Ethical Frameworks and Regulatory Governance: An Exploratory Analysis of the Colombian Strategy for Artificial Intelligence

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Abstract

[Purpose] This article analyzes the Colombian Artificial Intelligence (AI) Strategy and seeks to answer the formulation process of Colombia's digital transformation and Artificial Intelligence strategy.

[Methodology/approach/design] The study utilizes a case study analysis approach to explore factors that may have influenced the Colombian AI policy formulation process. We conducted an elite interview and documentary research on public policy documents.

[Findings]. This study identifies the inherent challenges of the national strategy for artificial intelligence. The implementation of the Colombian AI Strategy is guided by a market-oriented state model that promotes self-regulation regarding AI.

[Practical implications (if applicable)] National strategies are an increasingly important theme of scholarly debate in AI policy. This article aims to contribute to analyzing such strategies, including the challenges inherent in their design and implementation.

[Originality/value (if applicable)] This article examines how Latin America's third most populous country, Colombia, shapes AI governance strategies. The uniqueness of this study lies in its proposition to outline the model of AI governance based on a detailed analysis of public policies.

Keywords: Artificial Intelligence, Colombia, Digital Policy, National Strategy, Latin America

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INTRODUCTION

Artificial Intelligence (AI) has become an increasingly significant aspect of our society, and its impact is felt in almost every aspect of our daily lives. As AI technologies evolve, they are expected to bring about significant changes in our economic, social, and political structures, raising important ethical, legal, and social implications. Therefore, it is crucial to examine the growing influence of AI on society and highlight the challenges and opportunities that lie ahead. The absence of a proper legislative framework for AI usage creates a need to find solutions to mitigate risks and threats to human rights. However, beyond the technological advantages and potential uses of AI, currently, societies face the challenge of determining the ethical limitations of implementing AI-based utilities and their impact on people's lives.

AI is part of the Fourth Industrial Revolution (4IR), softening the divides between physical, digital, and biological aspects and significantly impacting almost every industry globally. AI is transforming the way we live, work, and interact with each other. Innovation processes have materialized in applying algorithms in the private and public sectors with a grounding in AI and large-scale data analysis.

Furthermore, AI is transforming business operations with various applications across industries. AI permits improving capabilities to analyze customer data, automate routine tasks, develop new products and services, or improve decision-making. At the same time, AI technologies are now beginning to be adopted in public sector areas because of the increasing availability of data. AI is flourishing in public administration to improve the efficiency and effectiveness of government services. Digitalization, AI, and robotics will be an essential factor of global economic growth in 2030 due to the technology transfer, changes in the labor market, full automation of processes, increased productivity, and the introduction of novel modes of conducting business and the use of technologies, especially in cities with significant concentrations of professional services (AUDA & RADHI, 2022; MAKRIDIS, 2022).

The absence of a proper legislative framework for AI usage creates a need to find solutions to mitigate risks and threats to human rights. As with any innovative activity, there are inherent risks, and digital technologies, including AI, affect various aspects of human life. It is essential to restore violated rights and minimize potential threats posed by these technologies (KOSILOVA, 2022). Societies face the challenge of determining the ethical limitations of implementing AI-based utilities and their impact on people's lives (GUIÓ, 2020; WIRTZ, WEYERER & GEYER, 2019).

To advance and advertise AI's fair and transparent application, some governments have created ethical frameworks to determine its advantages and limitations and reduce its risks regarding new applications or processes currently implemented by public institutions. The Colombian case is significant in the region due to its advances in digital public policy, big data, and AI policies (UBALDI, GONZÁLEZ ZAPATA, & BARBIERI, 2020). Colombia will be the fourth country in the world in 2022, according to AI and Democratic Values Index, and it served as the leader in Latin America in formulating strategies for AI. During the Duque presidency (2018-2022), the National Planning Department of Colombia was the first to encourage AI, the Internet of Things (IoT), and robotics in digitalizing institutions and planning covering the entire sector. Thus, the Colombian government launched the National AI Strategy. The strategy sought to create a framework of principles and guidelines to incentivize advances in AI and devise regulatory governance rather than a rule-based structure focusing on creating social and economic environments to support the application of AI.

This article analyzes the Colombian AI Strategy and seeks to answer the formulation process of Colombia's digital transformation and AI strategy. The first part of this paper focuses on the concept of strategy and regulatory governance framework to consider the national strategy and shifts in policy design. The second section utilizes a case study analysis approach to the Colombian design process of AI policy and analyzes the results of a single elite interview and a qualitative documentary analysis. The third section disentangles the strategy's constituent parts and identifies the state's role and governance style. Finally, we summarize the article's main findings in the fourth section. The article concludes the challenges involved in the national AI strategy, fundamentally based on the insight that national AI strategies are an increasingly important theme in AI policy debates. This article aims to contribute to analyzing such strategies, including the dilemmas and challenges involved in their design and implementation.

THEORETICAL FRAMEWORK

A key characteristic of the Fourth Industrial Revolution (4IR) is the softening of dividing lines between the physical, digital, and biological spheres "with various new kinds of technologies [being] able to interact intelligently, and thereby generate new forms of intelligence" (SKILTON & HOVSEPIAN, 2018: 15). Blockchain, IoT, or Big Data Analytics, are examples of such disruptive technologies, as well as AI and Machine Learning (ML) "and associated algorithms: automation of decision making, and performance of tasks that would normally require human intelligence" (KAZIM & KOSHIYAMA, 2021:2). Although not all digital technology is an algorithm, these kinds of technologies

are interrelated. Thus, the confluence of AI and Big Data feeds into Big Data Analytics, and algorithms based on AI are beneficial for massive data analysis. Often the data produced by IoT devices is valuable, and IoT allows devices to transmit information over the internet and create secure records of shared transactions on private blockchain networks, which cannot be easily modified or altered.

AI has generated unprecedented opportunities for innovation and growth in various sectors of society, but at the same time, the widespread adoption of AI also presents significant risks. Innovation by AI tends to increase risks, ethical issues, the unpredictability of outcomes, and possibly unforeseen social impacts, so much so that the hasty adoption and implementation of AI might threaten freedom, self-determination, and human rights (CARON & GUPTA, 2020). Misusing AI algorithms creates many problems, such as violating and undermining equal opportunities, non-discrimination, and the right to privacy and health.

As AI systems become increasingly sophisticated, this has the potential to infringe on fundamental human rights. To promote AI use from a human rights perspective, some governments have created regulation frameworks "that allow for balancing and for determining its advantages and limitations and reduce its risks" (BERNAL, 2023: 2).

Disruptive technologies constantly challenge regulation strategies because of the reactive nature of traditional modes of regulation (FENWICK, KAAL & VERMEULEN, 2017). Traditional regulatory models based on formal rules and command-and-control mechanisms have given way to governance models involving collaboration between public and private actors in decision-making processes to achieve social, political, and economic objectives (LEAL, 2021), commonly called regulatory governance. "Regulatory governance is a framework of governance in which non-state actors play an active role in regulatory standards setting, monitoring and enforcement in partnership with or in parallel to state agencies" (YASUDA, 2020: 472). Whereas norms as regulatory tools are concerned with what is regarded as good or bad from society's point of view, ethics focuses on the principles that serve as the foundation of those norms (DALY, HAGENDORFF, MANN, MARDA, WAGNER & WANG, 2020). As well as humans making decisions based on beliefs about right or wrong, regulations and policies should also consider ethical considerations. In other words, when creating rules and laws, thinking about what is morally right and wrong is essential, and how these decisions might impact people and society. Regulatory governance sets up a comprehensive system that outlines key tenets for ethical AI, founded on five fundamental pillars. While considering its constraints and repercussions, this ethical framework serves as a point of

reference for future efforts in establishing legal norms and practices of excellence for AI's ethical use and development (FLORIDI, 2018; COWLS & FLORIDI, 2018).

Several public, private, national, and international bodies have developed guidelines, strategies, and regulatory documents that "articulate ethical potentials, risks, and challenges" (BAREIS & KATZENBACH, 2022: 856). Regulatory governance is an essential aspect of public policies related to AI. Member states of the OECD decided to take on Principles on AI in May 2019 to bolster democratic values and respect for human rights. There is a lack of international consensus on regulatory frameworks for AI. AI is a rapidly evolving technology, and regulatory frameworks must be flexible and adapt to technological changes and usage patterns. Another critical issue is collaboration and coordination among stakeholders such as the public and private sectors, universities, civil society, and international organizations).

Additionally, reaching out to society at large is essential so that their concerns and perspectives are considered in developing AI policies. Additionally, AI is a complex and technical issue, and a lack of expertise and understanding among policymakers and regulators may struggle to understand their potential impacts. In this sense, algorithmic transparency is a critical aspect of ethical AI. AI systems must be transparent and understandable to stakeholders, including society. Transparency allows us to identify and address issues such as bias and discrimination and should be a priority for policymakers and stakeholders to develop and use AI ethically (VAROŠANEC, 2022; ANDRADA, CLOWES, & SMART, 2022).

The development of ethical frameworks for AI has gained significant attention in recent years. Several international organizations are working to establish guidelines and principles to strengthen the responsible and ethical development and use of AI and to respect human rights. Usually, they include principles such as transparency, privacy, fairness, and accountability; although there is no universally agreed-upon set of ethical principles for AI, developing ethical frameworks is essential to ensure that AI is ethically used. At the same time, different countries and regions may have different priorities and perspectives on regulating AI, making it challenging to develop effective and consistent regulatory frameworks to promote AI's fair and transparent use.

Colombia has advanced its digital agenda since the early 2000s. During the Duque presidency (2018-2022), the National Planning Department of Colombia was the first to encourage using AI, IoT, and robotics to digitalize institutions and strategic planning across society. The Colombian government launched the National AI Strategy, the National Policy for Digital Transformation and AI. The strategy aimed to create a framework of principles and guidelines to facilitate the

development of AI, rather than a rule-based structure and focusing on creating social and economic conditions that support the use of AI in the country. Thus, Colombia was the fourth country in the world in 2022, according to the AI and Democratic Values Index, and it was the leader in Latin America in devising a National AI Strategy, which sought to create a framework of ethical principles and guidelines to develop AI and a regulatory governance structure, rather than a rule-based structure, focusing on social and economic characteristics to support the use of AI.

A national strategy is "a general plan to achieve one or more long-term or overall goals under uncertain conditions," which tends to provide information about the key actors involved in AI governance formulation, adoption, and implementation so that AI national strategies aid the understanding of the processes of designing and formulating AI and the role of governments and public administrations (SANDOVAL, CRIADO, & RUVALCABA, 2022: 1; CRIADO, SANDOVAL, VALLE-CRUZ, & RUVALCABA, 2021). The governance of AI can be approached in different ways, based on how proactive or passive governments are in regulating possible dangers of AI technologies (enclosure and control approach) and in the development of AI technologies (stimulation approach) (DJEFALL, SIEWERT & WURSTER, 2022).

It can take a more passive role and give private actors as much freedom of self-determination as possible or assume a more active role in these two dimensions. Based on these two dimensions, four ideal-typical regimes of governance are created: the entrepreneurial state, the market-oriented state, the regulatory state, and the self-regulation-promoting state (DJEFALL, 2020; DJEFALL, SIEWERT & WURSTER, 2022). The entrepreneurial state, which actively invests in innovation and technology, and the government takes an active role in funding and promoting innovation, "a highly networked system of actors harnessing the best of the private sector for the national good over a medium to the long-term horizon" (MAZZUCATO, 2011: 19-20). Market-oriented states interfere minimally using soft regulation and regard technological innovation as driven predominantly by private actors. The state does not intervene unless there is a severe market failure.

On the other hand, the regulatory state designs an "ex-ante mechanism in a pro-active manner" (DJEFALL et al., 2022: 5) regulating innovations and technologies. The concept of the self-regulation-promoting state suggests that private businesses and other stakeholders collaborate to regulate themselves to establish self-imposed restrictions. The state's role in this approach is limited to facilitating, observing, or certifying private sector activities to structure AI regulation and governance instead of directly engaging in regulation. State

interventions are based on "soft regulatory instruments [such as] codes of conduct, quality standards, and ethics committees/commissions" (DJEFALL et al., 2022: 5). The core concern is how we can adjust the uses and development of AI to these principles.

The Colombian case is significant in the region due to its advances in digital public policy, big data, and AI National Strategy (UBALDI et al., 2020). This article analyzes the Colombian AI Strategy and seeks to answer the formulation process of Colombia's digital transformation and AI strategy. This exploratory research will contribute to public administration and public policy in the digital age by providing insights into Colombia's current policy decision-making process. The article examines the Colombian AI Strategy, designing and formulating AI in a country, and the role of governments and public administrations.

METHODOLOGY

This paper seeks to understand the processes of formulating the Colombian AI Strategy. The study utilizes a case study analysis approach to explore the formulation process. Colombia has pioneered the creation of an AI Strategy and a framework of ethical principles for AI development in Latin America. Nowadays, it is ranked fourth of seventy-five countries according to the 2022 AI and Democratic Values Index, the first worldwide assessment of AI policies and practices developed by the Center for AI and Digital Policy. Methodologically, such "remarkable circumstances" can make a case such as Colombia "an exemplary piece of research" (YIN 2009: 256).

Exploratory study design "is very flexible in nature and can take several different forms" (SWEDBERG, 2018: 38). This study is beneficial for generating theoretical ideas from empirical data before conducting a complete study. While there may be differing opinions about the nature and objectives of exploratory studies, this research "is especially helpful for theorizing empirical material at an early stage, and which has a purpose to help […] to decide whether to conduct a full study or not" (SWEDBERG, 2018: 3).

We conducted a single elite interview and made a qualitative documentary analysis. Elite interviews seek to discover "a particular piece of information" about a particular document and "inform or guide work that uses other sources of data" (GOLDSTEIN, 2002:669). Our empirical work proceeds at two levels: first, to discover the process to formulate the AI public policy, we conduct an elite interview with Armando Guido. This elite interview seeks the process that explains opening a window of opportunity and the emergence of AI interest in the Colombian government. Second, we conduct documentary research on public policy documents to prevent bias and inaccuracy (NATOW, 2020).

This process serves to discover the role of the state in regulatory governance. We conduct an interpretative process that moves "between concept development, sampling, data collection, data analysis, and interpretation [instead of] a rigid set of procedures with tight parameters" (ALTHEIDE, COYLE, DE VRIESE, & SCHENEIDER, 2008: 127) focused on themes and meanings. Analyzing national AI strategies allows us to gain insights into the formulation and design processes of AI, its motivations, and governance characteristics (CRIADO et al., 2021). The first reading aimed to provide a holistic overview of the text's themes and the constructed and legitimated problems. The second reading aimed to identify the construction of the main elements of the strategy: problems definitions, vision, objectives, lines of actions, actors, and policy instruments. The researcher identifies the codes and categories within the data itself (SOUSA, 2014; LICHTMAN, 2014).

COLOMBIAN STRATEGY FOR ARTIFICIAL INTELLIGENCE

Colombia has made strides in its digital planning since the early 2000s, with the initial impetus being the Information Technology Acts, Decree 02/2000, and Policy Document CONPES 3072/2000. Decree 02/2000 conceptualized the concept of online government, and Policy Document CONPES 3072 designed the connectivity agenda. Both documents established the two main aims of digital policy in Colombia: the application of information and communication technologies (ICTs) to improve the efficiency and transparency of the Colombian state through the gradual construction of e-government; moreover, a second increment of access, use, and appropriation of ICTs in society. Between 2008-2009, the regulatory framework for the Habeas Data Right and the use of data and information, that is, Law 1266/2008, were disruptive legislative efforts in this context. In 2010 the Policy Document CONPES 3650 strengthened the e-government strategy by reinforcing digital citizen services and a government intranet. Thus, the digital policy seeks to understand to improve the digital capacities of governments through regulating the conditions of use, security, and privacy of information and digital citizen services.

Between 2010 and 2018, efforts were made to achieve this goal by implementing the Vive Digital Programs. These programs were aimed at building a massification of the access, use, and appropriation of ICTs. The program was developed in two stages: Plan Vive Digital 2010-2014 promoted the massification of the Internet by rolling out the digital ecosystem utilizing the strengthening of infrastructure. Plan Vive Digital para la Gente 2014-2018 was developed and focused on strengthening information and communication technologies (ICTs) appropriation. While these plans have contributed to the promotion of

connectivity through the construction of infrastructure and provision of digital equipment at the national level, the use of ICTs by the Colombian population is deficient and still presents notable differences between the different regions and departments in the country (GARCIA ALONSO, CALDAS, DAVILA & THOENE, 2020).

Table 1 summarizes the primary policy documents composing the Colombian Artificial Intelligence strategy.

Date	Document
November 2019	National Policy for Digital Transformation (AI Strategy) (Conpes 3975)
December 2019	Plan 5G
August 2020	Conceptual model for the design of Regulatory Sandboxes and Beaches in AI
September 2020	Digital Transformation Projects, Procedures, and Services for the Citizen
October 2020	Sandbox on privacy by design and by default in AI projects
December 2020	Data exchange economy. Data Marketplaces - Conceptualization for its implementation
November 2020	Task Force for the development and implementation of AI in Colombia
April 2021	Follow-up Plan for the Implementation in Colombia of International Principles and Standards in AI
March 2021	Strategic Plan for knowledge transfer in AI
October 2021	Ethical Framework for AI in Colombia
May 2022	Infrastructure Governance Model for the Development of Emerging Technologies
July 2022	Recommendations for the development and strengthening of AI in Colombia in the framework of the expert mission

Table 1. Colombian Strategy for AI (Prepared by the author)

A disruptive change comes with the emergence of the concept of digital government in the National Development Plan 2018-2022. This plan defines digital government as a cross-government strategy, making all public administration entities implement the Digital Government policy, focusing mainly on the development of standards for the integration of procedures into the Single State Portal, centralization of access to all digital services, the obligation to publish and use public data, smart cities, and the use of the new technological possibilities of the Fourth Industrial Revolution in the public sector. Additionally,

this document highlighted several lines of action, in particular, the use and exploitation of public data infrastructure, the interoperability between public information systems, the use of cloud services as a mechanism to optimize the management of public resources, the use of technologies based on software that is either free or open-source and assigning priority to emerge technologies such as Big Data, AI, cloud computing services and IoT.

To implement this strategy, Colombia modified several public policy aspects to group package such policy initiatives around digital transformation, where high-speed connectivity and Big Data are understood as enabling conditions. Firstly, the Colombian government, aware of the need for a robust data infrastructure, implemented a Big Data policy (Policy Document CONPES 3920/2018). The National Data Exploitation Policy develops policies to promote personal data protection, transparency, open data, access and interoperability, administrative efficiency, and information reporting. Secondly, the last change was the 5G Plan in December 2019. The document analyzes the 5G context, advantages, demand, and spectrum importance, focusing on transitioning strategies, emerging technologies, and challenges in deploying 5G in Colombia.

In 2019 the Colombian government published the National Policy for Digital Transformation and Artificial Intelligence (CONPES 3975/2019), which seeks to further economic and social value creation in Colombia via the decisive application of digital technologies in the public and private sectors. This document recognizes that the interventions in this area, both in the public and private sectors, have not succeeded in creating a unified vision that allows for an intersectoral approach to digital transformation (CONPES 3975/2019).

The CONPES seeks to involve the public and private sectors comprehensively, emphasizing using ICTs for higher productivity and promoting citizen welfare. Digital transformation emerged as a concept "that guides the adoption of disruptive digital technologies to change business models in markets and industries, as well as the provision of public services and public policies in governments" (FILGUEIRAS & JUNQUILHO, 2023: 7).

Problem recognition requires a solution involving government resources, such as legislation, regulation, or public programs, and "affect outcomes significantly" (KINGDON, 2014: 198). The policy document CONPES 3965 recognizes that interventions developed so far in the public and private sectors have not been able to overcome the existing gaps in the levels of technological adoption, highlighting that connectivity is a necessary enabling condition to achieve digital transformation as it is an indispensable tool to reduce digital divides. Additionally, this policy document highlights that although the country has already adhered to the OECD principles, no actions have been implemented or advanced in terms of regulation, standards, and specific measures, which

undermines innovation and the progress of AI and does not further the acceptable use of the socio-economic fruits brought about by this technology.

According to this document, the public policies had three limitations:

> ""(i) las políticas de transformación digital han estado más orientadas al Gobierno con el fin de hacer más eficiente la relación ciudadano-Estado, no obstante, si bien hay avances en la materia, se hace necesario acelerar el paso para estar a la vanguardia de los desarrollos más recientes en el campo de gobierno digital;

> (ii) dada la velocidad del cambio tecnológico que se experimenta, el país todavía debe fomentar en la ciudadanía los conocimientos y las habilidades digitales necesarias para afrontar los cambios en las estructuras económicas y sociales que trae la 4RI;

> (iii) las políticas de competitividad y productividad han incorporado las tecnologías digitales, aunque no con la relevancia y profundidad que exige la 4RI" (CONPES 3965: 18).

Table 2 focuses on policy objectives and the actions of the National Policy for Digital Transformation and Artificial Intelligence (CONPES 3975/2019).

Objectives	Lines of Actions
Reduce barriers to the uptake of digital technologies in the private and public sectors to facilitate the country's digital transformation.	To reduce barriers related to lack of culture and knowledge, address the lack of knowledge to deal with the adoption and exploitation of digital transformation in the private sector.
	Develop policy and institutional adjustments to support the adoption of digital transformation in critical components of business productivity.
	Improve the performance of digital government policy to address the adoption and exploitation of digital transformation in the public sector.

Create enabling conditions for digital innovation in the public and private sectors as a mechanism for developing digital transformation.	International partnerships for innovation
	Designing and implementing initiatives to foster entrepreneurship and digital transformation.
	Promoting ICT-based innovation in the public sector
	Execute high-impact initiatives supported by digital transformation digital transformation
Strengthen human capital competencies to address the 4IR to secure the required human resources.	Generate enabling conditions that favor the development of digital competencies during the educational trajectory.
	They are developing capacities and competencies to enhance the interaction of the educational community with emerging technologies.
	Generation of innovation ecosystems.
	International partnerships for talent development.
	Preparation of AI education contributes to developing competencies for the 4IR.
Develop enabling conditions to prepare Colombia for the economic and social changes brought about by the 4IR and AI.	Generate the enabling conditions to boost the development of AI.
	Promote the development of digital technologies for 4IR.

Table 2. Objectives and Lines of Actions of National Policy for Digital Transformation and AI. (Prepared by the author based on CONPES 3975/2019)

The digital policy lists four specific objectives regarding promoting digital transformation and generating an ecosystem to incorporate AI in the country. It enunciates a set of actions to be implemented or coordinated by the national government and an extensive program. The published document contains four

specific objectives, fourteen lines of action, and sixty-two programs. Each line of action contains a set of programs.

This document aims to create the enabling conditions for developing an AI ecosystem in the country, understood as developing a framework of governance in which non-state actors play an active role in regulatory standards setting, monitoring, and enforcement. For developing this strategy since 2019, the Government of Colombia has supported CAF through technical assistance and specialized knowledge directed by Armando Guido, consultant, and researcher at Harvard's Berkman Klein Center (BKC). With the technical assistance provided by Interamerican Development Bank and the CAF, the Colombian government benchmarked good international practices. It established several mechanisms to develop a framework of governance in which non-state actors play an active role in regulatory standards setting, monitoring, and enforcement. Thus, the state seeks to promote innovation and confidence in AI while ensuring respect for human rights and democratic values.

In that sense, based on OECD, this policy document defined 14 principles for developing AI in the country.

No.	Principles
1	Creation of the Artificial Intelligence market: Colombia will become a laboratory for creating its own AI market.
2	Prioritization of market-creating innovations for the creation of an AI market in Colombia.
3	Evidence-based policies and impact metrics for regulation: any regulation that impacts the development of AI in Colombia.
4	Colombia must adopt innovative regulatory models that allow regulatory and supervisory entities to learn about the latest technologies.
5	They prioritize creating and identifying massive interoperable databases containing structured information.
6	AI can be directed towards non-traditional consumers and improve the quality of life of Colombians, especially for poor and vulnerable populations.
7	Ethical framework for AI, security, and the role of human rights.
8	Colombia must implement a credible and internationally recognized policy that generates legal security for investment.
9	The environment of experimentation to develop talent policies.
10	The strategic role of universities and academic research in creating the AI market.
11	The national Government must stimulate the creation of an AI market through the creation of programs.

12	The national Government must monitor the labor market to obtain timely evidence about the effects of this technology.
13	The state as a facilitator and user of AI.
14	It is necessary to exchange with leading international entities on the subject and generate strategies for constant exchange.

Table 3. Principles for the Development of Artificial Intelligence. (Prepared by the author based on CONPES 3975/2019)

The implementation of this strategy was based on four keystones. To carry it out, it created the AI Council to advise on the development of public policies, the Task Force to lead the implementation of these policies, and a new regulatory framework, consisting of the definition of an "ethical framework" which, in the form of guidelines (soft law), establishes rules for the ethical use of AI and its governance, following the OECD's AI Principles. Moreover, finally, developing sandboxes and beaches as an innovative regulatory instrument.

The International AI Council brings international experts into implementing and deploying the National AI Strategy. It would be a Council within the State consisting of six government members and nine international experts who participate as permanent guests. The Council should present public policy proposals that impact the development and deployment of AI in the country. Like countries such as the United Kingdom or the United States, the Colombian government created a task force for AI to bridge regulatory bodies and experts. The Task Force initially consists of a team of six people from various professions, including researchers and an AI expert who leads and coordinates the group.

The third keystone of this strategy was the development of sandboxes and regulatory beaches about ethics and governance. To this end, a conceptual model for the design of these experimental regulatory spaces was developed. The publication of the model served to bring these concepts to the table of Colombian regulatory actors and has already been adopted in at least one case. The Superintendence of Industry and Commerce and the Presidential Council for Economic Affairs and Digital Transformation implemented a regulatory sandbox on privacy by design and by default in AI projects.

Finally, the government of Colombia formed a Commission of AI Experts, composed of ten experts from both within and outside the country. This group met regularly, intending to design a strategic plan for applying AI policy. It was inaugurated on October 21, 2021. This Initiative was the pioneer group of AI specialists in the region and one of the earliest globally to concentrate on developing AI-centric education and employment policies. The Initiative assembled a varied collection of interdisciplinary professionals from regions like

Latin America, Asia, Australia, the United States, Canada, and Europe, which included four academics associated with BKC. The commission concluded its work on July 19, 2022.

ETHICAL FRAMEWORK

In 2020 the government released the Ethical Framework "for Artificial Intelligence, as a mechanism of 'soft law' […] that provides a set of ethical principles that should be considered in the design, development, and implementation of AI systems[1]" which includes a toolbox with strategies to develop principles in public entities, providing recommendations inspired by soft law for the structuring and project management of AI applications.

The framework sets out ten principles whose purpose is to serve as a guide for the design, development, implementation, and evaluation of AI: transparency, explanation, privacy, human control of the decisions involved in an AI system, security, responsibility, non-discrimination, inclusion, prevalence of the rights of children and adolescents, and social benefit. Across the board, these principles apply to the three main components of artificial intelligence: data, algorithms, and uses.

These predominantly principle-based documents have significantly advanced AI governance (MULGAN, 2019; RAAB, 2020). More recent research calls for practical guidance on incorporating principals into AI practice (HERMANN, 2021). Colombia developed a dashboard to guide AI practitioners in designing and deploying algorithms within these ethical boundaries. Developing the dashboard model within a framework will help organizations fully account for incorporating ethical principles into AI decision outcomes. The dashboard is a tool to effectively consolidate, track, and display information collated from various data sources for better understanding and visualization of the represented indices. Moreover, institutions are also expected to carry out the following: (1) evaluation of algorithms; (2) data "purging"; (3) Intelligent explanation; (4) Evaluation of legitimacy; (5) definition and management of ethical risks; (6) internal codes of conduct and ethics; (7) impact analysis for privacy; and (8) governance models to ensure AI ethics (TASK FORCE OF AI COLOMBIA, 2023).

It also incorporates several other principles that, although not elaborated in the Ethical Framework, provide critical inputs for the fair and responsible use of AI solutions. In particular, the handbook of monitoring dashboard seeks to capture gender-based biases and algorithmic discrimination and their use to mitigate the

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[1] https://inteligenciaartificial.gov.co/en/ethical-framework/

risks of the pandemic disease. The following table summarizes the ethics principles and key performance indicators.

Principle	Ethical Framework for Artificial Intelligence	Dashboard
Transparency	Transparency should be understood as the openness to provide complete information on the design, functioning, and impact of the information about the design, operation, and impact of artificial intelligence systems.	• Use of open data in the realization of the project. • Implementing AI algorithms in open source must have the availability of the algorithm to the public. • Reports to the citizens about the project. • Generation of interactive and publicly accessible content about the AI project or solution.
Privacy	Respect for the privacy of individuals, prior informed consent, and digital profiling.	• Specific and official privacy manuals for the project, which oversee privacy issues and their involvement in the project. • Review of consents for the use of personal information • Inform people when they interact with an AI system.
Human control	This principle applies to artificial intelligence systems with some autonomy in decision-making, giving the human being complete control, especially in a human-in-the-loop implementation stage.	• Risk analysis systems related to the AI project must exist. • Monitoring of results. • The operation can be reviewed through audits of the AI system and committees of evaluation of the project.
Checkbox		• Does the AI solution seek to solve any

		problems related to COVID-19? • Analyze if there is a relationship between the project and COVID-19.
Safety	Protection of human dignity as well as mental and physical integrity.	• There must be specific security policies for the project. • Ability to operate without the use of the application. • Mechanisms to inform citizens of risks to security. • Security reviews or audits, which are carried out regularly.
Responsibility	Accountability for the results and effects of an artificial intelligence system and shared responsibility of the designers, developers, and people who implement this technology.	
Non-discrimination	Artificial intelligence systems cannot have outcomes or responses that undermine the welfare of a specific group or limit the rights of historically marginalized populations.	• Debugging and analysis of the data used. • Review of the model used and application in similar contexts. • Generation of diverse teams involved in different moments of project development. • Incorporation of algorithm evaluation mechanisms (Algorithm assessment).
Inclusion	It is the active participation of historically marginalized	• Active participation of citizens and the population impacted by the project.

	populations in the design, development, implementation, and evaluation of artificial intelligence systems to be used in Colombia.	- We are obtaining feedback from citizens on the project. - Generation of knowledge about the AI project within the community.
Prevalence of the rights of children, girls, and adolescents.	Artificial intelligence systems must recognize, respect, and prioritize the rights of children and adolescents.	- Identification of the impact on this population. - Spaces to interact with this population and know their opinion about the project. - Generation of information primarily aimed at this population about the project and its characteristics.
Social Benefit	intelligence systems implemented in Colombia must allow or be directly related to an activity that generates a clear and determinable social benefit.	The justification for this principle is linked to how the project is directly associated with one or several UN Sustainable Development Goals.
Gender equality		- It identifies adverse effects of the project and creates biases affecting a specific population. - Document the composition of the technical groups working on these solutions. - There must be a direct and effective representation of women in these projects. - An analysis of the type of population that decides on the technology and its

		characteristics is necessary.
		• It is not sought to avoid discrimination against women by implementing AI systems, but that this gender achieves participation in the development of this type of project and that the concerns of this population are effectively considered.
Sustainability and Environment		• Analyze the possible environmental impact and carbon footprint that an AI solution can generate and the use of vital non-renewable resources, such as energy. • It is recommended as an ethical requirement of their research to disclose the average number of hours they used the system, the cloud service provider (if applicable), and the hardware in operation during this type of project. • It is necessary to know the type of hardware that is used.

Table 4. Ethics principles and key performance indicators. (Prepared by the author based on Ethical framework for AI in Colombia (2020) and User Manual Project form of Intelligence Artificial (2021)).

AN ASSESSMENT OF THE COLOMBIAN AI STRATEGY

This section dissects the objectives and strategic actions listed in the Colombian AI Strategy, which sets out the following vision: This Strategy sets out the role of the State in creating a "collaborative governance as a path for

implementing ethical artificial intelligence" (MUÑOZ. TAMAYO & GUIÓ, 2020: 1). Thus, the role of government is to create enabling conditions for the progress of AI, understood as a minimal state interference with soft regulation directed to promote an "ethical use" and where private actors and companies are the main drivers of technological innovations.

This view of policy has an implicit design problem. The policy defined four specific objectives, focus on reducing barriers and capacity building to the uptake of digital technologies in the private and public sectors, focusing on generating a digital ecosystem and promoting innovation in the private and public sectors, skills and diversity training to enable Colombian citizens to partake in technology development and prepare the country for the economic and social changes brought about by AI and the disruptive aspects of the 4IR. However, the policy is rather quiet and muted on the tools employed to progress toward the proposed policy goals and does not define actors, responsibilities, partnerships, or monitoring and evaluation mechanisms. The text of the strategy does not assign specific tasks or identify crucial actors responsible for digital development and hence fails to take advantage of a window of opportunity to foster stakeholder engagement toward building digital transformation and AI governance.

Creating this collaborative governance framework defines the fundamental objectives of the future deployment of AI, indicating thematic priority areas and defining the necessary capabilities needed to place Colombia at the forefront of the AI revolution, as well as the central norms, values, and standards. However, it is also essential to provide certainty for the responsible development of AI in collaboration with other social agents. Our analysis places Colombia in a market-oriented state model that promotes self-regulation. However, we do not know the actors and political instruments that the government will use for its implementation. Based on this image of the political instruments, can we ensure the achievement of the initially planned objectives in the policy and ensure that AI systems are audited and reviewed periodically to guarantee that they do not violate the established principles and fundamental rights?

CONCLUSION

The increasing sophistication of AI systems creates potential risks to fundamental human rights and requires regulatory framework development. Regulatory governance models have replaced traditional models based on formal rules, involving collaboration between public and private actors in decision-making processes aimed at achieving social, political, and economic objectives (YASUDA, 2020). AI regulatory governance identifies an ethical framework

consisting of core principles, standards, and best practices for ethical AI that permeate laws and rules (FLORIDI, 2018; COWLS & FLORIDI, 2018).

Although various public, private, national, and international bodies have developed guidelines, strategies, and regulatory documents that articulate ethical potentials, risks, and challenges, there is still a lack of international consensus on regulatory frameworks for AI. Furthermore, ethical frameworks for AI development and use have recently gained significant attention to safeguard that AI systems are developed and used responsibly, ethically, and respect human rights.

Several countries have developed regulatory governance of AI. Among countries in Latin America and the Caribbean, the Colombian government, with the technical assistance provided by the Interamerican Development Bank and the CAF, has achieved greater dynamization of AI governance. This article has analyzed Colombia's AI Strategy and provided insights into the formulation process of Colombia's AI strategy and digital transformation policies. The study has examined the national strategy's regulatory governance framework and policy design dynamics. Through case study analysis, this exploratory study has identified the role of the state and governance style in Colombian AI policy.

The study utilizes a case study analysis approach to explore factors that may have influenced the Colombian AI policy formulation process. We conducted a single elite interview and made a qualitative documentary analysis. Our empirical work proceeded at two levels: first, to discover how the AI public policy was formulated, we conducted an elite interview with Armando Guido. Second, we made a documentary research analysis to prevent bias and or inaccuracy.

The Colombian Strategy for Artificial Intelligence emphasizes a market-oriented state model that promotes self-regulation, intending to foster an enabling environment for the development of AI in the country. The creation of this collaborative governance framework defines the fundamental objectives of the future deployment of AI, indicating thematic areas and priorities, as well as principles and standards to promote an ethical AI. However, the policy lacks specificity concerning the tools and instruments to meet the proposed policy goals and fails to single out and assign essential actors, their responsibilities, possible partnerships, and evaluation and monitoring mechanisms.

Future research should explore how to safeguard that AI development and its uses are adjusted to the ethical principles and respect for human rights, mainly using soft regulatory instruments, reducing the opacity of algorithms, and promoting transparency (ANDRADA et al., 2022). Collaboration and coordination among stakeholders, including the public and private sectors, universities, civil society, and international organizations, are keystones for developing and implementing effective AI policies.

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