

A Historic Opportunity

Artificial intelligence to Unleash Colombia's Economic Potential

an AI Sprinters Report





Colombia

Colombia has a [population](#) of 52.7 million and a [GDP](#) of approximately USD 370 billion. In 2024, the [economy](#) grew by 1.7%, with an average growth of 2.7% between 2014 and 2024. The economic [sectors](#) contributing most to Colombia's GDP are Trade (17.2%) and manufacturing industries (11.5%). In February 2025, [exports](#) of fuels and extractive industry products accounted for 39.7% of total national exports.

AI can boost Colombia's productivity, efficiency, and economic diversification. According to the National Observatory of Information and Communications Technologies ([ONTIC](#)), in the services sector, 55.4% of companies reported increased sales due to AI use in 2024, while 59.9% reduced operating costs. Additionally, 71.9% reported improved customer relations, 67.3% improved internal organization, and 79.8% improved the quality of goods and services offered.

Economic Potential of AI in Colombia

We estimate that AI can generate an economic impact of USD 7.2-13.6 billion annually, equivalent to 2%-3.7% of GDP. The sectors with the highest potential impact are manufacturing (USD 886 million -1.7 billion annually) and trade (USD 832 million -1.5 billion annually). For more details on projected economic effects in Colombia, see Table 5.

Achieving this positive impact depends on AI adoption rates in businesses. According to Colombia's Ministry of Science, the [AI adoption rate](#) is approximately 21%. Applying this factor, AI's estimated economic impact is reduced to a range of USD 1.5-2.9 billion annually.

AI and the Coffee Industry

AI offers significant opportunities for the Colombian coffee industry, optimizing processes from cultivation to commercialization. Its use facilitates early pest detection, improves bean quality through automated inspection and sensorization, and allows predicting yields or designing market strategies via data analysis and machine learning. A recent [study](#) by *Universidad del Valle* academics found that Colombia, the world's second-largest coffee producer, is well-positioned to lead in this field. It concentrates some of Hispanic America's most prolific researchers in AI applied to coffee and shows exponential growth in scientific publications on the topic, even surpassing countries with higher production volumes like Brazil.

A concrete [example](#) of technology adoption is Juan Valdez, which used generative AI to create and design innovative beverages like "Nevado de mocca y aguacate achocolatado" and "Latte de lavanda y mora". This aimed to appeal to younger generations and reinforced their commitment to innovation and the added value of Colombian premium coffee.

2-3.7%

Of Colombia's GDP could represent the potential economic impact of AI.

Table 5
Estimated AI impact by Economic Sector in Colombia (millions of USD 2023)

| Economic Sector | Low impact scenario | High impact scenario | Average sectorial impact |
|--|---------------------|----------------------|--------------------------|
| Manufacturing | 886 | 1,658 | 12% |
| Wholesale and retail trade; repair of motor vehicles and motorcycles | 832 | 1,520 | 11% |
| Education | 562 | 1,074 | 8% |
| Agriculture, forestry, and fishing | 539 | 1,050 | 8% |
| Real estate activities | 547 | 1,044 | 8% |
| Financial and insurance activities | 490 | 872 | 7% |
| Human health and social work activities | 449 | 851 | 6% |
| Transportation and storage | 393 | 736 | 5% |
| Mining and quarrying | 366 | 714 | 5% |
| Public administration and defence; compulsory social security | 313 | 629 | 4% |
| Electricity, gas, steam, air conditioning supply, water supply, etc. | 313 | 582 | 4% |
| Arts, entertainment, and recreation | 293 | 550 | 4% |
| Construction | 263 | 513 | 4% |
| Administrative and support service activities | 260 | 482 | 4% |
| Information and communication | 252 | 469 | 3% |
| Accommodation and food service activities | 231 | 463 | 3% |
| Professional, scientific, and technical activities | 212 | 393 | 3% |
| Total | 7,203 | 13,599 | |

Source: Elaborated based on Colombian National Economic Statistics





Enabling Public Policies

Colombia has a strong institutional framework for AI development and adoption. It stands out for its strategic vision, modern regulation, and alignment with international standards. The National Digital Transformation and Artificial Intelligence Policy of [2019](#) and the Ethical Framework published in [2021](#) (based on OECD and UNESCO guidelines) have created a positive environment for responsible technology deployment.

Additionally, enabling policies in connectivity, data infrastructure, and education have been implemented. These include the [National Digital Strategy](#) 2023-2026, aimed at reducing access gaps; the National Data Infrastructure Plan, which defines a data governance model; and the [Ten-Year Education Plan](#) 2016-2026, which incorporates ICT tools as a strategic challenge. Furthermore, there are over five bills related to AI, mainly focused on harmonizing AI with labor rights or aggravating penalties for counterfeiting offenses.

In February 2025, the [Council for Economic and Social Policy \(CONPES\)](#) updated the [National AI Policy](#). Its goal is to "build capabilities for the ethical and sustainable research, development, adoption, and utilization of AI systems to drive Colombia's social and economic transformation." The policy outlines six goals for ethical AI governance: strengthen technological infrastructure, boost R&D and innovation in AI systems, develop digital capacities and talent, advance risk identification, prevention, and mitigation measures in AI adoption, and promote AI use and adoption in the public sector.

"The recent artificial intelligence policy represents a significant step forward for Colombia," states Lina María del Vecchio, Executive Director of the Communications Regulation Commission ([CRC](#)). *"In a context of multiple legislative initiatives -some general, others more technical on definitions and responsibilities- it provides a state vision, aligning the Executive and Legislative around common principles for AI adoption as a development tool. It sets a clear framework for action, assigns*

responsibilities to different players within the ecosystem, and avoids regulatory dispersion that could hinder implementation. All this is coordinated by the National Planning Department, ensuring a comprehensive view of the economic sectors involved."

Recommendations

- **Operationalize Colombia's national AI strategy**

Prioritize the implementation of the National AI Policy, establishing a clear governance structure, defined KPIs, dedicated budget lines, and a central coordination body to oversee progress and stakeholder engagement.

- **Integrate AI into sectoral development plans**

Ensure AI becomes a strategic enabler in priority sectors such as education, healthcare, agriculture, and justice by embedding AI use cases and capabilities into existing national development plans and investment programs.

- **Review existing legal frameworks**

Before introducing new AI-specific laws, conduct a comprehensive review of Colombia's existing regulations (e.g., data protection, cybersecurity, procurement) to identify whether they can already address new emerging challenges, and ensuring that any new regulation has a clear rationale.





Infrastructure

AI development in Colombia requires sustained strengthening of digital infrastructure, especially [connectivity](#). In 2024, only 65.6% of households had Internet access, with marked differences between urban (72.5%) and rural (41.9%) areas.

This territorial gap limits the equitable adoption of emerging technologies. As Congresswoman Maren Castillo pointed out, many regions still face fundamental needs, like access to drinking water or overcoming extreme poverty, that shape local priorities over implementing AI solutions. Thus, while in cities like Bogotá AI is seen as a concrete development tool, in regions like La Guajira, Buenaventura, or Chocó, social precariousness and connectivity limitations hinder its effective deployment.

Regarding technological infrastructure, Colombia ranks second in Hispanic America in the number of [high-performance computing](#) systems (11). In [data centers](#), the country ranks fourth in the region with 33 facilities, placing it among the top 25 globally.

Recommendations

- **Prioritize closing the territorial digital divide**

Implement specific public-private investment policies and programs to expand high-quality broadband connectivity to rural and remote areas. This could include subsidies, incentives for operators, and the use of alternative connectivity technologies.

- **Strengthen data center infrastructure and cloud services**

While Colombia has a good number of data centers, promoting Cloud First policies is a powerful way to accelerate AI tools, data storage, and advanced computing capabilities across sectors.

- **Promote open and interoperable data ecosystems to address local priorities**

Expand public access to standardized, high-quality datasets that reflect the country's territorial diversity and serve its most pressing challenges, such as access to basic services, environmental management, and economic inclusion, enabling better decisions and more effective policies and solutions that respond to the specific needs of different regions.





Technological Innovation

Colombia's ability to harness AI's full potential will depend on the strength of its innovation ecosystem. While challenges remain, there are promising signs in the country's tech landscape.

According to the Colombia [Tech Report](#) 2024, AI is considered the most promising sector, with high adoption rates among startups: 81% of AdTech, 80% of EnergyTech, 77% of Industry 4.0, and 74% of HealthTech companies already use AI-based tools. Examples like [Arkangel AI](#) in healthcare, [Habi](#) in real estate, and [Grupo Nutresa](#) in business productivity highlight AI's growing role in strategic sectors.

However, the lack of structured and sustained innovation processes continues to hold back much of the country's productive sector. Nine out of ten [Colombian SMEs](#) lack formal innovation processes to improve products or develop new solutions. In this context, AI offers a strategic opportunity to accelerate their growth. *"In Colombia, as in much of Hispanic America, more than 90% of businesses are micro, small, or medium-sized enterprises. But their contribution to GDP remains limited. Artificial intelligence can change that by improving SME productivity through process optimization, cost reduction, and better decision-making,"* explains Pablo Nieto, public policy manager at the Latin American Internet Association ([ALAI](#)).

Despite its potential, Colombia still faces significant structural challenges, especially in R&D and innovation. According to the [World Bank](#), the country invests less than 0.3% of its GDP in R&D, which is less than half the regional average of 0.62%. This underinvestment limits Colombia's capacity to develop a strong AI research base.

Arkangel AI

Founded in 2020, [Arkangel AI](#) is a no-code platform that allows healthcare institutions to design and deploy predictive AI models for early disease detection. Its [technology](#) has accelerated pediatric leukemia diagnoses by a factor of 28, reduced malaria diagnostic costs fivefold, and lowered hospital mortality rates by anticipating intensive care needs.

Operating in 18 countries, Arkangel AI has reached over 68 million people. One of its standout tools is Search, an AI-based clinical assistant that integrates sources like Google and PubMed, offering streamlined access to more than 37 million biomedical citations to support real-time clinical decision-making.

Recommendations

- **Increase public and private investment in AI-Focused R&D**

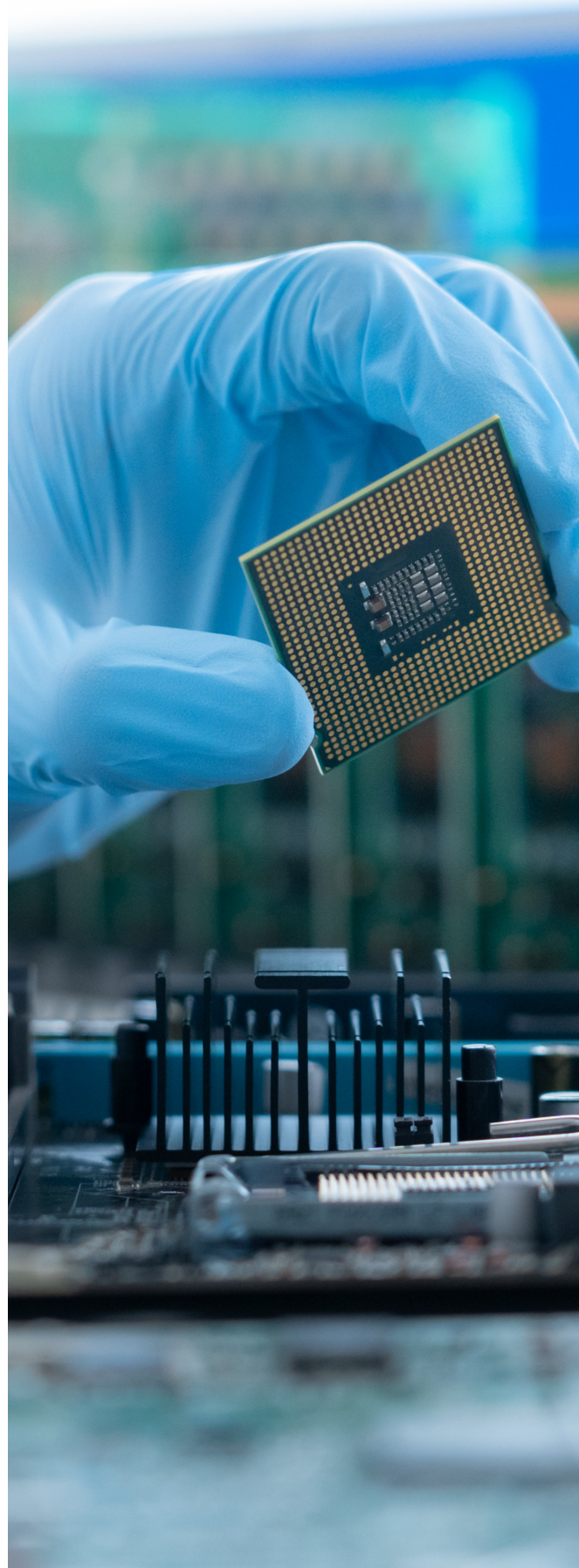
Substantially increase research and development spending from both public and private sources, with a clear focus on AI. Create dedicated mechanisms and programs to fund AI R&D projects in strategic sectors.

- **Foster structured innovation in SMEs**

Design and implement technical and financial support programs to help micro, small, and medium-sized enterprises build internal innovation capabilities and adopt AI solutions. This includes access to tools, methodologies, and specialized guidance.

- **Build strategic academia-industry-government alliances**

Encourage the formation of consortia and collaborative networks among universities, research institutions, companies and government agencies. These partnerships can drive AI initiatives with real economic and social impact, while accelerating technology transfer.





People

Colombia is building a solid pipeline for AI talent. According to [ILIA 2024](#), the country outperforms the regional average in early science education and ranks third in Hispanic America for the share of STEM graduates. It's also among the top five in AI skills regionally, with 11 master's programs at top-ranked universities [and a PhD](#) in AI offered by Universidad de La Sabana. Continuous training is gaining traction as well, with initiatives like [SENA's](#) free AI courses and [SENATIC's](#) 235,000 digital skills slots in partnership with the Ministry of Information and Communications Technologies.

Still, key challenges remain. [English proficiency](#) remains low, which limits the global competitiveness of its talent. Human capital management is another bottleneck, especially for [SMEs](#): 8 out of 10 show weaknesses in recruiting, training, or retaining specialized talent. As Saúl Kattan, former Presidential Advisor for Digital Transformation, puts it: *"Strengthen English Language Teaching and Transversal Digital Skills: Implement intensive, high-quality programs to improve English proficiency nationwide, especially in technical and professional contexts."*

Recommendations

- Improve English and core digital skills

Roll out high-quality, nationwide training programs to boost English proficiency, particularly in technical and professional domains. Embed digital skills, including AI literacy, more deeply into education from primary school through higher ed.

- Support human capital development in SMEs

Launch targeted support and advisory programs to help micro, small, and medium-sized businesses strengthen their workforce strategies. This includes identifying AI training needs and attracting and retaining qualified talent.

- Scale up continuous AI training

Expand and update initiatives like SENA and SENATIC to ensure they remain aligned with fast-evolving industry needs. Promote a culture of continuous learning to help professionals keep pace with AI-driven change.



Methodological Annex

The economic impact of Artificial Intelligence (AI) in Colombia was estimated by adapting McKinsey's frameworks ([2018](#), [2023](#)) on generative AI and deep learning, taking into account the particularities of the country's productive structure and the availability of national data.

The estimation calculates the percentage effect of AI on industry sales across a range of scenarios (conservative and optimistic) and incorporates the local adoption rate.

The main information sources used were:

- Industry Sales

Annual company data (2023) from the Argentinean Internal Revenue Service (Servicio de Impuestos Internos).

- AI Adoption

PwC Survey (2024) which indicates that 5% of companies have fully integrated AI.

List of Interviewees

As part of the qualitative component of this research, semi-structured interviews were conducted with key actors across Colombia's AI ecosystem. These virtual conversations lasted around 60 minutes and focused on each expert's view of AI adoption in their country and its potential economic impact. Discussions also explored key enablers and barriers for AI development and implementation. This qualitative input helped enrich the analysis with grounded, contextual insights from stakeholders directly involved in the space.

Colombia

Ingrid Hernández: Presidential Advisor in the Administrative Department of the Presidency of the Republic of Colombia, specifically in the Presidential Advisory for Digital Transformation. Lawyer with specializations in New Technologies and Telecommunications Law, and Economic and Market Law. Also holds an MBA (Master's in Strategic Business Administration).

Germán López: Director of Regulatory Affairs for the Colombian Chamber of Information Technology and Telecommunications (CCIT). Lawyer (Universidad Externado de Colombia) with specializations in Telecommunications Law and Economic Law. Previously worked at entities like the Communications Regulatory Commission (CRC) and the Ministry of Information and Communications Technologies (MinTIC).

Lina María Duque del Vecchio: Executive Director of the Communications Regulatory Commission (CRC) of Colombia since February 2024. Lawyer with a Master's in Law and extensive professional experience with the CRC and its predecessor (the CRT).

Marelen Castillo: Representative to the Chamber for the 2022-2026 legislative period. Doctor in Education (Nova University) and holds an MBA from Tecnológico y de Estudios Superiores de Monterrey.

María Fernanda Quiñones: Executive President of the Colombian Chamber of Electronic Commerce (CCCE). Lawyer (Universidad de los Andes) with

various specializations. Notable career includes 11 years at CredibanCo, where she structured the general secretariat, before leading the CCCE.

Mario Castaño: Technical director of Cintel. Telecommunications engineer with a Master's and a Doctorate in Telematic Engineering. Senior Member of the IEEE and actively volunteered in the organization, serving as President of the IEEE Colombia Section and Director for Latin America for the IEEE Communications Society (ComSoc).

Natalia Orozco: Deputy Director of the Chamber of Digital Industry and Services at ANDI. Studied finance and international studies at Universidad del Externado de Colombia and holds an MBA from Cardiff Metropolitan University.

Pablo Nieto: Regional Public Policy Manager for the Andean Region at the Latin American Internet Association (ALAI). Professional in politics and international relations (Universidad Sergio Arboleda), specialist in government, management, and public affairs, and holds a master's in Public Policy from Universidad Externado de Colombia.

Santiago Pinzón: Vice President of Digital Transformation for the Chamber of Digital Industry and Services at ANDI. Lawyer (Pontificia Universidad Javeriana) and holds a Master's in Public Administration from American University in Washington, D.C.

Saúl Kattan: Economist (Universidad de los Andes) with executive studies at INALDE and Wharton. Recently served as Presidential Advisor for Digital Transformation. Over 25 years of experience, expert in corporate transformation. Former chairman of Ecopetrol and ETB boards, led Juan Valdez Café's US expansion, and was recently named interim manager of Internexa.

Viviana Vanegas: Colombian economist serving as Director of Digital Development and Technical Director at the National Planning Department (DNP) of Colombia. Her professional experience includes technical and leadership roles in the public sector, including DNP, the Communications Regulatory

Commission (CRC), and the National Superintendence of Health, among others.

