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Technological Entrepreneurship and Territorial Development: Evidence from Urban Ecosystems in Latin America

Emprendimiento tecnológico y desarrollo territorial: Evidencias desde ecosistemas urbanos en América Latina

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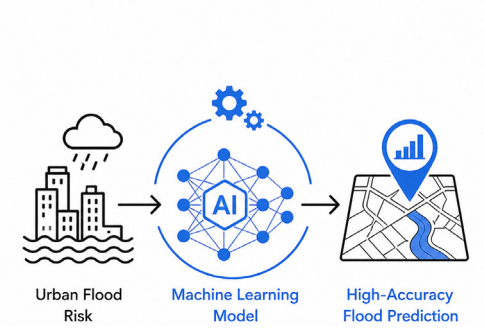
HIGHLIGHTS

- This paper analyzes the impact of technological entrepreneurship on territorial development in five Latin American countries: Mexico, Peru, Chile, Argentina, and Brazil.
- The study identifies how institutional collaboration and innovation hubs foster inclusive urban ecosystems.
- Comparative case analysis reveals successful strategies in public-private-academic partnerships that promote local development

GRAPHICAL ABSTRACT



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ABSTRACT

Technological entrepreneurship has been increasingly recognized as a key driver of territorial development in urban ecosystems; however, there is limited empirical evidence explaining how institutional, financial, and governance conditions shape its effectiveness across heterogeneous contexts in emerging economies. This study analyzes the impact of technological entrepreneurship on territorial development in ten cities across Argentina, Chile, Peru, Uruguay, and Ecuador using a quantitative descriptive-correlational design. A structured survey was administered to 450 ecosystem stakeholders, complemented by a systematic analysis of local policies and institutional strategies. The results reveal significant cross-city heterogeneity, identifying technological infrastructure (M = 3.42), interinstitutional collaboration (M = 3.67), and territorially adapted public policies as key enabling factors, while persistent constraints were observed in access to financing (M = 2.87) and policy continuity. The findings demonstrate that collaborative networks and governance structures play a decisive role in translating entrepreneurial activity into measurable territorial outcomes. Based on this evidence, the study proposes a territorial innovation framework that integrates entrepreneurship, governance, and policy alignment. This research contributes empirical insights into the systemic conditions required to leverage technological entrepreneurship as a catalyst for inclusive and sustainable urban development in Latin America.

Palabras clave:

Emprendimiento, Tecnológico, Desarrollo territorial, Ecosistemas urbanos, Políticas de innovación, Gobernanza

RESUMEN

El emprendimiento tecnológico ha sido reconocido como un motor clave del desarrollo territorial en ecosistemas urbanos; sin embargo, existe limitada evidencia empírica que explique cómo las condiciones institucionales, financieras y de gobernanza determinan su efectividad en contextos heterogéneos de economías emergentes. Este estudio analiza la incidencia del emprendimiento tecnológico en el desarrollo territorial en diez ciudades de Argentina, Chile, Perú, Uruguay y Ecuador mediante un diseño cuantitativo descriptivo-correlacional. Se aplicó una encuesta estructurada a 450 actores del ecosistema, complementada con un análisis sistemático de políticas públicas y estrategias institucionales. Los resultados evidencian una alta heterogeneidad entre ciudades, identificando como factores habilitadores clave la infraestructura tecnológica (M = 3.42), la articulación interinstitucional (M = 3.67) y las políticas públicas adaptadas al territorio, mientras que se observan limitaciones persistentes en el acceso al financiamiento (M = 2.87) y la continuidad de las políticas. Los hallazgos demuestran que las redes colaborativas y las estructuras de gobernanza son determinantes para traducir la actividad emprendedora en resultados territoriales medibles. A partir de esta evidencia, se propone un marco de innovación territorial que integra emprendimiento, gobernanza y alineación de políticas. Este estudio aporta evidencia empírica sobre las condiciones sistémicas necesarias para potenciar el emprendimiento tecnológico como catalizador del desarrollo urbano inclusivo y sostenible en América Latina.

1. Introduction

Latin America faces structural challenges related to uneven development, urban centralization, and limited innovation capacity. Within this context, technological entrepreneurship has gained relevance as a strategy to reconfigure urban economies, strengthen productive systems, and promote social inclusion. This study seeks to understand how urban ecosystems in countries such as Mexico, Peru, Chile, Argentina, and Brazil are implementing models of technological entrepreneurship oriented toward sustainable territorial developmentLatin America faces structural challenges related to uneven development, urban centralization, and limited innovation capacity. Within this context, technological entrepreneurship has gained relevance as a strategy to reconfigure urban economies, strengthen productive systems,

and promote social inclusion. Recent studies (2023–2025) reinforce this perspective by demonstrating that innovation ecosystems and digital entrepreneurship play a critical role in driving regional development and reducing territorial inequalities in emerging economies (Kraus et al. 2023; Nambisan et al. 2023; Zhao et al. (2023).

The emergence of technological entrepreneurship as a vector for territorial transformation constitutes one of the most significant phenomena in contemporary studies of urban development in Latin America. Recent research highlights that digital entrepreneurship and innovation-driven ecosystems are reshaping economic structures and enabling new forms of territorial competitiveness in emerging regions (George et al. 2023; Li, et al. (2023; Acs 2014; Cooke 1997).

Rather than conforming to a homogeneous pattern, the configuration of technological ecosystems in the region reveals diverse trajectories marked by asymmetries in digital infrastructure, access to funding, inter-institutional governance quality, and the presence of territorially oriented public policies. While some capital cities have succeeded in consolidating innovation platforms focused on inclusive growth, many intermediate or peripheral cities exhibit weak coordination among key actors and limited capacity to translate entrepreneurial initiatives into sustainable economic impacts (Etzkowitz & Leydesdorff, L. 2000; Morisson, A., & Doussineau, M. 2019).

In this regard, technological entrepreneurship should not be understood as an autonomous category, but as a phenomenon deeply embedded in the structural conditions of the territories in which it emerges. The role of local policies, institutional density, and multiactor collaboration networks becomes analytically central, calling into question conventional metrics of urban competitiveness in favor of approaches that highlight the interdependence of innovation, governance, and equity (Rodríguez-Pose, A., & Wilkie, C. 2017; Feldman, M. P., & Lowe, N. 2018).

This article aims to analyze the influence of technological entrepreneurship on territorial development in ten Latin American cities located in Argentina, Chile, Peru, Uruguay, and Ecuador. Through a descriptive-correlational quantitative methodology, the perceptions of 450 strategic actors linked to urban innovation ecosystems are collected and analyzed, complemented by a documentary review of public policies, development plans, and institutional entrepreneurship promotion programs.

The research seeks to identify the enabling and limiting factors that shape the capacity of urban ecosystems to mobilize technological entrepreneurship as a tool for territorial transformation. In doing so, it contributes to the formulation of differentiated, evidence-based policies that strengthen the ties between innovation and territory under conditions of equity and sustainability.

2. Theoretical Framework

2.1. Technological Entrepreneurship and Territorial Development in Latin America

Technological entrepreneurship has been identified as a key driver of territorial development in Latin America, particularly in urban settings. Recent studies reinforce this perspective by demonstrating that digital transformation and innovation ecosystems significantly contribute to regional economic growth, resilience, and competitiveness in emerging markets (Kraus et al. 2023; Linnenluecke 2023). For instance, Acs et al. (2014) emphasize the role of public policy in fostering innovative entrepreneurship, while Fernández-Bedoya (2025) analyze the strategies adopted by tourism entrepreneurs during the COVID-19 crisis. These contributions highlight the necessity of a favorable institutional environment and robust collaboration networks to support technological entrepreneurship.

Additionally, research by García et al. (2010) and Audretsch (1995) underscores the critical role of small and medium-sized enterprises (SMEs) in job creation and local economic dynamization. These authors argue that SMEs, being deeply embedded in their communities, are better positioned to respond to local needs and to stimulate territorial development.

Moreover, studies by Acs, Z. J. & Autio, E. (2013) and Reynolds (2005) have developed indexes and models to measure the economic impact of entrepreneurship, offering valuable tools for the design of public policies. These models help identify the strengths and weaknesses of entrepreneurial ecosystems in different regions, thus facilitating more targeted and effective interventions.

Finally, recent investigations have explored the role of emerging technologies—such as artificial intelligence and

digitalization—in transforming entrepreneurial ecosystems. Recent contributions emphasize that advanced digital technologies expand entrepreneurial opportunities and accelerate territorial development when supported by inclusive policies and investments in human capital (Dwivedi, et al. 2023; Davenport et al. 2023).

Table 1. Systematization of Theoretical Sources on Technological Entrepreneurship and Territorial Development

Author (Year)	Key Elements	Critical Analysis	Emerging Category
Acs et al. (2014)	Public policy and innovative entrepreneurship	Stresses the role of institutional frameworks in supporting innovation	Public policy for entrepreneurship
Fernández-Bedoya et al. (2025)	Resilience and adaptive strategies of entrepreneurs during crises	Highlights context-specific responses and the importance of agility	Entrepreneurial resilience
García et al. (2010) / OECD. (2021)	SMEs as engines of employment and local economic development	Emphasizes SMEs' integration into local ecosystems	Local development via SMEs
Audretsch,et al. (1995)	Link between innovation and regional economic growth	Explores mechanisms through which innovation drives development	Innovation-led growth
Acs & Autio (2014)	Entrepreneurship indexes to assess regional development	Provides empirical tools for assessing entrepreneurial performance	Measurement of entrepreneurial impact
Reynolds et al. (2005)	Models for business creation and entrepreneurial ecosystems	Supports policy planning through entrepreneurial process modeling	Entrepreneurial ecosystem modeling

Source: Own elaboration, 2024

The table above synthesizes key theoretical contributions regarding urban innovation ecosystems and their role in territorial development across Latin America. A convergence in the literature is evident regarding the importance of interinstitutional collaboration and territorial governance in the design and functioning of innovation ecosystems. Particularly, the Triple Helix model provides a valuable conceptual framework for analyzing the interaction between academia, industry, and government in fostering systemic innovation.

These studies underscore the relevance of localized governance mechanisms, institutional density, and strategic alignment in activating endogenous development processes. Moreover, they highlight the role of territorial policies and contextual adaptation in shaping innovative capacity within cities.

Innovation ecosystems are thus not spontaneous phenomena, but rather structures that require deliberate design, public investment, and multilevel coordination. Their effectiveness is contingent upon the ability of local actors to co-create solutions, share resources, and sustain long-term partnerships.

The literature reviewed in this section affirms that urban innovation ecosystems can function as transformative infrastructures for regional development, as long as they are embedded within inclusive and strategically governed territorial frameworks.

2.2. Urban Innovation Ecosystems in Latin America

Urban innovation ecosystems in Latin America have emerged as dynamic environments in which a diverse array of actors interact to foster innovation and economic development. These ecosystems are characterized by collaboration among universities, businesses, government entities, and civil society, thereby facilitating knowledge transfer and the generation of shared value.

Territorial development is conceived as a process driven by local capacities, depending on the region's ability to

generate collaborative dynamics, activate endogenous resources, and design institutional frameworks that promote innovation (Alburquerque, F. 2019).

Within the Latin American context, foundational studies such as those by Etzkowitz, H., & Leydesdorff, L. (2000) have been instrumental in understanding the dynamics of the Triple Helix model in promoting innovation. Furthermore, more recent research has examined the influence of public policy and territorial governance in the consolidation of these ecosystems.

Table 2. Theoretical Sources On Urban Innovation Ecosystems

Author (Year)	Key Elements	Critical Analysis	Emerging Category
Etzkowitz & Leydesdorff (2000)	Triple Helix model of university-industry-government interaction	Conceptualizes innovation ecosystems as collaborative structures involving multiple stakeholders	Interinstitutional collaboration
Feldman & Lowe (2018) / Etzkowitz, H., & Leydesdorff, L. (2000)	Place-based innovation policy and collective action	Emphasizes the role of local context and joint action in shaping innovation outcomes	Local governance of innovation
Morisson & Doussineau (2019)	Territorial governance in regional innovation strategies	Explores the institutional conditions necessary for regional innovation systems	Territorial policy frameworks
Acs et al. (2014) / cs, Z. J., & Autio, E. (2013)	Institutional context shaping entrepreneurial innovation	Links institutional quality to entrepreneurial performance and ecosystem resilience	Institutional enablers of entrepreneurship
Audretsch & Thurik (2001)	Innovation-driven growth in entrepreneurial economies	Illustrates systemic shifts from managed economies to innovation-led entrepreneurship	Innovation-led regional growth

Source: Own elaboration, 2024

The table above summarizes the main theoretical contributions regarding urban innovation ecosystems in Latin America. The literature reveals a clear convergence around the importance of interinstitutional collaboration, local governance, and regional innovation policies. These elements are essential for the consolidation of innovation ecosystems that drive economic and territorial development.

The literature review confirms that urban innovation ecosystems in Latin America require effective collaboration among diverse actors, strong local governance, and territorially adapted innovation policies. These factors are decisive for the success of innovation ecosystems and their contribution to territorial development.

2.3. Public Policy and Territorial Governance for Innovation

Public policy and territorial governance play a critical role in fostering innovation and regional development (Lundvall, (1992). In Latin America, numerous studies have analyzed how governmental policies and governance structures influence the capacity of territories to innovate and evolve.

Urban innovation ecosystems encompass a variety of stakeholders who interact to create new products, services, and technological solutions. Their effectiveness is mediated by social capital, trust-based networks, and digital infrastructure (Etzkowitz, H., & Leydesdorff, L. 2000).

Studies such as those by Rodríguez-Pose, A., & Wilkie, C. (2017) have examined the relationship between regional policy frameworks and innovation, emphasizing the importance of place-based approaches in policymaking. Additionally, recent research has investigated how multilevel governance and civic participation can enhance the innovation capacity of local territories.

Table 3: Theoretical Sources on Public Policy and Territorial Governance for Innovation,

Author (Year)	Key Elements	Critical Analysis	Emerging Category
Rodríguez-Pose, A., & Wilkie, C. (2017) / Alburquerque, F. (2019)	Territorial policy approaches for regional innovation	Highlights the need for locally adapted, place-based innovation strategies	Territorial policy frameworks
Borrás, S., & Edquist, C. (2013)	Selection and coordination of innovation policy instruments	Provides a framework for analyzing the effectiveness of innovation policy tools	Policy instrument design
Chaminade, C., & Edquist, C. (2006)	Innovation policy design in developing countries	Identifies the barriers and opportunities for innovation in developing economies	Innovation in developing contexts
Lundvall, B. Å. (1992)	National innovation systems and interactive learning	Introduces systemic thinking in innovation policy formulation	National systems of innovation
Cooke et al. (1997)	Regional innovation systems and governance structures	Explores how regional governance affects innovation capacity and outcomes	Regional innovation governance

Source: Own elaboration, 2024

The table above presents a synthesis of the main theoretical contributions on public policy and territorial governance for innovation. It highlights the importance of adapting innovation policies to the specific characteristics of each territory, as well as the need for regional governance that facilitates coordination among actors and levels of government. These elements are essential for the effective design and implementation of innovation policies in Latin America, particularly in terms of the selection and articulation of policy instruments aligned with territorial needs (Borrás & Edquist 2013).

The reviewed literature emphasizes that public policies and territorial governance must be aligned with the distinct features and needs of each territory in order to foster innovation and development. Effective regional governance and territorially adapted policies are critical to strengthening the innovation capacity of territories across Latin America.

3. Methodology

3.1. Methodological Approach and Research Design

This study was developed under a quantitative approach, employing a descriptive-correlational design with a non-experimental, cross-sectional structure. The aim was to analyze the perceptions of key stakeholders within urban ecosystems regarding the influence of technological entrepreneurship on territorial development in five Latin American countries: Argentina, Chile, Peru, Uruguay, and Ecuador.

The objective was to identify the dynamics between variables related to technological entrepreneurship (digital infrastructure, collaboration networks, public policies, financing, human capital) and their perceived impact on territorial development indicators (innovation, social inclusion, economic dynamism, talent retention, and local governance).

3.2. Study Components

The study was structured into two components:

Component 1: Structured survey of ecosystem actors: A five-point Likert scale survey (1 = strongly disagree, 5 = strongly agree) was administered to a purposive sample of 450 participants, proportionally distributed across the five countries. The sample consisted of:

- Technological entrepreneurs

- Officials from local innovation agencies
- Academics affiliated with university incubators
- Leaders of technology hubs and business chambers

The survey included 24 items grouped into five dimensions:

Dimension	Sample Evaluation Items
Technological Infrastructure	"My city has adequate physical and digital spaces to develop technology-based ventures."
Institutional Support	"There are effective government programs for tech entrepreneurs."
Collaboration Networks	"Universities, businesses, and governments actively collaborate in entrepreneurial efforts."
Financing and Sustainability	"It is feasible to access seed capital or investment funds in my ecosystem."
Territorial Impact of Entrepreneurship	"Entrepreneurship has boosted local employment and the economy."

The survey was validated by a panel of experts and administered virtually between January and March 2025, ensuring informed consent and data confidentiality.

Component 2: Analysis of local policies and strategic documents Primary data collection was complemented by an analysis of strategic documents, local economic development plans, and existing technological innovation programs in the ten cities analyzed (two per country). The aim was to triangulate the actors' perceptions with the available institutional information. Documents analyzed included:

- Municipal or metropolitan development plans (2020–2025)
- National or local government innovation programs
- Management reports from technology hubs or clusters

The data was organized into categorical matrices to identify alignments or contradictions with the survey findings. The selected cities were:

- Argentina: Buenos Aires and Córdoba
- Chile: Santiago and Valparaíso
- Peru: Lima and Arequipa
- Uruguay: Montevideo and Salto
- Ecuador: Quito and Cuenca

3.3. Analytical Techniques: Quantitative data was processed using descriptive and inferential statistical analysis with SPSS v.28. The following were calculated:

- Means and standard deviations per dimension
- Pearson correlation analysis among dimensions
- ANOVA by country and actor type

- Internal consistency test for each dimension (Cronbach's alpha ≥ 0.80)

Significant associations were determined at a 95% confidence level ($p \leq 0.05$), aiming to identify relationships between enabling factors of technological entrepreneurship and its perceived impact on territorial development.

4. Results

4.1 Survey Results from Ecosystem Actors

This section presents the findings derived from the administration of a structured survey to 450 participants representing key actors in the technological entrepreneurship ecosystem across ten cities in Argentina, Chile, Peru, Uruguay, and Ecuador. The analysis is organized into five key dimensions:

Technological Infrastructure:

Participants expressed a moderately positive perception regarding the technological infrastructure in their cities. 57% of respondents agreed that there are adequate physical and digital spaces to support technology-based ventures. Among the cities surveyed, Montevideo and Santiago reported the highest levels of agreement, while Salto and Arequipa registered the lowest ratings: Overall mean: 3.42; Standard deviation: 0.89; Cronbach's alpha (reliability): 0.84.

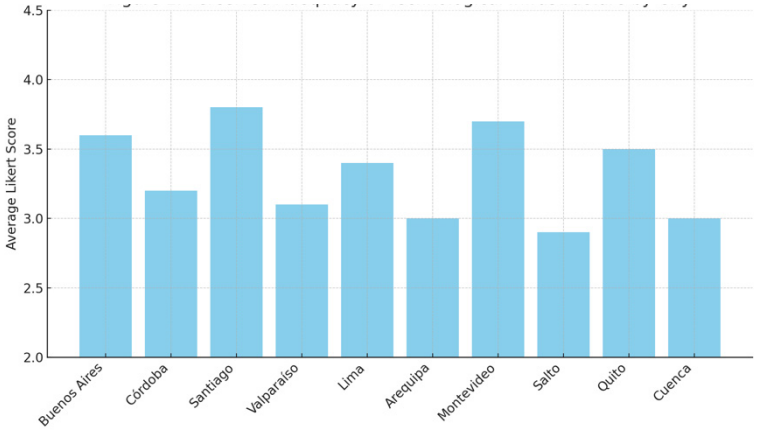

Figure 1. Level of Agreement on the Availability of Adequate Infrastructure for Technological Entrepreneurship
Source: Own elaboration, 2025

These results reveal significant disparities in the availability and quality of technological infrastructure between capital and secondary cities. More consolidated ecosystems tend to offer coworking spaces, high-speed internet connectivity, and university-based incubators—conditions that significantly enhance the feasibility and scalability of technological entrepreneurship.

Institutional Support: Only 38% of respondents expressed a high level of agreement regarding the effectiveness of public programs supporting technological entrepreneurship. The highest ratings were reported in Buenos Aires and Quito, while Córdoba and Valparaíso showed more critical assessments. Overall mean: 3.11; Standard deviation: 1.03; Cronbach's alpha: 0.81

Table 5. Average Perception of Public Support Programs by Country

Country	Main City	Average Perception Score
Argentina	Buenos Aires	3.45
Chile	Santiago	3.26
Peru	Lima	3.04
Uruguay	Montevideo	2.95
Ecuador	Quito	3.38

Source: Own elaboration, 2024

he perception of institutional support reflects the fragmentation of public policy frameworks, with programs that still lack continuity, territorial coordination, and long-term technical assistance. While economic incentives are generally viewed positively by stakeholders, there is a strong demand for streamlined administrative processes and targeted support during the early stages of entrepreneurial development.

Collaboration Networks: This dimension received the highest scores in the study. Over 65% of respondents indicated that their cities foster collaborative spaces among universities, government institutions, and businesses. Santiago, Buenos Aires, and Lima were identified as having the most robust levels of interinstitutional coordination. Overall mean: 3.67; Standard deviation: 0.76; Cronbach's alpha: 0.86

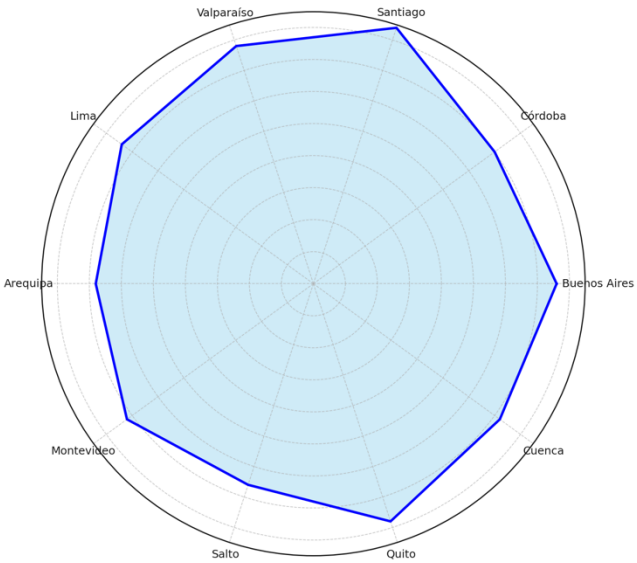

Figure 2. Level of Interinstitutional Collaboration in Public-Private Networks
Source: Own elaboration, 2025

The evidence indicates that the existence of collaboration networks is a key enabling factor within the ecosystem. These networks strengthen processes such as co-creation, startup acceleration, and access to shared infrastructure. However, their sustainability largely depends on institutional leadership and political continuity.

Financing and Sustainability: Only 29% of participants stated that there are accessible sources of seed capital or investment funds. The cities of Montevideo, Cuenca, and Salto recorded the lowest levels of agreement. Overall mean: 2.87; Standard deviation: 1.08; Cronbach's alpha: 0.80

Table 6: Perceived Access to Financing for Technological Entrepreneurship

City	Average Likert Score
Santiago	3.41
Lima	3.07
Quito	2.93
Montevideo	2.48
Cuenca	2.36

Source: Own elaboration, 2024

Access to financing continues to represent a structural barrier to technological entrepreneurship in the region. Dependence on limited public funding and the absence of robust private capital networks hinder the ability of startups to scale beyond their early stages.

Territorial Impact of Entrepreneurship: A total of 53% of surveyed actors believe that technological entrepreneurship has had a positive impact on economic dynamism, youth employment, and the transformation of local productive sectors. Quito, Buenos Aires, and Valparaíso received the highest scores for this item. Overall mean: 3.29; Standard deviation: 0.91; Cronbach's alpha: 0.83

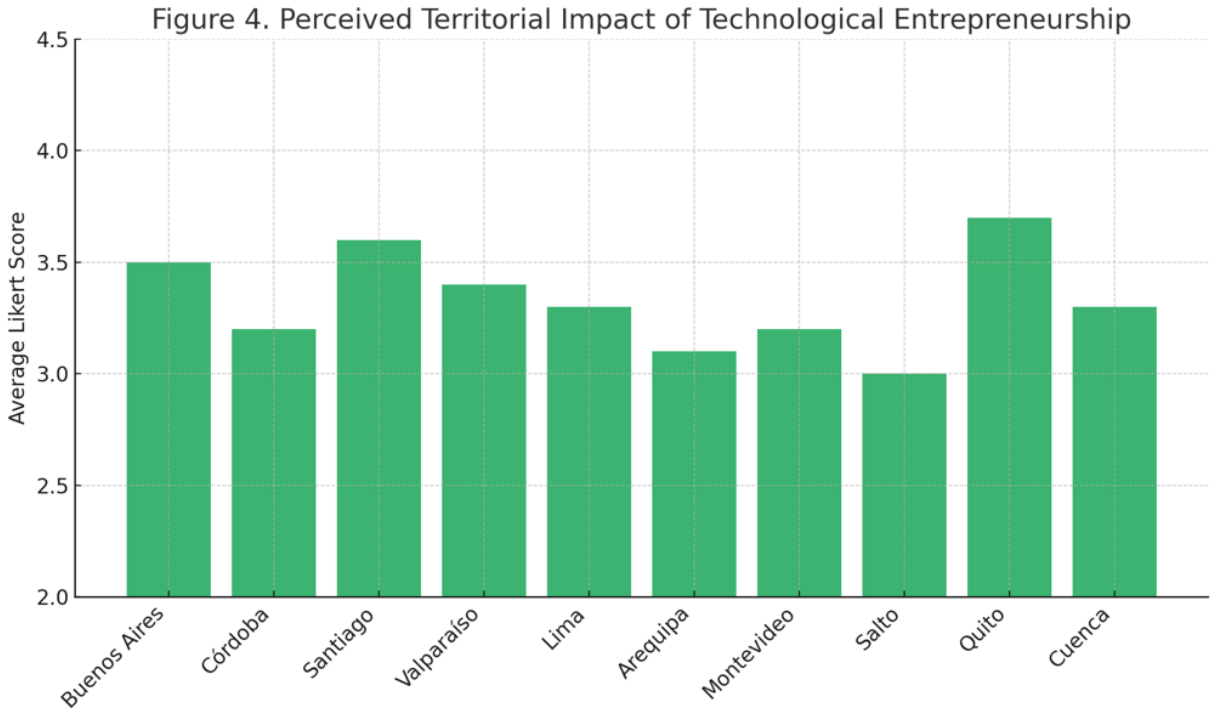

Figure 3: Perceived Territorial Impact of Technological Entrepreneurship,
Source: Own elaboration, 2024

Although the effects of technological entrepreneurship are still incipient, there is a positive perception of its transformative potential in the medium term. Cities with greater institutional maturity display a more evident connection between entrepreneurship and social, economic, and educational impact.

The survey results indicate that, while significant progress has been made in consolidating urban ecosystems for technological entrepreneurship, substantial challenges remain in the areas of infrastructure, financing, and policy continuity. Collaboration networks emerge as the most valuable asset of the analyzed territories, whereas access to capital and the formulation of comprehensive strategies continue to be critical points for enhancing the territorial impact of entrepreneurship in Latin America.

4.2 Results of the Document Analysis of Local Policies and Institutional Strategies

This component complemented the perception analysis with a systematic review of public documents and institutional strategies available between 2020 and 2025 across the ten selected cities. The review focused on local development plans, innovation programs, public policies specifically targeting technological entrepreneurship, and management reports from innovation hubs or clusters.

Institutional Mechanisms for Innovation: It was found that 8 out of the 10 cities have at least one strategic document containing explicit action lines to promote technological entrepreneurship. However, only 5 of them integrate these initiatives with actors from the academic and private sectors through a collaborative governance model.

Table 7. Institutional Mechanisms For Innovation

City	Strategic Document	Level of Intersectoral Coordination
Buenos Aires	Economic Development Plan 2030	High
Córdoba	Innovative Córdoba Agenda	Medium
Santiago	Santiago Futuro 2025 Plan	High
Valparaíso	Regional Innovation Policy 2020–2028	Medium
Lima	Lima Innova Strategy	High
Arequipa	Competitiveness and Innovation Agenda 2022	Low
Montevideo	National Plan for Productive Transformation	Medium
Salto	Departmental Innovation Program	Low
Quito	Quito Tech City Strategy 2025	High
Cuenca	Local Development Agenda 2023	Low

Source: Own elaboration, 2024

Cities that exhibit greater maturity in terms of innovation policies share three key characteristics:

- Strategic planning frameworks that include measurable impact indicators.
- Active participation of universities and R&D centers.
- Institutionalized governance mechanisms (e.g., innovation councils, sectoral roundtables).

In contrast, cities with lower levels of intersectoral coordination tend to have fragmented programs, limited administrative continuity, and weak connections with existing entrepreneurial ecosystems.

Financing Policies and Incentives: Only three cities—Buenos Aires, Santiago, and Quito—have specific fiscal incentives or public financing policies tailored for technology-based ventures. In the remaining cities, support mechanisms primarily stem from national-level programs or multilateral funds, with limited adaptation to local needs.

Table 8. Types Of Economic Support Instruments Identified

Type of Instrument	Cities Implementing the Instrument	Main Characteristics
Tax incentives	Buenos Aires, Santiago	Tax deductions, reduced corporate rates
Municipal competitive funds	Lima, Quito	Non-reimbursable funds with impact and scalability criteria
Co-financing programs	Córdoba, Montevideo	Public-private matching funds for tech startups
Soft loans and microcredits	Salto, Cuenca	Credit lines aimed at specific sectors with low interest rates

Source: Own elaboration, 2024

Financing continues to be a bottleneck, even in cities with relatively advanced support structures. Most financial instruments fail to cover the entire entrepreneurial cycle and are constrained by bureaucratic requirements or short implementation timelines. Notable practices observed in Santiago and Buenos Aires include tax incentives integrated into results-based evaluation systems.

Institutional Best Practices: Five replicable institutional practices were identified:

1. StartUp Santiago (Chile): A municipal incubation platform that provides funding, legal advice, and investor connections.
2. BA Emprende (Argentina): A comprehensive program linking the entrepreneurial ecosystem with the district's productive needs.
3. Lima Innova (Peru): A network of applied innovation nodes focused on sectors such as health, mobility, and the circular economy.
4. Quito Tech City (Ecuador): A multi-actor strategy positioning the city as a technological hub for the Andean region.
5. Open Innovation Montevideo (Uruguay): A collaborative platform aimed at solving urban challenges through entrepreneurship.

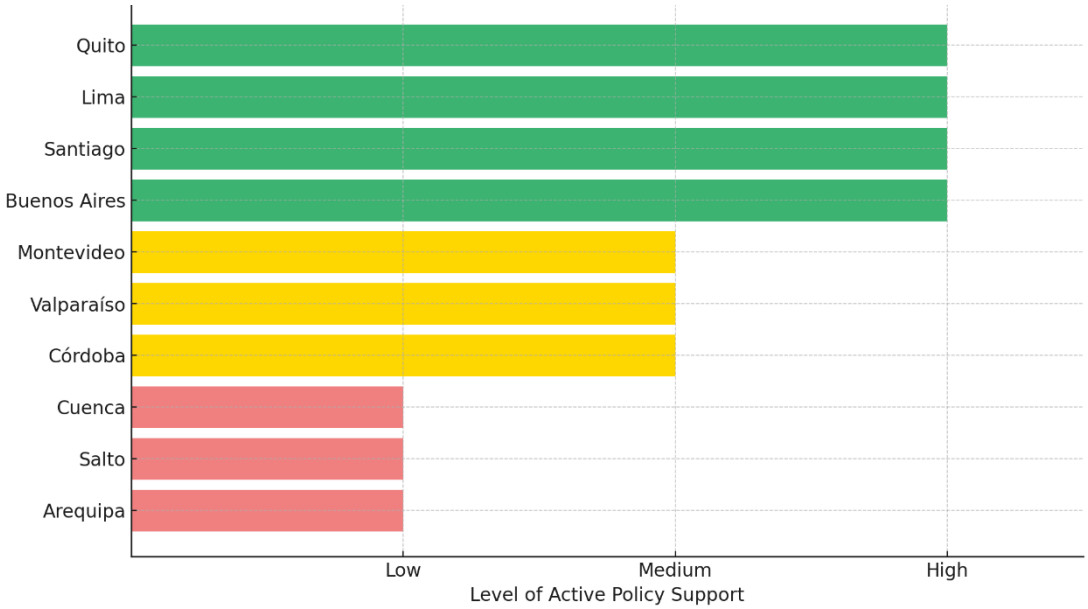

Figure 5. Levels Of Active Policy Support By City
Source: Own elaboration, 2024

The document analysis confirms that the presence and quality of local policies aimed at promoting technological entrepreneurship vary significantly across the cities studied. Cities that integrate innovation strategies with fiscal policies, participatory governance, and intersectoral collaboration present more favorable conditions for leveraging entrepreneurship as a driver of territorial development. The existing gaps call for greater institutionalization of policies and sustained strategic planning over time.

5. Discussion

The findings of this study reveal a heterogeneous landscape regarding technological entrepreneurship and its connection to territorial development in Latin America. These results align with recent studies that emphasize the role of innovation ecosystems, digital transformation, and institutional capacity as key drivers of territorial development in emerging economies (Kraus et al. 2023; George et al. 2023; OECD. 2021). The quantitative and documentary data analyzed from ten cities across five countries (Argentina, Chile, Peru, Uruguay, and Ecuador) highlight both significant progress and structural challenges.

Gaps and convergences in infrastructure and financing: Survey data indicate a moderate perception of available technological infrastructure (M = 3.42) and a low level of satisfaction with financing conditions (M = 2.87). This gap is consistent with the documentary analysis, which shows that only three cities—Buenos Aires, Santiago, and Quito—

implement fiscal instruments or municipal funds to directly support entrepreneurship.

The correlation between cities with adequate infrastructure and the presence of active policies suggests that ecosystem development depends not only on technological investment but also on the presence of supportive political and economic environments. In cities like Santiago and Buenos Aires, where both elements coexist, there is a higher perceived impact of entrepreneurship on territorial development.

Interinstitutional collaboration as a competitive advantage: One of the most consistent findings lies in the collaboration networks dimension, which recorded the highest mean among all categories (M = 3.67). This reinforces the literature emphasizing the strategic value of governance based on the triple helix model of university–industry–government relations (Etzkowitz & Leydesdorff (2000).

The document analysis confirmed that cities with institutional structures promoting ongoing dialogue between sectors—such as Santiago, Quito, and Lima—have succeeded in sustaining effective collaborative networks, even under high uncertainty. In contrast, cities like Salto, Cuenca, and Arequipa exhibit weak institutional integration, directly affecting the perceived impact of entrepreneurship.

Contradictions in public policy design: One of the most notable tensions identified in the study relates to the disconnect between policy formulation and the implementation of concrete territorial strategies. Although many cities have strategic documents referencing innovation, these policies do not always translate into tangible incentives or consider the specific characteristics of the local productive structure.

This is evident in cities such as Valparaíso, Córdoba, and Montevideo, where strategic plans exist but ecosystem actors report moderate or low levels of institutional effectiveness. Lack of administrative continuity, insufficient technical training, and fragmentation across government levels were identified as barriers to the consolidation of comprehensive policy frameworks.

Transformative potential of technological entrepreneurship for territorial development: Despite the challenges, more than half of the respondents (53%) perceive that technological entrepreneurship has had positive territorial impacts, particularly in youth employment, talent attraction, and productive transformation. These results suggest that entrepreneurship can function as a vector of social transformation—even in constrained contexts—when accompanied by appropriate policies.

The cases of Quito and Valparaíso are paradigmatic: despite having relatively new structures, both cities have positioned themselves as benchmarks in smart city and technological sustainability initiatives through the adoption of open innovation strategies and sectoral funding mechanisms.

The findings show that while technological entrepreneurship is a viable lever for territorial development, it requires institutional, economic, and social conditions that are not evenly distributed across the cities studied. Technological infrastructure and financing are key factors, but it is interinstitutional articulation and the existence of consistent public policies that distinguish emerging ecosystems from consolidated ones. The successful practices identified in the study suggest that strategic planning, collaborative governance, and territorial inclusion are essential axes for enhancing the impact of technological entrepreneurship in Latin America.**Conclusiones y recomendaciones**

Conclusions

The study demonstrates that technological entrepreneurship holds transformative potential for territorial development in urban contexts across Latin America. However, this potential does not materialize uniformly. Based on quantitative and documentary analysis carried out in ten cities across Argentina, Chile, Peru, Uruguay, and Ecuador, several critical factors were identified that determine the maturity and effectiveness of entrepreneurial ecosystems.

First, adequate technological infrastructure is a necessary but insufficient condition. Its impact largely depends on the institutional environment in which it operates. Second, access to financing remains a significant obstacle to the sustainability of ventures, particularly in intermediate cities that lack active incentive policies or consolidated investment networks.

Third, collaboration networks among universities, governments, and businesses emerge as the most consolidated component across the ecosystems analyzed. These networks function as catalytic platforms for innovation, trust-building, and co-creation of solutions. Finally, cities that integrate technological innovation into their strategic plans and practice participatory governance are better able to coordinate local capacities and generate stronger economic and social impacts.

Recommendations

1. Strengthen institutional infrastructure for innovation by creating municipal entrepreneurship offices with a territorial focus, articulated with universities and business chambers.

2. Expand and decentralize financial instruments through public-private co-financing funds, tax incentives, and investment programs with an inclusive focus on women and young entrepreneurs.

3. Consolidate stable mechanisms of interinstitutional governance, such as territorial innovation councils with representation from the academic, public, and private sectors.

4. Design city-specific public policies, tailored to the ecosystem's level of maturity and aligned with the territory's productive vocations.

5. Promote the measurement of entrepreneurial impact through territorial development indicators related to innovation, employment, sustainability, and talent retention.

Credit authorship contribution statement

The author solely conducted all phases of the research. This includes the conceptualization of the study, methodological design, data collection, statistical analysis, interpretation of results, drafting of the manuscript, and final review and editing. The author approves the final version of the article and assumes full responsibility for its content.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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