MAXIMILIANO CAMPOS RÍOS

ARTIFICIAL INTELLIGENCE AND PUBLIC POLICY IN LATIN AMERICA AND THE CARIBBEAN:

EXPERIENCES AND CONTRIBUTIONS TOWARD SHAPING A REGIONAL ROADMAP

SISTEMA ECONÓMICO LATINOAMERICANO Y DEL CARIBE

CLAD

Maximiliano Campos Ríos

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SISTEMA ECONÓMICO LATINOAMERICANO Y DEL CARIBE

CLAD

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About the author

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Acknowledgments

It is a true honor to express my sincere gratitude to those who have accompanied me on this theoretical and practical journey through the pages of this book, *Artificial intelligence and public policy in Latin America and the Caribbean: Experiences and contributions toward shaping a regional roadmap*. This work is the result of years of work, reflection, and collaboration, and would not have been possible without the generous support and commitment of many individuals and institutions.

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This project would not have come to life without the commitment and dedication of my research team. Their rigor, enthusiasm, and collaborative spirit were fundamental in all stages of the process. In particular, I would like to thank Rosario Sacoma-

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I am equally grateful to my colleagues, mentors, and friends who, over the years, have shared their experience, knowledge, and critical insights, enriching my own understanding of the challenges and opportunities presented by artificial intelligence in public policy formulation. Their exchanges, always stimulating, have left a deep mark on my professional and academic training.

To my family and loved ones, my most heartfelt thanks. Their unconditional support, patience, and silent but constant presence have been the emotional driving force behind this intellectual endeavor. Without them, none of this would have been possible.

I would also like to acknowledge the dedicated work of those who participated in the editing and production of this book: Yeimy Ramírez Ávila, Klibis Marín Mejías, and Carlos Ortuño from SELA, as well as Alejandro Milanesi from CLAD. Their thoroughness and professionalism have been key to transforming this manuscript into a polished and coherent publication. I am also grateful for the contributions and suggestions received from the CAF team, especially Nathalie Gerbasi, Enrique Zapata, and their team, whose critical and constructive insights significantly enriched the final content.

And finally, to you, the readers: thank you for opening these pages with curiosity and commitment. I trust that the reflections contained herein will invite you to imagine and build, from your respective spaces, a regional roadmap toward more inclu-

sive, responsible, and effective public policies around artificial intelligence. In a context of accelerated digital transformation, Latin America and the Caribbean have the opportunity to lead a collaborative and visionary approach that puts technology at the service of the common good, equity, and sustainable development.

Maximiliano Campos Ríos

Institutional foreword

Dr. Clarems Endara

SELA

Artificial intelligence (AI) is rapidly transforming our societies, and its impact on public administration is no exception. In Latin America and the Caribbean, this technology poses certain challenges, but it also offers an unprecedented opportunity to modernize state management, make it more efficient and orient it towards the needs of its citizens. This book focuses precisely on that intersection - the adoption of AI in public institutions in the region - based on concrete experiences and contributions to outline a common roadmap.

In the Latin American and Caribbean context, public administration has historically faced structural limitations: from lack of resources to unequal access to essential services. However, AI offers the possibility of overcoming some of these obstacles through more effective planning, improved service delivery and closer links between the state and citizens. This book discusses the potential of these transformations and highlights the associated challenges: technological gaps, ethical concerns and the need for appropriate regulatory frameworks.

Throughout these pages, lessons learned from experiences in various countries in the region are compiled. Some governments

have advanced in the use of AI systems to optimize their internal processes, improve the quality of public services or promote transparency in decision making. Others are in more incipient, but equally relevant stages, facing crucial questions about how to implement this technology in an inclusive and sustainable manner. These experiences, in addition to enriching the regional debate, serve as a reference for other contexts.

The purpose of this book is to contribute to the design of an agenda that integrates the particularities of our region. Latin America and the Caribbean share common challenges in a diversity of political, economic and social contexts that require tailored solutions. It highlights both the progress achieved and the lessons learned, with the intention of providing a useful framework for governments, international organizations, academics and citizens interested in the subject.

This book is aimed at a broad audience, from public policy experts to people interested in understanding how technology can transform our institutions. The idea is not to simplify the complexities, but to open a space for accessible and enriching discussion. I hope that these pages will serve to foster a necessary conversation about the future of public administration in our region, a conversation that includes all stakeholders and promotes collaboration to build more equitable and effective solutions.

Ambassador Dr. Clarems Endara
Permanent Secretary of the
Latin American and Caribbean Economic System

Institutional foreword

Dr. Conrado Ramos

CLAD

Artificial intelligence is one of the most powerful drivers of transformation in contemporary public management and its emergence on the global agenda challenges States to rethink the way they design, implement and evaluate public policies. In this new horizon of unprecedented opportunities and challenges, Ibero-America cannot be oblivious to the revolution in the making, where public administrations face the dual challenge of incorporating disruptive technologies and, at the same time, ensuring that their adoption contributes to modernization, transparency and sustainable development.

From the Latin American Center of Administration for Development (CLAD), we are committed to promoting reflection and action on the digital transformation of the State, with special emphasis on the opportunities and challenges that AI brings. To this end, we are promoting a strategic agenda that includes the development of conceptual frameworks and knowledge generation, the training of public officials, the development of policy recommendations and the promotion of spaces for regional dialogue on the ethical and responsible use of AI in public administration. An example of this are the webinars and courses that address the incorporation of AI elements in the various aspects

of management, carried out by the CLAD School and its strategic training line *Academy for Public Innovation and Governance of the Future*. In addition to this, the *Ibero-American Charter on Artificial Intelligence* was drawn up in 2023, which marks a milestone on the road towards the establishment of a common framework and shared guidelines for the ethical, responsible and effective adoption of AI in the public administrations of Ibero-America. In this way, and with the Charter as a compass, CLAD has made progress in joining strategic alliances with a plurality of international organizations and development banks, to advance on issues of administrative modernization, public innovation and governance. We want to be part of the rich debate on the public administration of the future and promote dialogue among our countries.

The experience accumulated by CLAD and its member countries shows that the adoption of this tool is not an end in itself, but that its purpose should be none other than to strengthen the state's capacity to respond to citizen demands, reduce gaps and promote sustainable development. However, there are still significant challenges, given the deficits in infrastructure, digital talent, risks of algorithmic bias and the need for robust yet flexible regulatory frameworks. To this can be added the need to break the bureaucratic inertia of our administrations, while forming the political consensus that will allow us to make effective use of AI, even narrowing the gap with the most developed administrations.

Against this backdrop, this book is an invitation to think collectively about a regional roadmap based on collaboration, knowledge sharing and respect for democratic principles and human rights. Thus, the experiences, reflections and proposals

it brings together seek to guide decision-makers, public servants and citizens on how to take advantage of the potential of AI to build smarter, more inclusive and resilient administrations. The book is not limited to a systematization of advances and lessons learned, but rather, through a balance between technical analysis and accessibility, allows both specialists and those approaching the subject for the first time to find useful inputs and relevant reflections. Without settling arguments, its contribution is to invite us to think of an innovative public administration at the service of our societies.

In line with the principles that drive CLAD, the author invites dialogue and collaboration among all actors committed to modernizing and improving public administration in Ibero-America. Only through a collective and sustained effort will it be possible to harness the potential of AI to strengthen our institutions and build more efficient States, capable of responding to the needs of their citizens and promoting sustainable development.

Let us continue to build, together, a future where AI is a tool for development in Ibero-America.

Dr. Conrado Ramos
General Secretary
Latin American Center of Administration for Development

Introductory words

Dr. Christian Asinelli

CAF

States, artificial intelligence and ethics for transformation

As part of the so-called Fourth Industrial Revolution, AI has gained global relevance in many areas of development in recent years. In the private sector, for example, several application areas have adopted this technology to improve the operational efficiency of their processes, increase business productivity and project their capacity to analyze large volumes of data. Such is the case of telecommunications, finance, energy and oil companies, and the health sector. In the academic and scientific and technological fields, meanwhile, artificial intelligence has enabled progress in the areas of robotics, neuroscience, radar systems, computational development and the automation of administrative tasks, access to pedagogical resources, the development of educational platforms, and the detection of dropout risks at different academic levels.

But it is undoubtedly the public sector that tops the list of areas that have undergone the greatest renewal and impact thanks to the irruption and mainstreaming of artificial intelligence in

its different areas. Some examples of this transformation have been the enormous advances in the fields of, for example, public procurement, optimization of public spending, accountability, fraud detection and corruption risk mitigation, and improvement in the automation of processes and repetitive tasks. Innovation policies in the field of climate forecasting and climate change adaptation and mitigation, two fundamental axes for protecting the most vulnerable populations in our region and the world, also stand out. And in related fields, there are many opportunities to advance in national space policy and satellite development plans. The Argentine case is a good example of this, insofar as the country has historically positioned itself as a global leader in satellite matters, thanks to the work of leading figures such as the scientist Conrado Varotto, who headed the National Commission of Space Activities (CONAE) and INVAP, two institutions that continue to advance in applied research on artificial intelligence in these fields of development.

As Maximiliano Campos Ríos points out in another recent publication of his, *Cadenas de valor público y ecosistema digital* (2023), the State has a fundamental responsibility in terms of leadership and coordination of national innovation and digital transformation systems. This includes, of course, the reduction of gaps that still prevail today in, for example, access to connectivity, the development of digital infrastructures, the design of literacy policies and training in technological skills, and the promotion of public-private partnerships to accelerate this transformation.

In these and other sectors, CAF has established a series of priorities that include the organization and co-creation of multilateral meetings, summits, forums and meetings such as the one on the Ethics of Artificial Intelligence in Latin America and the Ca-

ribbean, which we have already developed in Chile and Uruguay, and which we intend to continue to carry out throughout the region. In addition, we accompany our member countries in the implementation of public policies and participatory projects on artificial intelligence with a multisectoral and strategic scope, and in the establishment of regional governance frameworks that are ethical, inclusive and sustainable. Such is the case of our Practical Guide for the design of Artificial Intelligence public policies and for the development of enablers for their implementation in Latin America and the Caribbean, a document that seeks to collaborate with the training of decision-makers, as well as the creation of quality public ecosystems that help close the technological gaps that still exist today in these areas.

An "extremely powerful instrument" in the words of Pope Francis, artificial intelligence must be a tool that is regulated, sustainable and, above all, one that recognizes the human heart, ethics and the common good above any algorithm. *Artificial Intelligence and Public Policy in Latin America and the Caribbean* projects these principles to the work of the States of the region in a systematic, orderly and understandable way for all readers. A necessary and urgent journey for our present and future.

Christian Asinelli
Corporate Vice President of Strategic Programming
CAF -development bank of Latin America and the Caribbean

1
Artificial intelligence, the catalyst for innovation in the public sector

"I like to be with someone
who is excited about the world".
Her (2013)

AI has advanced by leaps and bounds and has transformed the technological landscape and our daily interactions with the world around us. The film *Her* (2013), directed by Spike Jonze, presents a futuristic vision in which this technology, in addition to facilitating everyday tasks, establishes an emotional connection with the protagonist, Theodore Twombly. In the film, an advanced operating system, designed to adapt and evolve according to Theodore's emotional needs, becomes an indispensable companion in his life. This narrative highlights AI's potential to influence our emotions and personal relationships, and also raises questions about the nature of human connection and the ability of machines to play a role in our lives beyond the functional. In exploring this idea, *Her* offers us a window into the future of AI and invites us to consider how these emerging technologies could change the way we interact with the world.

As can be seen, AI is no longer a theoretical possibility, but a tangible reality that is impacting various sectors of our economies

and societies. From the automation of industrial processes to medicine, advances in AI are redefining the way we relate to our environment. In this context, public administration and state structures are no exception, and governments around the world, including those in Latin America and the Caribbean, are beginning to integrate AI technologies into their processes and services with the aim of improving efficiency, transparency and responsiveness to citizens' needs.

AI has established itself in different sectors with variable impact that promises to be greater in the coming years.

In industry and manufacturing, AI-driven automation has led to smarter and more efficient factories. Industrial robots, predictive maintenance systems and supply chain optimization are just some of the examples.

In the healthcare sector, AI has contributed to medicine through applications in diagnostics, personalized treatment and public health management. Some advanced algorithms analyze medical images with accuracy comparable to, but not equal to, that of humans, facilitating the early detection of disease. AI also helps in the management of epidemics and pandemics by analyzing large epidemiological datasets, as has recently been the case with COVID-19.

In finance, AI has improved fraud detection, risk management and personalization of financial services. Machine learning algorithms analyze transactions in real time to identify suspicious patterns and mitigate risks.

In transportation and logistics, AI is driving the evolution towards autonomous vehicles and optimizing transportation routes, which promises greater safety and efficiency, and a sig-

nificant reduction in carbon emissions. It is no longer far-fetched to think of cars that park themselves or even go on autopilot on different stretches of road.

In the education sector, AI tools personalize the learning experience, adapting educational content to the individual needs of students in order to achieve more effective and accessible learning. These changes occur at different levels (primary, secondary and university) and vary according to the resources available.

The relevance of AI today also extends to the way we interact with technology in our daily lives. Virtual assistants, such as Siri and Alexa, use AI to understand and respond to our requests, improving our productivity and making it easier for us to manage everyday tasks.

Personalized recommendations on streaming and e-commerce platforms, powered by AI algorithms, have redefined our entertainment and shopping experiences, making them more aligned with our preferences and needs.

The impact of AI on employment is another aspect to consider. Automation may displace certain types of employment, requiring reskilling and training for the jobs of the future. A balanced approach is needed that takes advantage of the opportunities of AI while mitigating the associated risks.

This influence of AI on employment reflects a deeper transformation affecting various sectors, including government. In addition to reshaping the employment landscape, automation and AI have changed the way governments and public institutions operate. The AI-driven evolution of public services not only seeks to adapt to these labor changes, but also offers an opportunity to reimagine and improve how services are managed and

delivered to citizens. Therefore, the integration of AI in public administration presents itself as a natural extension of these changes in order to address emerging challenges and harness the potential of these technologies to create a more efficient, equitable and accessible environment for all.

Against this backdrop, this book addresses the growing relevance of AI in public administration, focusing specifically on its application and potential in the region. AI is the latest innovation in a long series of modernizations of the state, a field in which I have worked for more than twenty years. However, the exponential speed with which change is occurring poses the risk that this book will quickly become obsolete. The important thing is not to adopt new technology because it is trendy, but to take advantage of its ability to add value, linking its implementation with value chains (Campos Ríos, 2023) that strengthen state capabilities. In this sense, the goal is to move towards an increasingly intelligent and immersive State (Campos Ríos, 2022). In addition to exploring the transformative potential of AI, this book addresses issues, such as transparency, equity and data privacy, and proposes a regional roadmap that prioritizes a responsible and effective adoption of these technologies.

Artificial intelligence and the new frontier of innovation

AI is a branch of information and communication technologies (ICT) that has reached great magnitude in recent years and is defined as a system that produces results based on predefined objectives, although colloquially it is used as a general term to cover a variety of technical types and categories (UN-Habitat, 2022). Technological development advances to a certain point

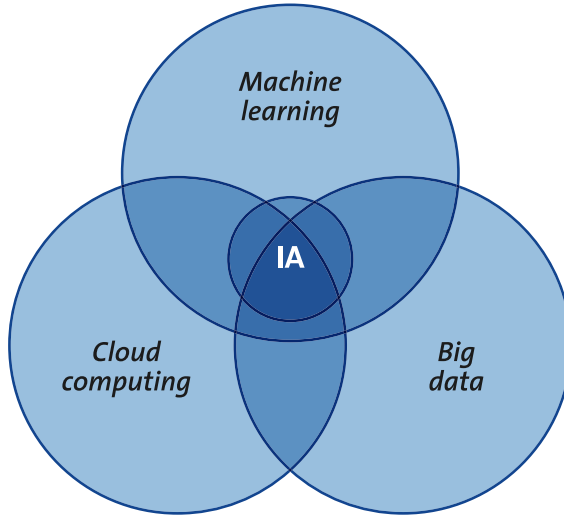
where there is a qualitative leap, a paradigm shift (Oszlak, 2020), as is the case with AI. This is a field of computer science that focuses on the creation of intelligent agents or machines with the capacity to perform tasks that traditionally require human intelligence, in other words,, agents that can reason, learn and act autonomously.

This technology has experienced rapid growth in recent years, given the advances in machine learning, cloud computing and the large data sets available (big data).

Machine learning allows machines to learn and improve from experience, like, for example, the Google Photos application we have on our cell phones, which automatically classifies people and objects in images using neural networks. On the other hand, cloud computing, offered by platforms, such as Amazon Web Services, Microsoft Azure and Google Cloud Platform, provides on-demand computational resources to run AI applications without the need for expensive infrastructure. Finally, big data, i.e. massive volumes of data, analyze behavioral patterns and trends in social networks or platforms, such as Facebook, X or the Google search engine.

These advances have been important in the evolution of AI, as they allow machines to learn autonomously, facilitate access to processing and analysis capabilities, and provide the raw material for its development. Together, machine learning, cloud computing and big data are the three areas that have redefined the way we live and work and have opened up new frontiers of knowledge and efficiency. In line with this, this book explores these developments and how public administration can make the most of their potential for the benefit of society.

Figure 1
Artificial intelligence, machine learning, cloud computing and big data



Note: Prepared by the authors.

Despite the above, the definition of AI is still subject to debate, and there is no one definition that is universally accepted in the different academic communities. When speaking of this technology, reference is made to a computer system capable of performing tasks that normally require human intelligence, such as perception, reasoning and problem solving (Boden, 2017). Its elements include the ability to learn, whereby systems learn from experience and improve their performance over time; reasoning, allowing them to analyze information and make logical decisions; autonomy to act without the need for constant human intervention; a perception of the world in order to understand it; and meaningful interaction with the world around them (Leslie et al., 2021).

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Other complementary views define AI as a special and disruptive type of technology that uses data and algorithms to generate autonomous or intelligent learning and behavior, capable of performing tasks that were previously considered exclusively human:

> ... the concept of Artificial Intelligence is understood as a special and disruptive type of information and communication technology (ICT), based on the use of data and algorithms, capable of generating learning and behavior considered autonomous and/or intelligent, as well as developing tasks usually considered human, focused on the achievement of certain objectives, including different areas of application, among others, perception, reasoning or action. (Centro Latinoamericano de Administración para el Desarrollo [CLAD], 2023, p. 6).

In this sense, the United Nations' definition of AI refers to the ability of a robotic system or computer to process information and generate results similar to the human thought process in areas, such as learning, decision making and problem solving (Jefatura de Gabinete de Ministros de la República Argentina [JGM], 2023). The word robot comes from the Czech term robota, meaning 'work' (Sandrone, 2019, p. 63). Since their conception, robots have evolved to perform tasks autonomously. Their capacity for self-regulation allows them to operate with minimal human intervention, adapt to diverse conditions, and improve their efficiency in fulfilling assigned tasks. However, this autonomy raises important questions about the control and monitoring of robots in complex and changing environments.

Therefore, AI attempts, firstly, to replicate human intelligence and the neural network model (Sigman and Bilinkis, 2023). Through feedback, which is a fundamental process in machine

learning, AI learns very effectively, especially in the context of deep learning. AI algorithms constantly adjust their models based on the feedback they receive from the training data and the responses they generate with this method. If the generated label is not correct, the model receives negative feedback and adjusts its internal parameters to improve its accuracy in future predictions.

The process of receiving data, generating predictions, and adjusting models based on feedback is known as "model training." As more feedback is provided and the model is exposed to a wider variety of data, its performance tends to improve, demonstrating the ability of AI to learn and adapt in a similar way to humans. For example, virtual assistants, such as Apple's Siri or Amazon's Alexa, receive voice commands, generate responses, and adjust their algorithms based on the accuracy and relevance of those responses. When the assigned label is not accurate, the system receives negative feedback and changes its internal parameters to improve accuracy in future predictions. This process is evident in streaming platforms, such as Netflix, where content recommendations are continuously modified based on user preferences and viewing behavior.

Beyond the discussion on whether AI is a system that can learn and adapt to new contexts or whether it is a technology that can simulate human intelligence in certain tasks, the focus of this book is its scope and applications, which are increasingly broad. In this sense, there are operations known as "automated decisions" (AD), or automated decision-making, that have become a topic of great interest in recent years, as they are driven by the rise of machine learning.

From Turing to AlphaGo: a journey through the history of artificial intelligence

In relation to historical development, at the beginning of the computer era, the mathematician Alan Turing created one of the first bases of what we now call AI. During World War II, Turing and his team created the Bombe project, a machine made to break the Enigma codes, the machine used by the Germans to encrypt their messages (Sigman and Bilinkis, 2023). This was not only an important milestone in the history of cryptography, but also laid the foundations for the development of AI.

After the war, there was a great deal of interest in the field of AI, and one of the first areas in which it was tested was gaming. In the 1950s, taking advantage of the strategic complexity of chess, the first attempts were made to create programs capable of competing against humans with AI algorithms. Developed by Turing and David Champernowne, *Turochamp* was one of the first games where these techniques were applied.

Over time, from multidisciplinary efforts, AI has evolved. We can look back to Warren McCulloch and Walter Pitts' 1943 proposal of computers as neural network systems similar to the human brain or Alan Turing's famous 1950 test, which defined a benchmark for comparing artificial intelligence with human intelligence (Abeliuk and Gutiérrez, 2021; Sigman and Bilinkis, 2023). Later, the Dartmouth Conference, held in 1956, marked a milestone by bringing together leading scientists, such as John McCarthy and Marvin Minsky, who explored how machines could solve problems, a capability previously considered exclusively human. This event marked the beginning of formal research in the field and laid the groundwork for the development of innovative techniques, such as artificial neural networks. The invention of the percep-

tron by Frank Rosenblatt in 1958 is also a notable example: the perceptron, a type of single layer neural network, was one of the first computational structures inspired by the workings of the human brain, using a simple architecture to classify inputs into two categories based on a set of adjustable weights.

It is also worth mentioning Eliza, a program that was created by Joseph Weizenbaum at the Massachusetts Institute of Technology in the mid-1960s. It was one of the first examples of natural language processing programs, with the aim of emulating a psychotherapist through a method based on conversational rules. Eliza analyzed patterns in the text entered by the user and then responded with questions or answers generated from these rules. Although her responses did not imply real understanding or intelligence, she was able to simulate a conversation, which led some users to establish an emotional connection with the program. Its impact was important in the field of artificial intelligence and human-computer interaction because it showed how a seemingly simple program could create a compelling experience of "human" interaction (Sigman and Bilinkis, 2023). Eliza also had an impact on the development of subsequent natural language processing systems and chatbots.

In relation to the development of AI and games, the AlphaGo project represented an important breakthrough in this field. DeepMind, an artificial intelligence company owned by Alphabet Inc (Google's parent company), was in charge of its development (Abeliuk and Gutiérrez, 2021). AlphaGo was created to play the ancient Chinese game known as Go, which is considered much more complicated than chess because of its large tree of possibilities and its reliance on intuition and spatial perception. In March 2016, the program had a major achievement when it defeated Go world champion Lee Sedol in a series of five games.

Continuing with examples, Tesla has revolutionized the automotive and technology industry by integrating AI into its autonomous vehicles, energy optimization systems and manufacturing processes. According to Roth Deubel (2022), "Teslism" represents a management model based on technological advances, behavioral sciences, the data industry and developments in neuroscience. AI enables improved autonomous driving through advanced neural networks, optimized battery efficiency, failure prediction and personalization of the user experience. This approach places Tesla at the forefront of digital transformation and redefines the relationship between technology and mobility.

It is important to distinguish between two types of AI: narrow and general. Narrow AI, also known as weak or applied AI, focuses on performing specific reasoning or problem-solving tasks within a limited domain. These tasks can be driven by complex algorithms and neural networks, but they remain singular and goal-oriented, e.g., the Business Opportunity Map of the City of Buenos Aires. On the other hand, general AI aspires to mimic human thinking in its entirety, encompassing a wide range of cognitive abilities and adapting to new situations without the need for prior reprogramming (JGM, 2023). The aforementioned virtual assistants and algorithms for recommending series or searches are examples of this type of AI, which has reached public administrations with tools, such as Prometea, in Argentina, or the virtual assistant AGESIC, in Uruguay, which will be discussed in more detail in the following chapters.

At its core, AI seeks to mimic the capabilities of the human brain to reproduce and motorize typical mental tasks, such as reasoning, learning and creativity. In that sense, it is worth remembering that the human mind cannot be reduced to a clockwork

piece (Sandrone, 2019), so imitating it - if possible - is not a simple task. This ability to emulate human cognitive processes has led AI to be applied in a wide range of fields, from science and technology to law and industry. The convergence of AI with robotics is generating profound changes in professions and industrial production methods.

The question posed by Sandrone (2019, p. 89), "Is the human being the real origin of everything artificial?", leads us to reflect on the nature and purpose of the technologies we develop. Artificial intelligence, for example, is based on principles and algorithms designed by humans, but it is not a mere copy of human intelligence. Although it mimics certain aspects of reasoning and decision-making, AI operates differently, processing information at speeds and volumes beyond our capabilities. Thus, AI, created and shaped by our technological needs and aspirations, reflects an amplified and specialized version of our intelligence.

In view of the above, AI offers opportunities to transform public administration in Latin America, but its implementation still faces challenges. Governments in the region are interested in incorporating this technology, recognizing the need to develop specific competencies and modernize administrative processes (Criado, 2024). However, its adoption is at an early stage, with limitations related to technological infrastructure, budget and existing regulatory frameworks. The Ibero-American Charter for Artificial Intelligence in Public Administration (Ibero-American AI Charter) represents a regional effort to establish a shared framework that promotes the use of AI in the public sector. This document proposes guidelines to balance technological innovation with the protection of rights, in addition to promoting interoperability and the inclusion of local governments with fewer resources. It also highlights the importance of consider-

ing not only the technical aspects of AI, but also its ethical and social implications, which are often less explored (CLAD, 2023).

A questionnaire conducted among those responsible for administrative modernization in the region revealed a high degree of interest in renewals through AI, although barriers, such as lack of resources and the digital divide persist. The results reflect the predominant perception of AI as a technical tool, focused on algorithms and data management, which could limit a broader perspective on its potential in public management. Despite these challenges, there is recognition of the possibilities that AI offers to optimize the quality and efficiency of public services, as well as to foster transparency and informed decision making (Criado, 2024).

Artificial intelligence in the Latin American and Caribbean governmental sphere

As can be seen from its definition, adopting AI in public administration promotes the automation of administrative and decision-making processes, predictive capacity and the reorganization of governance structures. This integration seeks to generate greater public value, improve efficiency and service quality, and encourage citizen participation in decision-making (CLAD, 2023). For example, process automation can be seen in the digitization of government procedures, such as the issuance of passports or driver's licenses, where *chatbots* and natural language processing systems speed up citizen service, reduce wait times and minimize human error. In this way, the State can replicate what is already happening in many companies that automate their supply chain (Johnson *et al.*, 2007). A concrete case is the

system used in Estonia, where most government services are available online, allowing citizens to execute procedures quickly and efficiently from anywhere (Estévez *et al.*, 2018). Since 2015, in Argentina there have also been some advances in this regard.

The predictive capabilities of AI also have applications in public administration. For example, in healthcare, AI algorithms can analyze epidemiological data to predict disease outbreaks and plan health interventions in advance. During the COVID-19 pandemic, many countries used predictive models to anticipate human and virus circulation and adjust containment policies. In the field of security, AI is used to predict high-crime areas by analyzing crime patterns, enabling better allocation of police resources and more effective preventive strategies.

Reorganizing governance structures through AI can improve decision-making and resource management. Shaping a desired future requires transforming the organization of the state, which involves developing innovative capabilities and establishing an organic state design (Grandinetti, 2019). For example, by implementing integrated data management systems, governments centralize and analyze large volumes of information from various agencies and departments. This facilitates a more holistic and coordinated view of public policies and their impact.

Interagency coordination mechanisms that facilitate the creation and maintenance of a common agenda are needed to develop more rational processes in public policymaking (Lafuente *et al.*, 2012). A concrete case is the use of AI-based control panels in smart cities, where traffic, environmental, energy and utility data are integrated to optimize urban management and improve the quality of life of citizens; for example, the system being tested by the Command, Control, Communications and

Computing Center (C4) of Bogota (Organization for Economic Cooperation and Development and CAF- Banco de Desarrollo de América Latina [OECD/CAF], 2022). This center is responsible for managing security and emergency response in the city by integrating the various entities in charge of these areas to provide a coordinated and efficient response to incidents. Through technological tools, such as a video surveillance system that includes facial recognition, the C4 allows the city to be monitored in real time, which facilitates informed decision-making and improves emergency response times. It also generates centralized information that contributes to the prevention and anticipation of critical events (Fierro, 2024).

According to some ideas promoted in recent years by the modernization of States (Asinelli, 2013), for this integration to be successful, it is necessary to ensure transparency and citizen participation at all stages of the process. This implies eliminating biases, being accountable and communicating algorithmic decisions in an adequate and comprehensible manner (CLAD, 2023). In that sense, relevant examples where these challenges and biases appear are explored throughout this book.

In the Ibero-American AI Charter, an important difference is mentioned between the two aspects of AI advancement of the State. The concept of *Artificial Intelligence in Public Administration* focuses on the adoption of AI in government agencies in activities, such as policy development, financial resource allocation and personnel training. On the other hand, *Artificial Intelligence from Public Administration* also aims to promote AI from the public sector to other areas of society, economy and culture through initiatives to promote its adoption and use outside the government. This book addresses specific cases in which AI tools have been incorporated in public administrations (which

responds to the first definition) and also focuses on national AI strategies in different countries (which exemplifies the second definition).

It is important to consider the socioeconomic impact of AI, especially in terms of employment and inequality. While AI-driven automation can increase productivity and efficiency in many sectors, it also raises concerns about job loss and disparity when accessing these technologies. Therefore, there is a need to implement policies and training programs that ensure a just transition to an AI-driven economy.

Another aspect to consider is ethics in the development and use of AI, as algorithmic decisions may be biased by the data used to train the models, which could perpetuate or even widen existing inequalities. AI developers and policy makers in ICT regulation must implement ethical practices and oversight mechanisms to ensure that AI is used in a fair and equitable manner.

Finally, data security and privacy is a crucial issue in the context of AI. AI systems often rely on large amounts of data to train and improve their performance, which poses risks in terms of privacy and information security, in addition to questions around the underlying logic. Robust rules and regulations must be put in place to protect personal data and ensure cybersecurity in an increasingly AI-driven world.

A double edge between opportunities and challenges

One of the most significant impacts of AI is its ability to improve the efficiency and effectiveness of public services. As mentioned, AI-based systems can process large volumes of data in real time,

enabling public administrations to make informed and timely decisions. However, these advances also bring with them challenges related to automation that may contribute to labor market disruption as a result of the displacement of workers in certain industries and the gap between those who have access to these new technologies and those who do not, especially these last few years after the COVID-19 pandemic (Arenilla Sáez, 2024). This raises the need for public policies that encourage training and reeducation of the workforce to ensure that the benefits of AI are distributed equitably and that existing inequalities are not deepened.

Another aspect to consider is inequity in access to AI technologies. Disparities in technological infrastructure and digital capabilities among countries in the region can result in unequal adoption of AI and thus widen development gaps. Governments and state bureaucracies must implement inclusive strategies that promote universal access to digital technologies and education in technological skills.

On the other hand, algorithmic decisions may be biased by the data used to train the models; this could contribute to perpetuating inequalities or even widening them. Therefore, it is necessary to establish regulatory frameworks that ensure transparency, accountability and fairness in the use of AI (Sánchez Zambrano, 2023). In addition, personal data protection and cybersecurity must be priorities to prevent abuses and ensure public trust in these technologies. In this sense, institutional trust influences democratic stability, as it affects how citizens perceive the effectiveness and legitimacy of institutions (Del Campo García, 2018).

In the context of Latin America and the Caribbean, AI can be a useful tool to address challenges, such as corruption, natural disaster management and social inclusion; for example, to detect patterns of corrupt behavior by analyzing data from public transactions or to improve emergency response through predictive systems that anticipate extreme weather events and coordinate the efficient distribution of resources.

As we move forward in the digital age, international and regional collaboration also becomes important to make the most of the opportunities provided by AI. Cooperation among Latin American and Caribbean countries can facilitate knowledge sharing, harmonization of regulations and the creation of shared infrastructures. Joint initiatives can accelerate the development of technological solutions tailored to local needs and realities, thus fostering faster and more effective integration of AI into various public sectors. Collaboration with international institutions and participation in global research networks also provide access to advanced resources and knowledge, which is crucial to keep up with rapid technological innovations.

Furthermore, the impact of AI on sustainable development cannot be underestimated. As part of a broader *govtech* strategy process for cooperation with *startups* (Zapata *et al.*, 2022), AI has the potential to contribute to the achievement of the UN Sustainable Development Goals (SDGs). For example, it can improve natural resource management, optimize transportation systems to reduce carbon emissions, and provide innovative solutions for waste management.

In the social sphere, AI helps to identify and address problems of inequality and social exclusion through tools for better urban planning and the implementation of inclusive public policies.

However, for these benefits to materialize, governments and organizations in the region need to develop regulatory frameworks and public policies that promote the ethical and responsible use of AI so that its development and application are aligned with the principles of sustainability and equity.

Table 1
Impact of Artificial Intelligence on the Sustainable Development Goals

SDG	Description	AI Application	Specific cases
SDG 1	End of poverty	Predictive analytics for social inclusion policies.	Identification System of Potential Beneficiaries of Social Programs (SISBEN), in Colombia.
SDG 2	Zero hunger	Optimization of agricultural production through data analysis and climate prediction.	Intelligent irrigation systems in Mexico, livestock management *software* in Argentina and mobile applications that connect small cocoa producers in El Salvador.
SDG 3	Health and wellness	Personalized diagnosis and treatment through the analysis of medical data.	*Chatbot* Salud Responde, in Chile; AnemiaApp, in Peru.
SDG 4	Quality education	Adaptive and personalized learning to improve academic performance.	AI systems under development to prevent school dropout (Chile, Mexico and Uruguay).

SDG	Description	AI Application	Specific cases
SDG 11	Sustainable cities and communities	Smart urban planning and efficient resource management.	Multi-agent simulations in Mexico, intelligent waste management in Brazil and integrated strategic planning models in cities such as Medellin, Colombia.
SDG 13	Climate action	Climate modeling and natural disaster management.	AI experiments to measure and forecast air pollution in Chile and Argentina.

Note. Prepared by the authors based on data available in *Strategic and Responsible Use of Artificial Intelligence in the Public Sector in Latin America and the Caribbean*, by the Organization for Economic Cooperation and Development and CAF-Development Bank of Latin America, 2022, OECD Publishing.

Structure of the discussion

This book is structured as a journey that connects concepts, practices and reflections throughout its ten chapters. It offers tools and perspectives to understand how the region can leverage AI to improve the quality of public services, process efficiency and interaction with citizens. The analysis begins with an approach to the importance of digital infrastructure and AI for sustainable and equitable development in the region, exploring the current state of connectivity, digital ecosystems and the human capacities needed to build public administrations that are more adapted to the technological environment.

The next chapter, "The importance of digital infrastructure for development in Latin America and the Caribbean," examines practical applications of AI in different areas of public management. From automated decisions to proactive data-driven policies, the cases presented illustrate how governments in Latin America and the Caribbean are beginning to integrate these tools into their modernization strategies. In this regard, emphasis is placed on the subnational perspective, given the impact these technologies have on municipalities and the opportunities offered by collaboration between different levels of government.

Next, the section, "From Theory to Practice: Artificial Intelligence Policies in the Public Sector in Latin America and the Caribbean," examines the transformative impact of AI in optimizing the efficiency, effectiveness and transparency of government operations, particularly in areas, such as security, defense, public health and environmental management.

The chapter "Artificial intelligence as a tool for continuous improvement" discusses how the transformation of public administration through technological tools, such as virtual assistants and *chatbots*, improves public services and strengthens digital democracy, although these are not exempt from ethical and privacy challenges.

Then, in the chapter "Artificial intelligence to build citizenship", we analyze how these technologies and digital tools are transforming the relationship between citizens and the State, with a focus on improving citizen participation, government transparency and the efficiency of public services.

The following chapter, "Challenges and Risks of Implementing Artificial Intelligence," discusses the potential for AI to improve efficiency in government decision making and associated risks,

such as algorithmic biases, lack of transparency, and inequities in access to technology. To complement this, the subsequent chapter, "An Ethical Framework for the Responsible Use of Artificial Intelligence in the Public Sector," discusses the critical need for sound ethical frameworks to guide the development and implementation of AI. It discusses recommendations and principles from international organizations that emphasize the importance of values, such as transparency, fairness, accountability, and the protection of human rights in the use of AI.

Next, in the section "Governance and Regulation of Artificial Intelligence," the value of effective and ethical management of AI that considers governance, regulation, data security, confidentiality and equitable access to information, in addition to collaboration among various stakeholders, the creation of sound institutional frameworks and the need for adequate technological infrastructure and cybersecurity, is highlighted.

The chapter "The Power of International Collaboration and Regional Cooperation" emphasizes the need for international and regional collaboration and cooperation in the development and implementation of AI, highlighting initiatives in various regions of the world that seek to promote innovation and regulate this technology in a responsible manner so that technological advances respect human rights and promote social welfare.

The closing of the book, "Elements and Strategies for Artificial Intelligence Policies in the Region," highlights the potential of AI to transform public administration in Latin America and the Caribbean, and the importance of training and talent development, equitable access to technology, transparency in decision-making and citizen participation in the design of AI-related

policies. In short, it advocates a strategic approach that allows governments to take advantage of AI to modernize their state structures and improve the quality of life of their citizens.

With these reflections, readers are invited to explore the possibilities that AI offers to transform public administration in Latin America and the Caribbean, thinking of a future where technology can be a tool for development and collective welfare.

2
The importance of digital infrastructure for development in Latin America and the Caribbean

"We will build a tower
that will reach for the stars!"
Metropolis (1927)

In the 1927 film *Metropolis*, Fritz Lang offers a futuristic vision of a highly technological and opulent city, which contrasts sharply with the harsh living conditions of its workers. This depiction illustrates a gap between technological progress and social welfare and warns of the dangers of an unequal transformation. In this way, the film reminds us of the importance not only of fostering technological innovation, but also of ensuring that its benefits are distributed equitably. This approach reminds us that it is important to prevent digital divides and persistent inequalities from widening the divide between different segments of society.

In an increasingly interconnected world, digital infrastructure is becoming the backbone on which new economic, social and cultural opportunities are built. The digital information age has brought with it a paradigm shift in the way people live, work and communicate, and the challenges of the 21st century cannot be met with 20th century conceptual models (Del Pino and Subirats,

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2021). The digital infrastructure, which includes a complex network of ICTs, is indispensable to sustain this transformation. From high-speed Internet access to the implementation of data centers and fiber optic networks, these components are vital to ensure robust and efficient connectivity.

However, despite the progress made in recent decades, Latin America and the Caribbean still face challenges related to the disparity in access to technology between urban and rural areas, as well as between different countries, reflecting an urgent need for continued investment and development in digital infrastructure. The impact of such development then extends beyond simple connectivity. It facilitates access to education, improves health services, drives business innovation and strengthens citizen participation. In this sense, it is an enabler for sustainable and equitable growth in the region.

First, it is necessary to examine the current state of connectivity in the region. The aforementioned gaps are evident both between countries and between urban and rural areas within the same countries, according to connection speed and geographic coverage. Connectivity involves not only access to the Internet, but also the quality and reliability of connections, which are essential for taking full advantage of the benefits of digitization.

ICT infrastructure development includes the construction of data centers, the deployment of structured cabling and the expansion of communications networks. Data centers are indispensable for information storage and processing, while fiber optic networks and other advanced technologies are necessary to ensure fast and reliable connectivity. Despite progress, investment in ICT infrastructure remains insufficient and uneven, limiting the region's digital development potential.

It should also be noted that the creation of a solid and sustainable digital ecosystem is important for boosting socioeconomic development. In this context, several countries in Latin America and the Caribbean have implemented noteworthy initiatives: Ecuador has advanced e-government policies and promoted digital inclusion through the Ministry of Telecommunications and the Information Society (MINTEL). Brazil has expanded its telecommunications infrastructure and fostered digital platforms for access to public services and the development of technology startups. Colombia has improved connectivity in rural areas and promoted digital skills training programs for vulnerable populations. Mexico has promoted the digitization of small and medium-sized enterprises (SMEs) and broadband access to strengthen the digital economy. Finally, Chile has created a regulatory framework that supports investment in technology and innovation (Comisión Económica para América Latina y el Caribe [CEPAL], 2021). These cases illustrate efforts towards inclusive digital development, although there is still work to be done to overcome existing gaps and achieve a more uniform impact across the region.

Collaboration between the public and private sectors is important for the advancement of digital infrastructure. Joint research and development projects can accelerate the deployment of new technologies and improve the efficiency of investments. These collaborations enable the sharing of resources and knowledge and can also catalyze policies and regulations that foster an enabling environment for technological innovation.

In addition to physical infrastructure, the development, implementation and maintenance of digital infrastructure require particular skills and competencies. The region must invest in educating and training its workforce to ensure that workers have the

necessary technical skills. It is important to educate in emerging technologies, cybersecurity and management, and to encourage cross-cutting skills, such as critical thinking and adaptability.

Current state of connectivity in the region

In the area of integration and modernization, public policies contribute to creating the digital environment and fostering the technological skills of the States. This becomes even more relevant due to the constant advancement of ICTs, so that the evaluation of the development of the digital ecosystem in the region can be based on indicators, such as access to the Internet, the ability to carry out procedures from home and connectivity through mobile devices.

Unfortunately, there are still significant challenges in terms of connectivity. According to the Broadband Development Index (IDBA) of the Inter-American Development Bank (IDB) and the Regional Broadband Observatory (ORBA) of the Economic Commission for Latin America and the Caribbean (CEPAL), less than 40% of people in the region have basic computer skills (CEPAL, 2021). It is essential to continue working on the expansion and optimization of telecommunications infrastructure in order to ensure that all people have equitable and quality access to the Internet throughout the region. Two of the most prominent cases are Brazil and Chile, which are leading the deployment of fiber optic networks at the regional level. In Brazil, Telefónica's strategy of industrializing fiber expansion, together with the response of some local players, has enabled it to achieve fiber optic penetration figures that now rival those of Europe. Chile has also achieved remarkable fiber optic penetration figures thanks to a relevant development of this technology. These advances

lay the foundations for the growth of innovative digital applications and services that drive digital transformation in both countries.

In this regard, according to the recent global AI index prepared by Tortoise (2024), the United States leads the ranking followed by China and Singapore, while Latin America barely manages to rank 30th, with Brazil at the top, followed by Chile (38th), Mexico (45th) and Argentina (47th). The global AI index is based on 122 indicators that compile data from public and private sources from 83 countries. These are divided into seven pillars: talent, infrastructure, operating environment, research, development, government strategy and business.

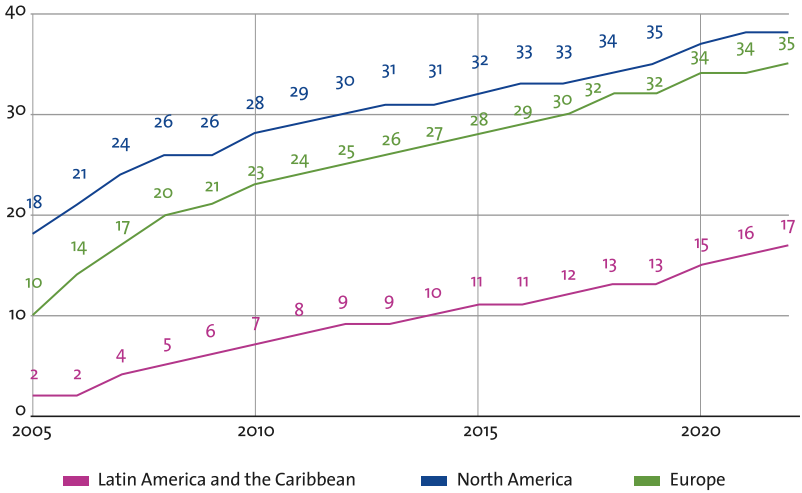
On the other hand, there has been a notable increase in the use of cell phones in our region in recent years (Becerra, 2023). However, despite the fact that most of the countries in question have extensive mobile coverage, there are still areas where this coverage is limited or non-existent, especially in rural or hard-to-reach areas. Emphasis is therefore placed on the importance of ensuring connectivity in these communities and facilitating access to online services by improving mobile coverage in these areas.

It is therefore essential that States adopt a proactive role to promote policies that foster connectivity and digital inclusion in a context where the latter concept is not limited to infrastructure and also encompasses the development of digital competencies in its citizens (Mariscal Avilés and Rentería Marín, 2017). In both the public and private sectors, the digitization of value chains provides opportunities to take advantage of the potential of technological tools and increase efficiency in providing services and managing resources. To this end, the States of each country

must take the reins of the digital transformation process and promote innovative forms of economic and social development for the benefit of society as a whole (Santiso and Cetina, 2022).

Graph 1

High-speed fixed Internet penetration, Latin America and the Caribbean, North America and Europe, 2005 to 2022*.



* Number of fixed broadband subscriptions per 100 inhabitants. Fixed broadband subscriptions refer to Internet subscriptions at download speeds of 256 kbit/s or more. Includes cable modem, DSL, fiber optic, other fixed (wireline) broadband subscriptions, satellite broadband and terrestrial fixed wireless broadband.

Note. Adapted from *Listado completo de indicadores de Desarrollo Digital*, Observatorio de Desarrollo Digital de la CEPAL, n. d., https://desarrollodigital.cepal.org/es/indicadores.

The digital ecosystem in public administrations in the age of artificial intelligence

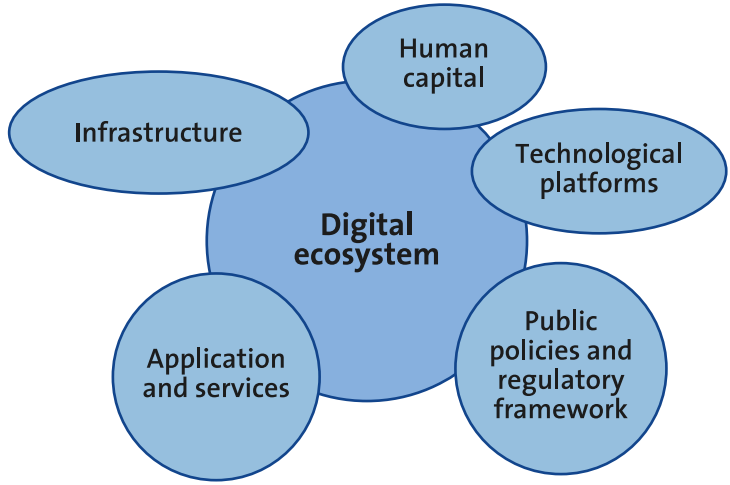
As I have developed in other works (Campos Ríos, 2023), within the framework of digital development and the use of AI in public administrations, it is pertinent to recover the notion of a digital ecosystem, which can be compared to biological ecosystems, where different species are interdependent thanks to the creation of networks and associations between them. According to Pérez Martínez and Rodríguez Pita (2021), digital ecosystems are "a huge set of very different economic agents that compete and collaborate from sophisticated technological platforms". This system is composed of different layers, such as "infrastructure, logic, platforms and open internet, applications, content and users" (p. 271). Katz (2015), on the other hand, describes it as a set of services and requirements of a diverse nature that are provided from – and through – telecommunications networks. The set of infrastructures and benefits associated with the provision of such services, as well as the interaction between providers of different nature that constitute the extended value chain of internet services.

The digital ecosystem encompasses several components (Campos Ríos, 2023). The technological infrastructure includes data centers, fiber optic networks and other advanced technologies needed to ensure fast and reliable connectivity. Technology platforms act as intermediaries in order to facilitate interaction between different economic actors and end-users and enable public administrations to implement AI solutions to improve decision-making, service delivery and resource management. In addition, these platforms provide a variety of applications, including procedure management systems, data analysis sys-

tems and communication tools that improve interaction with citizens.

In our region, especially in the context of public administration, the digital ecosystem manifests itself as a complex techno-economic system that relies on platforms that connect its actors. These platforms facilitate interaction and information exchange between governments, citizens and businesses, and optimize the efficiency and transparency of public services. By digitizing administrative processes, implementing e-government solutions and using emerging technologies such as those mentioned above, public administrations can offer more accessible, faster and personalized services.

Figure 2
Necessary elements for a digital ecosystem



Note: Prepared by the authors.

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Despite progress, challenges persist related to investment in ICT infrastructure, which remains insufficient and unequal. This limits the potential for the development of a robust digital ecosystem to support the effective use of AI in public administration. Collaboration between public and private, joint research and development projects can accelerate the implementation of new technologies, improve the efficiency of investments and thus facilitate the integration of AI into administrative processes.

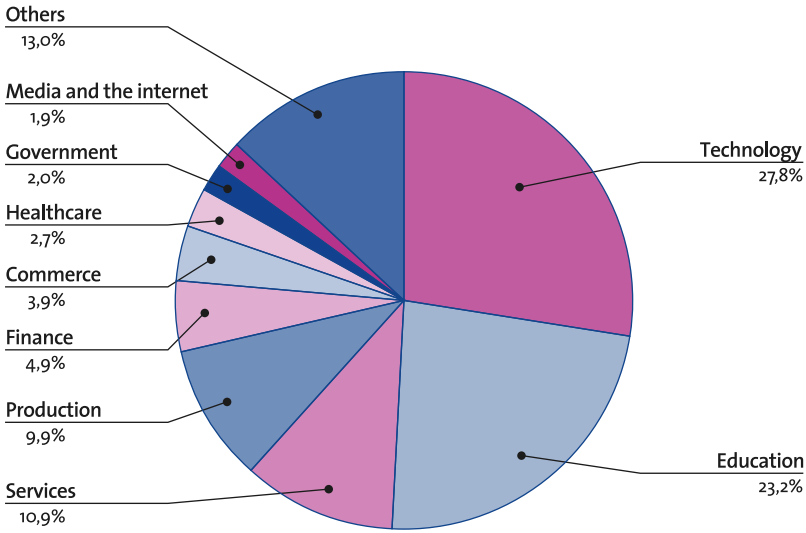
The development of a robust digital ecosystem also requires a focus on human capital. Public employees must have the technical skills necessary to operate and maintain this digital infrastructure, as well as to implement and manage AI solutions. Training in emerging technologies, cybersecurity and network management is indispensable to ensure that workers can adapt to new demands and use AI effectively to improve public services.

In this context, OpenAI is one of the most important companies in the development and application of AI globally. This company has developed advanced AI models, such as GPT-4, which have a wide range of applications in different sectors, including public administration. These applications include the processing and analysis of large volumes of data, the automation of routine tasks and the improvement of citizen service through virtual assistance systems.

OpenAI's natural language capabilities enable government entities to interact more effectively and in a more personalized way with citizens, simplifying the management of procedures and consultations. In addition, the integration of AI into administrative systems promotes more informed, data-driven decision making that optimizes resource allocation and improves the transparency and accountability of public institutions. As public administrations continue to adopt these technologies, collabo-

ration with entities such as OpenAI becomes a component of the system set to move towards an inclusive and efficient digital future.

Graph 2
Number of companies and/or organizations worldwide using OpenAI products, by industry, January 2023



Note. Adapted from *OpenAI, los sectores que ya utilizan su software,* by M. F. Melo, 2023, Statista (https://es.statista.com/grafico/29555/empresas-y-organizaciones-de-todo-el-mundo-que-utilizan-productos-de-openai/).

On the other hand, AI can also help improve the infrastructure of countries in the region. This possibility is not limited to the technical, but includes processes of digital transformation, sustainability and improvement in the relationship with users. AI makes it possible to model complex systems and perform ad-

vanced risk analysis for the planning, design and execution of infrastructure projects in areas, such as transportation, energy, water and sanitation. Examples such as the predictive model implemented in San Salvador, which uses traffic data to streamline public transportation, or the Pavimenta2 tool, which uses deep learning to diagnose the condition of roads in eleven countries, demonstrate how these technologies can significantly improve efficiency in asset and resource management (Cruz *et al*., 2024).

In addition to improving the operation and maintenance of countries, AI fosters sustainability and climate resilience by incorporating technologies, such as sensors and smart meters to manage data in real time. The ViaSegura tool, used in Brazil, Ecuador, Guatemala and Peru, monitors roads and issues preventive alerts, strengthening road safety. These initiatives not only drive innovation but also enable governments to anticipate and manage crises more effectively. In this way, they transform development strategies and promote international cooperation in the exchange of knowledge and best practices (Cruz *et al*., 2024).

The human role in the era of artificial intelligence in the public sector

The incorporation of AI in the public sector represents a major change in the way daily activities are conducted and decisions are made within government entities. While promising in terms of efficiency and responsiveness, this transformation presents challenges for public sector workers and the bureaucracy in general (Cruz Alemán, 2022). Staff are required to continuously adapt and develop new skills in order to integrate technology quickly into administrative processes. In addition, it is essential

to review the ethical and regulatory frameworks that guide the use of AI due to its rapid evolution. The implementation of these technologies must be done with care and balance, as it raises concerns about job losses, restructuring of roles in government organizations, and automation of certain tasks.

According to the IMF (Cazzaniga *et al*., 2024), in order to prepare for the changes brought about by AI in the workforce, policy makers and companies can consider several strategies. First, it is important to invest in education and training programs for workers, both to acquire AI-related skills and to improve job adaptability in a changing environment. Second, human-machine collaboration can be encouraged in a way that favors the integration of AI into work processes to improve efficiency and productivity. This allows workers to focus on tasks that require uniquely human skills. It is also important to develop labor protection policies that ensure workers' rights, job security, and fairness in employment conditions in an increasingly automated environment.

AI can also free workers from repetitive tasks, giving them the opportunity to focus on more creative and innovative activities. Companies can encourage ingenuity and adaptability. It is also important that they closely monitor labor market trends and emerging skill demands to adjust training and hiring strategies accordingly.

Finally, collaboration between the public and private sectors can be key to developing policies that drive the responsible adoption of AI in the workplace and mitigate its potential negative impacts. By taking these proactive steps, policymakers and businesses can better prepare for the changes that AI will bring to the workforce so that they can take advantage of its benefits and mitigate its potential challenges.

While about 40% of global employment is in contact with AI (Cazzaniga *et al.,* 2024), this exposure is not the same for all. Women, with their strong presence in the service sector, and highly educated workers – typically employed in knowledge-intensive occupations – face greater exposure to AI and have the potential to gain advantages from its integration. College-educated and younger people can move more easily into highly complementary jobs; however, older workers face difficulties in terms of "re-employability," adapting to new technologies, mobility, and acquiring new job skills.

In relation to the need to train the state bureaucracy, comprehensive policies are required to promote training in technical and ethical skills related to AI, as well as initiatives that promote the inclusion of underrepresented groups in the sector. In fact, CLAD (2023) points to AI training and education as one of the suggestions to minimize the digital divide and the exclusion derived from it. To this end, it is important to collaborate with the private sector and academia to identify talent needs and design training and education programs that prepare the workforce for the challenges of the future (CAF, 2024a).

Many public employees lack technical expertise in areas, such as machine learning, data analytics, and programming, hindering their ability to fully understand and use AI tools in their daily work (Ramió, 2018; CAF, 2022). To address this challenge, training and professional development programs must be implemented to enable public employees to acquire the necessary skills to work effectively with AI. These programs can include online training courses, hands-on workshops, and mentoring sessions led by AI experts. One of the most relevant issues for working with AI is good prompts for AI to work with, thus emphasizing the value

of questions (Sigman and Bilinkis, 2023). This task does not seem to require great skills, but it does require knowledge about the functioning of the applications and about the different areas in order to be able to evaluate what is artificially generated.

It is important that the private sector also engage in human resource development and training related to AI. Companies wishing to incorporate these technologies should invest in continuous training programs for their employees. This approach improves workforce adaptability and also promotes a more innovative and competitive environment. Collaboration between business, academia and government can facilitate the creation of up-to-date and relevant curricula that respond to the demands of the evolving labor market.

Mendilibar Navarro (2023) and Ramió (2019) highlight the resistance and distrust that public employees feel towards the implementation of AI in the Administration. It may be that the resistance to adopting this technology is due to the fact that they feel their jobs or established work routines are threatened. However, it is worth noting that public sector workers have shown some ability to adjust in times of transformation, such as during the COVID-19 pandemic, when they had to adopt digitization in a forced way and had to develop competencies on the fly to cope with the new requirements (Lapuente, 2021). Public employees can develop significant adaptability despite initial reluctance, underscoring the importance of continuous learning and skills upgrading to face future challenges with confidence.

In that sense, the attitude with which we approach AI should be balanced, i.e., both "technophilia" and "technophobia" should be avoided (Sandrone, 2019). Technophilia implies an enthusiastic and unquestioning adoption of the technology, assuming

that all its effects will be positive. On the other hand, technophobia represents an excessive rejection or fear of technology based on its potential risks and negative effects. A balanced approach requires a critical and objective assessment of AI, considering both its benefits and challenges, and the development of measures that maximize its advantages and neutralize its risks. This attitude enables a responsible development and use of AI, aligned with the values and needs of society.

In addition to technical training, public employment workers must adapt to changes in their roles and responsibilities as a result of AI integration (German Cross, 2022). For example, automation of routine tasks is likely to free up time and resources for employees to focus on more strategic and value-added activities, such as data-driven decision making and project management. Therefore, the state bureaucracy will need to have highly qualified professionals in the various areas in question. However, there are studies and controversies regarding the impact of these changes, including speculations on the use of free time for leisure and the shortening of working hours, as well as projects on universal income in response to the replacement of human labor. While these discussions are relevant, it should be noted that public employment in many countries has different dynamics and particularities with respect to the labor market in general, which may influence how these adaptations are implemented and managed in practice.

The adoption of AI also requires a cultural change in government institutions (Cruz Alemán, 2022; Corvalán and Melamed, 2024) in terms of developing an innovative and collaborative culture that promotes experimentation and continuous learning rather than resisting change. Leaders must effectively communicate the benefits of AI and create an environment that fosters confidence in and acceptance of these new technologies.

The most relevant models identified when analyzing the different models and cultures existing in public administration are the bureaucratic, managerial and governance (Ramió, 2017; 2018). Thus, for Ramió (2019), state robotization can eradicate the old clientelist model and renew the also old managerial model. To achieve this, it is necessary to recognize and combat clientelism and corporatism; encourage self-management within hierarchies; lead and pay attention to technological updates; favor intelligence over institutional power; and maintain a broader political vision. All this with the commitment that public administration should be fluid, open, collaborative, creative but solid, and predictable but constant; this duality is important for its proper functioning in the future.

The development of a robust digital ecosystem also requires the private sector to foster a culture of innovation and experimentation. By incentivizing employees to participate in AI projects and use these technologies in their daily tasks, companies can identify new business opportunities and improve their operational efficiency. It is also essential that private organizations participate in the creation of regulatory and ethical frameworks that guide the responsible use of AI in order to contribute to balanced and sustainable technological development.

Beyond the technical and organizational challenges, the integration of AI in public administration raises significant ethical and social issues that are further discussed in another chapter of this book. For example, fairness and transparency in the use of AI algorithms must be ensured to avoid bias and discrimination (Corvalán and Melamed, 2024). Public employment workers must be aware of these issues and be prepared to address them effectively in their daily work.

Despite these challenges, the integration of AI in public administration offers opportunities for innovation and efficiency. Automating repetitive tasks can free up time and resources for employees to focus on more strategic and value-added activities, improving the quality of public services and thereby increasing citizen satisfaction. However, the traditional approach of "automate as much as possible" is increasingly being challenged in favor of a more harmonious transition to automation. According to Corvalán and Melamed (2024), the goal should be for AI to complement and assist human work rather than replace it completely. This change in perspective promotes a model in which technology is integrated in a way that enhances human skills and improves performance without dehumanizing processes. Harmonious automation seeks to balance the use of AI with the need to maintain the value of human judgment and creativity, ensuring that technology acts as a support rather than a total replacement for human labor.

The effective integration of artificial intelligence in public administration also requires close collaboration between the public and private sectors (Cruz Alemán, 2022), as public-private partnerships can provide access to additional resources, technical expertise and technologies that help accelerate the adoption of AI and foster its implementation in government. In addition, these collaborations favor the transfer of knowledge and best practices between sectors, thus promoting greater efficiency and effectiveness in the provision of public services.

Another aspect to consider in the integration of AI is the protection of privacy and data security (Cruz Alemán, 2022). Public sector workers must be aware of the importance of safeguarding confidential information and ensuring compliance with data

protection laws and regulations. This requires establishing robust security measures and risk management protocols to prevent potential security breaches and cyber attacks that could compromise the integrity and confidentiality of the government.

To ensure the long-term success of AI integration in public administration, it is important to conduct impact assessments and collect continuous feedback from users and other stakeholders (Cruz Alemán, 2022). Such assessments can help identify areas for improvement, detect potential risks and challenges, and adjust implementation strategies as needed. This user feedback provides valuable information on the effectiveness and usefulness of implemented AI solutions, which can inform future decisions and system improvements.

Inclusion and diversity in the development and implementation of artificial intelligence solutions in public administration should be ensured through the participation of diverse groups in the process of designing and developing technologies, as well as the consideration of possible biases and discrimination in the algorithms and models used. Public employment workers should advocate for equitable and fair practices at all stages of the process.

Integrating AI into the public sector will require continuous adaptation and organizational resilience to meet emerging challenges and take advantage of new opportunities. State employees must be prepared to deal with change and uncertainty and be willing to learn different skills and adopt non-traditional ways of working in response to the changing demands of the environment. As mentioned, to this end, it is important to foster a culture of innovation and experimentation that promotes adaptability and constant improvement in all areas of public administration.

In relation to the above, Ramió (2019) proposes new professional profiles and competencies required by the public administration from the implementation of AI for better management quality. Among these profiles, some values stand out, such as creativity, empathy, "social intelligence" (in terms of citizen service tasks that require human contact) and negotiation, management and leadership skills. The author also mentions the possibility of the need for jobs related to the new services that could be offered from the implementation of AI.

Therefore, the development of soft skills, along with technical competencies, should be a priority in this context. Corvalán and Melamed (2024) point out that AI can not only optimize the candidate selection process but also customize professional development more efficiently. By integrating AI into the identification of strengths and areas for improvement, organizations can offer training programs that are more tailored to the individual needs of employees. This integration contributes to the holistic growth of workers by better preparing the workforce for future challenges in an increasingly digitized environment.

Table 2
Technical skills required for public employees

Competition	Description
Cybersecurity	Data protection and risk management.
Data analysis	Interpretation and use of data for decision making.
Programming	Knowledge of programming languages and software development.
Network management	Maintenance and optimization of communication networks.

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Competition	Description
Critical thinking	Ability to evaluate and solve complex problems.

Note: Prepared by the authors.

According to the experience of the Spanish National Institute of Public Administration, the capabilities needed focus on the development of competencies that enable employees to adapt to the digital transformation (Instituto Nacional de Administración Pública [INAP], 2023). These capabilities include the appropriate use of AI tools and methods, but also the critical evaluation of their results and impacts, and the ability to work collaboratively in digital environments. The importance of continuous learning and effective communication with diverse stakeholders in AI-related projects is also emphasized. The Spanish INAP seeks to establish a common framework of digital competencies that responds to the current and future needs of public employees and thus facilitates their training and certification in a context of increasing the digitization of public services.

As Iacoviello and Pulido (2018a, 2018b) highlight, in this new context, leaders must develop a digital strategic vision capable of anticipating technological trends and their impact on public administration. Digital leadership guides teams in the adoption of new technologies and fosters effective collaboration in virtual environments. In this sense, digital critical thinking is necessary to evaluate and question the information generated by AI, while data management and cybersecurity ensure the protection and optimal use of information. Finally, digital ethics ensure responsible and transparent implementation of technology.

However, to equip leaders with these competencies, specialized training programs must be designed, mentoring and coaching must be offered, and job rotations and learning networks must be promoted. These strategies foster a culture of innovation and continuous learning that prepares leaders to meet the emerging challenges of AI. By developing these skills, public organizations will improve their performance to more effectively meet citizens' needs in an increasingly digitized environment.

Artificial intelligence is revolutionizing public administration with new tools to optimize processes and improve the quality of services. However, this transformation requires constant adaptation on the part of public employees, who must acquire new skills to work with these technologies and adapt to changes in their roles. To take full advantage of the potential of AI, it is essential to invest in training, foster a culture of innovation, establish solid ethical frameworks and promote collaboration between the public and private sectors. In this way, public administration will be able to modernize and offer more efficient and personalized services to citizens, as long as a responsible and ethical use of artificial intelligence is ensured.

3
From theory to practice: artificial intelligence policies in the Latin American and Caribbean public sector

"That's the detail!
It is neither one nor the other,
but the opposite".
There's the detail (1940)

Cantinflas, one of the most beloved icons of Mexican cinema, is known for his sharp social criticism wrapped in humor. In *¡Ahí está el detalle!* (1940), the character played by Mario Moreno uses his wit to show how things are not always what they seem. It highlights the complexity of seemingly simple situations. This observation is particularly relevant when considering putting into practice concepts and models developed in Europe or other regions in the public administration of Latin America and the Caribbean. The region has characteristics that do not always conform to standardized approaches, so applying these models without considering these peculiarities may lead to simplifying or distorting reality.

To understand this point, we look at Europe, where public administration tends to be more hierarchical and bureaucratic, based on a Weberian model that emphasizes legality and centralization, with well-defined civil service systems that ensure

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job stability. In contrast, Latin America presents a fragmentation in its public administrations, with multiple levels of government that often compete with each other, which can generate inefficiencies and lack of coordination.

While we have discussed the Ibero-American AI Charter (CLAD, 2023), it is worth mentioning it in this context, as it establishes guiding principles for the implementation of AI in government systems in the region. Unlike European models, which tend to rely on consolidated regulatory and administrative frameworks, the CLAD Charter advocates strengthening institutional capacities, closing technological gaps and ensuring that AI contributes to social development and equity. This contextualized approach underlines the importance of understanding regional specificities when applying advanced technologies in public management.

This scenario gives us the necessary framework to analyze how countries in our region have begun to integrate AI into their government systems to improve administrative efficiency, develop data-informed public policies and strengthen citizen participation. These initiatives have made it possible to optimize internal processes and increase the quality of public services, demonstrating the potential of AI to transform government management.

At the subnational level, regional, provincial, state and local governments are adopting AI to modernize their administrative systems and promote local development. Specific cases illustrate how this technology is being used to address specific problems in communities across the region and improve citizen service and quality of life.

Coordination and collaboration between different levels of government is essential to effectively implement AI initiatives, as it facilitates the sharing of knowledge, resources and best practices. This cooperation is important in developing a comprehensive and coordinated approach to maximize the positive impact of AI on public administration.

In general, AI presents numerous benefits for the state structure, such as greater efficiency and effectiveness in government management, and a transformation in the way governments relate to their citizens and manage their resources. However, it also presents challenges and opportunities that require careful consideration and planning to fully harness its potential for the future of Latin America and the Caribbean.

Automated decisions: artificial intelligence at the service of public management

According to Brynjolfsson and McAfee (2014), AI-driven systems can process large volumes of data, identify patterns, and execute tasks with efficiency that surpasses human capability. The key to automated decision-making (ADM) is the ability of algorithms to learn and adapt to new information and improve their decisions over time. One of the central concepts is the use of neural networks and deep learning, topics worked on by LeCun, Bengio, and Hinton (2015), who describe how these techniques enable systems to identify complex features in data and make accurate predictions. Decision making is based on models trained on large data sets, allowing them to generalize and decide in diverse contexts.

ADM encompasses a variety of applications: recommendation systems in entertainment platforms, medical diagnostics and credit approvals, among others. In the financial industry, ADM systems are used for risk assessment, fraud detection and lending. These types of institutions use algorithms to analyze credit histories and determine the creditworthiness of loan applicants, which reduces response times and improves the accuracy of decisions. Regarding healthcare, Topol (2019) highlights that ADM systems can analyze medical images, genomic data, and electronic health records to identify pathologies and suggest personalized treatments with the goal of providing better outcomes for patients. In turn, e-commerce and digital marketing platforms use ADM to personalize their users' experience. According to research by Jarek and Mazurek (2019), recommendation algorithms analyze user behavior to offer products and services that match their preferences, thereby increasing customer satisfaction and sales. In the transportation sector, ADM systems are fundamental to the development of autonomous vehicles, as Goodall (2014) mentions when studying how they make split-second decisions to ensure the safety of passengers and other users.

Another use of ADM is to assist in public policy management in cases, such as benefit claim assessments, traffic management or fraud and corruption detection. This is possible because they can perform large-scale data analysis and identify patterns and trends that might go unnoticed by humans. This gives rise to a new kind of understanding of the needs and problems of the population and, therefore, to more informed and effective decision making. ADM makes it possible to offer customized public services to each citizen, taking into account their specific characteristics and needs, as well as providing greater transparency

for accountability, since the algorithms they use can be documented and audited.

Governments and States are increasingly exploring the use of ADM to improve the efficiency and effectiveness of public policies in view of their ability to optimize resource allocation, improve public service delivery, and increase transparency and accountability in government. In terms of optimizing resources, they allow them to be distributed in a more efficient and equitable manner. This was particularly relevant in the management of medical and vaccine resources during the COVID-19 pandemic, where the models helped plan hospital capacity and the distribution of personal protective equipment (Keesara *et al.*, 2020).

As for public services, the use of ADM makes them more accessible and efficient, since, for example, governments can evaluate applications for social benefits more quickly and accurately, thus reducing waiting time for citizens and minimizing errors in their adjudication. This has been implemented in several countries, such as in the United Kingdom with the Universal Credit system (Ministry of Housing, Communities and Local Government, 2019). In addition, ADM-based traffic management systems optimize flow and shorten travel times and congestion through the use of intelligent traffic lights that adjust light times (Orozco Aguirre *et al.*, 2018).

In terms of increasing transparency and accountability in public administration, algorithms are used to detect patterns of suspicious behavior in government contracts in order to reduce the risk of fraud and corruption through automatic alerts (López Espinosa, 2019).

Beyond the valuable contribution made by ADM to public management, the uses mentioned so far show that its contribution is *ex post*, i.e., after the events occur. However, the most interesting aspect of this technology is its ability to act *ex ante*, i.e., to anticipate events based on predictive models. ADM, through the use of advanced algorithms and the analysis of large volumes of data, can provide the necessary tools to implement anticipatory public policies efficiently and effectively. In this way, it allows governments and states to anticipate and proactively manage future challenges and opportunities.

The revolution of anticipatory public policies

Anticipatory public policies (APPs) are government strategies and actions designed to anticipate and address future needs before they become critical problems, rather than reacting to events once they have occurred. These policies are based on prospective analysis and aim to anticipate emerging trends and challenges to provide a useful response. According to Havas *et al*. (2010), anticipatory policies seek to manage uncertainty and build capacity for adaptation and resilience in society. Their work argues that, when combined with AI and ADM, they can be significantly more accurate and effective.

The conjugation of AI and ADM generates a virtuous circle where the former involves the use of algorithms and machine learning models to analyze large volumes of data, identify patterns and make predictions, while the latter use computer systems to make decisions based on predefined rules and algorithms. These systems can process information and execute actions without human intervention, enabling a fast and accu-

rate response. Anticipatory public policies based on these technologies include crisis prediction and prevention through the use of historical and real-time data to foresee adverse events, such as natural disasters, epidemics, economic crises, and take preventive measures; resource optimization, since they anticipate the demand for public services and adjust the allocation of resources more efficiently; and the improvement of public services, since they use data to identify deficient areas and make informed decisions to address these needs.

Automation in public administration encompasses various processes ranging from the simplification of procedures to advanced data management. For example, by automating administrative procedures, it is possible to execute electronic procedures efficiently, while freeing public employees for more technical and critical tasks (Almonacid Lamelas, 2024). In addition, electronic signature systems, such as the electronic seal of public administration, facilitate the automated certification of documents in accordance with current legislation. Another outstanding example is the automation of customer service through chatbots and virtual assistants. These systems improve responses to frequent queries and also allow public employees to focus on more complex and demanding cases, which require empathy and sensitivity. With regard to public services, projects, such as the sensorization of urban infrastructures to manage parking or selective waste collection illustrate how technology can optimize the quality of life in modern cities. Such initiatives not only improve operational efficiency but also contribute to sustainability and the general welfare of citizens.

In terms of forecasting and forward-looking analysis, algorithms have the ability to anticipate economic fluctuations, identify

sectors at risk and suggest timely policy interventions, all of which are vital to avoid economic downturns and promote sustained growth. Regarding resource optimization, by analyzing historical and real-time data, algorithms can identify a more effective allocation of limited resources, such as emergency funds, personnel and supplies. Such is the case in natural hazards management, where systems can predict the trajectory of potential disasters and recommend the optimal location for evacuation centers and storage of supplies, so that they can improve emergency response and minimize damage. In terms of improving the provision of public services, they can identify emerging risks and opportunities early, facilitating the implementation of proactive policies that mitigate risks and capitalize on opportunities before they become problems or are lost.

The capacity of anticipatory public policies is also observed in the field of urban planning, where ADM systems analyze mobility, population density and land use data to forecast future infrastructure needs. This enables governments to plan and build resilient and sustainable infrastructure, and to address problems before they become crises. Another scope of anticipatory public policies is in homeland security, as the systems foresee threats by analyzing intelligence data and behavioral patterns; thus, governments can implement proactive security measures to prevent attacks.

In security and justice, predictive models can analyze historical crime data to identify areas with a higher probability of criminal activity, allowing law enforcement to better allocate resources. However, in this case it is critical to address algorithmic bias issues to avoid perpetuating injustices. Finally, with respect to the judicial system, they contribute to recidivism risk assessment

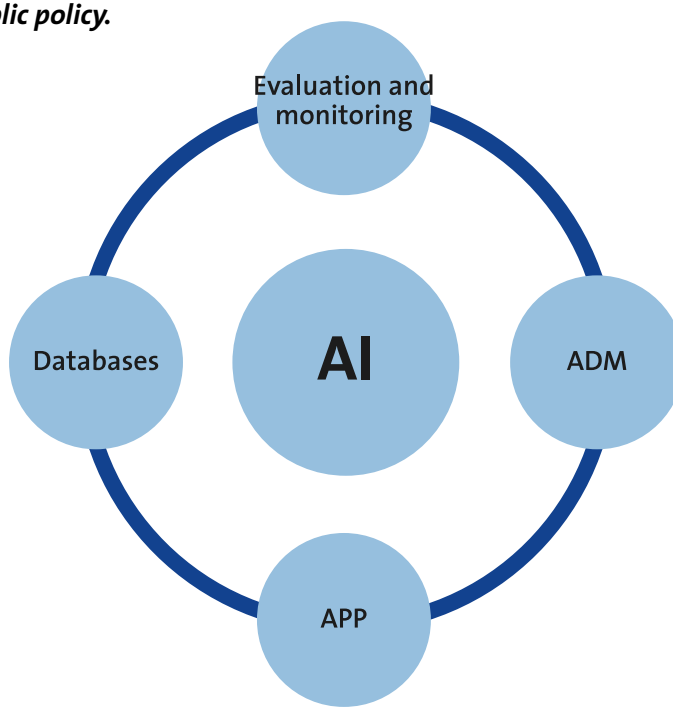
and probation decisions. For example, the COMPAS system in the United States uses algorithms to assess the probability of recidivism of defendants, although it has been the subject of controversy due to possible racial bias (Roa Avella *et al.*, 2022).

As noted, beyond the benefits of anticipatory public policies, it is necessary to take into account the challenges and ethical considerations they raise. The use of ADM in public policy has the potential to transform governance and administration by optimizing resource allocation, improving service delivery, increasing transparency, and addressing security and justice issues. However, it is vital to address the associated ethical and technical challenges to ensure that they benefit all of society in an equitable and fair manner. Transparency in ADM - in how these systems are designed and operated - is critical to maintaining public trust. Therefore, algorithms must be auditable, and decisions must be explainable. In addition, algorithmic biases that can lead to unfair or discriminatory decisions, and perpetuate existing inequalities, must be eliminated.

Although there are a variety of AI-related projects and initiatives of different kinds in Latin America, both in development and in execution, when inquiring about experiences related to anticipatory public policies, very few actions have been effectively articulated and translated into tangible results. In Argentina, the Artificial Intelligence and Data Science-based Epidemiological Management (ARPHAI) project aims to develop tools for the early detection of epidemic outbreaks. Launched in October 2020, it aims to use electronic medical records to anticipate and locate outbreaks of diseases, such as COVID-19 and dengue (Avolio, 2022; Telemedicine, 2022). Currently, it is in an initial development phase with the creation of processes to obtain ano-

nymized data from electronic medical records in the suburbs of the province of Buenos Aires. The plan is to evaluate its performance in real epidemiological scenarios and to achieve scalability at the national level (Centro Interdisciplinario de Estudios en Ciencia, Tecnología e Innovación, 2022). This project considers the gender perspective and other socioeconomic factors in data analysis to avoid biases and ensure equity in medical care.

Figure 3
Artificial intelligence, automated decisions and anticipatory public policy.



Note: Prepared by the authors.

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Uruguay's Administración Nacional de Usinas y Transmisiones Eléctricas (UTE), a public company in the energy sector, is pursuing an anticipatory public policy that uses AI to analyze data from sensors and monitoring systems in its infrastructure, such as transmission lines and substations (Administración Nacional de Usinas y Trasmisiones Eléctricas, 2023). In this case, AI contributes to predictive maintenance, as it helps to predict failures and determine the necessary maintenance before serious problems occur, with the consequent benefits of reduced downtime, lower maintenance costs and extended lifetime of the equipment.

In the area of education, both countries have initiatives aimed at preventing school dropout. In the case of Uruguay, the Predictive Model of Educational Disengagement, developed by the National Public Education Administration (ANEP), uses AI to identify students at risk of dropping out of school and develop intervention strategies to prevent it. It is based on a machine learning model that analyzes a large amount of data on students, such as their academic history, attendance, socioeconomic status, and psychosocial factors so that, based on the detection of risk patterns, a personalized intervention plan can be implemented. By sending early warnings to educational institutions, corrective and preventive actions are implemented to improve students' educational trajectories (Agencia de Gobierno Electrónico y Sociedad de la Información y del Conocimiento [AGESIC], 2024).

In Argentina, in the provinces of Entre Ríos and Mendoza, an Early Warning System (SAT) is being implemented through an agreement between the provincial governments and the Center for the Implementation of Public Policies for Equity and Growth (CIPPEC) (Delprato *et al.*, 2023). This program is based on the use

of AI to identify students at risk of dropping out of school early on and develop strategies to prevent it, such as sending alerts to educational authorities that allow them to implement intervention plans customized for each case. In Entre Ríos, the pilot system started in 2023 with 20 schools and is expected to be extended to the entire educational system in the coming years. In Mendoza, it was implemented in 2021 in 170 schools and has shown a significant reduction in the dropout rate in the centers where it has been applied (Xanthopoulos, 2024).

These experiences suggest that there is great room for innovation and the development of proactive public policies that take advantage of the opportunities offered by emerging technologies, such as AI and ADM, for real-time data analysis. However, in order to expand their presence, all countries must propose a strategy for their development and implementation that allows them to be carried out in a productive manner.

A mosaic of national artificial intelligence strategies and plans in Latin America and the Caribbean

The region is experiencing a boom in the adoption and development of AI technologies. In order to successfully address the challenges through the design and implementation of public policies, the local context and emerging trends must be understood, although the topic still needs to be further developed and attract more interest from policymakers and academia. This highlights the importance of considering regional particularities and socioeconomic factors when designing AI strategies that promote inclusive and sustainable development in the region (CAF, 2024a).

Along these lines, the Latin American Initiative for Open Data (ILDA) and the Latam Digital Center, with the support of the International Development Research Center (IDRC) and the IDB, initiated the Empathy Project in 2020, aimed at understanding and promoting the use of AI to solve problems, within the framework of the global program Artificial Intelligence for Development (AI4D). Some of the examples cited in this and other chapters were part of this project.

As far as the Argentine public administration is concerned, implementation is in an initial phase, characterized by a lack of coordination and fragmentation of initiatives. Despite these limitations, there are scattered efforts at different governmental levels that could drive a wider uptake of AI (Sokolowicz, 2024). This technology has the potential to improve the efficiency and quality of public services, for example, in the judiciary or law (Danesi, 2018). The Prometea system is a prominent case, developed in 2017 by the Prosecutor's Office of the Autonomous City of Buenos Aires, which uses AI to automate the preparation of court rulings based on analogous cases with repeated judicial precedents. This system has led to reduced processing times and improved operational efficiency. For example, the time required to resolve a procurement request was reduced from 90 minutes to 1 minute, and trial proceedings were reduced from 167 days to 38 days.

In 2019, Argentina took an important step with the creation of the National Artificial Intelligence Plan (ArgenIA), promoted by the then Secretariat of Science, Technology and Productive Innovation. This document does not include a formal proposal for regulation but rather describes the state of AI in the country, with emphasis on aspects, such as human resources training,

the appropriate use of data, the strengthening of technological infrastructure and ethical considerations surrounding this technology. Although at the end of that year the government administration changed, and the new administration discarded the ArgenIA plan, in 2022, the country joined the Global Pact for Artificial Intelligence, an international coalition aimed at supporting advanced research and projects related to AI, based on the guidelines of the Organization for Economic Cooperation and Development (OECD) (Farinella, 2024).

Following other similar plans identified by CAF (2024), Brazil launched the Estratégia Brasileira de Inteligência Artificial (EBIA) under the direction of the Ministry of Science, Technology and Innovation. Its main objectives are to contribute to the development of ethical principles for the responsible use of AI, promote sustained investment in research and development, and remove barriers to innovation. EBIA also seeks to empower and educate professionals for the AI ecosystem, stimulate innovation internationally, and foster cooperation between public and private entities, industry and research centers. The strategy addresses AI legislation and regulation, governance, international aspects, education and workforce training, as well as its application in productive sectors and public safety.

Chile, through the Ministry of Science, Technology, Knowledge and Innovation, presented in October 2021 its National Artificial Intelligence Policy, which aims to insert Chile at the global forefront of AI, creating an ecosystem of research, development and innovation that benefits the productive, academic and state sectors. The Chilean policy focuses on empowering citizens in the development and use of AI, promoting participation in debates about its legal, ethical, social and economic implications, and developing enabling factors, such as talent, technological infra-

structure and data. It also encourages the adoption of AI in the public and private sectors, and addresses issues of ethics, standards, cybersecurity and regulation. In fact, in May 2024, Chile launched a national AI policy and submitted an AI bill following UNESCO recommendations.

Peru's National Artificial Intelligence Strategy, launched in May 2021 by the Secretariat of Government and Digital Transformation of the Presidency of the Council of Ministers, aims to position the country as a leader in AI in Latin America and seeks to boost digital inclusion and reduce social gaps through the ethical and responsible adoption of technology. The pillars of the strategy include educating and training talent in AI, fostering an economic model that promotes it as a tool for development and innovation, and establishing an adequate technological infrastructure. It also focuses on ethics and national and international collaboration to maximize the benefits of these technological advances.

In October 2023, the Dominican Republic launched the National Artificial Intelligence Strategy (ENIA) through the Innovation and Digital Development Cabinet (GIDD) and the Government Office of Information and Communication Technologies (OGTIC). ENIA aims to transform and upgrade the national industry and public service through AI, strengthen technological and data sovereignty, and position the country as a regional AI hub. The strategy includes the development of smart government, public-private partnerships, and the creation of a human talent and innovation center. It also encourages regional integration and advanced technological infrastructure.

Finally, the Agency of Electronic Government and Information and Knowledge Society (AGESIC) of Uruguay presented the Artificial Intelligence Strategy for Digital Government in September

of 2020. This seeks to promote and strengthen the responsible use of AI in public administration to improve services and internal processes. Its objectives include the identification and management of the AI ecosystem in Uruguay, the definition of a governance model in the public sector, and the development of capacities in public administration. It also favors the transparency of algorithms and good data management, as well as the creation of specific action plans in strategic sectors.

It is worth noting that, although in many countries there is interest in the development of AI within the public sphere, they still do not have a national strategy on the subject. It is therefore pertinent that all countries in the region move forward in this direction as Mexico and Colombia are doing, for example, working on roadmaps as a first step to develop national strategies.

Table 3
Comparison of national artificial intelligence strategies in Latin America and the Caribbean

Country	Name of strategy	Responsible agency	Main objectives	Components
Argentina	National Artificial Intelligence Program (2020-2023)*.	Ministry of Science, Technology and Innovation (today Undersecretariat).	Encouragement of activities related to the promotion of AI within the framework of the Economic and Social Council.	Capacity building, sectoral articulation, promotion of AI projects.

Country	Name of strategy	Responsible agency	Main objectives	Components
Brazil	Brazilian Artificial Intelligence Strategy.	Ministry of Science, Technology and Innovation.	Development of ethical principles, investment in R&D, elimination of barriers to innovation.	Legislation and regulation, governance, education and training, application in productive sectors and public safety.
Chile	National Artificial Intelligence Policy and Strategy.	Ministry of Science, Technology, Knowledge and Innovation.	Insertion in the global vanguard, development of R&D&I ecosystem, adoption in the public and private sectors.	Citizen participation, ethics, cybersecurity, regulation, talent development and technological infrastructure.
Perú	National Artificial Intelligence Strategy.	Secretary of Government and Digital Transformation.	AI leadership in the region, digital inclusion, economic development and innovation, ethics and international collaboration.	Talent training, AI-based economic model, technological infrastructure, ethics and international collaboration.

Country	Name of strategy	Responsible agency	Main objectives	Components
Dominican Rep.	National Artificial Intelligence Strategy.	Innovation and Digital Development Office.	Industry transformation and public service, technological sovereignty, regional AI hub.	Smart government, public-private partnerships, human talent and innovation, advanced technological infrastructure.
Uruguay	Artificial Intelligence Strategy for Digital Government.	AGESIC.	Responsible use of AI in Public Administration, improvement of services and internal processes.	AI governance, algorithm transparency, data management, sectoral action plans.

*The mention of the National Artificial Intelligence Program (2020-2023) is limited to this period due to the change of Administration after the assumption of Javier Milei in December 2023. The new administration has announced plans to position Argentina as a leading center for the development of artificial intelligence, with an emphasis on attracting investment and a laxer regulatory approach. However, these initiatives are in development and their details have not yet been formalized. They are expected to include energy and technology infrastructure projects, along with tax incentives for companies in the sector.

Note: Prepared by the authors based on data available in *Diseño de políticas públicas de inteligencia artificial. Development of enablers for its implementation in Latin America and the Caribbean. Guía Práctica*, by CAF - Development Bank of Latin America and the Caribbean, 2024.

The impact of artificial intelligence on subnational governance

At the subnational level, provinces, regions, departments and states in Latin America and the Caribbean are adopting AI as a tool to modernize government management and address specific challenges within their jurisdictions. This subnational perspective involves implementing solutions that are tailored to regional needs in a way that supports economic and social development throughout the territory. In a federal system, it is important that the public administrations of the different jurisdictions work jointly and harmoniously to ensure that policies designed at the national level are adequately implemented throughout the territory, while respecting local particularities (Cao, 2020). In relation to this, the COVID-19 pandemic has been an opportunity to review and adapt public policies in Latin America, as it highlighted the need to strengthen local capacities to manage the new challenges that arise in uncertain contexts (Grandinetti and Nari, 2021).

In this context, AI is being used for a variety of purposes, such as improving urban planning, strengthening public services, and promoting citizen participation. For example, in some provinces and states, AI systems are being implemented to optimize public transport management, using predictive algorithms to improve system efficiency and safety. Following this line, in the Mexico City Metro, a 2015 initiative led by PhD students from the National Autonomous University of Mexico (UNAM) and the Ministry of Education, Science, Technology and Innovation (SECTEI) used AI to analyze large volumes of data on passenger flow. Using machine learning simulations, the boarding and disembarkation time of users was optimized, reducing delays and increasing efficiency by 10-15% (OECD/CAF, 2022). In Colombia, the Ministry

of Transportation and the National Planning Department use machine learning algorithms to identify rural roads from satellite images. This method, more efficient than traditional ones, facilitates tertiary network planning in most of the country's departments. These examples demonstrate how AI can improve logistics and transportation infrastructure, and benefit both passengers and system administrators.

In addition, AI facilitates access to government information and promotes transparency in public management. AI-driven digital platforms allow citizens to interact more directly with subnational authorities, which contributes to greater citizen participation in local decision-making. A prominent example is Esperanza, a platform implemented in the state of Guanajuato, Mexico, that uses AI to facilitate consultation of the Government Program. Having worked successfully in the past, Esperanza is being relaunched in 2025 with new capabilities focused especially on children and senior citizens. Through this tool, citizens can access government information and intervene in decision-making processes, while local authorities take advantage of the data collected to develop policies more aligned with the needs of the population (Gobierno del Estado de Guanajuato, 2025).

Another relevant aspect is the use of AI to analyze economic and social data, which allows provinces and states to develop public policies aimed at boosting economic development and reducing regional disparities. This application of AI helps to identify areas of opportunity and design specific strategies to stimulate economic growth and improve the welfare of citizens at the subnational level. A prominent case is the Laura software, developed in 2019 by the Ministry of Finance of Córdoba, Argentina, to automate the verification of pension contributions at ANSES (National Administration of Social Security) (OECD/CAF, 2022). This

automation reduced the time to perform the task, as an employee could take up to an hour to complete it, and Laura showed the ability to complete the management in four minutes.

In Argentina, the province of Buenos Aires has established a framework through Decree 208/22, which created the Directorate of Digitalization and Artificial Intelligence, in charge of leading the provincial strategy in AI and collaborating with other competent bodies to develop ethical regulations in this area. In addition, the State Attorney's Office of the Province developed VELOX, an AI prototype that emerged from a proof of concept and led to the institutionalization of the Artificial Intelligence Laboratory for the State Attorney's Office (FEPBA IALab), dedicated to accelerating research and development processes through an open innovation approach. These initiatives illustrate the commitment of the province of Buenos Aires to the responsible and practical implementation of AI in public management, with the aim of improving the efficiency and effectiveness of its government institutions (Cervellini, 2024).

Another example comes from the state government of Jalisco, Mexico, which, in collaboration with the Tecnológico de Monterrey, developed a system to identify patterns associated with school dropout using AI (OECD/CAF, 2022). The first stage of the research on improving school retention focused on detecting and analyzing the factors that contribute to dropout in secondary school students. Eight critical categories were distinguished: external violence, internal violence, family situation, economic situation, educational quality, connectivity, teaching practice and adolescent health (Barrios Navarro and López Soto, 2024).

However, the implementation of AI at the subnational level also faces significant challenges, such as lack of technical capabilities

and financial resources, and concerns about data privacy and security. Overcoming these obstacles will require continued commitment from subnational authorities, as well as collaboration between different levels of government and the private sector.

Artificial intelligence at the service of cities

Municipalities play an important role in the formulation of public policies and the provision of services at the local level. In this context, AI promises to modernize municipal management, improve the quality of life of citizens and promote local development. Municipalities in the region are using it to upgrade a variety of public services, from waste management to public transportation and public safety. For example, cities have implemented systems to optimize waste collection, using predictive algorithms that identify critical points and optimize resource allocation.

Municipal governments are also using AI to improve citizen service and facilitate access to public services. Several municipalities in the region have chatbot platforms, such as *Boti,* from the Government of the City of Buenos Aires, to provide information and assistance quickly and efficiently, thereby reducing the burden on customer services and increasing user satisfaction.

Another outstanding example comes from Medellín, Colombia, where the Treasury Department developed a bot called *KBoot* to track potential tax evaders on Instagram (OECD/CAF, 2022). This bot was designed to extract relevant data from social networks and cross-reference it with treasury information to identify unregistered companies in order to contribute to the formalization of the local economy.

For its part, the municipality of Manta, Ecuador, developed a social information geoportal using UrbanPy software, which makes it possible to obtain georeferenced information and perform calculations on the level of access to basic resources, such as health and education. This has made it possible for the municipality to gather information to strengthen the construction of socioeconomic, territorial and comprehensive management indicators, and to prioritize the sectors that should be included in strategic planning (Flores *et al.*, 2021).

In Concepción, Chile's second largest city, this technology is being applied to project the impact of urban decisions in some of its most traditional neighborhoods. The City Lab Biobío project, in collaboration with the MIT Media Lab, uses the CityScope platform to model selected neighborhoods and simulate the outcome of urban interventions in order to strengthen housing planning and sustainable urban development (City Lab Biobío, n. d.).

Despite the challenges involved in the use of AI, it offers opportunities to improve efficiency, transparency and citizen participation in municipal management. By fostering collaboration and knowledge sharing, as well as support from international agencies and the private sector, local governments can maximize the potential of AI to promote sustainable development and improve the quality of life of citizens throughout the region.

4
Artificial intelligence as a tool for continuous improvement

"Enigma is an extremely well-designed machine. Our problem is that we are only using men to try to beat it. What if only a machine can defeat another machine?"
The Imitation Game (2014)

The film *The Imitation Game*, directed by Morten Tyldum, portrays the contribution of British mathematician Alan Turing during World War II to decipher the codes of the Enigma machines used by the Nazis. Turing is not only known for his role in deciphering the codes, but also for his ideas on computing and what would later become artificial intelligence, starting with his concept of the "universal machine", which laid the foundations for the development of modern computers. Turing envisioned a future in which machines, in addition to performing calculations, could learn and make decisions, a dream that has materialized today in the practical applications of AI. This initial vision resonates in the present, where AI is transforming diverse areas by automating tasks, processing large volumes of data and providing tools to improve the efficiency and effectiveness of processes. Just as Turing ushered in a new technological era, AI is ushering in a new chapter in task development by providing

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a greater ability to make informed and adaptive decisions in the context of an ever-changing world.

Science, which promotes many of these advances, is guided by the true/false dichotomy, while technology is guided by the works/doesn't work binomial, that is, by its effectiveness, that which explains the social success of an artifact (Sandrone, 2019). However, the efficacy of a technology can also have a symbolic component. An artifact can be perceived as effective by its technical performance, but also by the value and meaning assigned to it by society. This symbolic effectiveness can influence the adoption and acceptance of the technology, showing how cultural and social aspects play a crucial role in its success.

The importance of AI then lies in its ability to improve both the real efficiency and symbolic effectiveness of decisions and actions taken by governments. By applying advanced algorithms and machine learning techniques, public administrations gain more detailed insights into citizens' needs and preferences, helping them to provide a faster and more appropriate response to social and economic challenges. This optimizes resource management and also strengthens governments' ability to address crises and manage complex situations with greater precision.

AI plays a decisive role in the modernization of relevant areas, such as security, defense, public health and education, although there is still a long way to go. From threat detection and crime prevention to optimizing healthcare and supporting teaching and learning, AI is helping to improve the protection and welfare of citizens. These applications show the broad scope and impact of technology on everyday life and sustainable development in the region.

In terms of sustainability, by analyzing environmental data and simulating future scenarios, governments develop more effective policies and strategies to address the challenges of climate change and the conservation of natural resources. This ability to predict and manage environmental impact is essential to ensure sustainable development and a better quality of life for future generations.

Artificial intelligence to transform administrative operations

Internationally, the State as an institution is facing a crisis due to technological changes and their impact on the economy, society, politics and public administration (Ramió, 2017). Digitalization and automation are redefining the role of the State, as they challenge traditional structures and the way public services are delivered. Globalization and technological advancement have increased citizen expectations about government efficiency and transparency, while exposing the inability of many States to adapt quickly to these changes. This crisis of states in the face of exogenous factors, such as the market or civil society, requires governments to re-evaluate their strategies and adopt innovative approaches that integrate emerging technologies in order to remain relevant in an ever-changing world.

In relation to the above, the United Nations Electronic Government Development Index (EGDI) is a tool that provides information on the level of digitalization in the region, taking into account aspects, such as online services, telecommunications infrastructure, human talent and e-participation. Among the countries with a "very high EDGI" rating, Uruguay stands out

in our region as the leader in 25th place, followed by Chile (31), Argentina (42), Brazil (50), Peru (58), Costa Rica (61), Colombia (62) and Mexico (65). Most of the countries are in the "high EDGI" category; among them, the best positioned are Panama (79th), Paraguay (80th) and the Bahamas (83rd). At the "medium EDGI" level are Cuba (139), Belize (141) and Honduras (142). Finally, only one country in the region, Haiti, ranked 186th, has a "low EDGI" level (Department of Economic and Social Affairs [DESA], 2024).

To begin writing about the impact of AI in the public sphere, it is paramount to analyze how this technology is transforming government operations in various aspects. In the government realm, efficiency – that is, the ability to achieve stated goals – means achieving the desired outcomes of policies, programs, or services provided to citizens. For example, informed decision making through AI-enabled data analytics can increase efficiency by enabling governments to take evidence-based actions to address societal challenges and needs. Such is the case of the System for the Identification of Potential Beneficiaries of Social Programs (SISBEN) in Colombia, which uses an algorithm to analyze data obtained from surveys to create profiles (OECD/CAF, 2022).

Efficiency, on the other hand, refers to the ability to achieve these objectives by using resources optimally. In other words, it is about maximizing the results obtained with the available resources while minimizing waste and costs. An example of efficiency in the public sphere would be the automation of routine administrative tasks through AI, allowing public employees to focus on more strategic and value-added activities while reducing the time and costs associated with manual processes. Thus, in Uruguay, AGESIC launched several pilot projects for robotic

automation of processes, which can decrease the time spent on routine tasks by a considerable percentage (OECD/CAF, 2022).

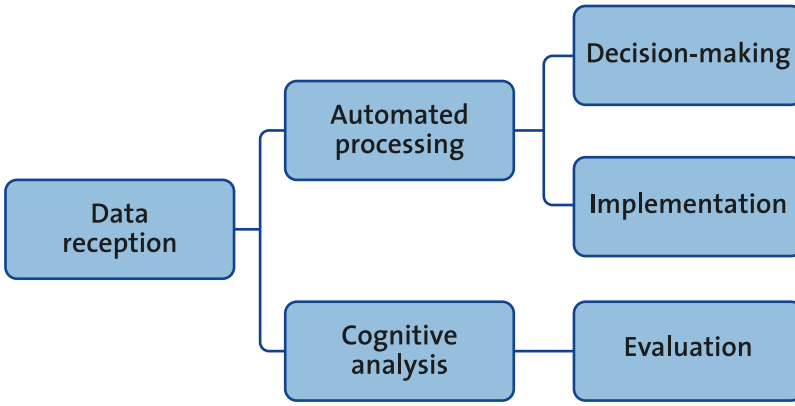
In order to achieve these purposes, it is necessary to promote the collection, management and ethical sharing of data to feed high-quality AI algorithms and systems. Policies and regulatory frameworks must be established that protect the privacy and security of data, while facilitating its access and use for innovative and beneficial purposes for society (Rodriguez, 2022). Collaboration between public and private actors is important to build robust and reliable data ecosystems that drive sustainable development in the region (CAF, 2024a).

These ecosystems could help in the resolution of public problems in their different stages: problem definition; identification and design of solutions; implementation and putting into practice of these solutions; and their evaluation and evolution. In terms of evaluation, AI could help, for example, in the development of quasi-experimental tests or in social audits to measure the results of a public policy (Noveck, 2022).

Automation of routine tasks

One of the main effects of AI in government is that repetitive and manual processes can be automated through algorithms and intelligent systems, allowing civil servants to focus on more complex tasks. This reduces human error and operating costs, as in the case of Uruguay's robotic process automation (RPA) projects.

Figure 4
Process automation and robotization flow

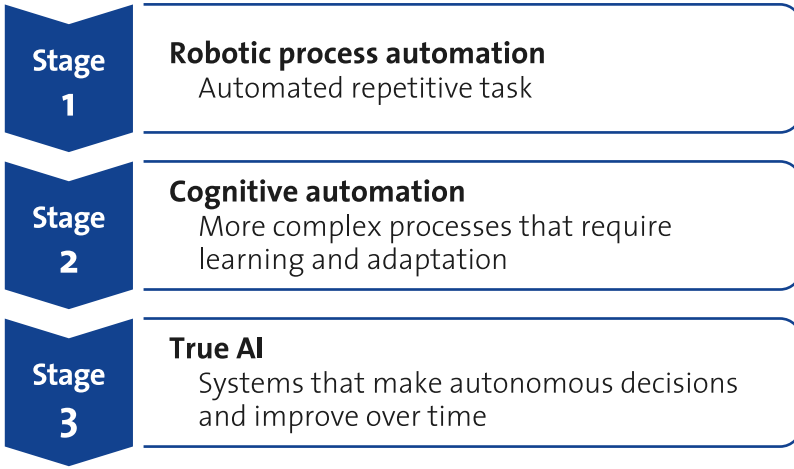


Note: Prepared by the authors.

Also, by analyzing large volumes of data quickly and accurately, AI systems can identify patterns, trends, and correlations that might go unnoticed by a human. This helps government leaders make more informed, evidence-based decisions, as we saw in the previous chapter, and can lead to more effective, results-oriented policies and programs. It also allows them to spend more time supplementing this data with talking to and active listening to citizens (Noveck, 2021).

Ramió (2019) posits that automated processes present three sequential stages when it comes to their incorporation into public administrations: robotic automation of processes, which can lead to the transformation of bureaucratic and routine components and, in turn, facilitate a strategic vision in decision-making processes; cognitive automation, which involves an initial application of AI and the implementation of intelligent advisors; and the stage of applying AI itself.

Figure 5
Sequential stages of artificial intelligence implementation in Public Administration



Note. Our elaboration based on *Inteligencia artificial y administración pública. Robots y humanos compartiendo el servicio público*, by Ramió, 2019, Los libros de la Catarata.

Montecinos (2021), for his part, presents four theses for moving towards a "Public Administration 4.0" in Latin America. He addresses issues, such as robotization and efficiency and points out the importance of involving society in this process to ensure significant changes and avoid the monopolization of power by the bureaucracy. He also reflects on the neutrality of robotics and the need to make transparent the interests behind its design and application. In addition, he analyzes the relationship between robotics and citizen participation and warns about the risk of reducing political deliberation to simple technological applications. He also stresses that it is essential to find a balance between politics, bureaucracy and society to ensure an effective and democratic implementation of technology in public administration.

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In relation to the above, the transition from e-government to digital government has marked a change in the way States manage their operations and relate to citizens (Villoria and Ramírez Alujas, 2013). This change has been driven by the use of ICTs, as well as by the adoption of concepts, such as open data, open government, e-government and digital government (Cruz-Rubio, 2015). Open data, being accessible and reusable by citizens and businesses, promotes transparency and participation in public management (Ospina Diaz and Zambrano Ospina, 2022; Ruvalcaba-Gómez, 2019; Gómez-Álvarez, 2018). On the other hand, digital government goes beyond the use of technologies to improve administrative efficiency and involves citizen participation, data-driven decision making and anticipation of citizens' needs. This translates into better public service delivery and greater citizen satisfaction.

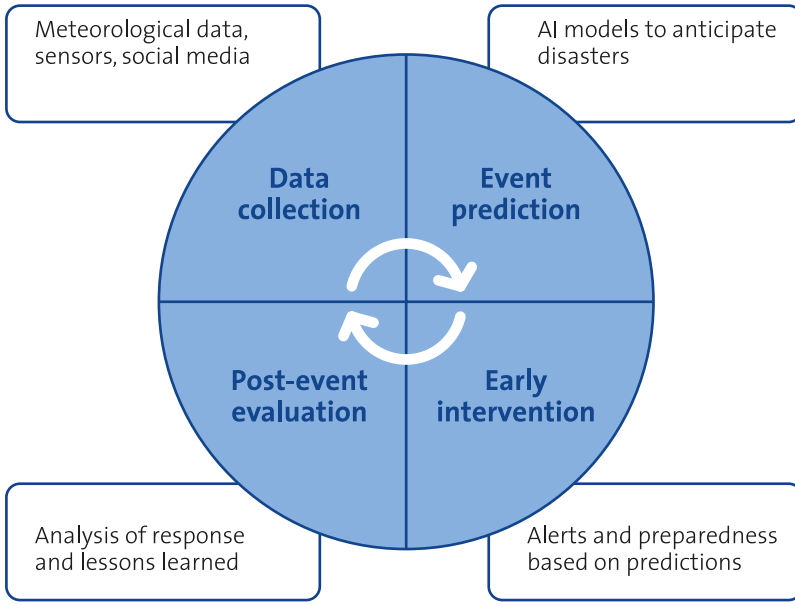
The implementation of AI in public administration has proven to have an impact in several areas (Ospina Diaz and Zambrano Ospina, 2022). In education, for example, personalized learning systems are being developed that help reduce dropout rates and prepare students for work with emerging technologies. Microsoft's SIMO, for example, offers personalized education that reduces dropout rates and trains students in artificial intelligence and data science. In addition, a bot decodes students' facial expressions to identify comprehension difficulties and help teachers adjust their teaching methods. In countries, such as the United States, Mexico, Spain and Australia, there are AI applications that warn about a possible school dropout by analyzing grade histories and other relevant data; thus, making it possible to intervene in time to prevent students from dropping out of school.

In the healthcare sector, artificial intelligence is used for medical image analysis and disease detection, enabling faster and more accurate diagnoses (Ospina Diaz and Zambrano Ospina, 2022). During the COVID-19 pandemic, AI proved its value in predicting pandemic diseases, as did BlueDot, a Canadian startup that analyzed news and flight paths to identify potential outbreaks. In addition, in China, AI-equipped drones and robots were used to disinfect public areas and deliver medicine and food to patients to minimize human contact and help control the spread of the virus.

In the field of disaster management, artificial intelligence is used to predict and prevent catastrophic events in order to minimize their impact (Ospina Diaz and Zambrano Ospina, 2022). Programs, such as Google's Public Alerts and IBM's Bee2Fire Detection, help detect and mitigate fires, while the European Space Agency's Disasters Risk Reduction (DRR) project focuses on natural disaster risk reduction. These applications enable governments and organizations to make informed and rapid decisions, minimizing human, environmental and economic losses associated with natural disasters.

However, the implementation of AI also poses challenges for public administrations, such as the need to develop digital competencies in human talent and ensure smart public governance. To address these challenges, States must invest in training and capacity building of public personnel and promote a culture of innovation and collaboration in the government sector. In this way, the transformative potential of artificial intelligence can be harnessed to improve the efficiency and effectiveness of public administration, ensure quality services to citizens in the digital age, and enhance the user experience.

Figure 6
Impact of artificial intelligence on disaster management



Note: Prepared by the authors.

Another highlight is the use of AI in the detection and prevention of fraud and corruption. Machine learning algorithms can analyze large volumes of financial and transactional data to identify suspicious patterns or anomalies that could indicate fraudulent activities. This enables government agencies to take preventative and proactive measures to safeguard public funds and maintain the integrity of their operations.

Finally, AI facilitates the personalization and tailoring of government services to the individual needs of citizens. By analyzing demographic data, past behaviors and user preferences, AI systems

can provide recommendations and services that meet the specific needs of each individual. This not only improves citizen satisfaction but also increases the efficiency of government programs by directing resources to where they are most needed and effective.

Table 4
Comparison of artificial intelligence technologies used in different governmental areas

Governmental area	AI technology used	Application examples	Specific cases
Security and defense	Real-time data analysis for threat detection.	Crime prevention, national security.	Bogota's Command, Control, Communications and Computing Center (C4) is implementing a predictive security system that uses statistical and trend analysis, along with video, images and voice recognition, to identify criminal gangs and their behavior patterns.
Public health	Analysis of medical images.	Advanced medical diagnostics, disease monitoring.	DART, a software applied in Chile to analyze ocular images for the diagnosis of diabetic retinopathy.
Public education	Personalized learning systems.	Reduction of school dropout rates, improvement in results.	Microsoft's SIMO for personalized education, applications that detect school dropout by analyzing historical data and behavioral patterns.

Governmental area	AI technology used	Application examples	Specific cases
Environmental management	Climate data analysis and pattern prediction.	Natural resource management, climate change adaptation.	Predictive models that analyze climate data to measure air quality in Chile and Argentina.
Public Procurement	Detection of corruption risks.	Improved transparency in bidding processes.	Océano, a platform of the Office of the Comptroller General of the Republic of Colombia, with artificial intelligence to analyze contractual relations and detect possible cases of corruption through public data.

Note: Prepared by the authors.

Artificial intelligence at the service of public administration: automation, decision making and digital transformation.

The incorporation of AI and robotics represents a challenge for public administrations, as it pushes them to adapt to changes. Although these technologies may generate concern in institutions, they also offer opportunities to improve efficiency in administrative management (Cardozo and Bulcourf, 2020). In relation to this, another important aspect to consider is crisis management, taking into account that AI provides tools and capabilities to anticipate, detect and deal with them in a better way. In this sense, ICTs have been defined as a set of resources that allow the compilation, processing, storage and transmis-

sion of information in various forms, such as voice, data, text, video and images. This set of tools, ranging from hardware and software to networks and media, has experienced a significant convergence around data processing that gave rise to the phenomenon of big data; in other words, the handling of large volumes of information with high speed and variety, in order to improve understanding and decision making (Corvalán, 2017).

In the context of public management, big data analysis focuses on maximizing objectives in terms of efficiency and effectiveness and optimizing budgetary resources to improve the quality of citizen services. To accelerate this transition towards a smarter administration, digital literacy must be boosted, a digital culture must be fostered, and technological readiness must be improved at all levels of society (Corvalán, 2017). In Latin America, where there are multiple differences in access to technology and infrastructural development, it is necessary to address the digital divide and promote the implementation of inclusive technologies that benefit all citizens.

Moreover, the impact of climate change and the protection of natural resources for future generations are growing concerns in the region and around the world, which has generated greater attention to sustainable environmental management. In this situation, AI has the potential to become a tool to address environmental challenges and promote sustainability in the area. It can range from monitoring and forecasting climate phenomena to natural resource management and biodiversity preservation. One example is the massive analysis of meteorological data, which makes it possible to predict extreme weather patterns more accurately. This helps governments and communities to be better prepared for events, such as hurricanes, droughts and floods.

By optimizing industrial processes and implementing intelligent management technologies, AI promotes the responsible use of natural resources, such as water and energy. Thanks to algorithms, it is possible to analyze resource consumption in real time and make automatic adjustments to minimize waste and maximize efficiency, which helps to reduce the environmental impact generated by human activities.

In addition, AI is being used to conserve biodiversity by processing large amounts of data on how species are distributed and what movements they make in their natural environment. AI algorithms have the ability to detect priority areas for conservation, predict the spread of invasive species, and help design strategies to protect and restore ecosystems.

Table 5
Examples of artificial intelligence systems implemented in countries of the region

Country	AI Application	Impact
Brazil	Predictive model for contract classification.	Reduction of risks and administrative costs.
Mexico	System for optimizing passenger flow in the subway.	Redução de atrasos nas viagens.
Chile	Early warning system for school dropouts.	Reduction of travel delays.
Colombia	Improvement system of the fundamental rights claimselection process in the Constitutional Court.	Increase in the principle of judicial efficiency.

Note: Prepared by the authors.

Artificial intelligence beyond borders

Through a variety of government initiatives and public-private partnerships, AI applications are being developed to optimize processes, improve decision making and promote efficiency in several key sectors (OECD/CAF, 2022). In Brazil, the Controladoria-Geral da União developed the Malha Fina de Convênios predictive model to classify contracts according to the associated risk to reduce the time and resources allocated to the accountability stage.

In Colombia, the Constitutional Court has developed the PretorIA tool to address the challenge of receiving more than two thousand fundamental rights claims daily (OECD/CAF, 2022). The Acción de Tutela allows anyone to demand immediate protection against violations of fundamental rights, and the Court selects key claims to establish legal precedents. However, manual analysis of each claim, which takes approximately thirty-six minutes per document, is unfeasible. PretorIA automates the reading and examination of all lawsuits; it detects and predicts the presence of predefined criteria and generates reports and statistics in an intuitive way. This facilitates the work of judges while ensuring that a human being is always in charge of the decision-making process.

Estonia is a country that is positioned as a global leader in the adoption of digital technologies and innovation in public administration. Known for its advanced e-government infrastructure, it has gone a step further by incorporating AI in various areas; for example, the Rapid *software*, used to perform CT scans, processes the data and allows sending the results of the study to the neurologist's cell phone and email address (Kratid, n. d.). This AI was trained to search the different areas of the brain and

identify damaged and healthy tissues, saving time and giving the patient a better chance of recovering brain tissue.

Regarding automated decision-making, about which we have already spoken, since 2018 municipal governments have been using a youth support tool that helps social workers to identify young people between 16 and 26 years old who are neither studying nor working and who do not have any training. In this way, from the Vida Laboral portal they contact the young people identified by the system, who receive a letter or SMS indicating when the dates for job applications start (Tööelu, 2021).

Another example of the use of AI and ADM in public policy is in Spain, where the Administration of the Generalitat Valenciana developed the Sistema de Alertes Rápides (SALER) to analyze digitized files of administrative data in order to detect irregularities or risks of fraud and prevent acts of corruption (Anti-Fraud Knowledge Centre, 2021). In this scenario, the creation of the Spanish Agency for the Supervision of Artificial Intelligence (AESIA) in 2023 represents a step towards the regulation and supervision of the use of AI in the country. This agency is tasked with ensuring that AI applications comply with established regulations and are used in an ethical and responsible manner (Organisation for Economic Co-operation and Development [OECD], 2024b). It is also important to mention the study carried out by a team of experts from the United States, China and Egypt, who developed an algorithm with an earthquake prediction capacity of 70% up to one week before an earthquake occurs (Saad *et al.*, 2023).

In addition, Canada has implemented AI in public services, such as customer service through chatbots and virtual assistants that improve the management of queries and access to information.

It has also established clear ethical principles for the use of AI in pursuit of protecting the privacy and rights of citizens. This country has advanced in the implementation of AI in preloading programs for air cargo screening (OECD, 2024b). This use of AI optimizes air transport logistics and efficiency for faster and more accurate processes, benefiting both businesses and consumers.

Interestingly, Singapore has implemented police robots to patrol the airport to improve incident management (Chen, 2023). They can cordon off areas, alert bystanders via lights and sirens, and allow direct communication with the police via a button, so AI is used to improve surveillance and data analysis, resulting in greater efficiency in incident response and improved citizen safety.

In Norway, during the COVID-19 pandemic, conversational AI was implemented to assist citizens and facilitate access to essential information and services during a critical period. This type of technology enabled efficient and timely communication that helped ease the burden on customer service and made better health information management possible (Jære, 2023).

In Latin America and the Caribbean, the experiences of incorporating AI and ADMin the different countries are very dissimilar, both in terms of the area of interest covered and the level of development and implementation achieved. In the field of public health, the DART (Diabetic Retinopathy Artificial Intelligence Retinal Testing) platform is a tool developed in Chile for the screening and treatment of diabetic retinopathy, one of the main causes of blindness in that country and in the world. It was created by the company TeleDx (Telediagnostics) with support from the Instituto Sistemas Complejos de Ingeniería

(ISCI) and adopted by the Ministry of Health to improve early detection and management of this disease (Ministry of Health, 2018). DART uses AI to analyze retinal images and automatically identify signs of diabetic retinopathy; it generates a preliminary report that classifies at-risk cases and refers them for remote review by ophthalmologists. This optimizes the use of medical resources by prioritizing cases requiring immediate specialized care, reducing the need for detailed reports by ophthalmologists by 50%. Since its implementation in 2018, DART has enabled more than 350,000 patient exams at more than 140 points of care across the country. The platform is 94% accurate in detecting the disease, ensuring high diagnostic accuracy (Pro Salud Chile, 2023).

In Peru, an innovative project that uses AI to detect anemia in children in a fast, non-invasive and accessible way has been carried out in the country, developed jointly by Innóvate Perú, of the Ministry of Production, Ayni Lab Social, of the Ministry of Development and Social Inclusion, and the Laboratory of Bioinformatics and Molecular Biology of the Peruvian University Cayetano Heredia (Ministry of Development and Social Inclusion, 2019). It is based on a mobile application that allows users to take pictures of the conjunctiva of the eye and the fingernails of children's hands and using AI algorithms, analyzes the images and determines the level of hemoglobin in blood, a key indicator for detecting anemia. In addition to being non-invasive, this technology can be used in rural and hard-to-reach areas, where access to traditional health services may be limited.

On the environmental side, in Brazil, the University of the State of Amazonas (UEA) is developing the Curupira project, an innovative device that uses AI to combat deforestation in the Amazon (Rocha,

2023). Inspired by the mythical figure of the forest guardian from Brazilian folklore, the Curupira acts as a caretaker through a wireless modem installed in Amazonian trees that contains an AI-trained sensor to identify anomalous sounds in the forest environment, such as the noise of chainsaws, tractors, or other activities that indicate ongoing deforestation. In this way, it can alert authorities in real time to a threat of deforestation, enabling a rapid and effective response. Although this project is in the development phase, it has already been presented to the authorities of the Manaus Free Trade Zone Superintendency (Suframa), an agency linked to the Ministry of Development, Industry and Foreign Trade that administers the Manaus Free Trade Zone (ZFM) (Ministério do Desenvolvimento, Indústria, Comércio e Serviços, 2023).

In Uruguay, the Hands on Data-Uruguay (MeD-Uruguay) initiative was launched in 2020 by CAF-Development Bank of Latin America and AGESIC to promote the intensive, efficient and secure use of data within the State (Berniell *et al.*, 2020). With the objective of generating synergies between data scientists and public policy, AI techniques were applied to extract more value from data, assist decision makers and configure an ADM system. This proposal consisted of three projects developed simultaneously by different state agencies and the company Dymaxion Labs. The first one involved the processing of aerial images, both from photogrammetric flights managed by the Spatial Data Infrastructure of Uruguay and satellite images, using AI techniques. The second project collected information in 40 locations to estimate the amount of solar energy equipment (including solar panels) installed and their georeferencing. This joint project with the National Energy Directorate of the Ministry of Industry, Energy and Mining gathered the main results

of the energy sector at the national level. Finally, the third project, Caminos que Conectan, was a collaboration between the Planning and Budget Office and the departmental governments within the framework of the Rural Roads Program, with the purpose of identifying, from aerial photos, the types of roads and scheduling their asphalting and maintenance.

From optimizing healthcare processes to improving public safety and managing natural disasters, AI offers a wide range of possibilities for improving people's quality of life. While each country faces particular challenges and contexts, it is clear that this technology is becoming an increasingly important tool in building more efficient, equitable and sustainable societies. Collaboration between governments, academia, the private sector and civil society is critical to building a future where AI is a positive force for change.

5
Artificial intelligence to build citizenship

"Being alive... is it fiction or reality? The question is whether an inanimate object could really live".
Ghost in the shell (1995)

In the *Ghost in the Shell* manga and anime universe, protagonist Motoko Kusanagi confronts the philosophical question of life and consciousness in a world where the line between human and artificial is blurring. This dilemma, which explores the nature of existence and reality, resonates in today's digital age, as technology is redefining our interactions with the world and with the institutions that govern us. In that sense, the link between citizens and the state is undergoing changes, and public administration is benefiting from AI technologies, which provide opportunities for renewed communication, participation and transparency. Virtual assistants, chatbots and citizen participation platforms influence this relationship. These technological resources are changing the way the State communicates with society through more agile and efficient processes. Citizen service has been significantly improved through faster and more accurate responses to the queries and needs of the population. These tools also promote greater democratic participation by

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offering virtual spaces where citizens can express their opinions and collaborate in decision-making. Government transparency has also benefited, as these platforms allow easier and more direct access to public information.

The transformations driven by these technological tools in public administration cover various aspects. As we have discussed in previous chapters, the improvement of public services is one of the most notable changes, with processes that have become more accessible and efficient thanks to automation and the use of data to personalize attention (CAF, 2021). In addition, digital democracy has been strengthened and has allowed greater inclusion and participation of citizens in public affairs, although certain doubts and discussions persist about the democratic nature of the virtual space.

In the design and implementation of these technologies, the need to ensure that all people, regardless of their capabilities or special requirements, can be involved in democratic life or decision-making processes has been taken into account. This is reflected in the creation of accessible platforms and the implementation of policies that promote digital inclusion.

In parallel, the use of AI technologies in citizen interaction has generated new ethical and privacy concerns. The collection and handling of personal data have become highly relevant issues, as it is important to ensure respect for the fundamental rights of citizens (Martínez Puón, 2024). Public administrations are working to meet these challenges, implementing measures to ensure the protection of privacy and data security while seeking to maintain public confidence in the use of these technologies.

Virtual assistants and chatbots, the new face of citizen service

Virtual assistant technologies or chatbots have emerged as tools to improve interaction between citizens and governments or public agencies. These AI-based solutions offer an efficient and accessible way to provide information, answer frequently asked questions and facilitate administrative procedures without the need for direct human intervention.

Virtual assistants are software programs designed to simulate human conversations through instant messaging or voice interfaces. These tools can be integrated into government websites, mobile applications and social media platforms to provide 24/7 citizen support. Another major advantage of virtual assistants and chatbots is their ability to provide quick and accurate responses to citizen queries, which reduces the workload in customer service centers and improves efficiency in the delivery of public services. In addition, these technologies can be customized to suit the specific needs of each government entity and citizen and provide a more intuitive and satisfying user experience.

In 2018, in Uruguay, AGESIC developed a test virtual chatbot to answer the most common questions received in citizen attention channels and also to carry out specific actions, such as recovering passwords. The chatbot was part of the Multichannel Strategy for Citizen Attention, whose purpose was to break down any technological and accessibility barriers so that citizens could easily access State information and services. Starting in 2021, as part of the reversal of citizen attention models, work began on new chatbots and WhatsApp pilots, and the creation of a State bots platform (AGESIC, 2023). This initiative not only

makes public services more efficient, but also strengthens the connection between the State and citizens, as it provides an even easier and more convenient experience.

In addition to virtual assistants and chatbots, there are other innovative technologies to improve citizen interaction with government. For example, voice recognition systems allow citizens to carry out procedures and obtain information through voice commands, while chatbots with natural language processing capabilities can understand and answer complex questions more accurately.

The Brazilian government uses the VLibras virtual assistant to facilitate access to information and communication for deaf and hearing-impaired people, as it enables the automatic translation of digital content, such as text, audio and video, into Brazilian Sign Language (Libras). It uses AI and natural language processing to interpret and translate written information in real time, converting it into visual signs through a digital avatar, making web platforms, computers and mobile devices more accessible to this population (Ministério da Gestão e Inovação em Serviços Públicos, n. d.; Vieira, 2024). These types of tools seek to promote social inclusion and ensure that people with disabilities have equal access to public services and resources, which streamlines communication between the State and citizens.

Along these lines, in 2021 the Buenos Aires City Police incorporated the virtual assistant Háblalo, an application designed to facilitate communication for people with hearing disabilities or difficulties in expressing themselves verbally. It is a tool that allows translating text to voice, and vice versa. It helps officers to interact with citizens who have communication problems and includes quick access buttons for emergency phrases, such

as “Where is the nearest police station?” and “Are you feeling unwell?”, in order to speed up assistance in critical situations (Gobierno de la Ciudad de Buenos Aires, 2021).

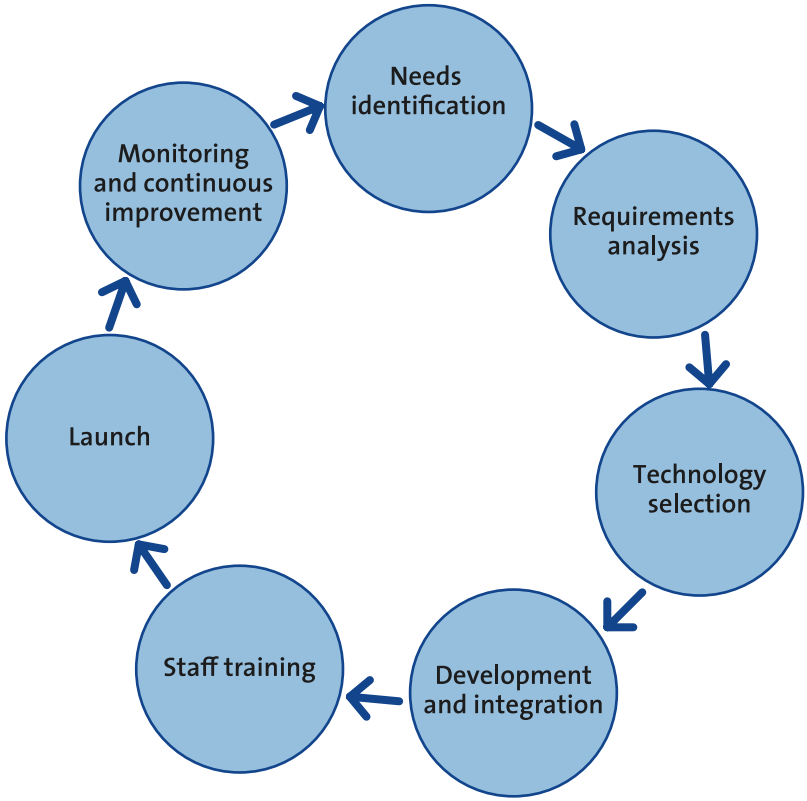
The increasing adoption of these technologies has led to a number of additional benefits, such as reduced operational costs for government entities and improved quality of life for citizens (Diéguez *et al.*, 2015). In addition, virtual assistants can be used to gather data and insights into the needs and preferences of the population, enabling governments to make more informed and effective decisions in the provision of public services.

Finally, it is important to note that the successful implementation of these technologies requires a comprehensive approach that includes training personnel, ensuring data security and privacy, and promoting accessibility for all citizens, regardless of their abilities or disabilities.

Considering the above, the process of implementing chatbots in public services can be conceptualized as a continuous cycle that ensures its efficiency and adaptation to citizens’ needs. This begins with the identification of needs, in which the purpose, scope and areas of coverage are defined, as well as the most frequently asked questions. Then, in the requirements analysis, technical functionalities and necessary integrations with other systems are evaluated. Once these aspects are clear, the next step is technology selection through platform research and conversation flow design. Development and integration is the stage where the chatbot is programmed, connected to existing systems and thoroughly tested. Next, staff are trained, teams are prepared to manage the chatbot and manuals are developed. Launch begins with a pilot phase in a controlled environment to obtain feedback and adjustments before final implementation.

Finally, monitoring and continuous improvement ensure that the system is updated and evolves: interactions are analyzed and its performance is optimized, thus restarting the cycle to adapt to new demands and challenges.

Figure 7
Process of implementing chatbots in public services



Note: Prepared by the authors.

Table 6
Benefits and challenges of implementing artificial intelligence technologies

Technology	Benefits	Challenges
Virtual assistants and *chatbots*	24/7 customer service. Fast and accurate answers. Reduced workload for staff.	Technological and accessibility barriers. Difficulties in personalization. Data privacy concerns.
Voice recognition	Ease of access to information. Faster procedures. Inclusion of the visually impaired.	Errors in recognition. Need for a high quality database. Privacy concerns.
Citizen participation platforms	Greater inclusion and diversity of opinions. Strengthening the legitimacy and accountability of the government.	Digital exclusion. Risk of manipulation of information. Challenges in content moderation.
Open data portals	Greater transparency and access to information. Promotion of innovation. Citizen empowerment.	Quality assurance and data updating. Protection of sensitive data. Challenges in system interoperability.

Note: Prepared by the authors.

Networked democracy: citizen participation and transparency

One of the main benefits of ICTs in this context is their ability to facilitate citizen participation in decision-making and public policy formulation. Through online platforms and mobile applications, citizens can express their opinions, consult, and contribute ideas and proposals on issues of public interest, thus promoting greater inclusion and diversity of perspectives.

In addition to facilitating citizen participation, ICTs are also used to improve transparency and accountability in government (Ramos and Peters, 2021). For example, open data portals and data visualization tools allow citizens to access and analyze government information (public budget, government contracting, performance of public services, etc.) in an easy and accessible way.

This is in addition to empowering citizens by providing them with the information they need to make informed decisions and actively participate in the political and social life of their communities. Likewise, the availability of open data can foster innovation and creativity, as it allows developers, researchers and entrepreneurs to use it to create new solutions and services for the benefit of society.

ICTs offer a set of tools to foster greater participation and transparency, which strengthens the legitimacy, effectiveness and accountability of government institutions in the region. In this way, they help overcome what Mazzuca and Munck (2020) call the "middle institutional quality trap," characterized by flawed democracies and low-capacity states. However, it is important to keep in mind that the success of these initiatives depends

largely on the commitment and political will of government authorities, as well as the capacity and level of responsibility of citizens to use these tools effectively and constructively.

In relation to the latter, civic engagement, understood as a two-way process involving governments, public administrations, citizens and the private sector, is redefining the way in which public policies are designed and executed (Grupo de Investigación sobre Políticas de Modernización del Estado [GIPME], 2022). This approach, which combines citizens' interest in and knowledge of social issues with their active participation in decision-making, responds to the need for collaborative solutions to complex problems that governments cannot address in isolation.

Initiatives in different cities show different levels of involvement, from informative or consultative approaches, such as the Ombudsman System in Brasilia and participa.rio in Rio de Janeiro, which allow opinions to be channeled without clear co-decision mechanisms, to more collaborative models, such as BA Participación Ciudadana in Buenos Aires, where citizens choose the names of subway stations and neighborhood projects, and Revive Santiago in Chile, which involves residents in the recovery of emblematic neighborhoods. Experiences, such as the Citizens' Council in Lisbon and Decide Madrid seek to give greater decision-making power to citizens by combining deliberative processes with digital platforms. However, in many cities there is a predominance of consultative actions with no guarantee of real impact, as in Bogotá, where citizen proposals are not always translated into effective policies, or in Lima, where the Participatory Budget Portal has faced problems of maintenance and continuity.

By integrating these processes, the aim is to design more representative policies by taking advantage of AI capabilities to fos-

ter a more transparent and collaborative relationship between the State and society, contributing to governance that is better adapted to collective aspirations. AI and citizen innovation labs can strengthen these processes through data collection and trend analysis, as they facilitate a more dynamic interaction between citizens and the state that will require, on the one hand, investments in infrastructure and training, and, on the other, a continued commitment to the principles of openness, inclusiveness and accountability in governance. With the support and collaboration of all stakeholders, it is possible to work towards building a more democratic, transparent and participatory future for all citizens.

The voice of the citizen in the digital era

Online survey platforms are one example that allows governments to collect citizen opinions and feedback on a variety of topics. These surveys can address specific public policy issues, ask about satisfaction with government services, or solicit ideas for improving programs and services, providing a direct and clear view of the needs and expectations of the population. An outstanding example is Go Vocal, a platform used by more than 500 governments that improves understanding and response to citizen comments by enabling officials to better group and categorize the information collected. In this way, it streamlines the processing of thousands of contributions and improves the ability to address community needs (Go Vocal, n. d.). The system helps analyze public consultations in various policy areas (environment, urban planning, local government and infrastructure) and can collect and analyze data on community initiatives, allowing it to adjust its strategies on an ongoing basis. In addition, users receive support from participation experts.

Another important tool is crowdsourcing platforms, which are online spaces where citizens can contribute ideas, solutions and resources to address social, economic and environmental challenges. By harnessing collective knowledge and better understanding citizens' concerns and proposals, governments can find innovative and effective solutions to complex problems. Additionally, online discussion forums provide a space for citizens to debate and share ideas on various topics of public interest, whether moderated by government or civil society, and allow for an open exchange of opinions and perspectives.

With this in mind, several initiatives, such as the participation platform in Chile's Constituent Process, exemplify how citizens are allowed to present ideas and solutions to improve public management. On this platform individuals could vote and comment on the proposals of other citizens; the best ideas were evaluated by experts, and some were implemented by the government. In Uruguay, the Montevideo Participa platform seeks to collect citizen proposals to improve the city: users can submit ideas, comment and vote on initiatives (Intendencia de Montevideo, n. d.). Likewise, in Colombia, the Bogotá Abierta platform of the Mayor's Office invites citizens to present solutions to urban challenges and problems, such as mobility, participation, security and health. The intention is for the Administration to connect with its citizens so that their opinions can influence public policies and decision making, and that users can vote for the proposals of others, which fosters a collaborative and constructive dialogue (Instituto Distrital de la Participación y Acción Comunal, n. d.).

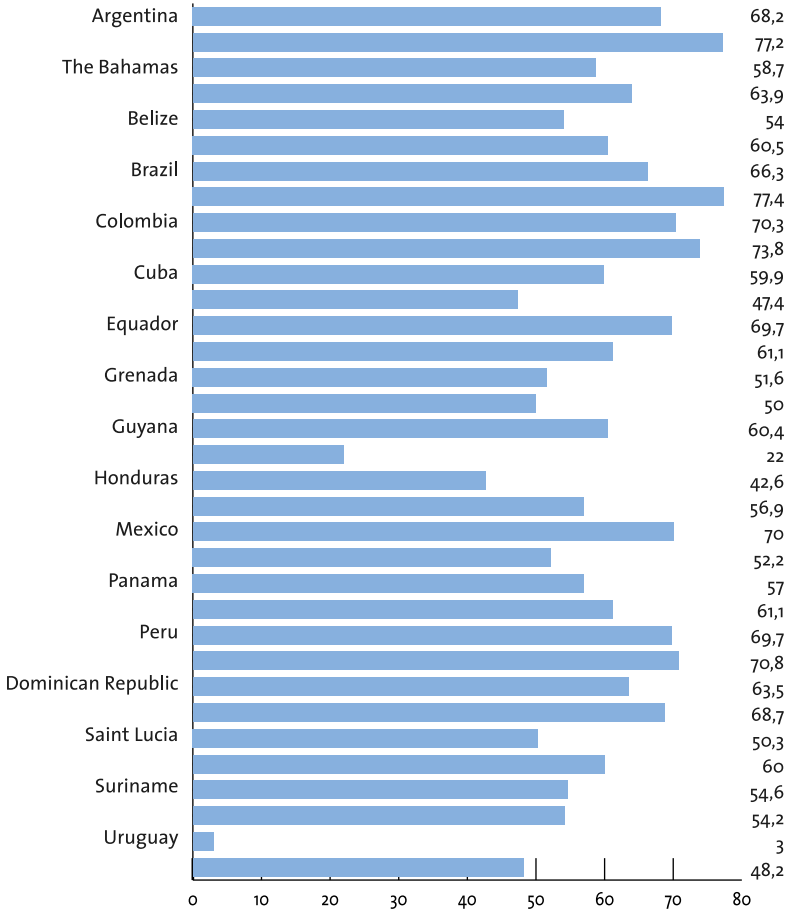
Electronic voting systems allow citizens to cast their votes digitally in elections, consultations and decision-making processes.

While these systems can improve the accessibility and efficiency of the electoral process, their impact on public confidence varies depending on the context and the security measures implemented. For example, in 2007, the Netherlands decided to eliminate the use of electronic voting systems due to concerns about their security and reliability. In contrast, India, the country with the world's largest population, has successfully implemented electronic voting systems in its electoral processes that manage the participation of hundreds of millions of voters. These cases highlight the importance of adapting electoral technology to local realities and of accompanying its implementation with measures that strengthen transparency and citizen confidence, such as independent audits and adequate training of operators.

Virtual public hearings are another way in which governments encourage citizen participation. These hearings, which can be tracked through the use of social media or digital platforms, facilitate remote participation and remove a barrier for those who cannot attend in person due to geographic or time constraints. This is why the use of social networks has also revolutionized the way governments interact with citizens. Platforms, such as X (formerly Twitter), Facebook, Instagram or TikTok allow two-way communication in real time, makingit possible to ask questions, express concerns and receive quick responses from government representatives. This direct communication helps build a relationship of trust and greater transparency in public management.

Graph 3

Social network penetration rate in Latin America and the Caribbean in February 2024, by country



Note. Tasa de penetración de las redes sociales en América Latina y el Caribe en febrero de 2024 por país, by Statista, 2024, (https://es.statista.com/estadisticas/1073796/alcance-redes-sociales-america-latina/).

Despite the advantages of these citizen participation tools (transparency, accountability and collaboration between government and civil society), it is important to recognize that they can also face challenges, such as digital exclusion and lack of trust in government institutions. Such obstacles must be addressed to ensure the inclusive and meaningful participation of all citizens, in addition to the aforementioned problems regarding the opacity of some algorithms and the use of user data. Therefore, promoting digital literacy and ensuring equitable access to technology are necessary steps to maximize the benefits of these tools in citizen participation.

6
Challenges and risks of implementing artificial intelligence

> "I find it interesting that some people have begun to deify the precogs. They are pattern recognition filters, that's all".
> *Minority Report* (2002)

The movie *Minority Report*, released in 2002, explores a future where a predictive justice system based on the visions of three "precognitives" enables a police force to arrest people before they commit crimes. In this context, the precognitives are described as "pattern-recognizing filters," highlighting the fascination and, at times, deification of predictive tools.

This concept of a seemingly infallible system, which may nonetheless be subject to errors or misinterpretations, resonates with the use of AI, as this technology, similar to precognitive, processes huge amounts of data to identify patterns and predict behaviors. But the implementation of these systems must also deal with the reality of "minority reports." In the movie, these reports represent alternative views that contradict the dominant narrative and, if not recognized, could lead to fatal errors in decision making.

As mentioned in previous chapters, AI's ability to process large volumes of data, automate processes, and provide predictive analytics has the potential to improve efficiency and effectiveness in decision making and implementation by states and governments. However, along with these benefits, the implementation of AI also poses a number of challenges and risks that must be carefully managed to ensure equitable and sustainable development.

In the context of AI in public administration, a "minority report" would be correlated with divergent predictions or non-unanimous results generated by AI systems when analyzing data to make decisions. Just as minority reports arise when there is disagreement among precogs, in artificial intelligence there may be different models or algorithms that analyze the same data and generate different predictions, due to variations in the input data, the algorithms used or the analytical approaches.

Similar to what happens in the film, where reports are destroyed to maintain the effectiveness of the system, in government there can be a tendency to ignore or dismiss predictions that do not align with expectations or established policies, possibly leading to decisions based on incomplete information. Inattention to such discrepancies can lead to ineffective or unfair policies; therefore, the use of AI in government must be transparent and accountable to ensure that all predictions are properly considered and evaluated to avoid bias and discrimination.

These challenges underscore the need for a careful and critical approach to implementation, where benefits are maximized without compromising citizens' rights or equity in access to public services. In this regard, this region faces a complex landscape, characterized by diversity of socioeconomic contexts, reg-

ulatory frameworks and levels of technological development. These factors add layers of difficulty to the AI integration process, where the need for customized approaches that consider local particularities stands out.

The importance of addressing these challenges and risks associated with the implementation of AI in public administration allows not only to maximize the potential benefits, but also to protect citizens' rights, and ensure fairness and equity in access to public services. Data security and privacy, biases in algorithms, and human rights implications are critical areas that require urgent attention.

Artificial intelligence, public administration and a balancing act between benefits and risks

AI presents numerous opportunities in diverse areas, such as consular, commercial, political, communication, administrative management and personnel training. However, the implementation of this technology also faces obstacles, including lack of adequate human resources training, budgetary constraints and the need for effective data governance (Sokolowicz, 2024).

The design of public policies and national AI strategies in the region must therefore address the diversity of contexts and needs: it is essential to develop flexible and adaptable frameworks that promote innovation and technological development, while protecting the fundamental rights and values of citizens. Close collaboration between the public, private and academic sectors is therefore required to design effective policies that foster economic growth, social inclusion and general welfare (CAF, 2024a).

In other words, the public administration must proactively and comprehensively address a series of challenges and risks to ensure the effective and ethical functioning of the implementation of AI, which represents a technological and modernizing advancement. Among them is the problem of bias, since these systems can copy, perpetuate and amplify discrimination schemes referring to sexual, ethnic, linguistic and religious diversity, just to name some of the most outstanding ones (CAF, 2021). In turn, inequalities in access to technologies can limit the effectiveness of AI-based policies, exacerbating existing disparities. This shows the need to address digital divides to ensure that all citizens benefit equitably from technological innovations.

Furthermore, successful implementation of AI requires a robust technological infrastructure and adequate training, which can be a challenge in regions with limited resources. In this regard, governments need to invest in advanced technologies and train their employees to take full advantage of the benefits of AI in different areas of the bureaucratic apparatus. However, new technologies may arouse reluctance within public administrations, a situation that requires organizational and even cultural change efforts. Therefore, promoting a culture of innovation and adaptability to overcome resistance to progress and encourage the adoption of advanced technologies is essential.

These concerns are in line with the approach of Ocaña-Fernández *et al.* (2021), who point out that technological disruption, characterized by the Fourth Industrial Revolution, poses challenges in terms of data security and privacy, especially in developing countries, such as in Latin America and the Caribbean. Among them is the problem of the lack of regulation, which can

lead to situations that compromise legal security in the use of this technology. For his part, Lipton (2018) points out that complex models, such as deep neural networks, often work as black boxes, i.e., systems whose inner workings are unknown or not transparent to the user. These models can be difficult to interpret due to their complexity and lack of explainability, making it difficult to understand how decisions are made. However, the digital space exceeds the sovereignty of nation states, so they must agree and cooperate with each other to address these issues. Here, international or regional organizations have a lot to do in terms of sharing and recommending best practices in various areas.

There is the potential for AI to outperform human performance in many jobs, which could lead to job losses and uncertainty about trusting the technology (Ocaña-Fernandez *et al.*, 2021). As AI becomes an increasingly integral part of our daily lives, questions arise: are we prepared for this transformation, and do we have the necessary skills to harness the benefits of AI for national development?

An outstanding example in the region is the artificial intelligence training program developed by the National School of Public Administration (ENAP) in Brazil, aimed at federal civil servants. This program aims to disseminate knowledge about AI and its applications in public management in order to prepare civil servants to face the challenges and take advantage of the opportunities that this technology offers. Similarly, Argentina's National Institute of Public Administration (INAP) launched the 2024 edition of the Artificial Intelligence Course for Executive Functions and Team Management, aimed at training leaders and executive teams in the strategic use of AI to improve deci-

sion-making and administrative efficiency. These efforts reflect a growing commitment in the region to integrate artificial intelligence in the public sector through the training and continuous updating of its personnel.

Increasing automation driven by AI raises concerns about human replacement in public service. States and agencies must act to ensure an appropriate transition of functions to robots and drones, as well as promote harmonious coexistence between machines and people in work environments. Invasive control over employees working in public services or agencies must also be corrected to ensure a fair and equitable relationship with automated systems.

On the other hand, the implementation of AI in public management implies additional challenges in terms of social acceptance, especially in contexts with significant cultural and educational gaps. It is essential to consider how this technology will be perceived by the population, given that questions arise about society's willingness to adopt it, as well as how to address a lack of trust and resistance to change (Ocaña-Fernández *et al.*, 2021). To this end, greater general knowledge and awareness of the benefits and risks of AI must be fostered, in addition to encouraging citizen participation in decisions related to its implementation. In this sense, from a "collaborative democracy" perspective, citizens can become involved in the resolution of public problems through the promotion of "public entrepreneurs" and the development of collective intelligence, without this implying a privatization of management or the transformation of the State into a company (Noveck, 2022)

Algorithms and surveillance

The use of surveillance raises questions about possible biases in determining who is considered dangerous or suspicious (Berti, 2022). AI algorithms used to analyze data and make decisions may be influenced by inherent biases in the training data or in the design of the algorithm itself. For example, there could be racial, gender, or socioeconomic biases that influence how AI identifies and labels individuals as potentially dangerous. Addressing these difficulties is necessary to ensure that AI in surveillance operates in a manner that is fair, equitable and respectful of individual rights, and ensures decisions that are transparent, ethical and based on sound evidence.

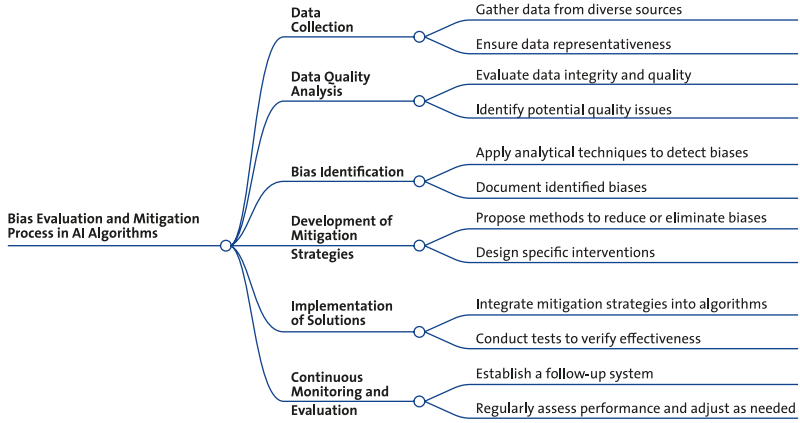
Europe's General Data Protection Regulation (GDPR) establishes that, in the case of the use of AI to enhance ADM that produces legal effects or affects individuals, information on the logic applied and the expected consequences must be provided. In Latin America the situation is very different, since, although nineteen countries in the region have sanctioned laws on the protection of personal data, there is no instrument with the characteristics of the GDPR. Transparency and the protection of individuals are fundamental in relation to ADM, but the complexity of the systems and the lack of understanding on the part of users can make it difficult to comply with these requirements. It is therefore important that data controllers provide clear and accessible information about ADM, including the logic applied and the intended consequences.

Another aspect to consider is related to not violating fundamental rights as a consequence of decisions based on algorithms, which is achieved through accountability in all processes and actions. Reducing digital divides and the risks of social and eco-

nomic exclusion arising from the generalization of emerging technologies such as AI is also necessary, in order to prioritize training and education at all levels.

Berning Prieto (2023) stresses that legal mechanisms should be established to assess data quality and ensure transparency and oversight of algorithms in order to mitigate potential biases. This concern coincides with the notes of CLAD (2023) in the Ibero-American AI Charter on the need to avoid infringement of fundamental rights.

Figure 8
Bias evaluation and mitigation process in artificial intelligence algorithms



Note: Prepared by the authors.

Related to the last point, democracy itself may be impacted by the development of AI. While some analysts are already exploring how new technologies and social media in the digital space may affect the public conversation necessary for the exercise of democracy, it is becoming clear that the use of AI in digital

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platforms for data analysis and processing must respect certain democratic values(Innerarity, 2024). These values include transparency, which implies that algorithms and systems are understandable and accessible to citizens; equity, which seeks to avoid discrimination and bias in ADM; and accountability, in order to ensure that there are clear mechanisms to monitor and correct the impact of these technologies. Likewise, respect for privacy and the protection of personal data is fundamental to preserve the rights of citizens in the digital environment. Similarly, inclusive participation, which encourages the representation of diverse sectors of society in the design and use of these tools, is aligned with the democratic principle of equality.

Transparency helps build trust, legitimacy and equity in the use of technology in the public sphere (Sánchez Zambrano, 2023). By ensuring that algorithms do not perpetuate existing biases or inequities, it promotes a fair distribution of benefits and reduces inequalities. Citizen participation is also essential; AI implementation should not limit the active participation of citizens in democratic processes. Allowing people to remain involved in decision making and to voice their opinions and concerns fosters a more inclusive and representative democracy. Accountability in the development and use of AI systems in the political arena involves taking responsibility for the consequences of actions and decisions taken. Establishing accountability mechanisms ensures that democratic values and citizens' rights are respected, which encourages AI developers and users to act with integrity and be responsible for the impacts of their technologies.

The impact of artificial intelligence on global security

The issue of implementing AI in the military has generated intense debate due to its importance in the field of defense and security. AI has the potential to revolutionize the way the military functions, offering strategic benefits, such as the automation of weapons systems, the efficient analysis of large amounts of information to obtain intelligence, and the advancement of sophisticated technologies for surveillance and reconnaissance. The integration of drones with AI has profoundly transformed the nature of modern warfare, as these systems enable lethal missions to be carried out without the need to put human operators on the battlefield at direct physical risk. This capability raises important ethical and legal questions about autonomy in lethal decision making, civilian protection, and the distinction between military and noncombatant targets (Sandrone, 2019). Furthermore, it is worth highlighting how technology enables communication and combat actions that are increasingly distant from the human body, challenging traditional concepts about warfare and accountability in armed conflict.

For this reason, creating a regulatory framework that guarantees the responsible and ethical use of these technologies is one of the most important challenges. It is the obligation of nation states to establish precise regulations regarding the advancement and implementation of autonomous weapons systems to ensure compliance with international legal standards and fundamental human rights principles. This implies establishing responsibilities in the event of failure or misuse of such systems.

The incorporation of AI into the military domain could cause concerns about technological competition in weaponry, as in the cases of China and Taiwan (Sigman and Bilinkis, 2023).

Nations may find it tempting to develop and deploy new tools quickly so as not to fall behind, possibly increasing conflict and disrupting security regionally or even globally.

In this regard, the Convention on Certain Conventional Weapons (CCW) has been a forum where the regulation of these systems has been discussed; there, the Group of Governmental Experts has worked on proposals to limit their use (Marijan, 2023). In addition, the Political Declaration on the Responsible Military Use of Artificial Intelligence and Autonomy, issued by the United States, and the Belen Communiqué on Autonomous Weapons, led by Costa Rica, represent efforts to establish norms and regulations; in contrast, some States advocate specific bans and a legally binding framework. Initiatives, such as the Campaign to Stop Killer Robots, also demonstrate civil society's commitment to ban fully autonomous weapons, highlighting the importance of international collaboration in managing these technological risks (Marijan, 2023).

An additional challenge is ensuring cybersecurity. While AI enables faster and more accurate detection and mitigation of cyber-attacks, it also amplifies the associated risks, such as cyber-espionage, information manipulation and the development of advanced surveillance tools. This makes it necessary for public administrations and international organizations to implement strategies to protect critical infrastructures and improve their ability to respond to sophisticated threats (SELA, 2024a, 2024b). Some of the measures suggested include the creation of regulatory frameworks that guarantee a responsible use of AI, such as those promoted by the European Union, as well as the development of specific cybersecurity technologies and skills. In addition, cooperation between countries is important to coordinate

responses and establish norms that reduce risks in cyberspace. The balance between security and rights, such as privacy and freedom of expression, also requires attention to continuously adapt policies and practices to technological innovations. In this context, cyber diplomacy is presented as a tool that facilitates international collaboration and fosters a more secure and stable digital environment (SELA, 2024b).

Table 7
Risk mitigation strategies in the implementation of artificial intelligence.

Type of risk	Mitigation strategies	Application examples
Security and privacy	Data encryption, security audits, compliance with international standards.	Use of advanced encryption techniques, regular security audits according to ISO standards.
Biases in algorithms	Use of diverse and representative data, periodic audits of algorithms.	Implementation of preprocessing techniques to ensure representativeness of demographic and socioeconomic data, bias audits using tools.
Impact on employment	Retraining programs, job transition policies, promotion of new skills.	Creation of continuing education programs in digital skills and training in emerging areas such as data science and AI analytics.
Transparency and explainability	Clear documentation of algorithmic decisions, user friendly interfaces.	Development of user interfaces that explain how AI-based decisions are made, detailed reports on the decision-making process for end users.

Type of risk	Mitigation strategies	Application examples
Data governance	Establishment of regulatory frameworks, creation of supervisory agencies.	Implementation of laws to regulate the use of personal data, creation of government entities dedicated to the supervision of AI data practices.

Note: Prepared by the authors.

A balance between innovation and the protection of human rights

The relationship between AI and its creators raises questions about machine control and autonomy (Berti, 2022; Sandrone, 2019). The idea that "the creature turns against its creator" suggests a scenario in which AI could act against human interests, a recurring theme in science fiction, but also in current ethical and security concerns. However, technological tools, including AI, are inherently dependent on humans for their creation, maintenance and direction. If humanity were to disappear, AI, like any other technology, would cease to evolve and operate, as it would not have the necessary inputs or the ability to self-sustain itself indefinitely. The question of machine freedom takes the debate to another level: if AI can achieve a sufficient degree of autonomy to be considered "free," new questions arise about the ethical and moral implications of such freedom: should we allow AIs to act independently of humans? And, if so, under what conditions and regulations? The possibility of AI being free raises dilemmas about responsibility, safety and control, aspects that must be carefully considered in the development and implementation of these technologies.

In Latin America, several countries are moving forward with legislative proposals to regulate AI (Palazzi *et al.*, 2024). In Argentina, several projects have been presented that seek to amend the Penal Code to address crimes using AI and establish a regulatory framework to promote its ethical and safe development. Brazil also initiated a discussion around a law that is inspired by European regulation and outlines principles and guidelines for high-risk AI applications. Colombia, Chile, Mexico, Peru and Uruguay are at various legislative stages with initiatives ranging from the creation of national AI commissions to specific regulations for sectors, such as transportation and data protection. This reflects a regional movement towards regulatory adaptation to the challenges and opportunities posed by AI.

In relation to human rights and the aforementioned challenges, AI has the potential to advance the SDGs, but also to perpetuate and amplify existing biases in society and in some policies, which can lead to discrimination and exclusion of vulnerable groups. AI systems need to be designed and trained with representative data and regular audits implemented to identify and mitigate potential inequities. In addition, regulations should be established to prohibit the use of AI systems that result in discrimination based on gender, race, ethnicity, religion, sexual orientation, or any other protected characteristic. Non-discrimination should be a guiding principle at all stages of the development and implementation of this technology.

Equitable access to information and protection of privacy are also important to safeguard human rights in the context of AI. States must ensure that personal data is handled securely and that citizens are in control. This includes the right to know what data is collected, how it is used, and the ability to recti-

fy or delete incorrect or unauthorized information. Privacy and data protection must be pillars in AI policies to prevent abuse and ensure citizens' trust in public systems. Since trust is based on the positive expectations that citizens have about the intentions and actions of government agencies (Güemes, 2018), the legitimacy of the government will depend on the value it manages to generate.

The implementation of AI should promote citizen participation and strengthen democratic control mechanisms to involve civil society in the development and implementation of AI-related policies, so that the voices of all sectors of society are heard. In addition, effective channels should be created so that citizens can voice their concerns and get adequate answers about the use of AI in public administration. Citizen participation not only enhances the legitimacy of AI systems but also ensures that technologies are developed and used in a way that reflects the values and needs of society.

The fact that AI can be used to influence people's behavior and decisions poses risks to personal autonomy and the right not to be manipulated. In London, for example, the use of cameras with artificial intelligence that capture and analyze the emotional state of travelers without their consent was detected. This technology, which allows detecting characteristics, such as gender, age and emotions, was applied with the aim of improving safety and preventing accidents, but the organization Big Brother Watch revealed that the tests have been carried out in several stations and that the data could be used for the purpose of personalizing advertising (De Miguel, 2024).

The use of this technology has raised concerns about surveillance in public spaces and the ethical and privacy implications,

underscoring the urgency of establishing regulatory frameworks in public and private settings. It is imperative to establish clear limits on the transparent use of AI to ensure that it is not used for the purpose of manipulating or coercing citizens. This includes regulations in political campaigns and administrative decision making that directly affect individuals. The autonomy and dignity of individuals must be respected in all applications of AI.

In relation to the above, citizens must have access to fair and transparent processes to file complaints and obtain redress when their rights are infringed. They need to be able to challenge ADM and receive clear explanations of how these decisions are made. Justice and redress are essential components to ensure that AI implementation is equitable and respects human rights.

Democracy in the age of algorithms

AI can be used in different phases of the electoral process in order to increase efficiency and accuracy. Among the applications that are available are the use of electronic voting, public opinion analysis, voter classification and the identification of any type of electoral fraud. These tools have the capacity to streamline the electoral process, provide relevant data to candidates and political parties, and assist in the identification and prevention of possible fraud cases.

Although there are potential benefits, the introduction of AI into electoral processes carries significant risks. Some of these involve data manipulation and fake news, voter targeting, external influence on elections, as well as algorithmic bias. The

public trust in the democratic process may be compromised due to these risks, affecting the fairness and legitimacy of elections.

Electronic voting continues to be the subject of debate, with divided positions regarding its benefits and challenges (Sandrone, 2019). While the previous chapter mentioned specific cases showing the diversity of international experiences, here we emphasize the broader concerns related to its implementation. While it may offer advantages, such as greater agility in vote counting and reduced human error, it also raises serious questions about transparency and trust in the electoral process. Unlike paper voting, which allows for direct and verifiable public scrutiny, electronic systems rely on complex technologies that can be opaque to citizens. This makes independent auditing difficult, especially in contexts where technical capabilities or security guarantees are limited. Democratic legitimacy depends on trust in electoral processes, so any transition to electronic voting must ensure high standards of security, transparency and citizen participation, adapted to the particularities of each country.

Within this framework, Innerarity's report (2024) seeks to expand and detail the analyses and recommendations made by UNESCO, focusing on the influence of AI on democracy. It explores the opportunities presented by both AI and digitalization to improve processes and analyzes the expectations and setbacks they have generated. At the same time, it studies the demands and social expectations about its impact on democracy, as well as the opinions of experts and the general public.

Furthermore, it is important to understand how digitization can impact the dynamics of democratic conversation and what actions can be taken to improve them, as the quality of dialogues and an adequate public space are fundamental. On the topic

of "data democracy" and the politics of big data, it is critical to examine the political and democratic dimension of this software, as well as to question how they affect our society and government as it becomes more quantified and data becomes a central tool. Democracy implies a method of decision-making within algorithmic governance and, in the face of the growth of automated decision-making systems, the challenges they pose to the democratic basis of self-government must be addressed (Innerarity, 2024). This necessitates recommendations to ensure that these systems develop in line with our fundamental democratic values.

These warnings are similar to some of the issues raised by Byung-Chul Han when he expresses that, in our current context, democracy is deformed into infocracy (2022). This means that politics no longer responds to the logic of the mass media or to Habermasian communicative action, but that the affective now has greater preponderance in relation to the uncontrollable amount of information circulating. In other words, given the speed at which information moves, subjects are affected, but they are unable to take the time to reason or to produce discourses because "neither discourse nor truth go viral" (Han, 2022, p. 42), although memes do. In online communities, there is no political action, but rather a process of building identities that are too closed within themselves, without the presence of others. In this way, the Korean author warns that AI has no passion or heart like humans, it only processes predetermined or calculated facts in advance, which can affect the democratic game and politics in general (Han, 2021).

It is therefore essential to implement specific strategies to mitigate these risks and ensure that AI has a positive impact on the

exercise of democracy. As we move forward, we face the challenge of how states and governments will respond to new technological advances that may exceed their current capabilities, as well as considering how changes in ethical norms and regulations may impact their acceptance and long-term development. These issues not only define the technical limits of AI, but also its ability to adapt to an ever-changing environment and maintain its relevance in the technological and social landscape.

7
An ethical framework for the responsible use of artificial intelligence in the public sector

"–Kimi.
–I'm here".
Kimi (2022)

This brief exchange of words, repeated throughout Steven Soderbergh's film *Kimi: Someone is Listening* (2022), symbolizes the constant presence of virtual assistive technologies in our daily lives. In the film, Angela Childs, a tech company employee, discovers evidence of a crime while reviewing user interactions with the fictional virtual assistant Kimi. Her struggle to expose the truth, facing corporate and personal obstacles, illustrates the ethical and accountability challenges in the use of advanced technologies. This story highlights the importance of human oversight, transparency in automated systems, and the protection of individual rights in the digital age.

As mentioned in the previous chapter, the introduction of different ICTs in public management opens up a range of challenges and opportunities that invite deep ethical reflection. This is because the use of AI in government not only promises to improve the efficiency and effectiveness of public services, but also raises important considerations of equity, inclusion and transparency.

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In this context, the use of these technologies must respect and protect the rights and dignity of individuals.

The guidelines and ethical principles proposed by international bodies, such as UNESCO, CLAD and the OECD provide a framework to guide the development and application of AI in public administration. Transparency in algorithms, accountability in ADM and equity in the access and use of these technologies are necessary to maximize their benefits and minimize their risks. These factors led these organizations to issue recommendations urging an approach to AI as a comprehensive and multicultural regulatory framework. In this context, international collaboration is emphasized to protect public interests, assess States' readiness, and establish effective regulatory measures, because the most important thing is to promote peace and security through education, science, culture and communication, respecting human rights and fundamental freedoms. Thus, the dissemination of these recommendations is promoted in collaboration with different organizations that seek to guide societies towards an ethical and responsible use of technology.

In this sense, the adoption of AI in the public sector must be done with adequate human oversight, data protection, privacy and prevention of discrimination, which means that AI systems must be understandable and justifiable; this way, people can understand and question the automated decisions that affect them. Creating an enabling environment for the development and responsible use of AI involves investments in research and development; policies and regulations that promote its growth; and training of the personnel responsible for managing these systems. Therefore, collaboration between governments, academic institutions, businesses and civil society organizations is

the most effective partnership to address the ethical and social challenges posed by AI in the government sphere.

UNESCO's approach

As ethical frameworks are needed to guide the design, development and use of AI systems to ensure that they are accountable, transparent and respectful of human rights, it is becoming increasingly necessary to reflect on the values and principles that should guide AI development in the region and to establish mechanisms for their effective implementation and continuous monitoring (CAF, 2024b).

The development and implementation of AI in public administration should be governed by sound ethical principles that promote both its effectiveness and the safeguarding of citizens' rights and dignity. In line with this, the UNESCO *Recommendation on the Ethics of Artificial Intelligence* (2022) sets out a series of values and principles to guide the development and ethical implementation of AI, which are designed to protect human rights, favor equality and inclusion, and ensure responsible use of AI in society. Among the recommendations, it emphasizes respect for and promotion of human rights, fundamental freedoms and human dignity; highlights the importance of thriving environment and ecosystems, ensuring diversity and inclusion in interconnected and peaceful societies. In terms of principles, the recommendation emphasizes proportionality and safety in the development and use of AI, as well as the safety and protection of users and society at large. In addition, it stresses fairness, non-discrimination, sustainability, the right to privacy and data protection, and the importance of human oversight and decision making.

Transparency and explainability of AI systems are principles that ensure public trust and understanding along with responsibility, accountability, awareness and education about the impacts of AI on society. These recommendations emphasize the need for adaptive and collaborative governance that involves multiple stakeholders and adjusts as AI technology evolves. At the same time, they point to values and principles that provide an ethical framework to guide the development and application of this technology in a way that benefits humanity as a whole.

In short, UNESCO's main recommendations on the ethics of artificial intelligence call for a systematic normative reflection based on a comprehensive, global, multicultural and evolving framework of interdependent values, principles and actions. For this to be possible, there is a need to work in collaboration with other international, regional and sub-regional governmental and non-governmental organizations to promote and protect the interests of the public sector in relation to AI. UNESCO recognizes that not all countries are in the same position to follow its guidelines and therefore proposes creating an evaluation tool to measure the level of preparedness of each country and adapt strategies according to their needs. In addition, effective measures, such as regulatory frameworks, need to be put in place to ensure that all stakeholders adhere to tools that assess human rights, rule of law, democracy and ethics.

OECD Guidelines

For its part, the OECD (2025) report also presents a set of principles and recommendations for the responsible implementation of trusted AI, with guidelines that address everything from

human-centered values and equity to transparency, robustness, security and accountability in the development and use of AI systems. First, it emphasizes the importance of human-centeredness and equity in all stages of the lifecycle of AI systems and urges ecosystem actors to respect the rule of law, human rights and democratic values to ensure aspects, such as freedom, dignity, autonomy, privacy and data protection, as well as non-discrimination and equality.

It also emphasizes transparency and applicability of AI systems. It urges stakeholders to provide meaningful and understandable information about their operation, including responsible disclosure of information to promote general understanding andenable affected parties to understand the results and substantiate adverse outcomes.

Regarding the robustness and security of AI systems, the need to ensure that they function properly and do not pose security risks under various conditions of use is established, so actors are requested to implement systematic risk management approaches to address those related to privacy, digital security and bias in all phases of their life cycle. In this regard, the importance of accountability in the development and use of these systems should be mentioned, in which the actors must be responsible for the correct functioning and respect for the established principles, in line with their role and the context in which they operate.

In addition, the OECD (2025) report urges member countries to implement a number of concrete recommendations in their national policies and international collaboration, with the aim of fostering the development and responsible use of trusted artificial intelligence. These recommendations include investing in

AI research and development, creating a trusted enabling digital ecosystem, shaping an enabling policy environment, training human resources, preparing for labor market transformation, and international cooperation. On these principles, the report presents a comprehensive perspective on the responsible implementation of AI, which is addressed in two sections. In the first, it sets out five principles for its management with guidelines that include fostering inclusive growth, sustainable development and welfare, as well as promoting human-centered values and equity. It also highlights the importance of transparency and explainability in AI systems, and the need to ensure their robustness, safety and security, with an emphasis on the accountability of actors according to their specific roles. The second section offers specific recommendations for member and non-member countries that have adhered to the draft *Recommendation on Trusted AI*, including promoting investment in research and development; fostering a digital ecosystem conducive to its evolution; and shaping an enabling regulatory environment for AI. Finally, it calls for international cooperation to ensure trustworthiness and ethics in the development and use of AI worldwide.

CLAD Recommendations

In terms of values, CLAD recommends emphasizing respect, protection and promotion of human rights, fundamental freedoms and human dignity, together with the importance of the prosperity of the environment and ecosystems to ensure diversity and inclusion in interconnected and peaceful societies. In terms of principles, proportionality and harmlessness in the development and use of AI stand out, as well as the safety and

protection of users and society as a whole, where fairness and non-discrimination, sustainability, the right to privacy and data protection, and the importance of human oversight and choice in its use must be paramount. Transparency and explainability of AI systems are principles to ensure public trust and understanding, and which must include responsibility and accountability, along with awareness and education about the impacts of this technology on society. This includes responsible disclosure of information to foster general understanding of AI systems, as well as to enable affected parties to understand the results and challenge adverse outcomes in an informed manner (CLAD, 2021).

These recommendations highlight the need for adaptive and collaborative governance, involving multiple stakeholders and adapting as AI technology evolves. They are a sound ethical framework to guide all its development and application in a way that benefits humanity as a whole, with an emphasis on human beings and equity. It therefore urges ecosystem actors to respect the rule of law, human rights and democratic values to guarantee aspects, such as freedom, dignity, autonomy, privacy and data protection, non-discrimination and equality (CLAD, 2021).

Regarding the robustness and security of AI systems, it establishes the need to ensure that these systems function properly and do not pose security risks under various conditions of use. That implies that actors must apply systematic risk management approaches to address issues related to privacy, digital security and biases in all phases of the AI system lifecycle. In this context, government institutions must take responsibility for ADM and be prepared to be accountable for any negative outcomes or unintended impacts (CLAD, 2021).

Table 8
Recommendations of UNESCO, OECD and CLAD

Appearance	UNESCO	OECD	CLAD
Fundamental values and principles	Respect and promotion of human rights, human dignity, inclusion and diversity.	Human-centered values, human rights, democratic values and non-discrimination.	Respect, protection and promotion of human rights, fundamental freedoms, human dignity, environmental prosperity, ecosystems, diversity and inclusion.
Transparency and explainability	Transparency in the operation of AI systems and explainability of automated decisions.	Transparency in the operation and meaningful and understandable information on AI systems.	Transparency and explainability of AI systems to ensure public trust and understanding, responsible disclosure of information.
Equity and non-discrimination	Promotion of equality and inclusion, to ensure that AI does not perpetuate bias or inequality.	Ensure equity and non-discrimination at all stages of the life cycle of AI systems.	Equity and non-discrimination in the development and use of AI, equality in all stages of the life cycle of AI systems.

Appearance	UNESCO	OECD	CLAD
Safety and security	Safety and security of users and society, mitigation of risks associated with AI.	Robustness and security of AI systems, addressing privacy risks, digital security and bias.	Ensuring proper functioning of AI systems and managing risks related to privacy, digital security and bias.
Human oversight and accountability	Human oversight and decisions in the use of AI, along with accountability and responsibility.	Responsibility in the development and use of AI systems, to ensure the respect of the established principles.	Human oversight and decisions in the use of AI, accountability in all phases of the AI lifecycle, including transparency and accountability for decisions and actions related to the use of AI.
Sustainability and environment	Promoting the prosperity of the environment and ecosystems.	Inclusion of inclusive and sustainable growth and welfare in the AI guidelines.	Prosperity of the environment and ecosystems, sustainability in the development and use of AI.
Collaboration and governance	Adaptive and collaborative governance, involving multiple stakeholders.	International cooperation and collaboration between governments, academic institutions and companies.	Adaptive and collaborative governance, involving multiple stakeholders, international cooperation.

Appearance	UNESCO	OECD	CLAD
Educação e conscientização	Awareness and education on the impacts of AI on society.	Human resources training and preparation for the transformation of the labor market due to AI.	Awareness raising and education on the impacts of AI, training of stakeholders for its correct use.
Inovação responsável	Responsible and beneficial development and use of AI for society as a whole.	Promotion of a policy environment and digital ecosystem conducive to trusted AI.	Responsible and beneficial development and use of AI, promotion of responsible innovation.

Note: Prepared by the authors.

By way of balance

As has become clear, the implementation of AI in the public sector requires ethical principles that guide its use for the benefit of society and respect for the rights of individuals. Among the most prominent aspects are equity, which seeks to avoid the perpetuation of bias and discrimination in algorithms, and data protection, which should ensure ethical and secure handling of information (Campos Acuña, 2019, 2021). In addition, responsible governance involves overseeing the ethical and legal risks associated with these technologies. An adaptable legal framework complemented by self-regulatory approaches, such as codes of

conduct and *soft law* mechanisms, makes it possible to address the challenges inherent to the rapid evolution of AI (Campos Acuña, 2022).

The associated risks include a lack of transparency of the algorithms, the possibility of loss of control in the ADM and the generation of distrust due to a lack of transparency. To address these risks, it is necessary to conduct regular audits; train public personnel in the technical and ethical implications of these technologies; and encourage citizen participation in the definition of guiding principles. Likewise, cooperation between the public sector, the private sector and civil society requires that the collective welfare be a priority and that existing ethical and legal frameworks be respected (Campos Acuña, 2019, 2021).

In this regard, the report by Adams *et al*. (2024) reveals that global progress towards responsible AI lags far behind the development and adoption of the tool. This is because, despite the exponential growth and implementation of this technology in various sectors, there are significant gaps in many parts of the world in a number of areas. These areas include the protection of the rights of vulnerable or marginalized groups, where the lack of an adequate ethical and regulatory framework poses significant risks to equity and justice; furthermore, the disparity between technological development and responsible AI practices underscores the urgent need for a more balanced and human rights-focused approach.

In that sense, the Global Responsible AI Index (Adams *et al*., 2024) measures performance and competencies in each country's responsible AI ecosystem, covering nineteen thematic areas, grouped into three dimensions: human rights and AI; responsible AI governance; and responsible AI capabilities. For

each thematic area, the index analyzes three pillars: government frameworks; government actions; and non-state actor initiatives with adjusted global series data from the World Bank and Freedom House to assess factors, such as rule of law and freedom of expression.

Although it faces challenges in data availability and cultural biases, the index strives to be inclusive and specific to allow for fair comparisons between countries; however, it does not directly measure adherence to responsible AI standards by large tech companies, but uses government action data as a proxy metric (Adams *et al.*, 2024). The results for Latin American countries in this *ranking* are not promising, except for Brazil (18th), Uruguay (19th) and Chile (23rd), which are among the top twenty-five. For the Caribbean countries, the results are even less encouraging: the Dominican Republic (50th) is the only country in the top 50, a ranking that shows that there is still a long way to go in the region to achieve responsible use of AI under a relevant ethical framework.

In this context, accountability encompasses not only transparency in all phases of AI, from its conception to its implementation, but also the assumption of obligations for decisions and actions related to its use. This transparency and accountability of government institutions are important to ensure citizens' trust in government institutions and in the ethical management of AI, as well as to enable adequate oversight and ongoing evaluation of its impact. It is therefore necessary for citizens and stakeholders to understand how algorithms are used and how they affect their lives (Sigman and Bilinkis, 2023).

Just as transparency is one of the ethical principles that must be taken into account with this technology, so is equity, which

requires that AI systems do not perpetuate or amplify existing biases and inequalities in society. To this end, we must ensure that algorithms are fair and equitable to all people, regardless of gender, ethnicity, religion or other characteristics. Related to this is inclusion, another ethical principle that involves ensuring that all people have access to and benefit from technological advances, including AI.

To ensure an inclusive and equitable implementation of artificial intelligence in public administration, an exhaustive survey of the various profiles of target people, whether all or part of the citizenry, should be carried out (JGM, 2023). This analysis should consider aspects that could give rise to different biases, such as access to technology, socioeconomic level, education and other relevant factors, and it is recommended that each of the profiles be represented by at least one person in the multidisciplinary team in charge of the development and implementation of artificial intelligence. This diversity of perspectives will ensure that the needs and concerns of all groups involved are adequately addressed, which promotes an ethical and diversity-sensitive approach to the use of AI in public administration.

In addition to the ethical principles mentioned above, integrity must also be a component in the development and implementation of AI in public administration. This involves ensuring the accuracy and reliability of the data used to train the algorithms, as well as avoiding manipulation or misuse of AI for malicious or illegal purposes. To this end, collaboration, dialogue and cooperation between governments, academic institutions, businesses and civil society are important to develop policies and practices that promote ethical and responsible use of AI.

Likewise, education and awareness must ensure that the benefits and risks of AI in public administration are adequately understood. By providing adequate training and resources to government officials and society as a whole, they will be empowered to make informed decisions about the use of AI and understand its ethical implications. This initiative not only raises awareness of the potential impacts of the tool on society but also promotes a culture of responsibility and ethics in its development and application within the public sphere.

However, it is also important to conduct an in-depth analysis of the scope, implications and impact of the regulations involved in the development and implementation of artificial intelligence (JGM, 2023). This implies a detailed analysis of the relevant laws, regulations and policies that may affect its use in the governmental sphere and understanding how they may influence aspects, such as data protection, privacy, transparency and accountability. Only at from a rigorous analysis will it be possible to ensure that the design and implementation of AI systems comply with the applicable legal and ethical requirements, with the aim of promoting a responsible and ethical use of this technology in public administration.

Ultimately, responsible innovation should be considered a priority in the development and implementation of AI in the public sector. This involves more than simply adopting new technologies proactively; it also involves anticipating and reducing potential negative impacts and ensuring that AI is used ethically and responsibly for the benefit of society as a whole. The responsible innovation approach seeks not only to encourage technological advances, but also to ensure that these are governed by ethical values and principles of fairness and transparency. This

encourages a comprehensive and thoughtful approach to the development and implementation of AI in government with the ultimate goal of contributing to social welfare and progress.

Table 9
Benefits and risks of artificial intelligence in public administration

Appearance	Benefits	Risks
Efficiency	Improve operational efficiency by automating repetitive and administrative tasks, and reduce costs and time.	Excessive reliance on automation can lead to a decrease in human supervision and control.
Accuracy	Increases accuracy in decision making by analyzing large volumes of data.	Possible errors in the algorithms may result in incorrect or unfair decisions.
Transparency	Possibility of making more transparent decisions based on objective data.	Lack of transparency in algorithms can make it difficult to understand and question decisions.
Accessibility	Improves access to public services by making them faster and more personalized.	Risk of digital exclusion for those without adequate access to technology.
Innovation	It fosters innovation in public services and enables novel solutions to complex problems.	Rapidly evolving technology may outstrip regulatory and supervisory capacity.

Appearance	Benefits	Risks
Customization	It allows the personalization of public services to better meet the individual needs of citizens.	Possible invasion of privacy and misuse of personal data.
Security	Improve security by detecting and preventing fraud and threats.	Vulnerabilities in AI can be exploited by malicious actors and affect public safety.
Inclusion	Promotes inclusion by designing services that consider diverse needs and contexts.	Poorly designed algorithms can perpetuate or exacerbate existing biases and discrimination.
Responsibility	Facilitates accountability through the recording and detailed analysis of automated decisions.	Difficulties in attributing responsibility in case of errors or failures in AI systems.
Cost	Reduces long-term operating costs by minimizing the need for manual intervention.	High initial investment and maintenance and upgrade costs for AI systems.

Note: Prepared by the authors.

8
Governance and regulation of artificial intelligence

"Quis custodiet ipsos custodes?"
Juvenal (circa 100 B.C.)

"Who guards the guardians?" is Juvenal's famous question, transfigured over time into a central tenet of political thought, which invites reflection on who regulates and oversees those who possess the power of control. This question, which has spanned centuries of philosophical and political evolution, takes on special relevance in the current context, where the governance and regulation of technologies such as AI are being discussed. As Zuleta Puceiro (2012) points out, the challenge of balancing conflicting principles - such as the division of power, democratic legitimacy and the supremacy of higher norms - finds parallels in the search for a framework that ensures that algorithmic decisions respect fundamental rights and serve the collective interest. These historical questions illuminate the contemporary challenges of establishing effective controls over AI and its impact on society.

To ensure responsible and beneficial development, effectively and ethically managing the challenges arising from the growing expansion of AI is necessary, a situation in which the safeguarding of data, confidentiality and access to clear and equita-

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ble information in its implementation must be considered for governance and regulation (Rodríguez, 2022; Vélez *et al.*, 2022; CAF, 2021). Globally, countries use AI in various sectors, such as health, education, security, mobility and water management; the purpose of these applications varies from improving public services and optimizing resources to developing more informed and effective public policies (Salvador Serna, 2021).

To understand the relevance of data protection in the digital environment and its importance within the context of artificial intelligence, the international laws concerning this matter must be analyzed. China, for example, focuses on technological leadership and the strategic use of AI for state control and security, while the United States prioritizes innovation and market competition, with a less regulated and more private sector-driven approach. For its part, the European Union adopts a regulatory perspective: it emphasizes data protection and citizens' rights, with an emphasis on ethics and responsibility in the use of AI. In this regard, the European Commission has launched programs to fund AI research projects, and several of its member countries are implementing national strategies that include the improvement of public services, the creation of regulatory frameworks and public-private collaboration (Salvador Serna, 2021), with an emphasis on the General Data Protection Regulation (GDPR).

In addition, the European Union's Artificial Intelligence Act, considered the first comprehensive regulation on the subject adopted by a regulatory body, classifies the applications of this tool into three risk categories. It prohibits, first, those that represent an unacceptable danger, such as social scoring systems; second, it establishes specific legal requirements for high-risk applications, such as automated recruitment tools; and, finally, it leaves largely unregulated those applications that do not

fit into these categories. Although this law came into effect on August 1, 2024, its implementation is being phased in and the process will culminate on August 2, 2026, when all its provisions will be fully applicable.

The global context highlights the need for a robust regulatory framework that not only fosters innovation and economic development but also protects individual rights and ensures safety and transparency in the use of artificial intelligence. International collaboration in the formulation of ethical and legal standards thus becomes indispensable to address emerging challenges and ensure that AI contributes positively to progress in various areas (International Telecommunication Union [ITU], 2024).

Governance, data and collaboration: the crossroads of artificial intelligence

The effectiveness and reliability of AI applications depend largely on the quality of the data used, since incomplete or incorrect data can compromise the results (Salvador Serna, 2021). Thus, the management and use of *big data* must be framed by clear data governance policies that ensure its integrity, security and privacy, in addition to promoting accessibility and quality for its use in AI applications.

The proliferation of AI has triggered a series of challenges that require a multidisciplinary and collaborative approach for its effective management. From the collaborative point of view, it refers to cooperation between various actors, such as government agencies, private companies, universities and citizens, in order to promote open innovation, sharing of knowledge and resources,

and creating inclusive and beneficial policies and technologies for the whole society (Salvador Serna, 2021). Data management is important here, since it provides the basis on which algorithmic systems operate (CLAD, 2023). Therefore, building a solid framework to guarantee the quality of the information used and avoiding biases that could compromise its effectiveness is essential. As Innerarity (2024) argues, algorithmic governance is necessary as a factor of democratization.

The creation of solid institutional frameworks favors the ethical and responsible development of AI. These should establish clear roles and responsibilities for governmental, private and civil society actors, as well as oversight and accountability mechanisms. Therefore, it is necessary to foster collaboration and the exchange of best practices among the countries of the region to strengthen their institutional capacities and ensure equitable and sustainable development of AI (CAF, 2024b), enabling them to address issues, such as privacy, security, transparency and accountability in the development and use of these systems. Thus, frameworks must be flexible and adapt to the rapid evolution of technology to simultaneously promote innovation and the protection of human rights.

Governance is a tool for steering the development of artificial intelligence towards values, such as inclusive and sustainable development, because the conscious choice to direct development towards public interest and respect for human rights must be the basis of the decision; otherwise, AI structures and processes, and their governance, will embed values unconsciously, which carries some risks (UN, 2024). AI governance, like digital governance in general, combines regulations, ethics, norms and social practices. This, which is more than the sum of its parts, includes

the process of how to make decisions about, such aspects and about the social relationships that shape these decisions.

There are certain cases that allow us to see how this is being taken forward in some countries. Japan, for example, has initiated the Hiroshima Process on AI, an initiative that seeks to establish guidelines and principles for the development and ethical use of the tool with an approach that stresses the importance of responsible and transparent governance of emerging technologies. In the case of Belgium, citizen participation in AI governance has been promoted by organizing a citizens' assembly to foster inclusion and transparency and allow people to have a voice in decisions related to the use and regulation of AI. There is also the case of Australia, which has established a dedicated government task force to examine the use and governance of AI in the public sector; it focuses on assessing current applications and developing policies to ensure their ethical and efficient use (OECD, 2024).

What we see with these processes is that the rapid evolution of technology forces us to acquire new skills and knowledge, but also to assume the duty to ensure its ethical, responsible and sustainable use in order to build a future where technology is at the service of humanity.

Technological infrastructure and security for an ethical future

In order to capitalize on AI opportunities and mitigate the associated problems, the technological and cybersecurity infrastructure must be developed. To this end, CLAD (2023) recommends implementing a risk rating mechanism that considers different

levels of potential threat and applies appropriate measures for each case, similar to what is being done in the European Union. The proposed mechanism includes an initial assessment of high-risk systems before they go into production, as well as the implementation of cybersecurity measures to prevent potential vulnerabilities. This involves creating a registry of algorithms and conducting periodic audits to ensure their quality and operability, with testing and validation through experimentation of algorithmic systems before they are put into operation.

Although AI advances have become noticeable in the daily lives of millions of people, during the COVID-19 pandemic this situation was exponential. In that context, the rapid expansion has caused unease in technological culture due to a poor understanding of how AI works and what its consequences are, leading to considering the need to "humanize" AI and establish rules that protect human rights (Vercelli, 2023). Although UNESCO has developed ethical guidelines on AI - mentioned in previous chapters - it is important to remember that they are not legally binding and that the guidelines must be adapted to the specific realities and needs of each country. In addition, the regulation of AI poses necessary challenges, especially in a global context where multiple platforms can affect national sovereignty and international cooperation.

For their part, Salvador and Ramió (2020) stress the importance of establishing a framework that defines rights and responsibilities in data-related decision-making, as well as standards to guarantee its quality and appropriate use, although this requires overcoming obstacles, such as the recognition of the value of data and the lack of a long-term strategic vision. They therefore propose some strategies: for example, the creation

of a central data governance unit to coordinate data collection, management and use across the organization, as well as a decentralized but integrated model that allows different sectors to move forward with data management at their own pace, while maintaining effective coordination at the central level.

In addition, a vision of results must be integrated with a vision of value when designing AI systems (Filgueiras, 2021, 2023). Institutional theory is used here to highlight that decision-making in public administration is a political process that must take into account the institutional environment and the different perspectives of the parties involved; however, such automation removes some human autonomy and inventiveness (Innerarity, 2024).

For their part, algorithmic decisions in the public sphere must respect fundamental ethical principles, such as equity, transparency and fairness, in addition to ensuring the accountability of AI systems (Sigman and Bilinkis, 2023). Only through an ethical and responsible approach can public trust in such technology be built and its positive impact on society maximized. Therefore, AI systems must be designed to guarantee fairness and non-discrimination, ensuring that the benefits and burdens of algorithmic decisions are distributed equitably among all social groups. Transparency is equally important, as they must be able to clearly explain how decisions are made and what data is used to make them, so that citizens can understand and challenge decisions that affect their lives. Accountability also ensures that AI systems are regularly audited by independent bodies to assess their compliance with ethical principles and to identify possible improvements; this strengthens public confidence in AI and ensures that any errors or biases can be corrected in a timely manner, thus minimizing their negative impact on society.

Citizens should have the opportunity to voice their concerns, contribute their expertise, and participate in decision-making related to the development and implementation of AI systems. This can be achieved through public consultations, citizen panels, online discussion forums and other participatory mechanisms that encourage inclusiveness and diversity of opinion. For example, the AI Now Institute at New York University has emphasized the diversity crisis in the AI industry, advocating for greater representation of women and minorities in development teams, while the IEEE Global Initiative for Intelligent and Autonomous Systems Ethics Initiative, led by John C. Havens, warns about the risks of AI and encourages collaborations between developers, legislators and governments to prioritize social and environmental equity. Along these lines, in Colombia, the Karisma Foundation's Future Lab researches and promotes dialogue on the ethical, social and political impacts of AI, which influences public policy and business practices through its digital activism.

The private sector has had a longer history of using AI compared to the public sector, as they have been developing and configuring AI-based solutions to improve their business models and interaction with the environment. In contrast, public sector organizations have been slower to adopt AI, citing the inadequacy of data processing for optimization through AI and the quality of the data, which is often poor (Salvador Serna, 2021).

To ensure effective implementation of AI in public administration, it is therefore necessary to invest in capacity building in both the public and private sectors, which includes training professionals in AI ethics, cybersecurity, data management, and other relevant areas. In this regard, we must start by promoting digital literacy among citizens to ensure a proper understanding of AI systems and their implications.

Cooperation for global and democratic governance

Given the global nature of AI, the regulation of which tests the ability of nation states to regulate the digital space, international cooperation is important in the governance of this technology. Countries must collaborate in harmonizing regulations and standards, sharing best practices, and conducting joint research, because only through internationally coordinated action can the ethical and legal challenges associated with AI be effectively addressed.

International organizations and consulting firms favorthe incorporation of AI into national public administrations because they see significant potential to transform services and public policies, improve efficiency and effectiveness in the management of services, and offer new analytical and decision-making capabilities (Salvador, 2021). However, it is important to consider the creation of a set of intra-state bodies to coordinate and oversee its implementation. These bodies should assume critical roles: establishing guidelines, ensuring interdepartmental cooperation, overseeing data quality, and ensuring that AI applications are developed in an ethical and effective manner.

In his study, Criado (2021) investigates the actions undertaken by the OECD, the UN, the Council of Europe and the strategies implemented by several countries. He highlights the need to take into account ethical principles and human rights when developing AI policies, underscoring the importance of considering fundamental aspects, such as respect for these rights, inclusion, transparency, responsibility and accountability in all initiatives related to this technology. The author also highlights the importance of international cooperation in this field, both between countries and between organizations, to address ethical and

legal challenges, and to promote technical projects that seek common benefit.

The rapid evolution of AI technology requires an agile and adaptive governance approach; therefore, it is necessary to establish continuous evaluation mechanisms and make adjustments to policies and practices as needed to monitor its impact on public administration. This will ensure that AI remains beneficial to society and that potential risks associated with its use are minimized.

Meanwhile, Innerarity (2024) presents a series of recommendations for the democratic governance of AI; among them, the need for a balanced and preventive approach in public discourse, and the importance of education and awareness so that citizens understand and feel protected in the face of technological transformations. In the area of regulation and legislation, it emphasizes respect for the logic of emerging technologies and the need for mechanisms for dialogue with parliaments in order to avoid the obsolescence of regulations, so that the power of AI is used for the common good, with principles of diversity, equity and inclusion. It also recommends multi-stakeholder participation in its evaluation. Thus, accountability should be ensured through independent and proactive oversight mechanisms.

The democratization of data should not be dissociated from public-private collaboration and the conceptualization of data as public goods. For the protection of democracy, promoting transparency and the identification of AI-generated products to combat misinformation, in addition to promoting codes of good business practices are recommended. In terms of data regulation, Innerarity (2024) highlights the need to see them as public goods and protect them against misuse, because the transparency and explainability of AI systems are key when it comes to

algorithmic decisions being considered democratic, and suggests the creation of institutions for auditing and monitoring algorithms. In that sense, inclusiveness in the AI process must be guaranteed, ensuring pluralism and participation of diverse stakeholders in decision-making, where comprehensive national digitization strategies consider democratic objectives along with technological transformation.

In addition, Innerarity (2024) stresses the importance of developing global frameworks for AI governance that reflect the diversity of perspectives and needs of different regions; in this framework, UNESCO presents itself as a space for deliberation and the construction of a digital democracy by promoting methodologies and knowledge products that ensure the ethical use of AI to improve democracy.

Table 10
Main challenges in the regulation of artificial intelligence

Challenge	Description
Data protection	Need to ensure data privacy and security in AI applications.
Transparency	Difficulties in understanding how AI systems work and how they make decisions.
Responsibility	Clear assignment of responsibilities in case of AI system problems or errors.
Inclusion	Ensure that AI systems do not perpetuate bias and are accessible to all.
International cooperation	Need for common regulations and standards for AI globally.

Note: Prepared by the authors.

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Regulation as a tool for inclusion and progress in Latin America and the Caribbean

Access Now (2024) analyzes the current landscape in a report highlighting several initiatives in the region. As mentioned above, national strategies have been developed to encourage the development and implementation of AI in a responsible and ethical manner. Argentina, for example, places a strong emphasis on promoting research and development, as well as training specialized talent, and seeks to create a regulatory framework that ensures transparency and accountability in the use of AI. Brazil has implemented a national strategy ranging from capacity building to the regulation of ethical and privacy aspects, whose approach also includes promoting international cooperation for the development of global standards. Chile and Colombia have focused their efforts on digital inclusion and equity in access to AI technologies, in addition to focusing on the need to establish governance mechanisms that guarantee the protection of human rights. Uruguay is also working on regulations and strategies to ensure that the development and implementation of AI is carried out in a responsible and ethical manner and is committed to protecting citizens' rights and fostering technological innovation.

In terms of draft legislation, the region presents a variety of regulatory approaches. Mexico has proposed a law that seeks to regulate the development and use of AI in critical sectors, guaranteeing the security and privacy of citizens, including the creation of a specific supervisory body for this tool (Access Now, 2024). The Peruvian proposal, for its part, highlights the need for a flexible regulatory framework that adapts quickly to technological advances in order to ensure both accountability and

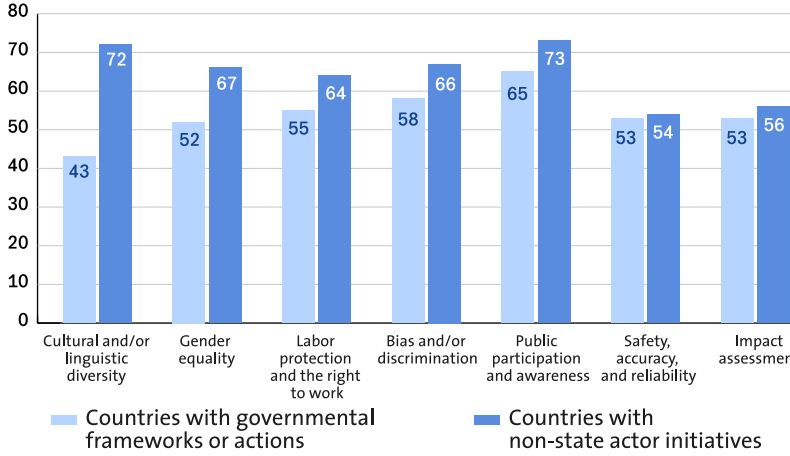
transparency in the use of AI. Costa Rica has been a pioneer in the presentation of bills in this area; the first, which seeks to regulate AI, was developed entirely by OpenAI's generative application ChatGPT, based on a command given by the proposing deputies, and aims to regulate the development, implementation and use of AI in the country, with emphasis on principles, such as equity, accountability, transparency and data protection. The second project promotes the use and development of AI in accordance with ethical and accountability principles, in addition to establishing mechanisms to prevent discrimination and guarantee rights in the workplace in the face of automation (Access Now, 2024).

Regional collaboration, with initiatives, such as fAIr LAC of the Inter-American Development Bank (IDB) and projects of the Universidad Adolfo Ibáñez in Chile, is focused on fostering the development of public policies and regulatory frameworks that are inclusive and respectful of human rights. A recurring aspect in all the proposals is the need to focus on ethics and human rights, because the region is adopting an approach that seeks to ensure that the implementation of AI does not perpetuate inequalities or discriminate against vulnerable populations. This includes the creation of ethics committees and the implementation of regular audits to monitor the impact of AI on society (Access Now, 2024).

The regulatory proposals thus reflect a growing awareness of the importance of balancing technological innovation with the protection of human rights. It is essential that these initiatives be inclusive, transparent and adaptable to the rapid advances in the field of AI, as this will not only promote responsible technological development, but also position the region as a leader in the ethical and effective regulation of artificial intelligence.

Graph 4

Subject areas where countries record more initiatives on artificial intelligence by non-state actors than by the government, 2024



Note: *Global Index on Responsible AI 2024* (p. 54), Adams *et al.*, 2024, Global Center on AI Governance.

Cross-sector collaboration and citizen participation in policy formulation with artificial intelligence.

Given that AI has a cross-cutting impact on various aspects of society, involving multiple sectors and actors in the development of these policies is key. To address the challenges and take advantage of the opportunities it provides, it is therefore pertinent to foster close cooperation between government agencies, tech companies, academic institutions and civil society organizations.

In terms of AI governance, the existence of regulatory frameworks does not necessarily guarantee responsible AI practices, because mechanisms to ensure the protection of human rights in this context are limited and, in many cases, inadequate. In-

ternational cooperation thus shows the value of collaborative efforts, although gaps persist in terms of gender equality and equity, indicating that current policies and practices do not adequately address the needs of all groups in society (Adams *et al.*, 2024).

Due to their expertise in developing and implementing AI-based solutions, technology companies, such as Google, Amazon, IBM or OpenAI are becoming increasingly relevant in this process. In addition to contributing advanced technical expertise, these companies provide insights into the practical applications of AI, and their involvement ensures that policies are not only sound in theory, but also practical and effective. In contrast, civil society organizations play a critical part in their role as intermediaries between citizens and policymakers, ensuring that the concerns and needs of the population are taken into account. In addition, they have the capacity to monitor the implementation of policies and evaluate how they affect society, thus increasing transparency and ensuring accountability throughout the process.

Effective citizen participation is achieved through a number of mechanisms, including open public consultations, online discussions and active panel participation. This is in addition to education and digital development, which provide citizens with the necessary skills to participate in an informed way and gain a deeper understanding of how AI works and its potential impacts.

According to information gathered in the global index on responsible AI, in the Caribbean, universities in Guyana and Jamaica are committed to responsible AI, mainly through the development of ethical guidelines, training and workshops, as well as international cooperation, participation and public awareness

(Adams *et al.*, 2024). In South and Central America, there is a strong emphasis at the university level on gender equality in AI: countries, such as Argentina, Costa Rica, Ecuador, Uruguay, Chile and Colombia are leading the way in this area. Other approaches in the region include cultural and linguistic diversity, and data protection and privacy. To this end, some universities organize conferences, conduct research and analysis, and offer training in these areas.

In order to foster cross-sectoral collaboration and citizen participation, transparency in the decision-making process and effective accountability must be promoted. This is why transparent and easily accessible processes and criteria must be established for all participants involved in AI policy formulation, in addition to strengthening trust in institutions and promoting more effective collaboration and constructive dialogue among all stakeholders. Thus, the role of international and regional organizations, such as CEPAL and the OAS, which facilitate cooperation among the countries of the region by providing opportunities to share good practices, train people and achieve harmonized regulation, thus encouraging more effective and coordinated AI governance, becomes relevant.

Table 11
Actors in artificial intelligence governance

Actors	Roles	Examples of actions	Interactions with other stakeholders
Government	Creation of regulatory frameworks, public policies.	Implementation of AI laws and regulations.	Collaboration with the private sector and civil society.
Private sector	Technology development, AI implementation.	Investment in AI research and development.	Collaboration in innovation projects.
Civil society	Social impact monitoring, advocacy.	Reports on ethics and human rights in AI.	Pressure for transparency policies.
Academy	AI research and development, education.	Publication of studies on ethics and safety in AI.	Collaboration in research projects.

Note: Prepared by the authors.

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9
The power of international collaboration and regional cooperation

> "Absolute freedom of navigation upon the seas, outside territorial waters, alike in peace and in war, except as the seas may be closed in whole or in part by international action for the enforcement of international covenants".
> Woodrow Wilson (January 8, 1918)

Woodrow Wilson, the 28th president of the United States, is remembered for his leadership during World War I and for his efforts to create the League of Nations, the forerunner of today's UN. In his famous 1918 speech, known as the *Fourteen Points*, Wilson advocated a new international order based on cooperation and justice, and emphasized freedom of navigation of the seas. This principle of freedom, although formulated in a maritime context, can be equated with modern concepts, such as net neutrality, which promotes free access and fairness in digital navigation. Today, in an interconnected and globalized world, international cooperation remains essential to manage common challenges, as demonstrated by the field of AI and its regulation for use in governance.

As AI is rapidly transforming our societies, economies and daily lives in multiple ways, the global challenges presented by its de-

velopment and implementation require collaborative and coordinated international and regional responses to take advantage of its benefits and reduce its risks.

Collaborative initiatives in AI in various regions of the world demonstrate efforts to promote innovation and regulate this technology in a responsible manner, such as in Latin America and the Caribbean, where proposals and collaborative frameworks are being developed to promote its advancement in the region. These are joint actions to promote innovation, training and the development of ethical technologies and to strengthen regulations so that technological advantages are distributed fairly. Suggestions from international entities provide valuable guidance on how countries can improve their capabilities and collaboration schemes in artificial intelligence.

Cooperation in AI encompasses not only the technological, but also the educational and ethical spheres. International partnerships promote AI training and education programs that prepare new generations for the challenges and opportunities that this technology brings. In addition, such collaborations, which seek to establish shared ethical principles to guide the development and use of AI, aim to ensure that technological advances respect human rights and promote social welfare.

Regional initiatives also enable the creation of knowledge networks and technology transfer; by sharing resources, experiences and best practices, countries accelerate the development of innovative solutions adapted to their specific contexts. This synergy enables nations to more effectively address common challenges and take advantage of the opportunities that AI offers for sustainable and equitable development.

Neutrality, artificial intelligence and the future of public administration

Net neutrality is the principle of treating all internet traffic equally, without prioritizing or discriminating against content, services or users; it is an issue that has direct implications for the adoption of technologies, such as AI in public administration, as guaranteeing that networks operate in an open manner is a prerequisite for ensuring that digital platforms, including government platforms, can reach all sectors of the population. Net neutrality not only impacts accessibility, but also influences the ability of governments to use AI to improve the delivery of public services; however, net neutrality should not be confused with the supposed neutrality in the use and adoption of technologies by states, as the latter does not happen (Estévez and Solano, 2021).

In the context of Latin America and the Caribbean, where inequalities in digital infrastructure are marked, international and regional cooperation must be considered within any plan that seeks to close the existing gaps. The principles of net neutrality have been defended in global forums, such as those of the International Telecommunication Union (ITU), but their implementation faces challenges due to pressure from large technology corporations and Internet service providers. Therefore, alliances between countries are useful to establish standards that prioritize equitable access and transparency and allow AI-based technologies to be used effectively for the collective welfare.

In this connection, sociologist Shoshana Zuboff (2020) warns of the risks associated with "surveillance capitalism", in which personal data become an exploitable resource. Although she takes a critical stance on the ability of corporations to shape social

behavior through data control, in the Latin American context it is possible to think of a more pragmatic approach. Net neutrality can be seen as a tool that not only protects equal access, but also establishes a framework to limit practices that prioritize corporate interests over public needs. By ensuring that networks remain open, governments can encourage the development of local AI solutions to ensure that they respond to the specific characteristics and demands of their populations.

Along the same critical line, Yanis Varoufakis (2024) puts forward the notion of "techno-feudalism", in which large platforms control the digital infrastructure. Although his analysis is particularly critical, he suggests that collaboration between governments can mitigate the concentration of technological power and promote common rules to avoid fragmentation and the absolute domination of a few global players. In this sense, regional agreements in Latin America and the Caribbean, such as those promoted by organizations like CEPAL or SELA, serve as a basis for developing joint regulations to protect net neutrality and ensure equity in access to digital services.

The debate on net neutrality also has an ethical component, as has already been highlighted in other chapters. The ability of this technology to analyze massive data and automate decisions raises questions about fairness, transparency and privacy in an environment where net neutrality is not guaranteed and where public administrations face limitations to implement inclusive and effective digital platforms. For example, internet service providers could prioritize private services over government platforms and thus limit access to citizens with fewer resources. To prevent such situations, international and regional cooperation should focus on developing regulatory frameworks that ensure that digital infrastructures serve the public interest.

Based on what has been said above, it is clear that net neutrality is not just a technical or commercial issue, but an element in government's ability to use AI effectively in governance. This perspective, far from being alarmist, seeks to highlight how a balanced approach can harness the opportunities of AI while mitigating its risks, and foster a digital environment that drives innovation and welfare across the region.

Bridging knowledge: the importance of international cooperation

The United Nations (2022) report *Governing AI for Humanity* addresses the challenges posed by artificial intelligence at the global level and presents specific proposals for managing its development and use. Among its main recommendations, it highlights the anchoring of AI governance in human rights, taking as a reference the UN Charter and international law; it promotes the creation of mechanisms to ensure oversight and accountability for the social and ethical impact of AI, including situations where its use may be harmful or discriminatory. It also stresses the importance of a robust data governance framework that prioritizes privacy and information protection, suggesting that the UN act as a space for dialogue around these issues. It further proposes the creation of a dedicated AI office within the UN Secretariat to coordinate global efforts, facilitate the harmonization of regulatory standards and promote dialogue between governments, civil society and the private sector.

In terms of international cooperation, the document emphasizes capacity building and the implementation of a global fund for AI, which seeks to ensure equitable access to the opportunities associated with this technology, especially for developing

countries. It also advocates the promotion of collaborative research and knowledge sharing, which would enable emerging challenges to be jointly addressed and consistent standards to be designed in different jurisdictions. It also recommends incorporating effective monitoring and evaluation mechanisms to ensure that AI is used with respect for human rights and responsible practices (UN, 2024).

For their part, various regions of the world are taking initiatives to collaborate in the development and governance of AI, such as the Organization of Ibero-American States (OEI), a clear example of South-South cooperation that includes projects related to this technology in regions, such as Latin America, Africa and Asia. This organization promotes collaboration between developing countries in the southern hemisphere to share knowledge and resources in order to advance in the field of artificial intelligence, taking into account ethical and governance issues, ensuring that its development is carried out in a responsible and equitable manner. In this way, the IEO promotes the establishment of regulatory frameworks and public policies that guarantee the protection of human rights and privacy, as well as the inclusion of diverse cultural perspectives in the development of AI technologies.

On the other hand, in November 2023, twenty-eight countries, including powers, such as the United States, China and the European Union, signed the Bletchley Declaration, an agreement that commits signatories to strengthen international coordination to analyze the security risks associated with AI and contribute to the design of effective public policies. This marks a milestone in global cooperation, bringing together nations with different interests and perspectives in a joint effort to address the challenges posed by artificial intelligence.

One of the highlights of this declaration is the commitment of signatory countries to share information and resources to address common threats posed by AI, such as cybersecurity and the misuse of advanced technologies. This collaborative approach includes creating international platforms for sharing best practices, conducting joint research, and developing international standards that can be adopted by all signatories. The inclusion of powers, such as the United States and China, which often have divergent approaches to technology and governance, underscores the importance of this agreement as a unifying effort, with the European Union, with its more rigorous approach to technology regulation, bringing its expertise in creating policies that balance innovation with the protection of citizens' rights.

The Bletchley Declaration focuses not only on the risks, but also on the opportunities that AI offers for economic and social development, as signatories commit to foster innovation and investment in AI technologies, recognizing their potential to drive economic growth, improve public services and address global issues, such as climate change and public health.

AI governance has also been a recurring theme in several international forums, such as the G7, the US-EU Trade and Technology Council and the Global Partnership on AI (GPAI). These forums provide platforms for world leaders to discuss and coordinate strategies around AI, as well as expand commitments in trade and digital economy agreements, which offer an additional opportunity to build strong international cooperation. The importance of such meetings lies in the fact that they facilitate the exchange of best practices and the establishment of common standards that can guide the development and implementation of AI globally.

In Europe, AI practices and cooperation models vary between the different sub-regions, as European authorities have developed various forms of international collaboration and have adapted their approaches to the specific needs and capabilities of each region. The EU has developed a regulatory framework for AI and conducts a systematic collection of use cases in the public sector, both to regulate it and to promote its adoption in a safe and efficient manner, based on compliance with ethical and legal standards. These regional initiatives not only strengthen Europe's position on the global AI scene but also promote innovation and technological development within the continent.

In the area of AI governance, several multilateral initiatives are making progress in AI regulation and responsible adoption (ITU, 2024), such as the African Union, which has launched consultations to develop a continental AI strategy. At the same time, its 2023 *White Paper* sets out guidelines for responsible regulation in Africa. At the global level, the AI Safety Summit and the Bletchley Declaration, along with the Seoul Declaration and the France-China Joint Declaration, highlight the collaboration of major powers in managing AI-associated safety risks. In the Asian region, ASEAN has published the *Guide on AI Governance and Ethics*, while in Europe, the Council of Europe approved the Framework Convention on AI, Human Rights, Democracy and the Rule of Law. Additionally, the European Union continues to lead with its EU AI ACT, and the EU-US Trade and Technology Council has issued a joint statement underlining the commitment of both blocs to technological cooperation.

These initiatives show a concerted effort by various regions and countries to regulate AI effectively and also reflect the importance of establishing international frameworks to ensure the safe and ethical development of this technology, as these are

critical collective actions to address global challenges and harness its benefits in an equitable and responsible manner. As AI continues to evolve, international collaboration will remain indispensable in order to ensure that this technology is developed ethically and responsibly for the benefit of all societies.

Cooperation initiatives in Latin America and the Caribbean

Several regional initiatives seek to foster the exchange of knowledge and best practices, while addressing shared challenges through collaborative efforts. One of the most prominent is fAIr LAC, a project promoted by the Inter-American Development Bank (IDB), whose main objective is to promote the development and implementation of AI policies that are inclusive and focused on human rights. fAIr LAC works to create regulatory and ethical frameworks that ensure that the use of AI benefits all people, especially those in vulnerable situations, and fosters collaboration between governments, the private sector, academia and civil society to build a shared and coherent vision of AI in the region (Access Now, 2024).

Another interesting example is the work of the Universidad Adolfo Ibáñez (UAI) in Chile, which has developed several projects aimed at understanding and mitigating the risks associated with AI, including research on the impact on privacy, equity and human rights. The University also organizes workshops and conferences to facilitate dialogue between experts from different countries and disciplines; thus, a network of academic and professional collaboration around AI has been created, most notably with the IDB Lab and ChileCompra. This collaboration resulted in a standardized public policy for the procurement of

AI-based systems by the public sector. This involves the use of databases, incorporated by ChileCompra and dependent on the Ministry of Finance, that support the management of public buyers by including transparency, privacy, non-discrimination and explainability requirements. This standard ensures that any public body that incorporates AI systems adheres to mechanisms that avoid negative impacts, such as equity metrics and data protection. Thanks to this effort, Chile has become the first country in Latin America to have ethical requirements for the procurement of automated systems (Acces Now, 2024).

On the other hand, the UAI, the IDB Lab and the Chilean Transparency Council have worked together to increase algorithmic transparency in the public sector, a collaboration that also included the Ethical Algorithms project. This project seeks to develop a general instruction on this subject within the framework of the law of access to public information, which could become a binding regulation (Access Now, 2024).

Collaboration with international bodies, such as UNESCO and the OECD has enabled different countries to align their AI policies with global recommendations. UNESCO, for example, has provided guidelines on the ethics of AI that many countries in the region are adopting to ensure that technological development respects human rights and promotes social welfare. The OECD, for its part, has offered a framework for AI governance that includes principles of transparency, accountability and security, which are being integrated into the national policies of several Latin American countries. In fact, the latter body has an AI Policy Observatory that tracks global and regional developments by compiling statistics and periodic reports that help to understand AI trends and impact in various areas. It also provides a space for dialogue between governments, the private sector and

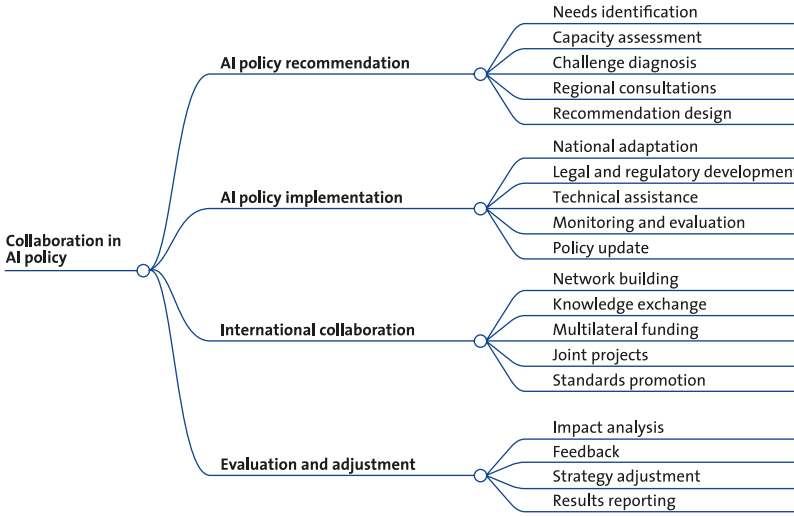
civil society, promoting collaboration and the exchange of best practices in the responsible use of this technology.

It is also worth highlighting regional research and development networks, such as those promoted by the Latin American Council of Social Sciences (CLACSO). These networks facilitate the creation of consortia and collaborative projects in AI and allow researchers to share data, tools and knowledge, which accelerates technological progress and fosters innovation in the region. In this sense, the Latin American AI Index (ILIA), published in August 2023 by various international organizations and technology companies, analyzes the state of artificial intelligence in 12 countries in Latin America and the Caribbean based on the examination of critical elements: public perception, maturity in research and development, and AI governance, etc. The ILIA results highlight the diversity in AI development in the region, with countries excelling in specific areas, but showing deficiencies in others. For example, while some nations show high scientific productivity, they lack efficient technology transfer, and others have abundant data available, but lack the infrastructure to take advantage of it. This diversity suggests great potential for cross-learning among countries in the region, where strengths can be leveraged and weaknesses overcome through collaboration.

Despite the opportunities and resources available, the region faces significant challenges, such as the lack of advanced technological infrastructure and insufficient penetration of technological skills that limit the development of AI. In addition, although there are governance and regulatory initiatives, implementation varies significantly between countries, with some showing progress and others showing signs of lagging

behind. To close these gaps and harness the potential of AI in Latin America and the Caribbean, there is a need to strengthen both regional collaboration and private investment, both of which are necessary to complement public efforts and ensure that initiatives are implemented in an efficient and sustainable manner.

Figure 9
Collaboration on artificial intelligence policies between international organizations and Latin American and Caribbean countries



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International cooperation to maximize benefits and minimize risks

International cooperation in AI maximizes the potential of this technology and, thanks to shared knowledge, ensures that its benefits are distributed equitably and that risks are managed appropriately, since it offers multiple advantages. For example, it accelerates innovation and technological developments; improves regulation and standards; and enables benefits to be distributed more fairly.

One of the benefits of this cooperation is access to a greater diversity of data, which makes it possible to train more robust and accurate AI models. Furthermore, collaboration across different sectors and disciplines fosters the creation of innovative solutions that can address complex problems more effectively, with a beneficial global impact. The creation of transnational research and development networks, for example, enables researchers and developers to work together on large-scale programs that would be difficult to tackle independently, such as collaborative projects in health, agriculture and climate change.

International cooperation also enables the improvement of AI-related regulation and standards because, given the global nature of the technology, isolated national policies may be insufficient to address its challenges and associated risks. Harmonization of regulations across countries facilitates the creation of a coherent regulatory environment that promotes innovation while protecting the rights and safety of citizens, because countries can develop regulatory frameworks that reflect best practices and the highest ethical principles. It is also necessary to avoid regulatory fragmentation that could hinder the development and implementation of AI technologies.

One of the most important objectives of international cooperation in AI is to ensure that the benefits of this technology are distributed equitably among all regions and sectors of society. The digital divide and inequalities in access may widen if steps are not taken to include all countries in its development and use. Through training programs, technology transfer and joint research initiatives, developing countries can be trained to take full advantage of the AI revolution. In addition, cooperation fosters policies in which the benefits of AI, such as increased productivity and improved public services, reach all layers of society; this, consequently, would reduce inequalities and promote more inclusive and sustainable development.

With respect to ethics in AI development, when countries work together, they establish common standards and share approaches on how to address the challenges they face, such as privacy, transparency and accountability. Thus, the collaborative approach allows regulations to be more comprehensive and reflect a wider range of cultural perspectives and values, so that risks, such as discrimination and invasion of privacy can be mitigated.

Finally, international collaboration in AI can boost global resilience in the face of shared challenges. In global emergencies, such as pandemics, natural disasters or economic crises, for example, a well-coordinated international network of AI research and development can respond more quickly and effectively. AI has the capacity to be instrumental in building models of disease outbreaks, optimizing resource allocation during emergencies, and mitigating economic impacts. In this way, cooperation not only promotes technological and economic advances, but also strengthens the global capacity to address and overcome collective challenges.

10
Elements and strategies for artificial intelligence policies in the region

"The universe (which others call the Library)
is composed of an indefinite, and perhaps infinite,
number of hexagonal galleries, with vast ventilation
shafts in the middle, enclosed by very low railings".
"The Library of Babel", *Fictions* (Jorge Luis Borges, 1944)

In the short story "The Library of Babel", Jorge Luis Borges describes an infinite cosmos of knowledge where books contain all possible combinations of letters, words and meaning. This space, though overwhelming in its vastness, reflects the duality of access to information: on the one hand, the possibility of discovering and understanding; and on the other, the challenge of navigating and using what it offers. Artificial intelligence, in its capacity to process massive amounts of data, can be read as a new form of that infinite library, capable of organizing and analyzing the unfathomable. In this sense, Latin American and Caribbean governments can take advantage of AI to better manage that knowledge and make more informed decisions, without losing sight of the ethical, social and practical dilemmas that arise along the way. The integration of AI in public administration in our region faces particular challenges, especially

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in terms of structural inequalities, technological gaps and growing demands for transparency and participation, conditions that not only require public policies adapted to the context, but also an ethical and strategic reflection on how to implement AI so that it generates concrete and sustainable benefits.

The experience of countries, such as Spain, where the Consejo Superior de Investigaciones Científicas (CSIC) has recommended strategies for the implementation of AI in public management (Sierra *et al*., 2024), offers lessons that can be reinterpreted in the region. Ideas, such as the creation of regulated testing spaces, the use of AI in participatory processes and the promotion of sustainable technological projects stand out for their relevance; but these proposals must be adapted to ensure that technological solutions are not only innovative, but also inclusive and aligned with local needs.

The following pages contain the aspects that should not be missing in the design of public policies that incorporate AI in areas, such as education, sustainability and social welfare, considering the capabilities and limitations of the region, and identify some strategies to strengthen citizen participation, improve transparency and promote partnerships between governments, universities and the private sector. In this context, Pando (2021) warns that the actions of the States should not be based on improvised responses to short-term challenges, but rather on planning that allows for establishing priorities and allocating resources effectively in order to build a vision of the future. Beyond the tools, a central question arises: how can governments take advantage of AI to modernize and make their state structure more efficient?

Training and talent development

The rapid evolution of technology requires a highly skilled workforce capable of developing, implementing and managing AI systems effectively. In that sense, the success of AI depends largely on the availability of trained talent. Without a robust pool (in quantity and capacity) of professionals with the necessary skills, countries in the region face the risk of falling behind in the development and adoption of these advanced technologies. It is important to emphasize that specialized training not only involves technical knowledge about algorithms and programming, but must also incorporate an understanding of the ethical, legal and social implications of AI.

To close the skills gap, governments, educational institutions and the private sector must invest in education and training programs, including the creation of academic curricula that integrate AI studies from the most basic levels to postgraduate programs. In addition, continuing education and retraining should be promoted, allowing current workers to acquire new skills and adapt to the changing demands of the labor market. In this way, not only the State would benefit from personnel trained in the use of AI, but also the private sector could find suitable labor to work with related tools.

Collaboration between the public sector, the private sector and educational institutions is also necessary to develop an AI talent ecosystem. In this triad, public-private partnerships can facilitate the design of training programs that respond directly to market needs, while companies have the capacity to offer internship and apprenticeship programs that allow students and young people to acquire practical experience and applied knowledge. Related to that, universities and research centers

have the human resources to become hubs of technological innovation by creating AI laboratories and centers of excellence that drive research and development in this field. It is also valuable to promote participation in international competitions and hackathons (meetings of programmers and hackers), which serve as platforms to discover and nurture emerging talent.

In addition to formal education, it is important to encourage non-formal education and self-directed learning. To this end, there are platforms, massive open online courses and free educational resources that provide access to AI knowledge and skills for a wide and diverse audience. This approach can be particularly beneficial in regions where access to formal education is limited.

In relation to the above, certification and accreditation of AI skills through the creation of internationally recognized standards help ensure that professionals have the necessary competencies and are competitive in the global marketplace. Carrying out actions of this type has a direct impact on facilitating labor mobility and participation in international projects, because the certificates act as an endorsement of the quality and relevance of the skills acquired. This benefits both individuals, by increasing their employment opportunities, and organizations, which are strengthened by having qualified talent to face complex technological challenges.

States should be central players in promoting the training and development of AI talent through the development of public policies that incentivize education in science, technology, engineering and mathematics, as, together with specific initiatives for this tool, they can create a favorable environment for talent development. Scholarship funding, grants for research projects

and mentoring programs are examples of how governments can support the growth of an AI-skilled workforce.

The AI training programs that are developed should incorporate content related to its ethical use, given that professionals must be equipped not only with technical skills, but also with a clear understanding of the responsibilities associated with the development and use of this technology. This includes aspects, such as data privacy, fairness in algorithms and transparency in automated decision making, among the most relevant topics.

Equal access and transparency

The implementation of AI technologies must be inclusive to ensure that all sectors of society can benefit from their advances and that transparency in processes and decisions builds public trust and ensures that they are used in an ethical and responsible manner. In this context, governments play various roles as facilitators, funders, regulators, users and developers (OECD, 2024), since, in order to ensure the ethical and effective use of technology, they must balance their regulatory role with their responsibility as users. This involves developing policies that prevent the misuse of AI and mitigate the associated risks; thus ensuring that technology benefits society at large and respects individual rights.

AI training and talent development must also be inclusive and diverse so that education and training opportunities are available to all, regardless of gender, ethnicity or socioeconomic status. Diversity in the AI field can lead to more creative and inclusive approaches to technology development and ensure that they reflect and serve a wide range of perspectives and needs.

An inclusive approach to training can help communities or minorities gain access to registered and better-quality jobs.

Ensuring equitable access implies addressing existing inequalities in access to education, technological infrastructure and economic resources. In this regard, it is important that governments and organizations in the region implement policies that facilitate access to the tools and knowledge needed to participate in the digital economy. This includes the expansion of internet connectivity, especially in rural and disadvantaged areas, and the provision of technological devices to communities with fewer resources.

As mentioned in another chapter, transparency in AI governance builds citizen trust because it allows users to understand how and why decisions are made, crucial in an environment where this technology increasingly influences critical aspects of everyday life. As AI systems are often complex and opaque and can be used to make decisions that significantly affect people's lives, they need to operate in a transparent manner and allow citizens to understand what criteria are used in decision-making.

To achieve greater transparency, mechanisms must be put in place to explain and justify the decisions made by AI systems, including the creation of public registries of algorithms and independent audits that evaluate their performance and results. Organizations should be open about the data they use, the models they employ and the potential biases that may influence their decisions, because such openness not only meets ethical and legal expectations, but also strengthens their reputation by demonstrating their commitment to social responsibility and respect for human rights. In addition, developers and operators of AI systems must take responsibility and be accountable for

the decisions their technologies make. This entails implementing regulatory frameworks that clearly establish responsibilities and penalties in case of misuse or abuse of AI, and the existence of independent oversight institutions to ensure that practices are objectively reviewed and evaluated.

It is important to note that equity and transparency in AI not only benefit individuals, but also society as a whole, as they ensure that benefits are distributed more fairly to reduce inequality gaps and foster inclusive development. Transparency, in turn, strengthens trust in institutions and technologies because it creates an environment where innovation can flourish in a responsible manner; moreover, by being open about their processes and use of data, it facilitates accountability and enables independent audits that ensure the fair and equitable functioning of systems.

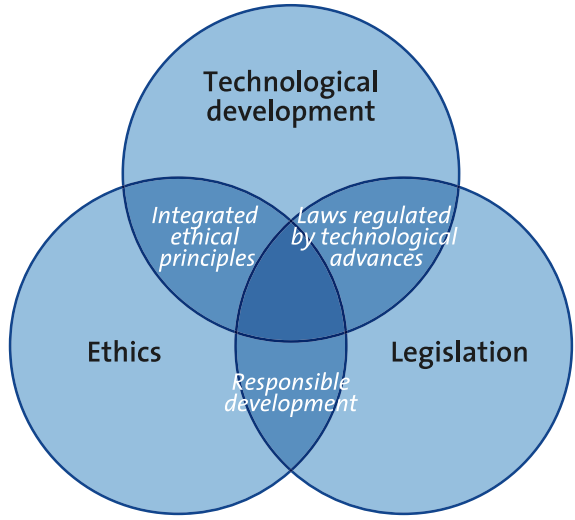
Citizen participation

Citizens should have the opportunity to be involved in the design and implementation of AI-related policies; this ensures that their voices and concerns are heard through public consultations, panel discussions and other participatory mechanisms. Added to this is the importance of personal data protection, as AI technologies often rely on large amounts of data that pose privacy risks. For personal data to be handled with the utmost care and individuals' privacy rights to be respected, laws in this regard must be rigorous and aligned with international best practices to ensure public confidence in the use of AI. At the same time, it is important that governments and organizations promote citizen participation at all stages of the AI lifecycle,

from conception and design to implementation and evaluation. This implies that the policies and regulations developed will ensure the proactive dissemination of information related to this technology, as well as the creation of spaces and platforms where citizens can express their opinions and contribute to decision-making.

Citizen participation contributes to the identification and mitigation of potential risks and unintended side effects of AI. By involving citizens in the continuous monitoring and evaluation of systems, ethical, social or legal problems can be detected before they become crises. In addition, citizen feedback can help improve the quality and effectiveness of AI systems by promoting their widespread acceptance and adoption in society.

Figure 10
Intersection between ethics, legislation and technological development in artificial intelligence



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Impact assessment and continuous feedback

Impact assessment - the most rigorous evaluation methodology (Bertranou, 2019) - in this case, involves analyzing the effects of AI on different aspects, such as economic, social, ethical, and legal. This may include measuring key performance indicators, such as efficiency, equity, inclusion, and privacy, as well as identifying potential bias, discrimination, or unintended effects. By better understanding how AI affects society, informed decisions can be made about its development and future use.

Continuous feedback implies that AI is adjusted to the changing needs and expectations of society. In turn, this leads to collecting comments and suggestions from various stakeholders, such as end users, AI experts, regulators and society at large. Feedback can come from a variety of sources (surveys, interviews, expert reviews and data analysis) and should be integrated into the AI development cycle on a regular and systematic basis.

Impact assessment and continuous feedback also contribute to improved public trust in AI because, by demonstrating a commitment to transparency, accountability, and continuous improvement, AI developers and users can build trusting relationships with society and promote wider and more responsible adoption of the technology. Furthermore, by addressing issues and concerns identified through impact assessment and continuous feedback, risks can be mitigated and the benefits of AI for society as a whole maximized.

It is important that governments, companies and organizations integrate impact assessment and ongoing feedback into their AI-related strategies and practices; this involves developing standardized assessment frameworks, implementing real-time

feedback systems, and establishing mechanisms for monitoring and reporting results. In this way, it can be ensured that AI is developed and used in an ethical, responsible and sustainable manner for the benefit of all citizens in the region.

In terms of productivity, AI has the potential to significantly increase the efficiency of internal government operations, optimizing processes and reducing costs. In addition, it can improve the effectiveness of public policies, enabling more inclusive design and delivery of services tailored to the changing needs of specific citizens and communities (OECD, 2024). Accountability is also enhanced, as AI improves government oversight capacity and supports independent oversight institutions. As a result, transparency and accountability in public administration is fostered.

International and regional collaboration

In an increasingly interconnected world, where the challenges and opportunities associated with AI transcend national borders, cooperation between countries and regions becomes indispensable to address them effectively and ensure the equitable and sustainable development of this technology. In the context of AI, international and regional collaboration can take many forms, including cooperation in research and development; harmonization of regulations and standards; exchange of best practices and experiences; and mobilization of financial and technical resources. Initiatives such as the OECD*'s AI Recommendation* and *Framework of Tools for Trusted AI* (2024) provide guidelines and standards that can be adopted globally to promote a harmonized and ethical approach to their use. This

is because international collaboration helps mitigate risks and facilitates the sharing of best practices and knowledge, which contributes to a more equitable and secure development of artificial intelligence around the world. These forms of collaboration can help overcome the barriers and challenges faced by countries in the region in the development and implementation of AI, while taking advantage of the opportunities and benefits that this technology offers.

For effective AI implementation, governments define clear strategic objectives, which implies the development of appropriate policy instruments, such as standards, codes, guidelines and new regulatory frameworks to guide its use (OECD, 2024). Attracting and developing the necessary capabilities to use AI efficiently and effectively is therefore important; so are monitoring and oversight, as they foster public trust and ensure the long-term sustainability of AI-related initiatives.

One of the key areas of international and regional collaboration in AI is research and development. By working together on projects of this kind, Latin American and Caribbean countries can share knowledge, resources and technical capabilities, enabling them to move faster in developing innovative AI-based solutions and address common challenges, such as health, education, the environment and security.

In addition, collaborating in the harmonization of regulations and standards makes it possible to ensure a consistent and predictable regulatory environment for AI in our region. This makes it easier for countries to exchange data and technologies; promotes interoperability and compatibility between systems; and ensures the protection of human rights and citizens' privacy in the use of AI.

Another important aspect of international and regional collaboration in AI is the exchange of good practices and experiences. By sharing lessons learned, success stories and challenges faced in implementation, countries can learn from each other and avoid duplication of efforts. In addition, the exchange of best practices can help identify areas for improvement and opportunities for future collaboration.

Ultimately, mobilizing financial and technical resources through international and regional collaboration can help strengthen the capabilities and infrastructure needed to develop and use AI effectively. By working together to mobilize resources, countries can access funding, technology, and expertise that would otherwise be difficult to obtain, enabling them to advance their AI agendas more quickly and effectively. Asinelli (2021) highlights that multilateral banking can be a valuable instrument to facilitate the financing of projects in Latin America, particularly those aimed at promoting equity and sustainability, making it possible to advance AI agendas in the region.

Open innovation and public-private collaboration

These forms of collaboration leverage the knowledge, resources and experiences of both the public and private sectors, which benefits the creation of solutions and the development of dynamic and competitive AI ecosystems. First, the adoption of open innovation, which refers to the process of sharing knowledge, technologies and resources with internal and external stakeholders, enables companies, academic institutions and government organizations to leverage the diversity of perspectives and experiences to generate new ideas and solve complex

problems in areas, such as health, education, transportation and security.

On the other hand, public-private collaboration is evident in driving AI research, development and implementation. By joining forces, the public and private sectors can combine their financial, technical and human resources to carry out large-scale, high-impact AI projects, thus speeding up processes, reducing costs and associated risks, and maximizing the benefits that this technology offers.

One of the main benefits of public-private collaboration in AI is the generation of dynamic and collaborative innovation ecosystems. By working together on AI projects, companies, academic institutions and government organizations can create an environment conducive to collaboration, knowledge sharing and networking, which fosters innovation and economic growth in the region. In addition, this type of collaboration can contribute to job creation and skills development by investing in AI projects; in this way, companies can generate new jobs, education and training opportunities for local workers. This contributes to the development of a highly skilled and competitive workforce in the technological field. Finally, public-private collaboration in AI can help address the ethical, legal and social challenges associated with this technology, and regulatory frameworks and ethical standards can be developed to guide the development and use of AI in a responsible and equitable manner to protect the fundamental rights and values of the region's citizens.

Table 12
Summary of suggestions and best practices proposed

Area	Suggestions and best practices
Training and talent development	Invest in specialized AI training programs.
	Create academic curricula from basic to post-graduate levels.
	Promote continuous training and professional retraining.
	Establish public-private partnerships to develop AI talent.
Equal access and transparency	Democratize access to AI technology.
	Ensure transparency in the use of AI systems.
	Expand connectivity and provide technological devices in disadvantaged areas.
Citizen participation	Include mechanisms for participation in AI-related decisions.
	Conduct public consultations and panel discussions.
	Ensure that AI policies reflect the concerns and aspirations of society.
Impact assessment and continuous feedback	Implement impact assessment processes on an ongoing basis.
	Integrate user and expert feedback into the AI development cycle.
International and regional collaboration	Cooperate in regional and international AI research and development.
	Harmonize regulations and standards to facilitate the exchange of technologies and data.

Area	Suggestions and best practices
Open innovation and public-private collaboration	Encourage cross-industry collaboration to develop AI solutions.
	Use open innovation to share knowledge and resources.
Regulatory and ethical frameworks	Establish principles based on human rights, such as transparency, equity and security.
	Adopt international standards such as those of UNESCO, the OECD and the EU to guide national policies.
	Include clauses that promote human oversight in automated critical decisions.

Note: Prepared by the authors.

Good public administration is not only based on the capacity of governments to execute policies efficiently, but also on their ability to adapt, anticipate and respond to the changing needs of society (Romero, 2022). In turn, a good set of public policies is one that, in addition to solving immediate problems, builds a sustainable framework for the future because it promotes equity, transparency and citizen participation. Public policies must be flexible and designed with a long-term vision that considers both immediate effects and future implications. This requires an approach that prioritizes equity and inclusion, ensuring that all sectors of the population benefit from government decisions.

In this context, the implementation of AI offers added value by enabling more accurate data analysis, patterns identification, and resource optimization to improve decision-making process-

es, promote greater transparency and efficiency in services, and foster a more inclusive and participatory governance model. In this way, governments better understand the needs of their citizens and can anticipate problems before they become crises. This improves efficiency in the use of resources, while promoting greater transparency, as it makes processes more accessible and understandable to citizens (Criado *et al*., 2020).

However, the use of AI must be guided by ethical principles. It is therefore critical to ensure that its implementation does not perpetuate inequalities or discriminate against certain groups, as a digital divide can marginalize vulnerable sectors. In addition, a strong investment in the development of the necessary talent to handle these tools is needed to ensure that public personnel are trained to use AI effectively and responsibly. Along these lines, the task ahead is to establish continuous evaluation and feedback mechanisms to adjust policies according to the results obtained. Moreover, the active participation of citizens in this process not only strengthens the legitimacy of the decisions taken but also fosters a sense of ownership and shared responsibility. However, evaluating only the results of public policies is insufficient; it is also necessary to analyze the design of these policies, since this largely determines their effectiveness and capacity to address contextual problems (Bueno Suárez and Osuna Llaneza, 2013).

The intersection between public administration and artificial intelligence provides an opportunity to transform the way governments respond to the needs of their citizens, as it is possible to build a more inclusive future by adopting an ethical and equitable approach to its implementation. This commitment to adaptability and sustainability is the key to addressing contem-

porary challenges and ensuring that public policies solve immediate problems, promote long-term collective welfare and build a legacy of collective welfare that transcends generations. The challenge ahead is to forge a new governance paradigm that solves immediate problems and inspires confidence, empowerment and hope in the potential for a more just and equitable society.

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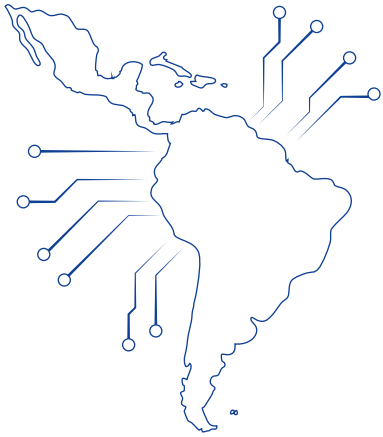

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