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Artificial Intelligence in Latin America: A Bibliometric Approach to Sustainable Development and Educational Innovation

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Abstract

In this paper, the rise of AI research in Latin America is considered, as well as the primary challenges to implementing AI, including a lack of infrastructure, funding, and AI professionals. The research is based on a mixed-method approach, integrating qualitative content analysis and quantitative bibliometric data from Scopus and Web of Science to examine AI publications in Latin America from 2015 to 2024. It is found that there is a 150 per cent growth in AI publications, with Brazil, Mexico, and Argentina topping the list. The primary research topics found are Machine Learning (32%), Natural Language Processing (25%), and AI to Sustainable Development (20%). Nevertheless, issues like inadequate infrastructure, inadequate funding, and skills gap still hinder the full potential of AI in the region. The paper highlights the importance of interdisciplinary work between academia, industry, and government, and policy interventions that facilitate AI research, education, and innovation. Suggestions are to invest more in AI infrastructure, create AI-specific funding, and incorporate AI training into educational systems to overcome the talent gap. Lastly, future studies are needed to consider the long-term effects of AI policies in the region and to make sure that the integration of AI is consistent with the Sustainable Development Goals (SDGs) and regional development priorities.

Keywords: Artificial Intelligence, Latin American Research, Machine Learning, Natural Language Processing, Educational Innovation, AI Challenges, International Collaboration.

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Introduction

The concept of artificial intelligence (AI) is a transformative force in different sectors across the globe (Mendoza et al., 2022). There are opportunities as well as challenges in the process of technological appropriation using advanced technologies in Latin American countries. This article aims to give an overview of the state of affairs in AI research and scientific production, reviewing the key trends and issues of concern to the region and the opportunities that may emerge as a result of adopting this technology. AI is not the same as it used to be in the 1950s. The foundations of this field were laid by Alan Turing and John McCarthy, who created the theoretical and practical background that increased expectations of how possible it was that machines would simulate human intelligence (Sepúlveda & Machuca, 2021). More recently, some of the earliest machine learning systems were invented, and advancements in programming were also crucial steps towards the evolution of AI. Nevertheless, with the available computational power, so-called AI winters occurred, when the interest and funds in this field waned. The renewed interest in AI at the end of the 20th and early 21st centuries can be attributed in part to the growth in processing power, the sheer volume of data accessible, and the creation of deep learning algorithms (Quirumbay Yagual et al., 2022).

This new era has given rise to applications with the potential to be truly useful, from virtual assistants to voice and image recognition systems, which have radically changed, for example, the landscape of knowledge (LeCun et al., 2002; Castillo, 2024). Here, AI has moved from theory to becoming a basic tool for decision-making and the automation of global processes.

Meanwhile, the inequality of infrastructure, capital investment and talent resources characterises the giant wealth of AI, the industry of artificially intelligent. In earlier research, the necessity to work on the AI ecosystem in the region in collaboration with other countries and invest in education has been identified (Rodríguez-Alegre et al., 2023; Ruiz-Ruiz et al., 2025). This paper looks at the evolution of AI in Latin America. International partnerships are considered to be one of the pillars of AI development in Latin America. There is also a lot of literature about the necessity to engage universities, firms, and governments in collaboration to share knowledge and invent technologies (Martocci & Zuleta, 2023). Some of the programs, like the Pacific Alliance Science and Technology Innovation Program of Brazil, have supported research cooperation among Mexico, Colombia, Peru, and Chile and have established a more favourable environment to innovate AI (Velásquez & Ortiz, 2025).

Another significant element is training in AI skills. UC-Baffi faces a skills shortage; in response, it break down any solution within the organization. According to research, more than 60% of companies in Latin America have problems recruiting staff with the required technological and AI skills. This is one of the reasons the need to invest in educational and professional training in the field to boost the growth of the next generation of AI researchers.

The aim of this article is to provide a comprehensive picture of the role of AI in Latin America. It will discuss all the significant discoveries in the field of scientific research, the largest obstacles in the region, and the biggest opportunities of AI.

- The paper analyses the areas of interest in AI in Latin America through a bibliometric study. These include Machine Learning and Natural Language Processing. The increase in scientific production of the region is also discussed.
- However, there are some serious problems such as inadequate infrastructure, lack of funds, and professionals trained in AI. The authors suggest more cooperation at the international level to overcome these problems.
- The paper provides ways to enhance AI implementation in the Latin American educational system and policies that may help in creating a more vibrant AI community in the region.

This paper follows the following structure: Section I examines AI in Latin America with its problems and possible solutions. Section II examines the literature on AI technologies and their impact regionally. Section III includes the methodology, which is a bibliometric and qualitative analysis of AI publications. The results are given in Section IV and show the growth of AI research and essential problems. Section V discusses findings, both interdisciplinary collaboration and policy recommendations provide the practical implications of the findings, such as the development of AI ecosystems and the development of talents. Section VI conclusion and finally, the future research directions.

Literature Review

AI is an abbreviation of the term artificial intelligence, which encompasses various elements that can be used to achieve tasks that were previously only performed by humans, such as perceiving, reasoning, learning, and decision-making.

Historically, there are three traditions that have developed:

- Symbolic: On the premise of rules and explicit knowledge representations.
- Connectionism: Data patterns are learned using neural networks.
- Statistical: Probabilistic and machine learning models.

In recent years, hybrid approaches such as neuro-symbolic have emerged that attempt to combine the interpretability of knowledge-based systems with the power offered by deep learning models. Furthermore, this technological context introduces new possibilities and challenges for teaching and learning: generative AI can produce language, images, and code.

The convergence between the two domains is imperative in our quest to prevent an exclusive technocratic approach. Using research from cognitivism, educational AI has simulated processes of attention, memory, and problem-solving and has therefore been able to design intelligent tutors that adapt flexibly according to what students know (Ocaña-Fernández et al., 2019).

Constructivism and socio-constructivism develop the idea of situated active learning: AI is a scaffold that regulates progressive cues, formative feedback, and situational activities in the zone of proximal development (Ruano et al., 2024). Cognitive load theory and the principles of multimedia learning translate into agents that adjust the amount and timing of information provided, while self-regulated learning—metacognition together with control panels—and conversational agents encourage students to plan their own performance, when it should be carried out, and what goals they are pursuing.

Areas of practice in educational AI include, among others, intelligent tutors, learning analytics, and educational data mining. Intelligent tutors are a reflection of what is to be taught to a student, measure progress, and choose pedagogical actions (e.g., provide a hint, increase or decrease the difficulty, or an example) based on student domain models and the instruction they use (Guardia et al., 2025; Rodríguez Chávez, 2021).

Learning analytics on its part is an investment in predictive modelling and sequencing methods in order to determine patterns of engagement, dropout tendencies and various mastery patterns, all of which are supposed to be used to inform teaching decisions and policies (Villalobos, 2025). In natural language processing, instant feedback is received by automated text evaluation systems and conversational assistants. These systems are able to identify discursive characteristics and facilitate academic writing. Based on this collection of functions, generative artificial intelligence extends to synthesis, co-authorship, and simulation of scenarios.

In the curricular and didactic fields, tools such as TPACK (technology-pedagogical content knowledge) and SAMR (substitution-augmentation-modification-redefinition) provide frameworks for situating AI within broader pedagogical decisions: it is not just a matter of incorporating tools, but of setting objectives, differentiating evidence in the learning process, and assessment strategies. Integrating with competency-based instructional design means using AI to foster authentic practices (e.g., virtual labs) and offering multiple forms and levels of access in compliance with the principles behind Universal Design for Learning.

At the same time, this cross-cutting dimension of socio-technical and ethical literature poses problems for an even wider audience. On the one hand, to some extent, it can be seen as a platform for environmental argumentation of political ecology from a grassroots perspective. The literature emphasises the need for fair, explainable, and privacy-respecting systems (Gutiérrez et al., 2025). This encompasses evaluating biases in data and models, not gathering more information than needed, making the criteria of recommendations visible, and meaningful human oversight of high-impact decisions (e.g., accreditation, scholarships, or promotion).

From the perspective of educational justice, linguistic and cultural equality invites a question about the timing of AI, especially in Latin America, where English is taught as a second language. Avoiding inequalities produced by language, accent, and access to devices or connectivity is therefore necessary for educational justice. Generative AI would be a linguistically competent AI, particularly Lingua (Sueth, 2024). A generative AI environment may require "AI literacy" that merges functional understanding (what it does and how it works), critical analytical skills (when and why to use it), and ethical practice (citation, traceability, and hallucination management). This, for example, the cognitive bias of information must be sought in the right and quick way, rather than misleading possible paths of development, as is currently the case.

Another important aspect is human-AI interaction. Unlike a simple automation process, human-AI collaborative systems imply a machine design that promotes learning and expands the student capacity: AI as a pedagogical

co-worker to take away the repetitive assignments (such as initial grading procedures and creation of variants of exercises) and as a professional judgment assistant that could represent the view of the servant (Ortíz et al., 2024). It is proposed that learning measures (e.g., gains, transfer to other work and persistence) should be used together with equity, usability, trust and cognitive load indicators in assessment. A design research criterion is called pedagogical explainability, that is, explaining not only why the model predicted, but what it means to this student and what instructional action should be suggested (Pincay-Chiquito & Cuero-Delgado, 2024). Actually, in the case of Latin America, some of the lines listed here are of priority consideration: the development of tools and corpora in Spanish and other native languages; the development of models that are responsive to the local curricula; training teachers in AI and data; and regional consortia that narrow infrastructure disparities and spur responsible innovation. A pedagogically and ethically applicable, effective and fair educational AI, shown in theory and implemented, that is not limited to its style or form, to permit greater interactivity in the conversation; there are a number of directions that I will take.

The literature emphasises that AI is rapidly growing in Latin America, especially in the fields of Machine Learning and Natural Language Processing, yet notes that the challenge is low infrastructure, funding, and AI-trained specialists. The solution that needs to be undertaken to overcome this challenge is cooperation at an international level. It is in line with what our research has shown, in that there must be strong training programs, supportive policies, and collaboration on a regional level to sustain AI development.

Methodology

The mixed research method is adopted in the research because both qualitative and quantitative methods of analysis have been employed according to the scientific outputs on AI in Latin America during 2015-2024. The process is undertaken in four phases, namely literature review, data collection, keyword selection and data analysis. This method provides an overview of AI research in the region, both qualitatively and quantitatively.

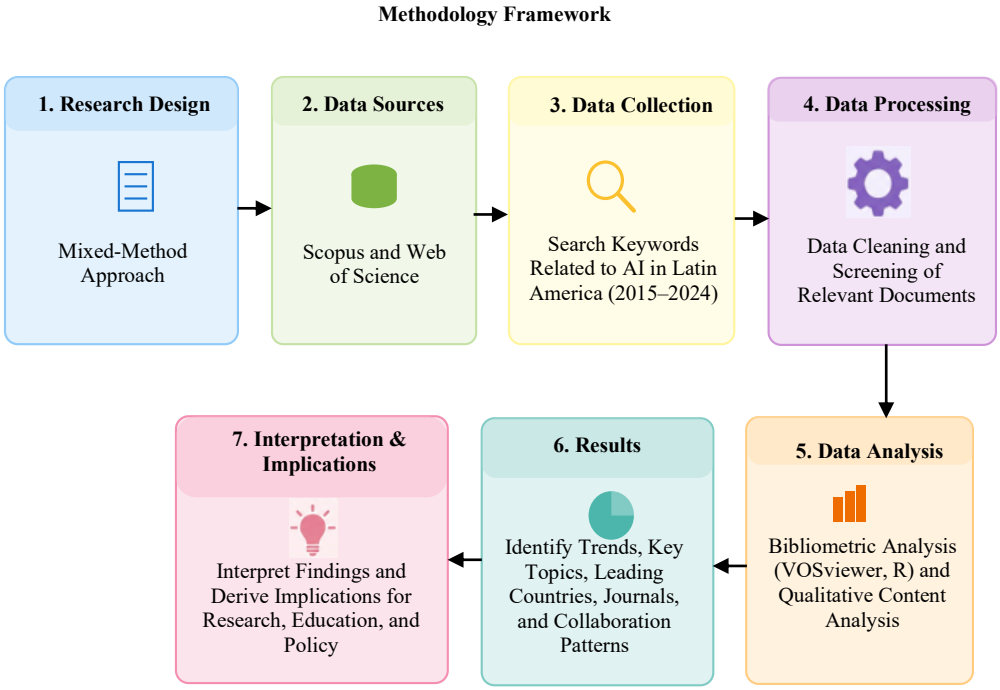


Fig. 1: Methodology Flow for AI Research Analysis in Latin America

Fig. 1 illustrates the methodology used in this research, which is made up of both qualitative and quantitative techniques. The first stage is data collection from relevant databases such as Scopus and Web of Science. This is followed by classification of fields of research and qualitative and bibliometrics analysis. Finally, the results will be analyzed to answer some of the research questions and policy implications towards further development of AI in Latin America.

This process was done through four stages:

Literature Review

The literature reviews on AI in Latin America included journal articles, thesis, and research papers even when such studies were based on case and comparative studies. These reviews helped in identifying some of the key issues being explored in the AI domain.

Data Analysis

Data were gathered from established organizations and prominent authors in the region, as well as the most researched themes within this field.

For this study, a selection of scientific journals indexed in reputable databases like Scopus and Web of Science was used since the former has an extensive coverage across many countries, and the latter is known for its stringent indexing practices.

Inclusion criteria employed in this research included:

- Journals directly addressing the topic of AI;
- Researchers working at universities in Latin America; and
- Years of publication ranging from 2015 to 2024.

The rationale behind the criteria was to maximize validity and contemporaneity while minimizing irrelevant findings.

The reason why these criteria were chosen lies in the requirement to produce accurate findings that do not suffer from possible bias due to low visibility and impact of other sources.

Keywords

Keywords used were "artificial intelligence" (AI), "machine learning," "natural language processing," "neural network," "computer vision," and "robotics."

Other related keywords were "algorithms," "big data," and "data analysis."

Author and Affiliation

Searches were made for authors who have discussed AI in Latin America.

Institution and country filters were employed to find the output of science based on geographical criteria.

Citations and References

The number of references made to a certain article was analysed as a measure of its significance in the area.

References and citations were also used for citing relevant sources to widen the scope of research.

Language

Both the sources written in Spanish and in English were considered to achieve a better collection of literature, especially concerning Latin America.

Data Analysis

In the first phase, the quantifiable data were structured, and the number of publications was counted based on the following three variables: country, type of the research, and level of international collaboration.

The visualization of time trends (number of co-authorship networks) and themes dissemination was done using special software packages and bibliometric methods.

In the second phase, the sample of publications underwent content analysis to detect patterns of evolution, methodologies used, and shortcomings of the research.

The application of such a methodological triangulation allowed us to enhance the quantitative grounding of more specific data about this position, the setting in which the scientific community operates, and the nature of difficulties that it faces. The discourse itself is interdisciplinary in nature, combining expertise from artificial intelligence, politics, and education for discussing the implications of artificial intelligence on society in Latin America.

Ethical Aspects

The research is carried out based on the epistemological requirements for conducting social research. Since only publicly available information was used, there was no need for direct permission from the authors; however, the intellectual property rights were strictly followed, and all references are made in the most detailed way possible.

It was also avoided any interpretation that could mislead the interpretation of the original meaning of the analysed research. The handling and storage of bibliographic data was performed based on the criteria of reliability for scientific purposes only.

Ethical considerations also extended into other areas, including the impact of AI on education and policymaking, algorithmic transparency and fairness, and data privacy in AI innovations, particularly in Latin America.

Results

The analysis carried out in AI in Latin America reveals that a significant growth has occurred between the years 2015 and 2024 with Brazil, Mexico, and Argentina leading this field. The publication of AI papers in Brazil, Mexico, and Argentina increased during the last five years by approximately 150% according to Scopus and Web of Science databases. There are three main areas of AI research in Latin America which include Machine Learning (ML) (32%), Natural Language Processing (NLP) (25%), and AI of Sustainable Development (20%). An interest in ML and NLP denotes that the region is aiming at automating decision making and improving language access while the interest in AI of sustainable development reveals the need to address environmental and social issues.

Challenges to AI Adoption

Although the area of AI has been flourishing in a positive manner, Latin America is not exempt from a number of challenges that pose a problem for scaling and integrating AI technology:

Lack of Infrastructure: There is a lack of infrastructure when it comes to access to supercomputing resources and AI research facilities in most countries, particularly in rural areas or developing countries in the region.

Insufficient Funding: While it is true that the governments of both Brazil and Mexico have started allocating money for researching and developing technologies related to artificial intelligence, the total amount of funds dedicated to it still needs significant development when compared to developed regions. Latin America finds it hard to receive enormous grants and investments made in the field of artificial intelligence, which is common practice in other regions of the world, like Europe and North America. Most projects related to AI technology rely heavily on external sources of finance.

Shortage of Talent: According to surveys conducted among Latin American firms, over 60% of them reported that to find it difficult to hire experts in AI technology. Such a skills shortage presents a major problem when it comes to implementing artificial intelligence technologies. Additionally, many top-level researchers in the field of artificial intelligence from this part of the world leave their homeland in search of better research facilities abroad. The lack of AI-trained specialists leads to an insufficiency in the translation of research into practical and real-world applications in such industries as healthcare and agriculture.

Interest will be located in the following table:

- Machine learning: health and financial uses.
- Natural Language Processing: Creation of special tools in Spanish and native languages.
- Robotics and Automation: Agriculture and manufacturing are present.

A number of major issues emerge, such as poor infrastructure, insufficient or no investment in research and the brain drain to other countries that have more opportunities to enhance careers. Table 1 presents the list of scientific output in Latin America by country in AI between 2015 and 2024. It also displays the percentage of each country of the total in the region and gives key institutions of nine of these countries table 1.

Table 1: Scientific Output by Country (2015-2024)

Country	Number of Publications	% of Regional Total	Main Institutions
Brazil	1,200	45	USP, Unicamp, UFMG
Mexico	800	30	UNAM, ITESM, CINVESTAV
Argentina	500	20	UBA, UNLP, INTI
Chile	200	5	PUC, University of Chile
Colombia	150	3	University of the Andes
Others	100	2	Various
Total	3,050	100	

Table 2 shows the main areas of research related to AI throughout Latin America. It also includes the percentage that each field contributes to the total volume of publications under AI research carried out in this region, a useful means of reflecting its relative importance to observe how all the topics compare with each other.

Table 2: AI Research Subject Areas

Thematic Area	Number of Publications	% of Regional Total
Machine Learning	1,000	32
Natural Language Processing	750	25
Robotics	500	15
Computer Vision	400	13
AI in Health	300	10
AI in Finance	100	5
Total	3,050	100

Finally, table 3 classifies the types of publications that have been generated in artificial intelligence. It allows us to observe the proportion of articles, proceedings, and listed articles.

Table 3: Types of Publications

Type of Publication	Number of Publications	% of Regional Total
Journal Articles	1,800	59
Conference Proceedings	1,000	33%
Theses	150	5
Books and Chapters	100	3%
Total	3,050	100

Table 4 shows the number of scientific publications generated through international collaborations.

Table 4: International Collaborations

Collaborating Country	Number of Joint Publications	Main Collaborating Institutions
United States	20	MIT, Stanford, Harvard
Spain	150	UPM, UPF, UCM
Germany	10	TU Munich, KIT
France	75	INRIA, Paris-Saclay University
Others	50	Various
Total	675	

Table 5 shows the impact of AI publications by presenting the average number of citations per article and the percentage of highly cited publications.

Table 5: Impact of Publications (Average Citations)

Country	Average Citations per Publication	% of Highly Cited Publications (≥ 10 citations)
Brazil	12	30
Mexico	10	25
Argentina	8	20
Chile	7	15
Colombia	6	10
Total	9.6	18

The concept of Artificial Intelligence in Latin America is slowly taking shape as a strategic focus for sustainable development as well as educational innovation. Nevertheless, the statistics indicate that there are consistent

asymmetries in access to technology and institutional capacities, in which to attain sustainable and fair integration of AI, joint policies, training of educators, and an ethical framework that values social welfare over technological progress is required table 6.

Table 6: Interrelation between Artificial Intelligence, Sustainable Development, and Educational Innovation in Latin America

Dimension	Artificial Intelligence (AI)	Sustainable Development	Educational Innovation	Analytical Link and Emerging Insights
Knowledge Production and Research Trends	The growth of AI publications in Latin America reflects an increasing regional commitment to digital transformation and knowledge generation.	Contributes to SDG 9 (Industry, Innovation, and Infrastructure) by promoting research ecosystems and technological capacities.	Encourages the redesign of teaching models, integrating digital literacy and data-based decision-making into higher education.	Bibliometric indicators suggest that scientific collaboration and interdisciplinarity are key to consolidating AI as a driver of innovation aligned with sustainability.
Technological and Institutional Capacity	AI initiatives in Latin America are often concentrated in urban research centres with limited regional distribution.	Sustainable growth depends on equitable access to technological infrastructure and inclusive innovation policies.	Institutions adopting AI foster smart learning environments and adaptive educational systems.	Strengthening institutional networks and regional cooperation is crucial to reducing inequalities in access and implementation of AI-based educational innovations.
Pedagogical and Cognitive Transformation	AI supports personalised learning and intelligent tutoring systems.	Promotes lifelong learning (SDG 4) and social inclusion through equitable education models.	Encourages teachers to rethink their pedagogical strategies and adopt evidence-based educational practices.	The integration of AI into education systems must balance technological efficiency with ethical and sustainable human development principles.
Ethics, Governance, and Policy	Raises concerns about algorithmic bias, data privacy, and technological dependency.	Aligns with SDG 16 (Peace, Justice, and Strong Institutions) by promoting transparent and ethical AI governance.	Supports the creation of ethical frameworks for the responsible use of emerging technologies in educational contexts.	Policy frameworks that integrate sustainability principles ensure that AI adoption in education is both equitable and socially responsible.
International Collaboration and Knowledge Transfer	Co-authorship networks reveal increasing cooperation between Latin American and European researchers.	Strengthens global partnerships for sustainable innovation (SDG 17).	Facilitates exchange of pedagogical models and technological solutions for inclusive and quality education.	The promotion of open science and international projects enhances the sustainability of educational innovation and knowledge democratisation.

Results of the Qualitative Analysis

The qualitative analysis of the sampled publications identified thematic trends, leading methodological perspectives, and research opportunities in the field of artificial intelligence in Latin America.

In terms of lines of work, there was a clear focus on machine learning and natural language processing, with subsequent applications in computer vision, predictive analytics, and recommendation systems. Most of these fields are related to regional requirements, such as local language processing, environmental monitoring, or production process improvement.

Methodologically, there was also a tendency to achieve objectives through experimental designs and single (or multiple) case studies based on public or self-generated datasets. However, mixed methodological approaches combining socially and technically informed methodologies were underutilized, pointing to a more interdisciplinary approach to AI that would involve its ethical, educational, and cultural aspects of use.

In addition, a related finding was the growing participation of joint initiatives between institutions from different countries in the region and research centers in North America and Europe. This process not only expands the availability of technological and capital resources, but also broadens the mode and logic of operation. Nevertheless, there are still some barriers like the dependency on other countries' financing and the absence of formal advanced AI courses in certain countries.

To conclude, in this research, an increasingly developing and diverse environment with some structure deficiencies, which, if not addressed, might pose threats to the scale of scientific output in artificial intelligence, has been uncovered.

Discussion

The survey results show that, to a certain extent, scientific productivity in AI has grown, but many obstacles still limit its development in the region. One of the most significant is the lack of infrastructure for research and development.

Many countries in Latin America have insufficient laboratories and poor access to advanced technology, according which makes most of their AI research unfeasible. It can be evidenced by the fact that only a small number of articles have been published in the internationally-recognized high-impact journals, which lowers the international presence of Latin American researchers in the field of AI (Quintero et al., 2026).

Another issue that seems to impact AI research seems to be funding, even though certain countries start investing in AI projects, these sums are minute compared to those of more developed nations. This underinvestment does not only hold back the development of innovative projects, but also deprives schools of the possibility to educate qualified professionals (Retamozo, 2024). The lack of resources to finance technological training programs and AI means that the training will be scarce, and it is a significant obstacle to implementing effective solutions in the labor market.

The use of international cooperation is a more viable approach to these problems. The collaboration of the universities and research institutions in different countries offers the possibility to share knowledge, develop research partnerships, based on cooperation. One such area is the collaborations between Latin America and Europe; several successful joint ventures have been conducted between the two regions that have been bearing quality research and articles published in the top international journals (Barredo et al., 2021).

Thus, there is a need to advance societal policies that would facilitate research and development in AI. It indicated that governments in the region ought to establish an environment that encourages investment in technology or innovation. This goes beyond direct funding to the extent that taxes are given to companies that invest in research and development. With good public policy, it is possible to create a more favorable environment where AI ecosystem will thrive in Latin America (Arteaga et al., 2025). To believe that skills shortages in the region can be addressed by introducing technology and university-level courses in AI (Lugo & Barrera Rojas, 2024). Despite the vast opportunities that Latin America has in regards to the use of AI, the region needs to address the existing challenges, in case it is to maximize on the opportunities presented by the technology. Elements that can enhance the local development of a more robust and sustainable AI ecosystem include investment in infrastructure, international collaboration, developing positive public policies, and offering talent training.

The qualitative analysis demonstrated the perception that the most prevalent research topics in artificial intelligence in Latin America machine learning and natural language processing resonates with what was found in the prior qualitative research and reports. To illustrate, in his turn, confirms this point in the context of how it are applied to local issues; he stresses that when regional issues like translating local languages or modeling environmental phenomena are in question, this type of tools can be particularly useful (Ccahua, 2025). These findings are confirmed and extended in the current study as it indicates that, despite the similarity of the topics with local needs, the research designs tend to be technical thus, do not provide much space to social ethics or education.

Furthermore, as reported, the methodologies in this report used uncontrolled experiments and cross-sectional studies 16]. However, the data from this study reveal a weak presence of interdisciplinary approaches, a feature considered by the literature to be essential for further development in AI for emerging contexts.

The qualitative results of the research prove the existence of the inter-institutional cooperation networks rising, a fact that had been previously through a mixed method study (Verástegui Gutiérrez & Rodríguez Ahuanari, 2024).

Nevertheless, here it is underscored that as much as this form of cooperation has the potential of delivering material benefits like access to facilities and technology, it may also lead to a reliance on external resources especially where it is not supplemented with a sound national policy on scientific and technological planning and development.

Overall, the future of AI studies in Latin America is dynamic and holds potential. Nevertheless, it has shortcomings of poor interdisciplinarity and unequal capabilities of the region and it should also enhance the scientific independence of the national state. The following observations in this paper, along with the conclusions of the past studies, indicate that, in order to create a sustainable AI environment, there is a need not only to learn technical skills but also to contrast and adjust both local and socially responsible approaches.

Practical Implications

The study results offer a very important framework that can be used to formulate policies and strategies in sectors like education, scientific research and technical innovation which must also be included in future programs of the Inter-American Journal. The fact that this scientific productivity on artificial intelligence has continued to increase, is due to the fact that individuals have learnt the value of training young scientists to be involved in major fields like learning how machines learn and natural language processing. Academia, industry and government should work together to further build the AI research ecosystem in Latin America. Facilitating the creation of AI research centers and promoting public-private partnerships, Latin American nations can become more innovative and make AI technologies more region-specific. The collaboration between countries is still growing, and in case the growth persists, there is a likelihood that the research networks may experience further growth, not only in the sense that countries benefit when it cooperate internationally in terms of knowledge, but technology transfer and availability of high level resources as well. These movements would enhance the quality of scientific output as well as enable the adoption of AI-based applications with real social and economic effects.

Moreover, the integration of AI in the learning process and the creation of training programs for professionals are key strategies for addressing the talent shortage in the field. Together with the government, universities should create AI-focused initiatives that would give young scientists and professionals the competencies required to be innovators. With the help of improved AI awareness across all levels, from elementary schools to colleges, a skilled workforce would be formed, which would be capable of implementing AI innovations in various fields. Such a strategy will not only improve the AI environment but will also prepare future generations for an AI world.

Limitations

This work is a survey of the state of scientific production in AI in Latin America, but it is essential to note that the study has some limitations, which were associated with the design and scope of the study. First, the analysis focused only on publications indexed in certain databases. This may exclude relevant contributions not registered on these platforms, especially those in regional or restricted-access journals.

The ways in which the data are analyzed make it difficult to explore other aspects in a substantive way, such as the quality of the research, the real impact of the resulting applications, or any socioeconomic context that this research may have had to overcome.

Finally, AI is a dynamic field. This means that the data analyzed in our current overview will change shortly. Therefore, all results may take on a different light at any time with rapid technological advances and changes in research policies.

Conclusions

This paper has examined the current state of AI research in Latin America, including the increasing scientific output and the areas of interest including machine learning, natural language processing, and AI in sustainable development. In the last 10 years, AI publications in Brazil, Mexico, and Argentina have grown in number by around 150% and these nations are leading in the region in terms of AI research. his growth reveals increasing realization of the potential impact of AI when tackling regional problems. However, despite these achievements, many difficulties still remain including poor infrastructure, shortage of financial resources and AI expertise. Over 60% of businesses in Latin America reported to have difficulty finding skilled people, hindering implementation of AI. All of these findings show that it is important to overcome these issues by means of interdisciplinary and cross-regional cooperation. Funding, AI infrastructure development policies, and raising awareness of AI are crucial for creating a sustainable environment for AI in Latin America. Successful collaboration projects show the benefits of knowledge sharing; developing an AI plan can align Latin America with global AI strategies and SDGs. Future research projects to be undertaken should focus on longitudinal studies analyzing the effects of AI policies in industry and education in Latin America.

Furthermore, examining the potential of AI technology in addressing social, environmental, and health issues within the community would offer a good perspective on the application of AI to help shape the region. The inclusion of AI learning in the country's curriculum and the development of an AI center for innovation should be part of the future strategy for the region to ensure that there is no gap in talent among both groups and prepare the next generation of AI experts.

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