Employees who attended IT training courses

28.6%

Local PAs connected to the Internet with optical fiber

+17.4% since 2015.

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More advanced technologies in larger municipalities

In 2018, almost all the Public Administrations (99.6%) used **desktop** PCs (39.2% with an average life longer than 5 years) and 62.4% **laptops**. The presence of desktop personal computers was widespread (94.5 out of 100 employees; laptops available for 8.3 out of 100 employees).

Regions and Autonomous Provinces[i] also used other **mobile** devices, **GIS** and **CAD** instruments, video conferencing tools, with percentages between 90% and 100% (Table 5 attached).

In comparison with 2015, among technologies aimed by Pas to reduce costs, **open source** software decreased from 54.1% to 50.9% in 2018 (Tables 9 and 10), whereas **cloud computing** increased from 25.7% to 34.3% (10.5% in 2012) (Tables 12 and 13). The share of entities relying on **e-procurement** purchases remained stable (from 79.5% to 80.9%) (Table 17 and 18).

Availability of online services offered by local administrations continued to improve: almost half of them offered the possibility to start and conclude online the entire process of the requested service (47.8%; 33.8% in 2015) and the possibility to upload online documents relating to the requested services (68.3%; 58,3% in 2015) (Tables 21 and 22).

MAIN INDICATORS ON ICT USAGE OF LOCAL PUBLIC ADMINISTRATIONS
Years 2012, 2015 and 2018, percentages

Years	Local PAs with ICT autonomous office	Local PAs with employees trained inICT	Employees trained with ICT courses	Numbers of:			Local PA using:			Levels of online services:			
				Desktop PC per 100 emp	Portable PC per 100 emp	Other mobile devices per 100 emp	e-Procurement	Open source	Cloud computing	visualiz. informations	Download document.	Upload/sending document.	Entire service' process via Internet
2018	16.0	16.9	9.5	94.5	8.3	10.8	80.9	50.9	34.3	98.5	92.8	68.3	47.8
2015	16.8	19.4	7.7	90.3	7.7	8.1	79.5	54.1	25.7	93.5	85.0	58.3	33.8
2012	17.4	20.0	6.3	84.4	7.2	3.2	30.3	55.2	10.5	90.5	75.9	36.7	19.1

Still inadequate ICT training for employees

In 2018, ICT specialist training decreased from 19.4% in 2015 to 16.9%, though involving a greater share of personnel (from 7.7% in 2015 to 9.5%).

The involved staff indicated as main topics covered by the training "specific applications and software" (71.7%), "ICT security" (40.8%), "web-related topics" (28.7%). Hours supplied per 100 employees were on average 23.3, varying between Municipalities of different size (30.6 hours for those with over 60 thousand inhabitants) (Tables 2 and 3, Figure 1).

The IT functions were mainly supplied by private enterprises (94.2%), competing with the internal and declining staff (65.6% in 2018; 66.4% in 2015, 70.8% in 2012). Regions as well registered a significant share of outsourcing for public companies (from 77.3% in 2015 to 72.7%).

The most frequently internally managed functions "drafting and management of Web content" (56.4% from 57.0% in 2015) and "technological support and assistance to internal users" (27.3% in 2018 from 28,8% in 2015). On the other hand, in outsourcing the most specialized activities relating to the management and maintenance of software (87.4% in 2018, 86.8% in 2015) and hardware (83.2% in 2018, 82.8% in 2015) (Table 4).

FIGURE 1. ICT TRAINING IN LOCAL PAs
Year 2018, percentage values on the total of local PAs that organized training courses
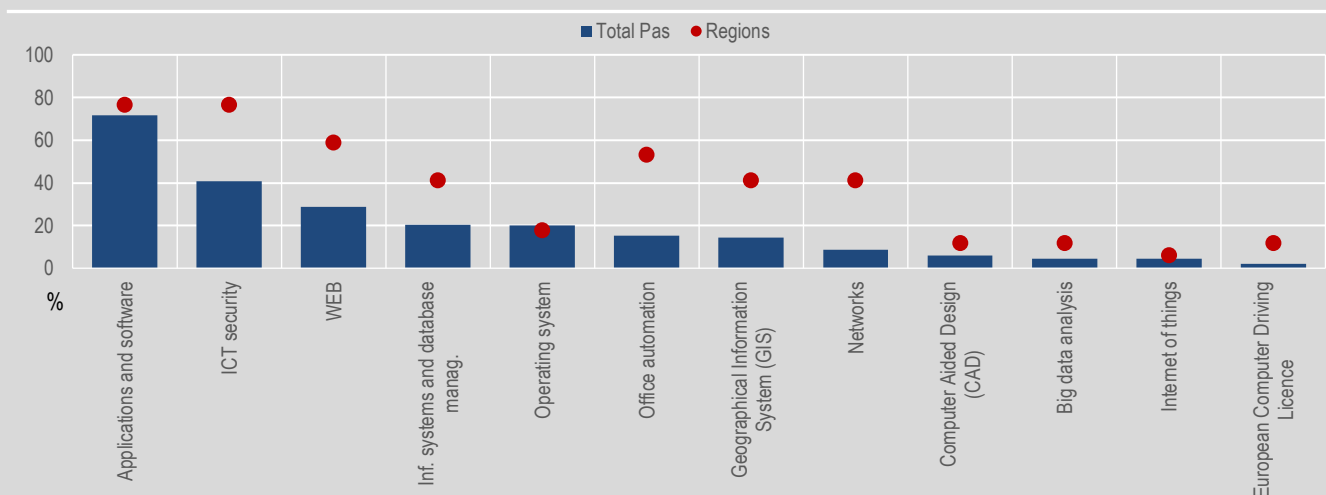
Sharp decline in software reuse

The use of software developed on behalf and at the expense of another administration – therefore implying savings thanks to the reuse - recorded a strong step backwards for all types of local administrations (35.2% in 2012; 12.7% in 2015; 7.1% in 2018). A small percentage sold their software for the reuse (0.7%) (Table 14).

In 2018, 40.7% of local administrations made open data available (95.5% of the Regions and 62.0% of the Municipalities with over 60 thousand inhabitants) (Table 15 and Figure 2).

The computerization of internal activities with specific and networked applications was mainly adopted for protocol management (83.4%), economic and financial accounting (81.1%), registry and marital status activities (80.8%), management of payments (78.9%), administrative documents and resolutions and taxes (about 75%). Regions and Provinces also added the management of personnel and tenders, Regions digitalized procedures relating to competitions as well (Table 20).

Despite the growth of computerization on the net for many current activities and the integration between applications of different management areas, 87.8% of the local PAs still included in the protocol analog procedures (stamps, handwritten signatures, initials in the margin, etc.), used for more than half of the documentation registered by 44.9% of them (Table 16).

FIGURE 2. OPEN DATA AVAILABILITY IN LOCAL PAs
Year 2018, percentage values out of total local PAs that make open data available
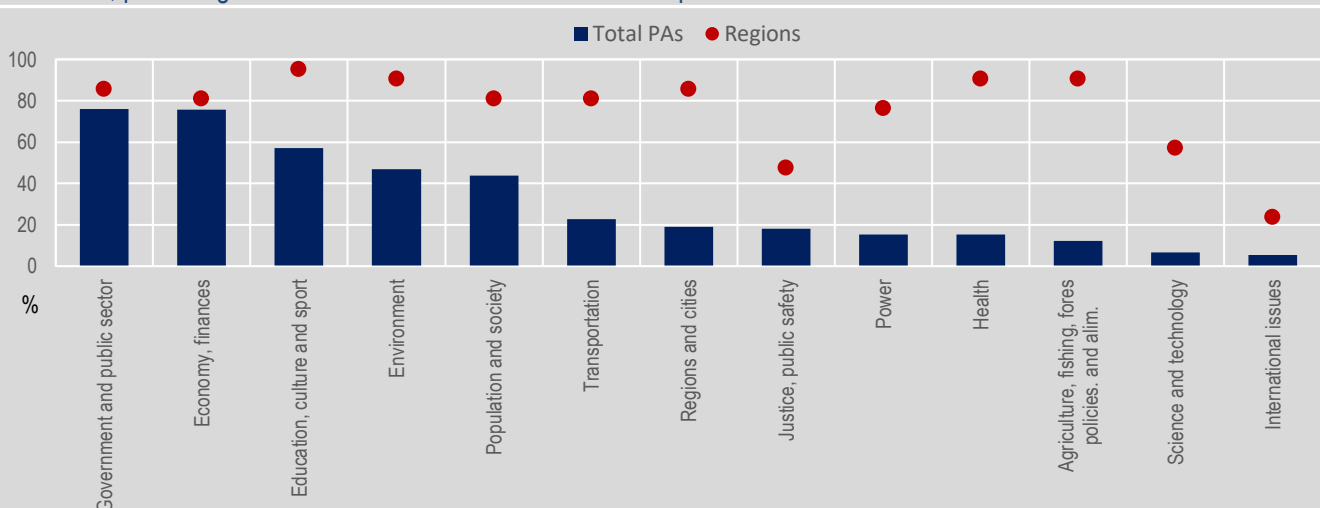
Online services mainly dedicated to businesses

Compared to the online availability of services, 47.8% of the local PAs (54.6% of the Regions) declared now possible to start and conclude electronically the entire procedure relating to the requested service. Best performances for Municipalities in Veneto (70.8%), Lombardy (62.9%) and Emilia-Romagna (62.4%), offering at least one service at the maximum level of online availability (Table 21).

In 2018, similarly to the previous edition, among the 24 observed services, those offered online at any level of interaction were mainly intended for businesses, such as calls for tenders (85.6%; 79.5% in 2015) and the One Stop Shop for Productive Activities (82.8%; 74.6% in 2015).

In 2018, the online access to services was possible through digital identity (Spid) in 20.5% of the local Pas, 72.7% of the Regions, 58.2% in the larger Municipalities. National services card (CNS) for 21.9% of the local PAs and electronic identity card for 5.5%. Other specific forms of access indicated where "territorial digital identity management" (e.g. FedERa, FedUmbria) and the use of "Pec" or direct access without any identification (Table 24).

FIGURE 3. AVAILABILITY OF ONLINE SERVICES SUPPLIED BY AT LEAST 50% OF LOCAL PAs
Year 2018, percentage values 2015 and increase 2018 on the total of local PAs that offer online services
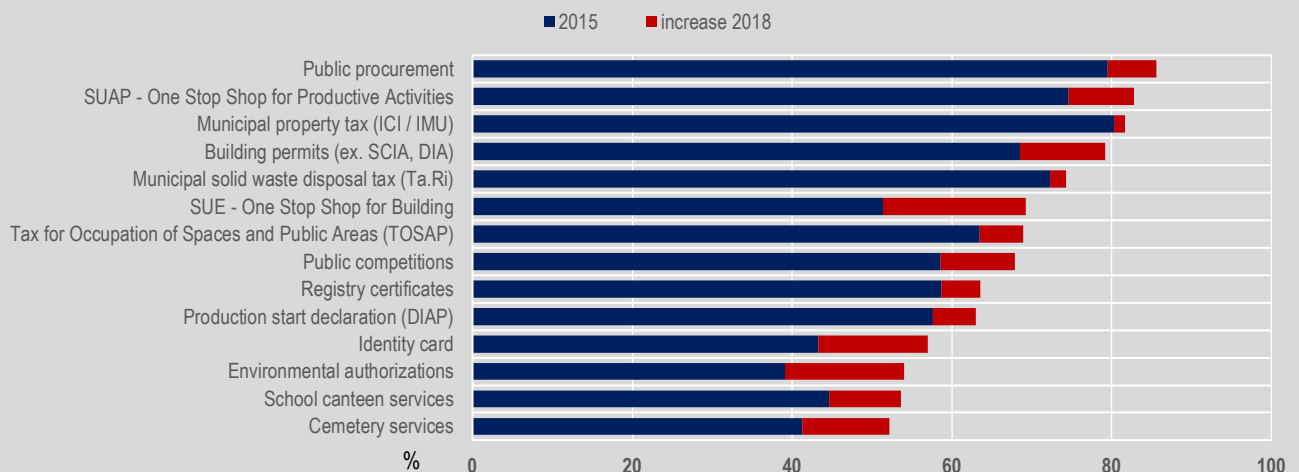
Increasing demand of improved online services

In 2016-2018, over 40% of the local PAs in the Center-North carried out technical, financial or regulatory interventions to improve the services rendered online (29.4% in the South). The most common effects were the increasing of online requests out of the total and of practices processed entirely online out of the total (59.2% and 49.2% respectively), as well as time saved waiting for online services (43.7%).

Users' level of satisfaction with online services was less monitored (11.3%), but concerning 51.1% of the larger Municipalities and 68.2% of the regional Administrations. Regions also defined target indicators on the digitization level to be achieved in the three-year period (77.3% against 22.1% of the Municipalities with over 5 thousand inhabitants) (Table 25).

In 2018, 64.6% of local administrations offered online services also available via mobile devices such as smartphones or tablets, 37.2% also via mobile messaging (SMS, WhatsApp, etc.) and 23.7% on free apps for mobile devices. Some Administrations used CRM software applications to manage information about their users (citizens, businesses or other entities), collected through various channels (web, app, counter, telephone, etc.) (5.6%; 63.6% of regional Administrations and 5.5% of municipalities) (Tables 26 and 27).

FIGURA 4. TOOLS USED IN THE THREE YEAR 2016-2018 TO IMPROVE THE ONLINE SUPPLY, BY TYPE OF INSTITUTIONS AND GEOGRAPHICAL BREAKDOWN. Year 2018, percentage values out of the total of local PAs
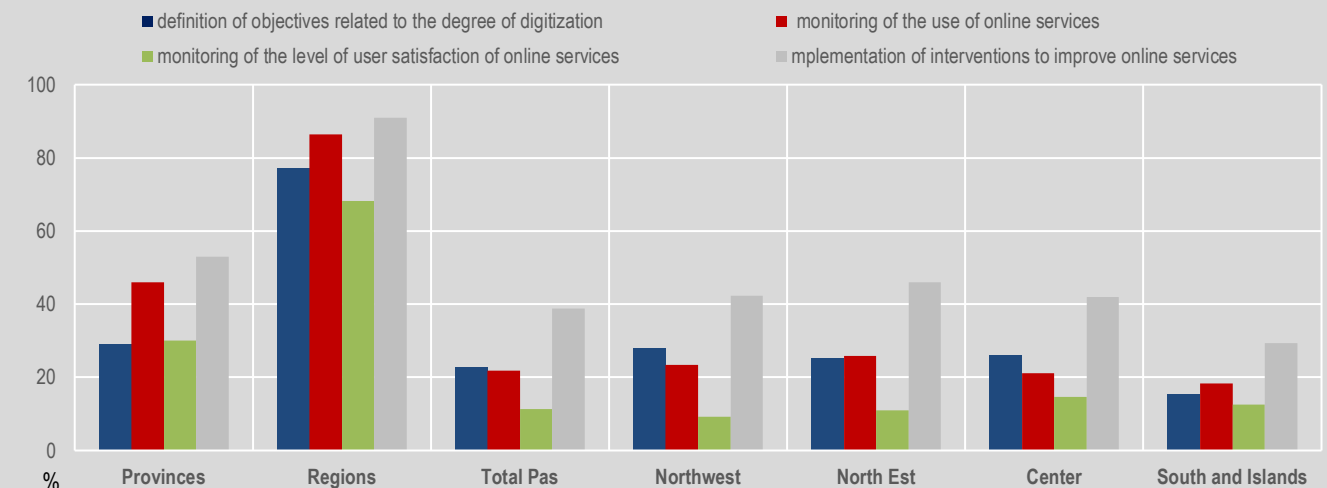
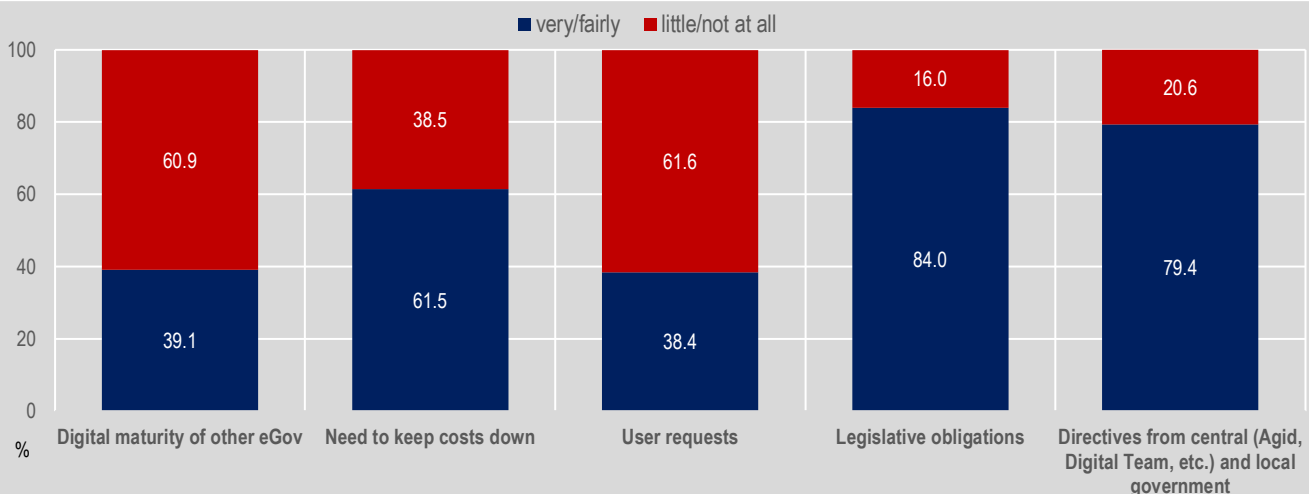## Not enough investments in artificial intelligence and big data by PAs

In this edition of the survey, for the first time local authorities were asked about the decision to invest, in the three-year period 2018-2020, in innovative tools to improve the offer or management of online services.

Larger Administrations demonstrated awareness towards Artificial Intelligence (AI) tools, such as chatbots, machine learning techniques and big data analysis: three out of ten Regions declared to be interested in investing in AI and more than half in techniques for analyzing large amounts of data referred to 'things' (Internet of things), 'people' (from social media, website, from other mobile applications) and other types (59.1%).

About 22.0% of the Municipalities with more than 60 thousand inhabitants made or intend to make improvements in the online offer by investing in those technological innovations (Table 29).

In the three-year period 2016-2018, factors that significantly impacted on the digitalization process of the local governments were linked to legislative obligations and directives from the central government (Agid, digital team, etc.) (35.3%) and from the local government (30.4%) (Table 30 and Figure 5).

FIGURE 5. FACTORS THAT AFFECTED THE DIGITALIZATION PROCESS OF LOCAL PAa IN THE THREE YEARS **2016-2018.** Year 2018, percentage values out of the total of local PAs

	Digital maturity of other eGov	Need to keep costs down	User requests	Legislative obligations	Directives from central (Agid, Digital Team, etc.) and local government
little/not at all	60.9	38.5	61.6	16.0	20.6
very/fairly	39.1	61.5	38.4	84.0	79.4

Focus on Municipalities in Metropolitan Cities

Considering 12 indicators among the main ones detected by the survey and calculating the average ranks[ii] of each metropolitan city, Bologna, Milan, Florence, Bari and Venice gained the top 5 positions in the ranking, whereas Reggio Calabria and Genoa fell in the last positions, overtaken by Messina and Palermo (Prospect 2 and Figure 6).

FIGURE 6. THE USE OF ICT IN THE MUNICIPALITIES OF THE14 METROPOLITAN CITIES AND CLASSIFICATION ON THE BASIS OF 12 INDICATORS. Year 2018, percentage values and average rank
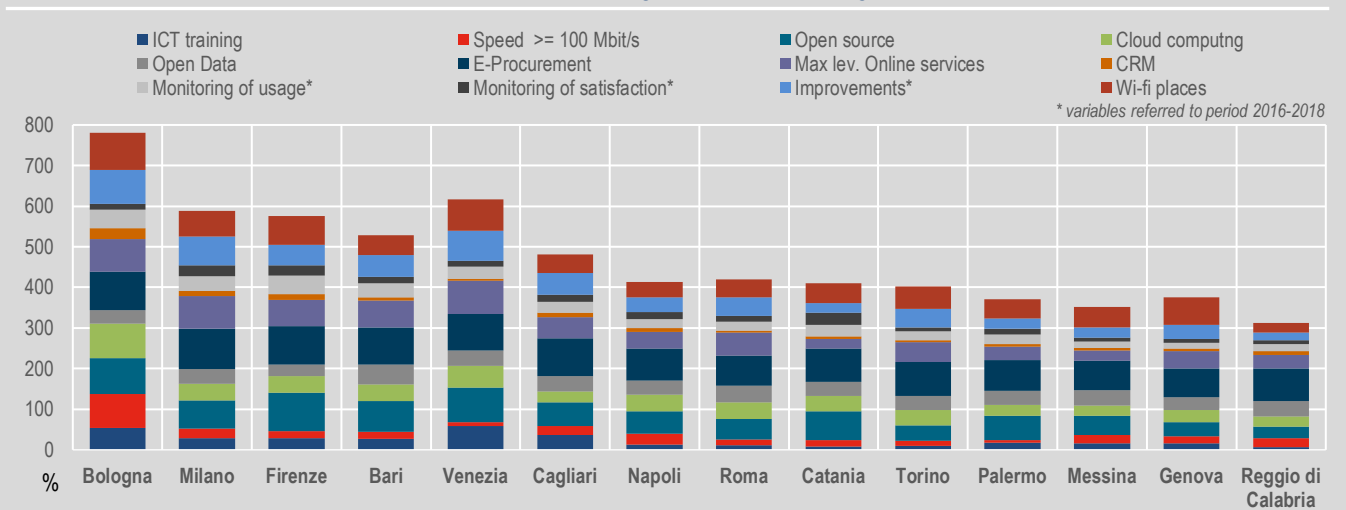
Methodological note

Introduction and regulatory framework

The survey aims to acquire information on the technological equipment available from the local administrations in support of internal administrative activities and relations with citizens, businesses and other public administrations, helping to complete the statistical information system on the information society in accordance with what has been defined from the European Union. The survey is foreseen by the National Statistical Program 2017-2019 - Update 2018-2019 (code IST-02082).

Frame population, survey and analysis units

The survey involves the main local public administrations: regional administrations and autonomous provinces, provinces, mountain communities and municipalities. Below is the table of information sources used for the production of estimates.

PROSPECTUS 1. LIST OF INFORMATION SOURCES USED FOR THE PRODUCTION OF ICTPA STATISTICS

	Economic characteristics and variables used for the estimates
Information sources	
List S13 *(referring to the date of 01/30/2018)*	Data about Institution
Annual account of State Accounting *(Ragioneria Generale dello Stato)*	Employees

The sampling design

The survey is census for all types of Administrations, with the exception of the Municipalities of nine Regions for which a sampling procedure has been adopted (Liguria Region, Umbria, Lazio, Abruzzo, Molise, Campania, Puglia, Calabria, Sardinia). For the selection of Municipalities from a population of 7,954 units, a one-stage stratified random sampling plan was adopted, with a probability of constant inclusion for all units belonging to the same stratum.

All the provincial capitals were included in the sample, all those with a population greater than 20,000 inhabitants and all those belonging to the metropolitan city area present in the nine Regions. For the remaining Municipalities, a stratified stage sampling design was used, in which the layers are identified by the intersections of the following variables Population classes[iii] x Metropolitan Cities x Regions / Autonomous Provinces for a total of 264 layers containing at least one population units.

The optimal allocation was calculated by planning the percentage variation coefficients of the "resident population" variable for the following domains:

• Dom1. 8 population classes;

• Dom2. 21 Regions or Autonomous Provinces;

• DOM3. 21 Regions or Autonomous Provinces x 8 population classes;

• Dom4 107 Provinces / Metropolitan cities.

The determination of the sample size and its allocation between the layers is the result of a methodology, which is an extension to the multivariate and multi-domain case of Neyman's allocation. On the universe of 7,954 Municipalities, the selected sample, including 6,505 Municipalities (of which 2,734 the Municipalities sampled in the nine Regions), was defined on the basis of some hypotheses of estimation of proportions and on the basis of the resident population. The sample allocation resulted in expected variation coefficients of the "population" variable of less than one percent in each type of domain.

The collection of information

The Statistical Offices of the Regions and the territorial ones of Istat have managed the survey in their own territory. In particular, 13 Statistical Offices of the Regions and Autonomous Provinces participated in the data collection,

monitoring and validation operations as intermediate bodies while for Liguria, Umbria, Lazio, Abruzzo, Molise, Campania, Calabria, Sardinia Istat he directly oversaw all the stages of the survey thanks to the work of the experts identified in the six territorial offices referring to the territory of the eight regions.

The technique used for data collection is that of the self-compilation of an electronic questionnaire available on the Gino platform which guarantees the authentication and protection of the data transmitted; the administrations were sent the PEC code and password to access the acquisition site via PEC. The phases of monitoring, reviewing and validating the data were also carried out through functionalities developed by Istat ad hoc and made available through a website dedicated to intermediate bodies.

Data processing: process, tools and techniques

Statistical treatment of partial non-responses - The first phase of the checks on the recorded data concerned the presence of measurement errors and compliance with the rules of consistency in the responses provided by the bodies investigated. We therefore proceeded to contact the respondents and subsequently to check and correct corrections on the variables. With regard to quantitative data, corrective methods have been adopted to reduce the effect of non-respondents and incorrect answers through the imputation of data inferred from previous years and, for the staff variable, from the annual account of the State General Accounting Office. For the treatment of incorrect or incomplete qualitative variables, only deductive and deterministic methods (logical imputation) have been applied.

Statistical treatment of total non-responses and response rates - The estimates are produced using the final carry-over coefficients of the universe associated with each unit, determined on the basis of the probability of inclusion in the sample and the probability of response in each layer; the coefficients were calibrated on the basis of known totals of auxiliary variables for each domain. The calibration was carried out taking into account the planned domains.

The results obtained are based on a total of 6,360 validated responses equal to 94.0% (it was 92.5% in 2015) of the 6,766 units selected from the starting list and 77.4 (it was 89.6% in 2015 and 72.7 % in 2012) of the reference universe of local PAs, all Regions and Autonomous Provinces, all 100 Provincial Administrations and Metropolitan cities, 87.1% per cent of Mountain Communities and 76.9% of Municipalities.

Statistical load reduction strategies - To reduce the statistical load on respondents to Municipalities with fewer than 5,001 inhabitants and mountain communities, a questionnaire was administered with a reduced number of questions (short form) compared to the larger questionnaire administered to municipalities with more of 5,000 inhabitants, to the provinces, regions and autonomous provinces (long form).

The output: main analysis measures

In particular, information was collected on: existence of IT infrastructure, ICT training, management of ICT functions, ICT equipment, connectivity, cloud computing, dematerialisation and computerization of management activities, e-procurement, open data, offer of online services, monitoring and innovation.

The accuracy of the estimates

The estimation method used is based on the attribution to each respondent Municipality of a final weight, which indicates how many Municipalities of the population it represents. The final weights are determined on the basis of the probabilities of inclusion in the sample and the response rates. Furthermore, they are calibrated using the number of Municipalities as auxiliary variables.

In order to assess the accuracy of the estimates produced by a sample survey, it is necessary to take into account the sample error that derives from having observed the variable of interest only on a part (sample) of the population.

This error can be expressed in terms of absolute error (standard error) or relative error (i.e. the absolute error divided by the estimate, which is called the coefficient of variation, CV).

Through simple calculations, it is possible to obtain the confidence intervals with a confidence level of 95% (α=0,05). These ranges therefore include unknown parameters of the population with probability equal to 0.95. The following table reports the relative error and the confidence intervals associated with percentage values of the point estimate of some of the main variables of the ICTPA survey, in the broader study domain (total Municipalities) (Table 2).

PROSPECTUS 2. Relative errors and confidence intervals for the main ICTPA variables. Year 2018

INDICATORS	A – Estimates (%)	B – Relative error (CV)	Stima intervallare (%)		
			C - Semi interval (A * B * 1.96)	Lower limit of CI (A - C)	Upper limit of CI (A + C)
Municipalities with internal autonomous IT offices	14.9	0.020816878	0.607171366	14.274	15.488
Municipalities with associated management IT offices	11.1	0.011411951	0.247523099	10.819	11.314
Municipalities with employees who participated in ICT training activities	16.3	0.017824809	0.568253733	15.697	16.834
Municipalities that use VoIP	34.9	0.013155819	0.90000957	34.004	35.804
Municipalities that use Cloud Computing services	33.8	0.013534905	0.897172356	32.922	34.716
Municipalities that use Open source software	50.3	0.009937413	0.979360333	49.303	51.261
Municipalities that use e-procurement purchasing methods	80.8	0.005347809	0.847331606	79.992	81.686
Municipalities that have submitted tenders electronically for contracts above the threshold	11.9	0.022679449	0.529609367	11.385	12.444
Municipalities that make their data available in Open Data format	40.3	0.011792948	0.932265482	39.401	41.265
Municipalities that have provided free wi-fi access points	47.5	0.009963837	0.927610833	46.571	48.426
Municipalities connected to the Internet via DSL	69.9	0.005651286	0.77473221	69.169	70.718
Municipalities connected to the Internet via radio (wifi, satellite, etc.)	33.3	0.013332749	0.871150755	32.465	34.207
Municipalities connected to the Internet in optical fiber	27.8	0.010997589	0.598284281	27.158	28.354
Municipalities connected to the Internet with broadband technology	99.1	0.000882363	0.171454724	98.968	99.311

Information on data privacy

The data collected, protected by statistical secrecy (art.9 of Legislative Decree no. 322/1989) and subjected to the legislation on the protection of personal data (Legislative Decree no. 196/2003 modified by Legislative Decree no. 101/2018) may be used, also for subsequent treatments, exclusively for statistical purposes by the subjects of the national statistical system and may also be communicated for scientific research purposes under the conditions and according to the methods provided for by art. 7 of the Code of Deontology for the processing of personal data carried out within the national statistical system. The same data will be disclosed in aggregate form, so that it is not possible to trace the subjects who provided them or to which they refer.

Coverage and territorial detail

The estimates of the report statistics are available at the regional level and from this year also at the Metropolitan City level.

Timeliness

The first estimates produced are available in the year following that of the survey (data for 2018 were collected in 2019 and are released in 2020).

Data dissemination

The data can be consulted via file tables and report statistics. The latest dissemination refers to data for the year 2015 which can be consulted at the link https://www.istat.it/it/archivio/195035.

Some indicators are also disseminated through the Indicators for Thematic Objectives database of the Partnership Agreement 2014 - 2020 (link: http://www.istat.it/it/archivio/16777) within the following objectives and expected results:

- Thematic Objective 2, Improve access to information and communication technologies, as well as the use and quality of the same:

- Result RA 2.2 - Digitization of administrative processes and diffusion of fully interoperable digital services (Municipalities with fully interactive services);
- Result RA 2.3 - Enhancing the demand for ICT for citizens and businesses in terms of use of online services, digital inclusion and participation in the network (Availability of public wifi in the Municipalities).

- Thematic objective 11, Strengthening the institutional capacity of public authorities and stakeholders and an efficient Public Administration:
  - Result RA 11.3 - Improvement of the performance of the public administration (Municipalities with fully interactive services, Employees of local Administrations who have followed ICT training courses).

Notes

[i] In the following the "Regions and the Autonomous Provinces of Trento and Bolzano" are indicated with the unique wording "Regions" or "Regional Administrations"; the total number of "Regions" thus defined, results from the sum of 20 Regions and 2 Autonomous Provinces.

[ii] The average rank reached by each metropolitan city was calculated for each of the 12 variables considered; the 12 relative positions have been added and among these an average rank has been made to define the final classification.

[iii] The resident population classes are 8 (<1,000; 1,000 ⊢ 2,000; 2,000 ⊢ 3,000; 3,000 ⊢ 5,000; 5,000 ⊢ 10,000; 10,000 ⊢ 20,000; 20,000 ⊢ 60,000; ≥ 60,000); for the growing up to the universe, the classes have been changed to: up to 1,000; 1.001 ⊢ 2.001; 2,001 ⊢ 3,001; 3,001 ⊢ 5,001; 5.001 ⊢ 10.001; 10.001 ⊢ 20.001; 20.001 ⊢ 60.001; ≥ 60.001.

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