

Repositioning universities for inclusive innovation in Latin America

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Abstract

This chapter examines the evolving role of universities in Latin America within innovation ecosystems, guided by the central question: Who do universities serve? The analysis combines a review of Technology Transfer Offices (TTOs), patent data from Colombia and Peru, and research group classifications from the Ministry of Science, Technology, and Innovation of Colombia. Results reveal three persistent challenges: dependence on multinational corporations, bureaucratic inefficiencies, and weak engagement with local ecosystems. Patent landscapes in both Colombia and Peru are dominated by foreign corporations, whereas domestic universities and firms remain marginal actors. At the same time, excessive bureaucracy within TTOs erodes timeliness, undermining universities' ability to meet the demands of industry and society. Evidence from research group classifications further shows that enterprises are gaining ground in high-quality knowledge production, while regional asymmetries persist.

Keywords: Technology Transfer Offices (TTOs); innovation ecosystems; knowledge transfer; Latin American research ecosystem.

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1. INTRODUCTION

Universities have historically been instruments of knowledge creation and innovation. Their contributions have transformed societies, from the discovery of penicillin to the development of the internet, and more recently, the foundations of artificial intelligence (AI). Academic institutions have long occupied a privileged position at the frontier of scientific discovery, shaping not only the stock of human knowledge but also the institutions and norms through which innovation emerges (Mowery et al., 2001). This trajectory reflects the core mission of academia: advancing knowledge across disciplines and addressing human challenges.

Yet, this paradigm is undergoing a profound transformation. Over the past decades, firms have increasingly assumed roles once monopolized by universities, emerging as central actors in knowledge generation and technological breakthroughs. The case of AI exemplifies this shift. Although its conceptual and technical foundations were developed within academia, from Turing's (1950) seminal reflections to the Dartmouth Conference of 1956, current advances in generative AI are driven primarily by firms such as Google, OpenAI, and DeepMind (Haenlein & Kaplan, 2019). This transition reflects a broader recognition that sustainable advantage depends on cultivating unique assets, with knowledge being the rarest and most strategic among them (Hamel, 1998). As a result, firms have restructured into knowledge – creating organizations, positioning themselves at the forefront of technological development (Barnard & Merwe, 2016).

This transition does not diminish the relevance of universities but redefines their role within a more complex landscape. Institutions of higher education remain critical to fundamental discovery, talent formation, and fostering spaces of intellectual exchange. However, their central challenge increasingly lies not in producing knowledge but in ensuring its effective transfer into societal and economic value (Agrawal, 2006; Bikard et al., 2019). Weak industry linkages, institutional rigidities, and limited entrepreneurial orientation often constrain this transfer (Sjoo & Hellstrom, 2019).

The evolution from linear technology transfer models to frameworks such as the Triple Helix of university–industry– government collaboration (Etzkowitz & Leydesdorff, 2000) and the Quadruple Helix, which incorporates civil society (Lindberg et al., 2014), illustrates these shifting expectations. Universities are no longer perceived as isolated generators of knowledge but as hubs within broader innovation ecosystems. Their legitimacy increasingly depends on co-producing knowledge with diverse stakeholders, accelerating innovation, and ensuring inclusiveness, particularly in contexts marked by critical social needs.

This reconfiguration is especially relevant in Latin America. The Atlántico Digital Transformation Report (Atlántico, 2023) recognizes that without rapid adaptation, Latin America risks deepening its competitiveness gap in the global knowledge economy. Universities are thus expected to broaden their contributions: aligning research agendas with digital transformation, building stronger ties with industry, and extending the benefits of knowledge to traditionally excluded communities. Within this scenario, we intend to discuss the question: Who do universities serve? especially in the Latin American context.

2. CONTEXT OF THE DESCRIBED RESEARCH

This chapter employs a qualitative and descriptive research design, combining a systematic literature review with secondary data analysis to explore the evolving role of universities in Latin America within the framework of knowledge transfer and innovation ecosystems. The methodological strategy is organized around three interrelated dimensions, each addressing the guiding question of this study: Who do universities serve?

2.1. Literature review on Technology Transfer Offices (TTOs)

The first dimension examines Technology Transfer Offices (TTOs) as institutional mechanisms mediating between academia and industry. A systematic



review of scholarly contributions was conducted to capture theoretical and empirical insights into university–industry collaboration and technology transfer. Emphasis is placed on the organizational structures, functional roles, and limitations of TTOs in Latin American universities. In this regional context, institutional voids, weak intellectual property regimes, and fragmented innovation systems often constrain the effectiveness of knowledge commercialization. This review thus contextualizes the structural and institutional challenges faced by universities in bridging academic research with industrial and societal applications.

2.2. TTOs and local versus global engagement: evidence from Colombia and Peru

The second dimension investigates whether TTOs in Latin America primarily serve multinational corporations or foster local innovation ecosystems. Patent data were retrieved from the Lens database (<https://www.lens.org/>), which provides information on patent applications by country, applicant type, and institutional affiliation. The analysis compares Colombia and Peru, examining the relative prominence of multinational corporations, local firms, and universities in patent activity. Special attention is given to the role of national universities and public research organizations. This comparison highlights the tension between global integration, often led by multinational R&D strategies, and local anchoring, which strengthens the societal legitimacy and developmental contributions of universities.

2.3. Knowledge generation in Colombia

The third dimension focuses on knowledge production and dissemination within the Colombian research ecosystem. Data was obtained from the Ministry of Science, Technology, and Innovation of Colombia (MinCiencias) (<https://minciencias.gov.co/la-ciencia-en-cifras/grupos>), which maintains the official registry of recognized research groups. This dataset enables classification by institutional type (e.g., universities, enterprises, government agencies, civil society associations, research centers, and compensation funds) and provides longitudinal data on their evolution. The analysis considers both the quantitative distribution of research groups and their quality classifications, highlighting structural concentration, institutional diversity, and systemic weaknesses such as limited funding and fragmented collaboration.

3. MAIN RESULTS/REFLECTIONS

3.1. International models of TTOs and liaison offices: lessons for Latin America

Technology Transfer Offices (TTOs) and university–industry liaison units have followed diverse organizational trajectories worldwide, shaped by national policy regimes, market conditions, and institutional missions. In the United States, the Bayh–Dole Act institutionalized the pursuit of intellectual property (IP) protection and licensing revenue within universities, triggering the rapid diffusion of TTOs focused on patenting and out-licensing (Trejo, 2017; Florez &

Table 1. *Main TTO studies in Latin America*

Author(s) & Year	Country(ies) studied	Main findings
Florez & Pineda (2019)	Mexico, Colombia	OTRIs/OTT often act as administrative units rather than strategic intermediaries; lack of incentives for researchers, weak demand orientation, and limited management capacity hinder effectiveness.
Berumen (2019)	Mexico, Spain, United States	Mexico's OTTs expanded through public policy but face heterogeneity and sustainability issues; U.S. offices consolidated due to strong systemic conditions; Spain and Mexico display uneven results tied to institutional fragility.
Rojas (2021)	Mexico	Case study of an OTT in a Mexican ICT center that demonstrates its effectiveness in project structuring (including proposal design, project formulation, and the development of new business lines) and underscores the role of specialized technology transfer staff.

Pineda, 2019). Yet, regional studies show that direct transplantation of this model produces uneven results, as scientific capacity, industrial demand, and legal frameworks differ markedly from the U.S. context (Ísmodes, 2015; Rojas, 2021).

European practices have been more heterogeneous. Alongside IP management, universities often emphasize collaborative R&D contracts, sponsored projects, and the creation of spin-offs, frequently supported by public policies to strengthen professional transfer capacity (Ísmodes, 2015; Solís et al., 2020). Latin American policy frameworks inspired by Europe likewise stress organizational models that move beyond transactional IP management toward broader portfolios of engagement (Bonadeo, 2017; Di Meglio, 2024).

Organizationally, three archetypes dominate: (1) internal TTOs embedded within universities, (2) external or shared agencies serving multiple institutions, and (3) hybrids. Regional evidence suggests that internal or tightly coupled designs are preferable when alignment with academic missions, responsiveness, and researcher engagement are priorities, whereas shared models are better suited for pooling scarce capabilities (Bonzón & Terezano, 2023; Galvez & Herrera, 2020). Colombia's national OTRI program, for example, underscores both the limits of small, isolated offices and the value of coordinated services, standardized procedures, and common performance metrics.

For Latin America, adaptation rather than replication is the most defensible path. Comparative work on Mexico and Colombia highlights that TTOs should act as articulating intermediaries: not only brokering patents but also structuring demand-driven (“market-pull”) projects, technical services, and long-term partnerships tailored to regional needs (Di Meglio, 2024; Florez & Pineda, 2019). Lessons from Colombia's OTRI program further emphasize shifting from technology-push to market-pull logics, expanding dissemination and marketing functions, and adopting metrics that capture adoption and societal impact.

Examples of collaborative and multi-institutional models already illustrate this adaptive approach. In Argentina, initiatives such as the VINCTEC–UNER program illustrate the value of SME-oriented liaison centers (Bonzón & Terezano, 2023), whereas in Mexico, BUAP's OTT demonstrates the importance of professional expertise in patent drafting and incentive structures for researchers (Solís et al., 2020). In Peru, case studies point to persistent challenges of professionalization and alignment with industry demand, though national policies continue to encourage broader university–industry linkages (Galvez & Herrera, 2020; Ísmodes, 2015). These experiences converge on two critical enablers: sustained government support to underwrite professionalization and inter-institutional cooperation to reach critical mass.

Evidence from Mexico, Colombia, Peru, and Argentina displayed in Table 1 shows that TTOs remain

emergent, fragmented, and constrained by institutional voids, weak IP regimes, and limited professionalization (Bonadeo, 2017; Galvez & Herrera, 2020; Rojas, 2021). Nevertheless, innovative adaptations are emerging: Mexico's BUAP illustrates how internal professional expertise and researcher incentives can improve patenting outcomes (Solís et al., 2020); Argentina's VINCTEC-UNER demonstrates how liaison offices can strengthen regional SMEs (Bonzón & Terezano, 2023); and Colombia's OTRI program provides a blueprint for coordinated, networked services that address the inefficiencies of isolated offices (Florez & Pineda, 2019). These examples underscore that while Latin America cannot simply replicate U.S. or European models, it can selectively adapt practices to local needs and capacities.

Two insights cut across regions. First, TTOs function most effectively when embedded within systemic frameworks that align incentives, resources, and demand-side conditions. Second, institutional design matters: internal offices facilitate alignment with academic missions, while shared or hybrid models allow for pooling of scarce resources. For Latin America, the policy challenge is therefore twofold: to professionalize and stabilize TTO operations while simultaneously embedding them within broader national and regional innovation ecosystems.

3.2. Refocusing TTOs on the local ecosystem vs. serving multinationals

A persistent challenge for Latin American universities is the tendency of Technology Transfer Offices (TTOs) to orient their strategies toward the logic of large multinational corporations rather than the needs of national firms and local enterprises (Bonzón & Terezano, 2023; Florez & Pineda, 2019). This bias reflects the influence of imported paradigms, particularly the U.S. model, which privileges licensing inventions to actors with the financial and organizational capacity to scale them, typically global corporations with established operations in the region (Mowery et al., 2001). While such strategies may generate international visibility, they risk sidelining context-specific innovations that could yield substantial benefits for local industries and communities (Sjoo & Hellstrom, 2019).

The problem is especially critical given the structure of Latin American economies, where small and medium-sized enterprises (SMEs) dominate. These firms invest little in R&D but could derive significant value from adaptive innovations, consulting, and technical services provided by universities (OECD & European Union, 2017). Yet, patent-centered transfer models often neglect these high-impact but less visible forms of collaboration. In some contexts, academics bypass formal TTOs, engaging directly with local firms or governments, perceiving official offices as misaligned with immediate needs (Ísmodes, 2015; Rojas, 2021). This signals a failure of focus: TTOs should function not only as brokers for international business but also as bridges for community-driven innovation and regional development (Galvez & Herrera, 2020).

Patent data reinforce these concerns. In Colombia, patent registrations are overwhelmingly concentrated among multinational corporations. As shown in Figure 1, the first national applicant is Ecopetrol, while Universidad Nacional de Colombia is the only domestic university among the top filers; other leading applicants include Procter & Gamble, Colgate-Palmolive, and Bayer.

A similar pattern emerges in Peru, where pharmaceutical and industrial multinationals dominate patent filings, leaving domestic universities and firms as marginal actors (See Figure 2). Despite modest growth in patent numbers, both systems reveal weak local participation and strong dependence on foreign corporate agendas.

In both cases, TTO strategies appear to be oriented toward facilitating knowledge appropriation by external actors rather than addressing the technological demands of local industries, governments, and civil society. This evidence highlights the need for a strategic reorientation. Rather than adopting foreign benchmarks as universal indicators of success (patents, licenses, royalties), Latin American TTOs must develop models that balance global integration with local anchoring. Practical steps include:

- Mapping local needs to ensure technology transfer aligns with priority productive sectors such as agriculture, manufacturing, and digital services.

Figure 1. Colombian patent landscape. (a) Number of patents registered in Colombia by year. (b) Main organizations holding patents in Colombia (Lens database, 2024).

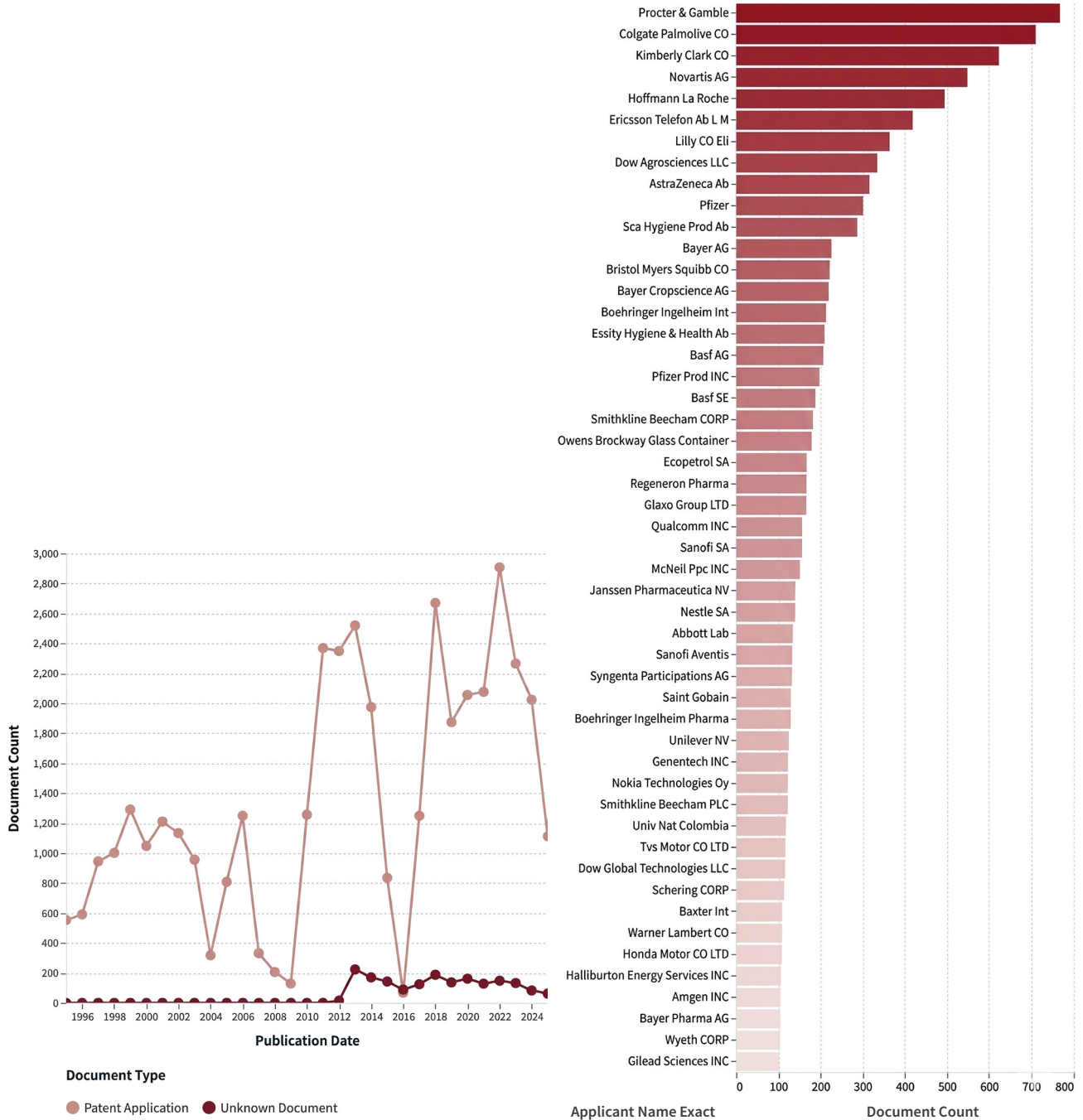
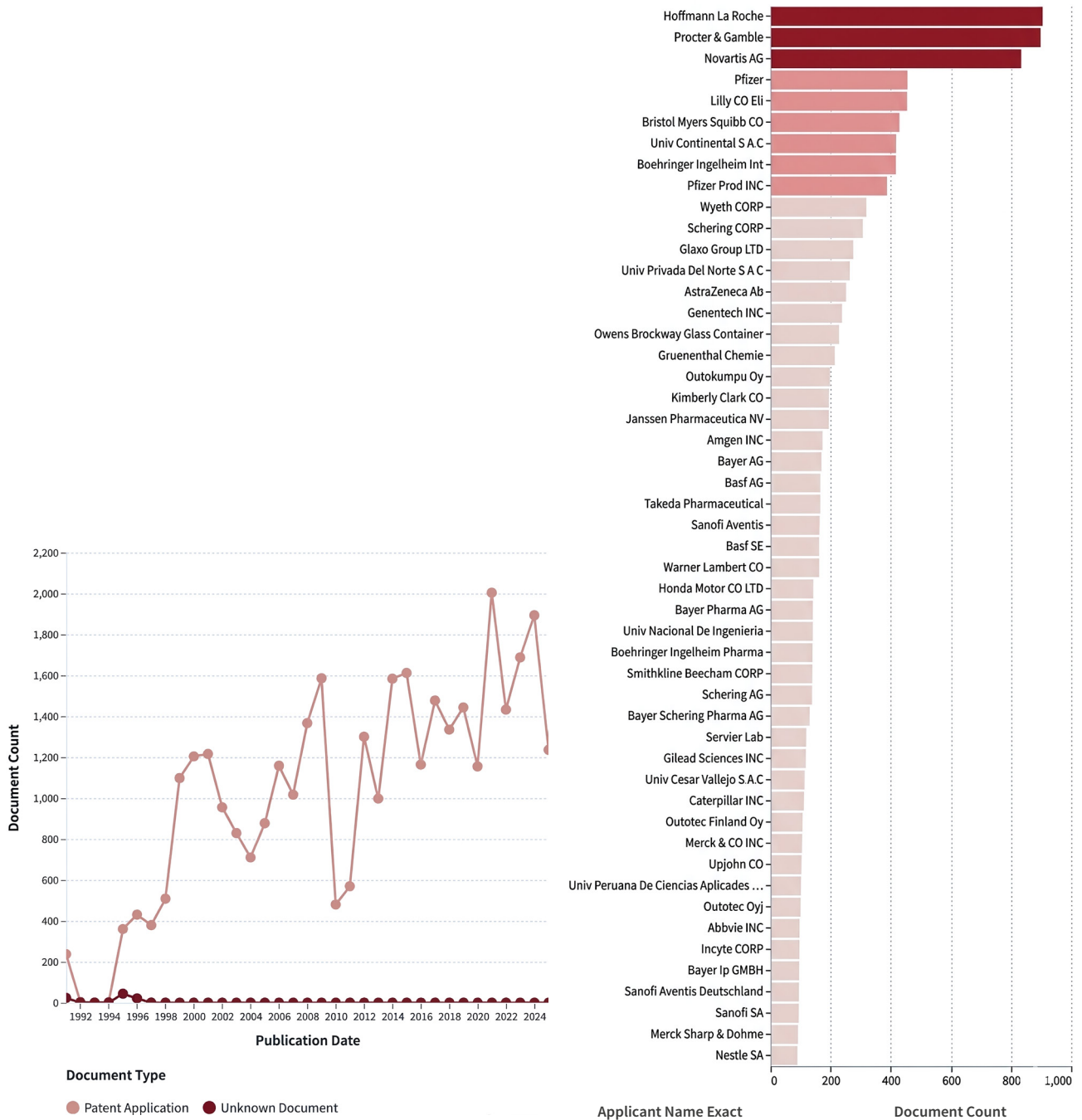


Figure 2. *Peruvian patent landscape. (a) Number of patents registered in Peru by year. (b) Main organizations holding patents in Peru (Lens database, 2024).*



- Developing SME-focused programs, positioning TTOs as extension offices that provide technical services, training, and applied R&D solutions.
- Adjusting academic incentives, rewarding faculty engagement with local challenges as much as international publications or multinational partnerships.

A sustainable TTO model for Latin America must ensure universities act as catalysts of endogenous development. This requires bridging the gap between academic research and local innovation ecosystems while selectively engaging with global corporations to complement, rather than dominate, national agendas (Agrawal, 2006; Bikard et al., 2019). Without this reorientation, TTOs risk becoming peripheral actors in global innovation chains, with limited contributions to the socio-economic development of their countries.

3.3. The university's internal pace vs. the accelerated dynamics of the productive sector

A central challenge for Latin American universities is the persistent misalignment between their internal rhythms and the accelerated dynamics of the productive sector. While industries increasingly operate on short innovation cycles, universities are constrained by rigid governance structures, lengthy approval processes, and inflexible administrative rules. This mismatch generates delays in contract negotiations, intellectual property (IP) management, and collaborative projects, reducing the effectiveness of technology transfer initiatives. Excessive bureaucracy within TTOs has been identified as one of the main barriers to productive university–industry collaboration (Galvez & Herrera, 2020; Rojas, 2021).

The consequences are tangible. Firms often perceive universities as slow or difficult partners, opting instead for private consultants or international collaborators who can respond more quickly. Likewise, researchers frequently bypass TTOs, transferring inventions independently to avoid procedural bottlenecks. Such practices weaken the institutional role of TTOs and risk producing suboptimal agreements

that neglect long-term strategic alignment (Bonzón & Terezano, 2023; Flores et al., 2024).

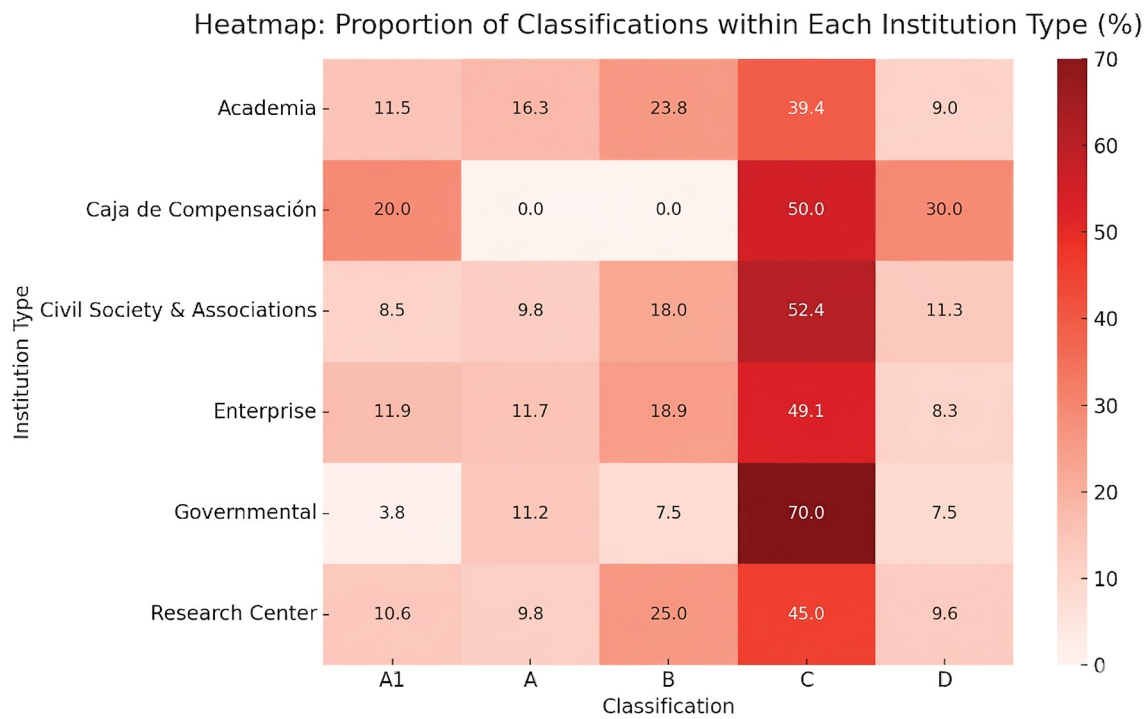
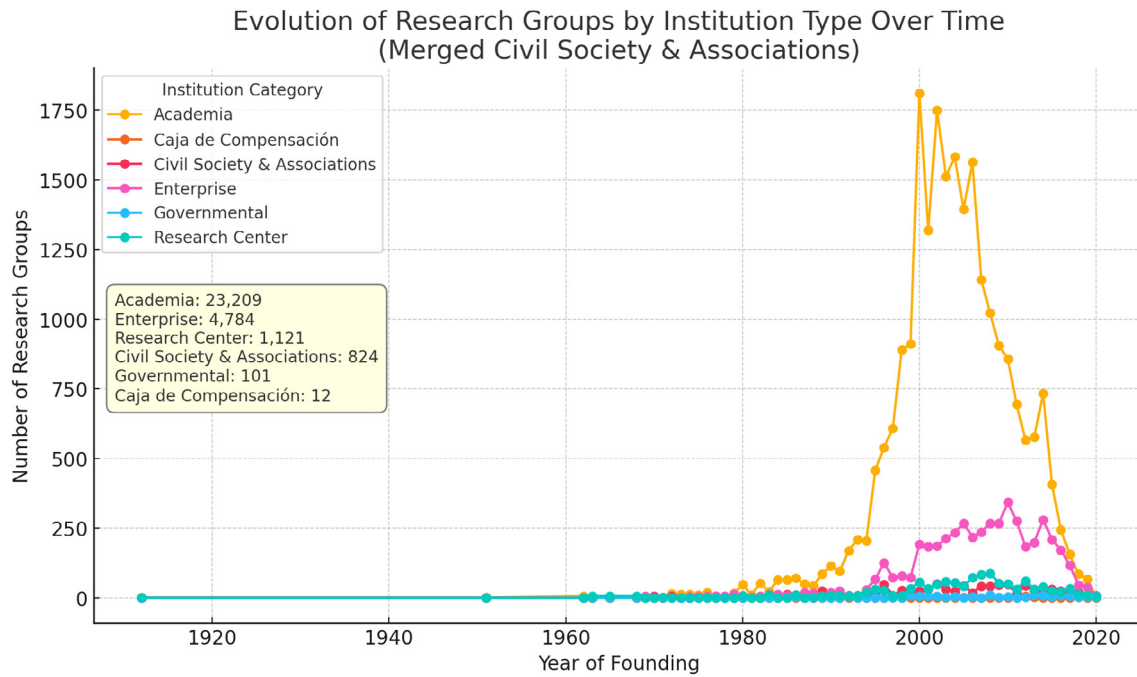
Evidence from Colombia illustrates this tension. Figure 3 shows that companies host a slightly higher share of top-rated (A1) research groups (11.9%) compared to universities (11.5%). While this difference is modest, it signals a rebalancing in which non-academic actors, particularly firms, are gradually consolidating their role in research and development. Universities remain the largest producers of research, but their bureaucratic inertia threatens their capacity to translate scientific outputs into timely innovation.

Figure 4 highlights another systemic challenge: geographical and sectoral asymmetries in research capacity. The Capital District (Bogotá) concentrates nearly 9,000 recognized research groups, while peripheral regions such as Llano or Centro Sur host only a few hundred. This spatial imbalance deepens systemic rigidity, limits inclusive scientific development, and reinforces dependency on knowledge generated in Bogotá or by international partners. Universities in less developed regions often lack the critical mass to adapt to emerging demands, leaving local economies to evolve with minimal scientific support.

These findings underline the urgency of accelerating and decentralizing university engagement. Without reforms that streamline procedures, empower TTOs with greater autonomy, and strengthen regional research ecosystems, universities risk further disconnection from both local needs and industry timelines. Companies and, increasingly, research centers are demonstrating growing capacity to produce high-level research outputs, while universities risk falling behind.

Several reforms are essential to bridge this “speed gap.” First, universities should simplify procedures and delegate authority to TTOs, enabling them to approve standard agreements, set technical service fees, and sign nondisclosure agreements without excessive oversight. Comparative experiences show that empowered technology managers respond faster and more effectively (Berumen, 2019; Sun et al., 2025). Second, formalizing IP and commercialization policies is critical. In Peru, for example, fewer than 10% of universities had formal IP frameworks in place by the

Figure 3. (a) Evolution of research groups recognized by MINCIENCIAS and (b) Group classification by institution type



Note: A1 accounts for the highest classification recognition given by MINCIENCIAS. Groups classified as A1 usually provide high quality knowledge to the Colombian ecosystem.

mid-2010s, creating inefficiency and legal uncertainty (Ísmodes, 2015).

Another priority is the professionalization of TTO staff. Many offices lack in-house patent lawyers, business negotiators, or specialists capable of operating at the academic–industry interface and instead rely on external consultants for routine processes. Regional networks such as FORTEC in Brazil and Red OTT in Mexico illustrate how continuous training and collective learning can build the dual technical and managerial expertise required for agile technology transfer (Ogarrío & Culebro, 2019; Vargas & Rivera, 2017).

Finally, a cultural shift is necessary. Universities must embrace efficiency and timeliness as central to their role as innovation partners. Service-oriented practices, such as deadlines for invention disclosure evaluations, clear response timelines for industry partners, and satisfaction surveys, can help TTOs strengthen trust and overcome reputational barriers. Strong leadership from university authorities is also

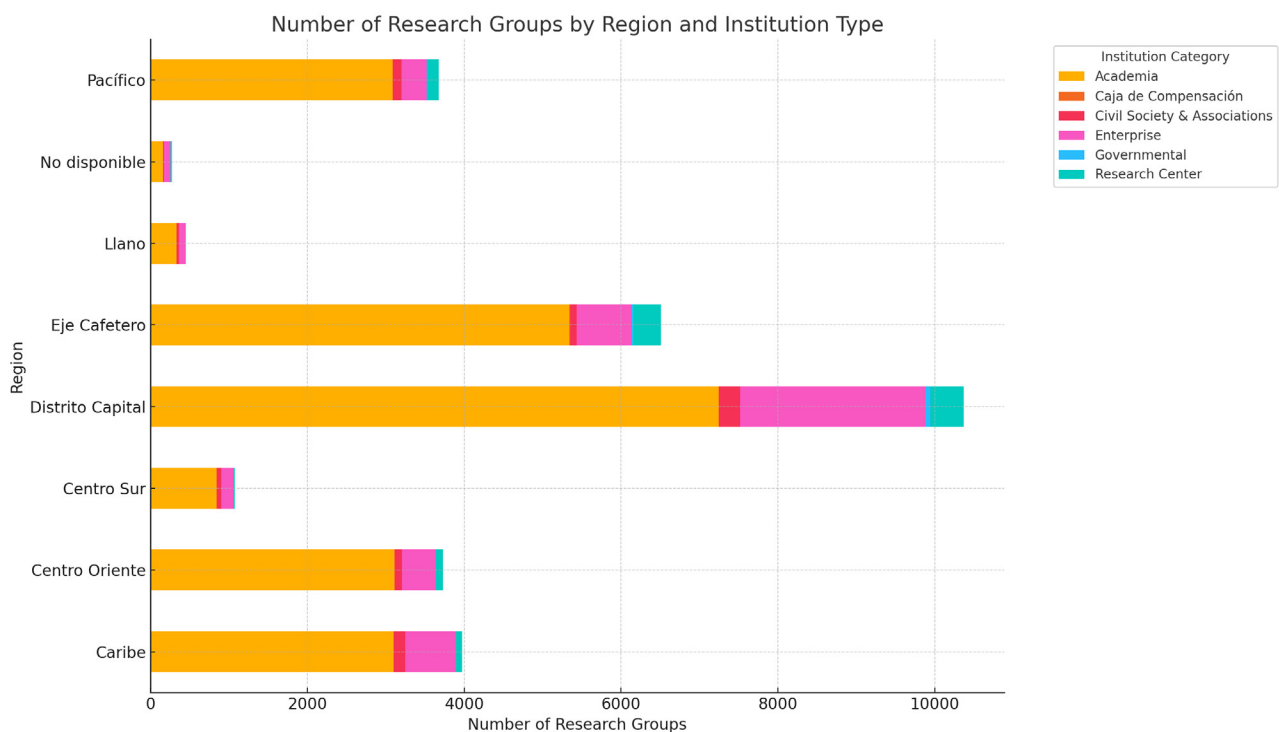
indispensable: prioritizing innovation agendas requires removing administrative obstacles, allocating resources, and rewarding faculty who engage in impactful transfer (Rayes, 2023).

Overall, the effectiveness of Latin American TTOs depends not only on resources or legal frameworks but also on institutional agility. As Rojas Arce (2021) observes, cumbersome bureaucratic processes undermine the very purpose of technology transfer, where timeliness is critical to seizing innovation opportunities. Universities that modernize and decentralize their processes will be positioned as central actors in regional innovation ecosystems. Those that fail to adapt risk relegation to peripheral roles, bypassed by more agile partners.

4. CONCLUSIONS

This study has sought to answer the guiding question: Who do universities serve in Latin America? The

Figure 4. Number of research groups classified by regions (Colombia)



evidence demonstrates that universities cannot prioritize a single constituency, whether global science, national competitiveness, industrial demand, or societal needs, but must instead act as mediators across the Quadruple Helix. This balancing act is not a normative aspiration but a structural necessity, given the asymmetries and constraints of the region's innovation systems.

The patent landscapes of Colombia and Peru reveal a persistent dependency: *multinational corporations dominate intellectual property filings, while local firms and universities remain peripheral actors*. If universities continue to evaluate success primarily through patent counts, they risk reinforcing reliance on foreign corporations and neglecting the technological and social demands of their own societies. Broader success metrics are therefore essential. Indicators that capture partnerships with SMEs, contributions to regional competitiveness, or impacts on social inclusion would more accurately reflect the developmental role of universities in Latin America's diverse and localized innovation contexts.

A similar shift is visible in research group dynamics. In Colombia, enterprises now host a slightly higher share of top-classified research groups than universities, signaling a rebalancing of knowledge production toward the productive sector. Coupled with the geographical concentration of research capacity in Bogotá, this trend exacerbates territorial inequalities and sidelines peripheral regions. Unless universities adopt decentralization strategies and governments provide targeted investments, higher education institutions risk reproducing the very inequalities they are tasked with mitigating.

Across cases, a recurrent theme emerges: *time as a determinant of impact*. Bureaucratic inefficiencies within Technology Transfer Offices (TTOs) delay negotiations, erode trust with industry, and diminish responsiveness to societal challenges. Process agility is therefore not an administrative detail but a strategic imperative. Achieving it requires institutional reforms to streamline procedures, professionalize transfer staff, and grant TTOs greater autonomy. Equally, it demands cultural change: universities must recognize

responsiveness, service orientation, and collaborative problem-solving as integral to their mission.

The risks of inertia are evident. If universities fail to adapt, they risk marginalization within national innovation systems, ceding leadership to multinational corporations and private firms whose agendas may diverge from local needs. Conversely, universities that embrace agility, redefine metrics of success, and strengthen regional engagement can consolidate themselves as central actors in inclusive and sustainable innovation. For Latin America, the challenge is not to replicate foreign models uncritically but to adapt them to local realities, positioning universities as mediators among government, industry, and civil society, and as catalysts of development that is both competitive and socially just.

REFERENCES

- Agrawal, A. (2006). Engaging the inventor: exploring licensing strategies for university inventions and the role of latent knowledge. *Strategic Management Journal*, 27(1), 63–79. <https://doi.org/10.1002/smj.508>
- Atlantico. (2023). *Latin America Digital Transformation Report 2023*. <https://www.informeticplus.com/latin-america-digital-transformation-report-2023-atlantico>
- Barnard, Z., & van der Merwe, D. (2016). Innovative management for organizational sustainability in higher education. *International Journal of Sustainability in Higher Education*, 17(2), 208–227. <https://doi.org/10.1108/IJSHE-08-2014-0120>
- Bikard, M., Vakili, K., & Teodoridis, F. (2019). When collaboration bridges institutions: The impact of university–industry collaboration on academic productivity. *Organization Science*, 30(2), 426–445. <https://doi.org/10.1287/orsc.2018.1235>
- Bonadeo, D. J. (2017). *Análisis de la implementación del Programa de fortalecimiento de las oficinas de Vinculación y Transferencia Tecnológicas (OVTT) del Ministerio de Ciencia, Tecnología e Innovación productiva de Argentina, en el marco de las políticas de promoción de la innovación: El caso de la OVTT mendocina*

- Argentec S.R.L [master's thesis, Universidad Nacional de Quilmes]. <https://ridaa.unq.edu.ar/handle/20.500.11807/2033>
- Bonzón, M. G., & Terezano, I. (2023). Fortalecimiento de la Oficina de Vinculación Tecnológica (VINCTEC) de la Universidad Nacional de Entre Ríos (UNER) como Centro Universitario PyME (CUP) en sus líneas de acción en proyectos estratégicos de asistencia a Mi-PyMEs. In *XX Congreso Latino-Iberoamericano de Gestión Tecnológica y de la Innovación ALTEC* (pp. 2268-2278). Repositorio Institucional ALTEC. <https://repositorio.altecasociacion.org/handle/20.500.13048/2078>
- Di Meglio, M. F. (2024). Experiencias y tendencias institucionales de vinculación científico-tecnológica en dos universidades argentinas [Institutional experiences and scientific-technological linkage trends in two Argentine universities]. In R. Willman, & C. Garrido (coords.), *Las universidades y sus respuestas innovadoras a los sectores socio-productivos ante los desafíos actuales* (254–279). Red Universidad-Empresa América Latina y El Caribe – Unión Europea. <https://ri.conicet.gov.ar/handle/11336/263916>
- Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: From National Systems and “Mode 2” to a Triple Helix of university–industry–government relations. *Research Policy*, 29(2), 109–123. [https://doi.org/10.1016/S0048-7333\(99\)00055-4](https://doi.org/10.1016/S0048-7333(99)00055-4)
- Flores, K., García, V., & Palma, L. A. (2024). Retos y perspectivas de las oficinas de transferencia de tecnología en instituciones de educación superior públicas en México [Challenges and Perspectives of Technology Transfer Offices in Public Higher Education Institutions in Mexico]. *Revista de la Educación Superior*, 53(210), 127–149. https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0185-27602024000200127
- Florez, S., & Pineda, L. (2019). Rol de las Oficinas de Transferencia Tecnológica en México y Colombia: Avances y retos. *Debates sobre Innovación*, 3(2), 297–319. <https://repositorio.altecasociacion.org/handle/20.500.13048/1809>
- Galvez, W. I., & Herrera, L. R. (2020). *La vinculación universidad–empresa en el Perú: El rol de las oficinas de transferencia tecnológica. Estudio de caso: La Oficina de Innovación (OIN) de una universidad peruana* [bachelor's thesis, Pontificia Universidad Católica del Perú]. <http://hdl.handle.net/20.500.12404/18356>
- Haenlein, M., & Kaplan, A. (2019). A brief history of Artificial Intelligence: on the past, present, and future of Artificial Intelligence. *California Management Review*, 61(4), 5–14. <https://doi.org/10.1177/0008125619864925>
- Hamel, G. (1998). Strategy innovation and the quest for value. *Sloan Management Review*, 39(2), 7–14. https://www.creaciondeestrategia.com/wp-content/uploads/2022/02/Hamel_1998.pdf
- Ísmodes, E. (2015). *Estudio sobre modelo de oficinas de transferencia tecnológica en el Perú*. CONCYTEC. <https://repositorio.concytec.gob.pe/handle/20.500.12390/96>
- Lindberg, M., Lindgren, M., & Packendorff, J. (2014). Quadruple helix as a way to bridge the gender gap in entrepreneurship: the case of an innovation system project in the Baltic Sea region. *Journal of the Knowledge Economy*, 5(1), 94–113. <https://doi.org/10.1007/s13132-012-0098-3>
- Mowery, D. C., Nelson, R. R., Sampat, B. N., & Ziedonis, A. A. (2001). The growth of patenting and licensing by U.S. universities: An assessment of the effects of the Bayh–Dole act of 1980. *Research Policy*, 30(1), 99–119. [https://doi.org/10.1016/S0048-7333\(99\)00100-6](https://doi.org/10.1016/S0048-7333(99)00100-6)
- OECD & European Union. (2017). *Supporting Entrepreneurship and Innovation in Higher Education in Ireland*. OECD Publishing. <https://doi.org/10.1787/9789264270893-en>
- Ogarrio, P., & Culebro, J. E. (2019). Coordinación y transferencia del conocimiento en las universidades públicas en México. El caso de la Universidad Autónoma Metropolitana, Unidad Cuajimalpa [Coordination and knowledge transfer in public universities in Mexico. The case of the Universidad Autónoma Metropolitana, Unidad Cuajimalpa]. *Revista de la Educación Superior*, 48(191), 83–96. https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0185-27602019000300083
- Rayes, F. G. (2023). *Institucionalidad y estrategias para la vinculación tecnológica en una Universidad joven: La experiencia de la UNTDF* [master's thesis, Universidad Nacional de General

- Sarmiento]. <http://repositorio.ungs.edu.ar:8080/handle/UNGS/1470>
- Rojas, J. L. (2021). Las Oficinas de Transferencia de Tecnología y su papel en la estructuración de proyectos de innovación: el caso de una oficina mexicana. In *2017: XVII Congreso Latino-Iberoamericano de Gestión Tecnológica*. Repositorio Institucional ALTEC. <https://repositorio.altecasociacion.org/handle/20.500.13048/1445>
- Sjoo, K., & Hellstrom, T. (2019). University–industry collaboration: A literature review and synthesis. *Industry and Higher Education*, 33(4), 275–285. <https://doi.org/10.1177/0950422219829697>
- Solís, A., Ovando, C., Olivera, E., & Rodríguez, M. Á. (2020). Desempeño de una oficina de transferencia de tecnología en el contexto de gestión de patentes: estudio de caso de la OTT de la Benemérita Universidad Autónoma de Puebla. *Nova Scientia*, 12(24). https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S2007-07052020000100021&lng=es&nrm=iso&tlng=es
- Sun, J., Liu, X., & Cai, J. (2025). Intermediaries that facilitate university–industry research partnerships: a systematic literature review. *Journal of Business Research*, 194, 115365. <https://doi.org/10.1016/j.jbusres.2025.115365>
- Trejo, K. S. (2017). *Surgimiento y desarrollo de las oficinas de transferencia de tecnología como unidades de enlace en los sistemas nacionales de innovación de México, España y Estados Unidos* [doctoral dissertation, Universidad Autónoma de Baja California Sur]. <https://biblio.uabcs.mx/tesis/te3678.pdf>
- Vargas, P., & Rivera, J. (2017). *Diseño del modelo de negocios para la Red Nacional de Oficinas de Transferencia de Resultados de Investigación-OTRIS-regionales apoyadas por Colciencias* [master's thesis, Universidad de Antioquia]. <https://hdl.handle.net/10495/8028>