EXECUTIVE SUMMARY

ICT ELECTRONIC GOVERNMENT SURVEY

2021

Brazilian Network Information Center - NIC.br

CEO : Demi Getschko
CFO : Ricardo Narchi
CTO : Frederico Neves
Director of Special Projects and Development : Milton Kaoru Kashiwakura
Chief Advisory Officer to CGI.br : Hartmut Richard Glaser

Regional Center for Studies on the Development of the Information Society – Cetic.br

Executive and Editorial Coordination : Alexandre F. Barbosa
Scientific Coordination : Maria Alexandra Cunha
Survey Project Coordination : Fabio Senne (Coordinator), Ana Laura Martínez, Catarina Ianni Segatto, Daniela Costa, Fabio Storino, Leonardo Melo Lins, Luciana Portilho, Luísa Adib Dino and Luiza Carvalho
Statistics and Quantitative Methods Coordination : Marcelo Pitta (Coordinator), Camila dos Reis Lima, Isabela Bertolini Coelho, Mayra Pizzott Rodrigues dos Santos, Thiago de Oliveira Meireles and Winston Oyadomari
Sectoral Studies and Qualitative Methods Coordination : Tatiana Jereissati (Coordinator), Javiera F. Medina Macaya and Luciana Piazzon Barbosa Lima
Process and Quality Management Coordination : Nádilla Tsuruda (Coordinator), Maísa Marques Cunha, Rodrigo Gabriades Sukarie and Victor Gabriel Gonçalves Gouveia
ICT Electronic Government Survey Coordination : Manuella Maia Ribeiro
Field Management : Ipec - Inteligência em Pesquisa e Consultoria, Rosi Rosendo, Guilherme Militão and Lígia Rubega
Editing support team : Comunicação NIC.br : Carolina Carvalho and Renato Soares
Proofreading and Revision in Portuguese : Tecendo Textos
Translation into English : Prioridade Consultoria Ltda., Isabela Ayub, Lorna Simons, Luana Guedes, Luísa Caliri, Maya Bellomo Johnson and Melissa Barth
Graphic Design : Pilar Velloso
Publishing : Grappa Marketing Editorial (www.grappa.com.br)

Brazilian Internet Steering Committee - CGI.br
(in July, 2022)

Coordinator
José Gustavo Sampaio Gontijo

Counselors
Beatriz Costa Barbosa
Carlos Manuel Baigorri
Demi Getschko
Domingos Sávio Mota
Evaldo Ferreira Vilela
Fernando André Coelho Mitkiewicz
Jackline de Souza Conca
Jeferson Denis Cruz de Medeiros
José Alexandre Novaes Bicalho
Henrique Faulhaber Barbosa
Laura Conde Tresca
Marcos Dantas Loureiro
Maximiliano Salvadori Martinhão
Nivaldo Cleto
Orlando Oliveira dos Santos
Patrícia Ellen da Silva
Percival Henriques de Souza Neto
Rafael de Almeida Evangelista
Rosauro Leandro Baretta
Tanara Lauschner

Executive Secretary
Hartmut Richard Glaser

This publication is also available in digital format at www.cetic.br

Executive Summary ICT Electronic Government 2021

Carried out in 2021, the second year of the pandemic in Brazil, the fifth edition of the ICT Electronic Government survey identified the main changes that occurred in government organizations during this period. Data were collected referring to two units of analysis: federal and state government organizations of the executive, legislative, and judiciary branches and Public Prosecutor's Office; and local governments. In 2021, in addition to the analysis dimensions already investigated in previous editions – such as infrastructure, digital services and electronic participation –, new modules were included regarding the use of emerging technologies; actions aimed at personal data protection and privacy; and the use of information and communication technologies (ICT) in the fight against the pandemic.

Federal and state government organizations

NEW TECHNOLOGIES

Nearly half (45%) of federal and 22% of state organizations used Artificial Intelligence (AI) technologies in the 12 months prior to the survey. The adoption of AI occurred in greater proportions in the judiciary (55%), the Public Prosecutor's Office (50%), and legislative branches (48%). The adoption of applications related to the Internet of Things (IoT) and blockchain was reported by less than 20% of federal and state government organizations (Chart 1).

NEARLY HALF (45%) OF FEDERAL AND 22% OF STATE GOVERNMENT ORGANIZATIONS USED AI TECHNOLOGIES IN THE 12 MONTHS PRIOR TO THE SURVEY

The most used types of AI were machine learning for data prediction and analysis (32% of federal organizations and 9% of state organizations) and workflow automation (31% of federal organizations and 11% of state organizations). Also noteworthy was the use of text mining and written language analysis technologies by one in four federal organizations. Other investigated AI technologies were used by less than 20% of federal organizations, such as image recognition and processing, cited by only 13% of these entities.

ONLINE SERVICES AND COMMUNICATION

In 2021, three out of four federal organizations stated that they provided online the most requested public service to citizens, a situation that was mentioned by just over half of these organizations in 2019. In state entities, online provision of the most requested public service went from 31% in 2019 to 45% in 2021. There was also a decrease in public organizations that reported not offering online the most requested service, in both federal (from 8% to 2%) and state organizations (from 20% to 13%).

There was also an increase in the adoption of chats on websites, either with human assistants or in an automated way. At the federal level, real-time online customer service through chats rose from 8% in 2019 to 30% in 2021. In state organizations, the use of this service, which was 5% in 2019, reached 18% in 2021. The adoption of chatbots on websites increased from 9% in 2019 to 24% in 2021 among federal organizations, and from 6% to 18% among state organizations. However, these forms of

real-time customer service were still at much lower levels than other means of contact investigated by the survey, as shown in Chart 2.

In 2021, 99% of federal and 92% of state organizations had profiles or accounts on social networks. Although activities such as responding to comments from citizens on these profiles were among the most mentioned in federal (89%) and state (89%) organizations, less than a third of federal (29%) and state (31%) organizations offered services via real-time chats with human assistants. The use of virtual assistants or chatbots was also reported in smaller proportions (21% of federal and 15% of state organizations).

IN LOCAL GOVERNMENTS, PRACTICALLY ALL DIGITAL SERVICES INVESTIGATED BY THE SURVEY INCREASED IN 2021

Local governments

ICT INFRASTRUCTURE AND DIGITAL SERVICES

In 2021, the ICT Electronic Government survey pointed out that almost all local governments had access to the Internet via fiber optic connection (94%); in 2019, this proportion corresponded to 73%. The growth of this type of access was accompanied by lower proportions of access to connection via radio and telephone line (DSL), as shown in Chart 3. Despite these changes, local governments in the North (84%) used fiber optic connection in smaller proportions when compared to the South (97%), Northeast (95%), Southeast (94%), and Center-West (94%) regions.

Confirming the trend observed in the last editions of the survey, in local governments, practically all digital services investigated by the survey increased in 2021, such as generating electronic invoices, which increased from 41% in 2015 to 78% (Chart 4). The 2021 edition also revealed growth among local governments that received requests for public services, such as cleaning and lighting, by WhatsApp or Telegram (from 28% in 2019 to 48% in 2021) and through social networks such as Facebook or Instagram (from 45% in 2019 to 53% in 2021). The adoption of local government applications for this purpose also increased compared to 2019, from 11% to 17%.

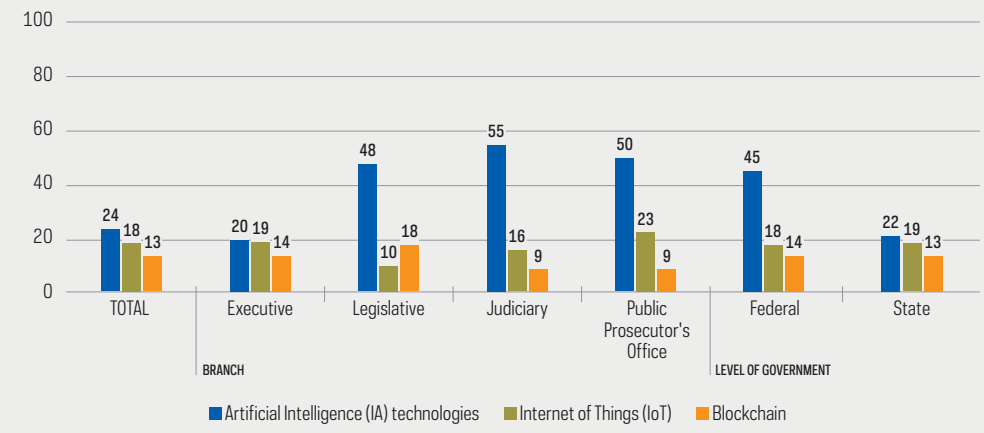
The use of ICT in the fight against the pandemic was also investigated. The results showed that most local governments used the Internet to disseminate information about the pandemic. More than 90% released information about COVID-19 vaccination and incidence in the municipalities, through both websites and profiles on social networks. About a quarter of Brazilian local governments made applications available that provided information or services related to COVID-19 during the pandemic. The availability of applications was more common among local governments of municipalities with more than 500,000 inhabitants (78%) and in capital cities (82%), being adopted by just over a third of local governments of municipalities with more than 100,000 and up to 500,000 inhabitants (35%).

In education, platforms or applications for remote teaching in local education networks (55%) were the resources most commonly made available by local governments. Classes through traditional media, such as radio and television, were the least adopted resource, present in only 12% of local governments. The ICT Electronic Government 2021 also identified a greater proportion of initiatives aimed at teachers. While 44% of local governments had some initiatives to offer devices (portable computers, tablets or mobile phones) to teachers, only 13% adopted this same action for students.

CHART 1

FEDERAL AND STATE GOVERNMENT ORGANIZATIONS THAT USED BLOCKCHAIN, INTERNET OF THINGS AND ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN THE LAST 12 MONTHS, BY TOTAL, BRANCH AND LEVEL OF GOVERNMENT (2021)

Total number of federal and state government organizations (%)



99% of federal government organizations had profiles or accounts on social networks

92% of state government organizations had profiles or accounts on social networks

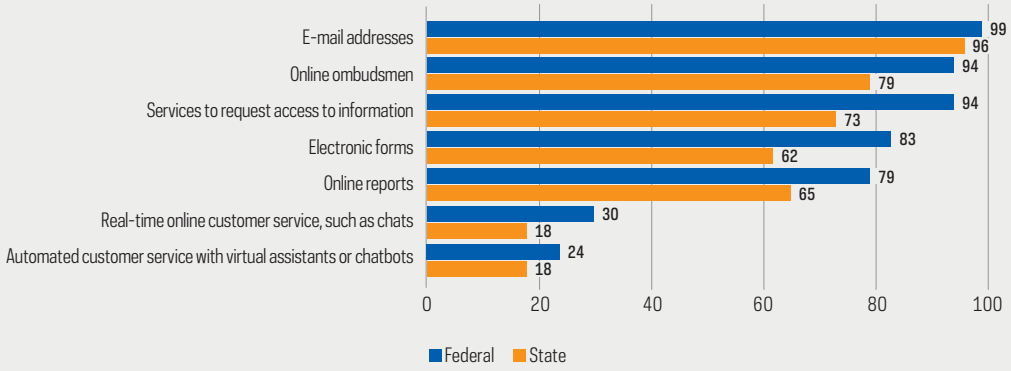
21% of federal government organizations with profiles or accounts on social networks offered automated customer service with virtual assistants or chatbots

15% of state government organizations with profiles or accounts on social networks offered automated customer service with virtual assistants or chatbots

CHART 2

FEDERAL AND STATE GOVERNMENT ORGANIZATIONS THATS PROVIDED CONTACT CHANNELS FOR CITIZENS ON THEIR WEBSITES IN THE LAST 12 MONTHS, BY TYPE OF CHANNEL AND LEVEL OF GOVERNMENT (2021)

Total number of federal and state government organizations with websites (%)



ELECTRONIC PARTICIPATION

Despite the growth of some forms of contact via websites, interaction initiatives such as chats with assistants in real time (19%) and virtual assistants or chatbots (8%) were made available at lower levels than other means of contact, such as e-mails (95%) and online ombudsmen (71%). There was an increase in the proportion of local governments with profiles on social networks, from 82% in 2019 to 94% in 2021. Among the local governments with profiles on social networks, service on these platforms with the support of chats with human assistants (20%) or chatbots (9%) was also mentioned in smaller proportions than other activities, such as posting news about the local governments (93%).

In 2021, all electronic participation initiatives investigated by the survey saw significant growth. The most mentioned – online public consultation – had an increase of 20 percentage points, from 19% in 2019 to 39% in 2021. Even with these changes, not even half of the local governments carried out online participation initiatives in the 12 months prior to the survey, such as polls (35%) and voting (28%).

Survey methodology and data access

Carried out every two years since 2013, the ICT Electronic Government survey maps the incorporation of technologies in the Brazilian public sector and their use for the provision of public services. In addition, the study investigates the existence of initiatives for access to information and society's participation in the activities of government organizations through technologies. The survey has two units of analysis: federal and state government organizations of the executive, legislative, and judiciary branches and the Public Prosecutor's Office; and local governments (municipal executive branch). Data collection for the 2021 edition, carried out by telephone, took place between August 2021 and April 2022. 580 federal and state government organizations and 3,543 local governments were interviewed. The results of the ICT Electronic Government survey, including tables of proportions, totals and margins of error, are available on the website of the Regional Center for Studies on the Development of the Information Society (Cetic.br) – https://www.cetic.br. The "Methodological Report" and "Data Collection Report" can be consulted in both the printed publication of the survey and on the Cetic.br|NIC.br website.

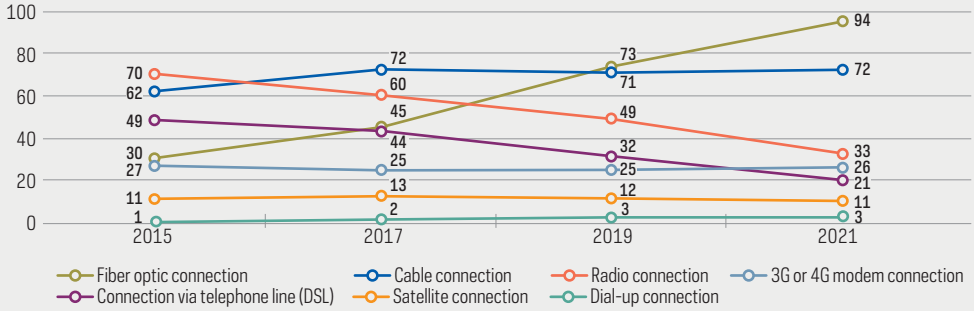
Actions related to privacy and personal data protection

In the ICT Electronic Government 2021 survey, a new module was included regarding actions related to the implementation of the Brazilian General Data Protection Law (LGPD). Among the initiatives investigated, one-third of state government organizations mentioned the appointment of data protection officers (DPO) (33%). At the federal level, 81% had appointed DPO, and 65% reported having online customer service channels available for citizens to send messages regarding the use of their personal data. Although the presence of online channels for requests regarding data processing was the measure most mentioned by local governments, less than a third reported having this type of service. The results of the new module suggest that federal and state government organizations and local governments are in the initial phase of adapting to the legislation.

CHART 3

LOCAL GOVERNMENTS WITH INTERNET ACCESS BY TYPE OF CONNECTION IN THE LAST 12 MONTHS (2015 - 2021)

Total number of local governmentts with Internet access (%)



19% of local governments with websites offered real-time online customer service, such as chats

8% of local governments with websites offered automated customer service with virtual assistants or chatbots

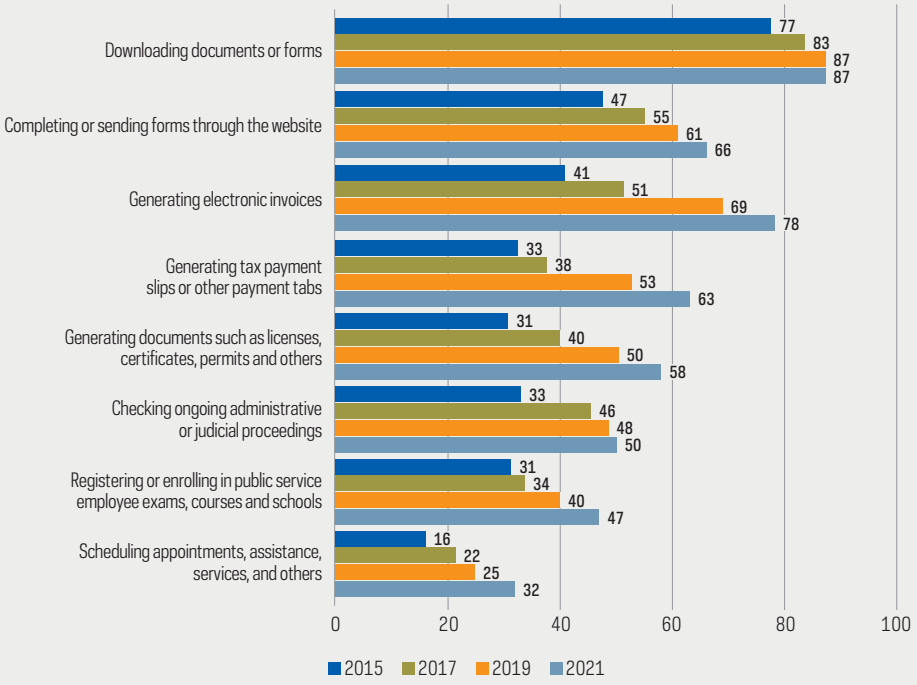
20% of local governments with profiles or accounts on social networks offered real-time online customer service, such as chats

9% of local governments with profiles or accounts on social networks offered automated customer service with virtual assistants or chatbots

CHART 4

LOCAL GOVERNMENTS BY TYPE OF SERVICES PROVIDED ON THEIR WEBSITES (2015 - 2021)

Total number of local governments with websites (%)



ABOUT CETIC.br

The Regional Center for Studies on the Development of the Information Society, a department of NIC.br, is responsible for producing indicators and statistics on the access and use of the Internet in Brazil, disseminating analyzes and periodic information on the Internet development in the country. Cetic.br is a Regional Study Center, under the auspices of UNESCO. More information at http://www.cetic.br/.

ABOUT NIC.br

The Brazilian Network Information Center – NIC.br (http://www.nic.br/) is a non-profit civil entity, which in addition to implementing the decisions and projects of the Brazilian Internet Steering Committee, has among its attributions: coordinate the registration of domain names – Registro.br (http://www.registro.br/), study, address and handle security incidents in Brazil – CERT.br (http://www.cert.br/), study and research network technologies and operations – CEPTRO.br (http://www.ceptro.br/), produce indicators on information and communication technologies – Cetic.br (http://www.cetic.br/), implement and operate Internet Exchange Points – IX.br (http://ix.br/), enable the participation of the Brazilian community in the global development of the Web and support the formulation of public policies – Ceweb.br (http://www.ceweb.br), and host the Brazilian W3C office (http://www.w3c.br/).

ABOUT CGI.br

The Brazilian Internet Steering Committee, responsible for establishing strategic guidelines related to the use and development of the Internet in Brazil, coordinates and integrates all Internet service initiatives in the country, promoting technical quality, innovation and dissemination of the services offered. Based on the principles of multistakeholderism and transparency, CGI.br represents a democratic Internet governance model, internationally praised, in which all sectors of society participate equitable in the decision-making. One of its formulations is the 10 Principles for the Governance and Use of the Internet in Brazil (http://www.cgi.br/principios). More information at http://www.cgi.br/.

Access complete data from the survey

The full publication and survey results are available on the **Cetic.br** website, including the tables of proportions, totals and margins of error.

ACCESS
WWW.CETIC.BR