

Review article

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From agreements to active networks: epistemic value for managing cooperation, internationalization, and relations with the academic world

De convenios a redes vivas: utilidad epistémica para gestionar cooperación, internacionalización y vinculación universitaria

Dos acordos às redes ativas: utilidade epistêmica para gerenciar a cooperação, a internacionalização e o relacionamento com o mundo universitário

Abstract

Introduction: a management gap persists in higher education institutions: agreements and contacts increase, while sustained and impactful academic cooperation remains uneven. **Objective:** to interpret the evolution of academic networks and to propose epistemic utility as a lens for understanding their sustainability and their articulation with internationalization, extension, and social engagement. **Methodology:** a qualitative narrative review with thematic synthesis was conducted; studies were searched in SciELO, Redalyc and Dialnet (2020-2026), in Spanish and English, including reviews, empirical studies and case studies, with screening documented using a flow diagram. **Results:** the literature shows that networks have positioned themselves as coordination infrastructure for universities in digital and hybrid environments; their continuity is associated with governance, leadership, institutional support and digital infrastructure with clear rules; their contribution is evident when they connect international cooperation with territorial engagement through projects, outputs and knowledge transfer; management improves when it prioritizes active partnerships and evaluates verifiable outcomes. **Conclusion:** sustainability depends on the value generated; epistemic utility, understood as the cognitive-practical value of exchange, allows distinguishing active networks from nominal ties and guides institutional decisions toward impact.

Keywords: university cooperation, international education, higher education, university extension, epistemic utility

Resumen

Introducción: en las instituciones de educación superior persiste una brecha de gestión: aumentan convenios y contactos, mientras la cooperación académica con continuidad e impacto sigue siendo irregular.

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Objetivo: interpretar la evolución de las redes académicas y proponer la utilidad epistémica como lente para comprender su sostenibilidad y su articulación con internacionalización, extensión y vinculación social. **Metodología:** se realizó una revisión narrativa cualitativa con síntesis temática; se buscaron estudios en SciELO, Redalyc y Dialnet (2020-2026), en español e inglés, incluyendo revisiones, estudios empíricos y estudios de caso, con cribado documentado mediante diagrama de flujo. **Resultados:** la literatura muestra que las redes se han posicionado como infraestructura de coordinación universitaria en entornos digitales e híbridos; su continuidad se asocia a gobernanza, liderazgo, soporte institucional e infraestructura digital con reglas claras; su aporte se evidencia cuando conectan cooperación internacional con vinculación territorial mediante proyectos, productos y transferencia; la gestión mejora cuando prioriza alianzas activas y evalúa por resultados verificables. **Conclusión:** la sostenibilidad depende del valor generado; la utilidad epistémica, entendida como valor cognitivo-práctico del intercambio, permite distinguir redes activas de vínculos nominales y orientar decisiones institucionales hacia impacto.

Palabras clave: cooperación universitaria, educación internacional, educación superior, extensión universitaria, utilidad epistémica

Resumo

Introdução: nas instituições de ensino superior persiste uma lacuna de gestão: aumentam convênios e contatos, enquanto a cooperação acadêmica com continuidade e impacto permanece irregular. **Objetivo:** interpretar a evolução das redes acadêmicas e propor a utilidade epistêmica como lente para compreender sua sustentabilidade e sua articulação com internacionalização, extensão e vinculação social. **Metodologia:** realizou-se uma revisão narrativa qualitativa com síntese temática; buscaram-se estudos na SciELO, Redalyc e Dialnet (2020-2026), em espanhol e inglês, incluindo revisões, estudos empíricos e estudos de caso, com triagem documentada por meio de diagrama de fluxo. **Resultados:** a literatura indica que as redes se posicionaram como infraestrutura de coordenação universitária em ambientes digitais e híbridos; sua continuidade associa-se à governança, liderança, suporte institucional e infraestrutura digital com regras claras; sua contribuição é evidenciada quando conectam cooperação internacional com vinculação territorial por meio de projetos, produtos e transferência de conhecimento; a gestão melhora quando prioriza parcerias ativas e avalia por resultados verificáveis. **Conclusão:** a sustentabilidade depende do valor gerado; a utilidade epistêmica, entendida como o valor cognitivo-prático da troca, permite distinguir redes ativas de vínculos nominais e orientar decisões institucionais rumo ao impacto.

Palavras-chave: cooperação universitária, educação internacional, ensino superior, extensão universitária, utilidade epistémica



Introduction

A recurring management symptom plagues many higher education institutions: formal agreements proliferate, reported alliances multiply, and contacts expand, yet sustained cooperation with verifiable results remains sporadic. This tension raises a practical question: under what conditions does connectivity translate into academic collaboration, organizational learning, and meaningful territorial impact? This manuscript addresses that problem and proposes an interpretive framework for university strategic management.

The contemporary university operates within a social logic organized by networks, flows, and nodes, where relational position conditions access to information, collaboration, and recognition (Castells, 2000; Day, 2019; Flores Torres, 2020). Digital transformation accelerates exchanges, expands cooperation platforms, and reorganizes academic production routines, directly affecting the coordination of research, teaching, and engagement (Ramos-Zaga, 2024). In this context, university management requires criteria for deciding which connections warrant strategic investment and how to sustain them over time.

In this article, academic networks are understood as webs of relationships among researchers, groups, units, and institutions that coordinate the production, circulation, and validation of knowledge. Their relevance materializes when they enable sustained cooperation, mobilize capacities, and stabilize shared agendas. Regional literature highlights their contribution to scientific collaboration, knowledge transfer, and collective synergy, as well as their potential to sustain collaborative practices in virtual environments (Román Acosta & Rodríguez Torres, 2024). This evidence supports a management criterion: a network matters for its products and continuity, not merely for its declared existence.

Internationalization is incorporated as a strategic dimension that reorders institutional priorities. Foundational approaches link it to curriculum, cooperation, and research (Knight, 2003, 2005), while critical perspectives caution against instrumentalization and visibility pressures, tensions that are intensified in Latin America by asymmetries and restricted access to cooperation (De Wit, 2024; Labraña Vargas & Brunner, 2020; De Giusti, 2025; Gacel-Ávila et al., 2024).

In parallel, university outreach and societal engagement are understood as processes that connect academic production with external actors and dynamics. The literature indicates that relevance and legitimacy are strengthened when stable links, territorial articulation, and university-society transfer mechanisms exist (Verdezoto Reinoso et al., 2025; López & Obregón, 2025a, 2025b; Maldonado Moreno & Obregón, 2025; Ayala & Rivas-Martínez, 2026). Thus, networks, internationalization, and engagement converge on a single imperative: coordinating relationships to produce verifiable impact.

To avoid theoretical leaps, the manuscript adopts a multi-level articulation. At the macro level, the network society describes an environment where an institution's relational position conditions access to information, collaboration, and recognition, making networks a strategic resource for university performance (Castells, 2000). At the meso level, a network is understood as an operational assembly of actors, rules, and mediations that enables cooperation to be coordinated

under real conditions. This perspective shifts the emphasis from "having links" to "making links work" through devices, routines, and coordination agreements (Latour, 2005).

At the micro level, networks gain density when they operate as communities of practice, where collaboration stabilizes shared repertoires and fosters learning through participation (Lave & Wenger, 1991; Wenger, 1998). This dynamic is sustained because much of the academic craft circulates as tacit knowledge, transmitted more effectively through interaction, feedback, and situated practice (Polanyi, 1966). Finally, the structure of the academic field introduces a distributive dimension: resources, recognition, and opportunities associated with networks accumulate as scientific capital, helping to explain unequal access and the differential effects of cooperation (Bourdieu, 2001). With this articulation, epistemic utility is proposed as an integrative lens for describing the cognitive-practical value that keeps cooperation active and turns interaction into verifiable capacities and products.

Implementation gaps, however, persist. Studies on internationalization, accreditation, and university cooperation show that institutional value is compromised when collaboration operates as a formality, with problems in activation, follow-up, and continuity (Becerra et al., 2024; Barquero Morales et al., 2024). The literature on development alliances emphasizes that productive cooperation requires shared objectives, governance, resources, and evaluation. Proposals such as circular cooperation reinforce the centrality of reciprocity and shared responsibility (Rodríguez Cotilla, 2023; Paletta, 2024; Glennie, 2025). Here, management faces a task of discernment: distinguishing nominal relationships from those capable of sustaining academic production, innovation, and territorial work.

To address this distinction, an interpretive category is introduced: epistemic utility, understood as the cognitive-practical value that actors recognize in a network's exchanges, expressed through guidance on criteria, access to repertoires, reduction of academic uncertainty, and strengthened agency for research and writing. This lens engages with tacit knowledge (Polanyi, 1966), communities of practice (Lave & Wenger, 1991; Wenger, 1998), and the dynamics of scientific capital within the academic field (Bourdieu, 2001). The sustainability of networks and alliances is also linked to leadership and governance: transformational and distributed leadership are associated with cultural change, continuity, and institutional appropriation; digitalization and emerging technologies introduce risks that demand ethical and regulatory criteria in academic coordination (Bass, 1985; Burns, 1978; Cuenca, 2025; Jiménez & González, 2026; Pérez-Ugena Coromina, 2024; Peña-García et al., 2026).

Based on these elements, the article presents a qualitative narrative review aimed at interpreting the evolution of academic networks in higher education and proposing epistemic utility as a lens for understanding their sustainability and impact on internationalization, outreach, and social engagement (Roman-Acosta, 2025).

The review is structured around four guiding questions that organize the results section: (1) What stages or shifts help us understand the evolution of academic networks in contemporary higher education? (2) What relational and

managerial mechanisms explain their continuity, including trust, reciprocity, governance, and institutional support? (3) How do networks articulate internationalization with outreach and territorial engagement, connecting university capacities with local problems? (4) What strategic implications arise for university management regarding leadership, incentives, and an organizational infrastructure oriented toward verifiable outcomes? The manuscript is organized into five sections: methodology, results by thematic axis, a discussion oriented toward management decisions, and conclusions.

Methodology

A qualitative narrative review with thematic synthesis was conducted. This choice aligns with the manuscript's purpose: to integrate heterogeneous evidence (reviews, empirical studies, and case studies) and develop an interpretive reading useful for university management. In this field, a narrative review is appropriate when the goal is to organize debates, identify patterns, and build an applied conceptual framework, rather than to estimate effects or answer efficacy questions using the exhaustive criteria typical of systematic reviews. To enhance reported transparency, the identification and screening process was documented using a flow diagram based on PRISMA 2020, and the quality of the narrative review was addressed using the SANRA criteria (Page et al., 2021; Baethge et al., 2019; Grant & Booth, 2009).

Information sources and search strategy

The search was conducted in SciELO, Redalyc, and Dialnet for publications in Spanish and English with a time window of 2020-2026. These databases were selected for two reasons: (1) their coverage and availability of Ibero-American and Latin American open-access literature, which is pertinent for analyzing academic networks, internationalization, and engagement from the Global South; and (2) their institutional accessibility, given that Scopus and WoS require a subscription. This decision is acknowledged as a coverage limitation, so no claim of global corpus exhaustiveness is made (a limitation explicitly noted in the discussion section).

Combinations of terms in Spanish and English, adjusted to each database's engine, were used. The base strategy applied (with minor syntax variations depending on the platform): ("redes académicas" OR "redes de investigación" OR "academic networks" OR "research networks" OR "scientific collaboration") AND ("educación superior" OR universidad OR "higher education") AND (internacionalización OR "internationalization" OR extensión OR "university extension" OR vinculación OR "community engagement") AND (gestión OR gobernanza OR liderazgo OR "governance" OR management). Filters: 2020-2026; Spanish/English; document type: review articles, empirical articles, and case studies. Bibliographic management and deduplication were performed using Mendeley.

Eligibility criteria

Studies were included if they addressed academic networks in higher education and provided evidence or argumentation on: (i) network evolution, (ii) sustainability mechanisms (governance, leadership, institutional support, digital mediation), (iii) articulation with internationalization and/or outreach/engagement, and (iv) implications for university management. Letters to the editor, documents in other languages, and non-pertinent designs were excluded. The category previously reported as "without variables of interest" is specified as follows: texts that mentioned networks tangentially or descriptively without developing findings, categories, or results related to network sustainability/management, without a link to higher education, or without a connection to the defined analytical axes (governance, internationalization, outreach/engagement, impact).

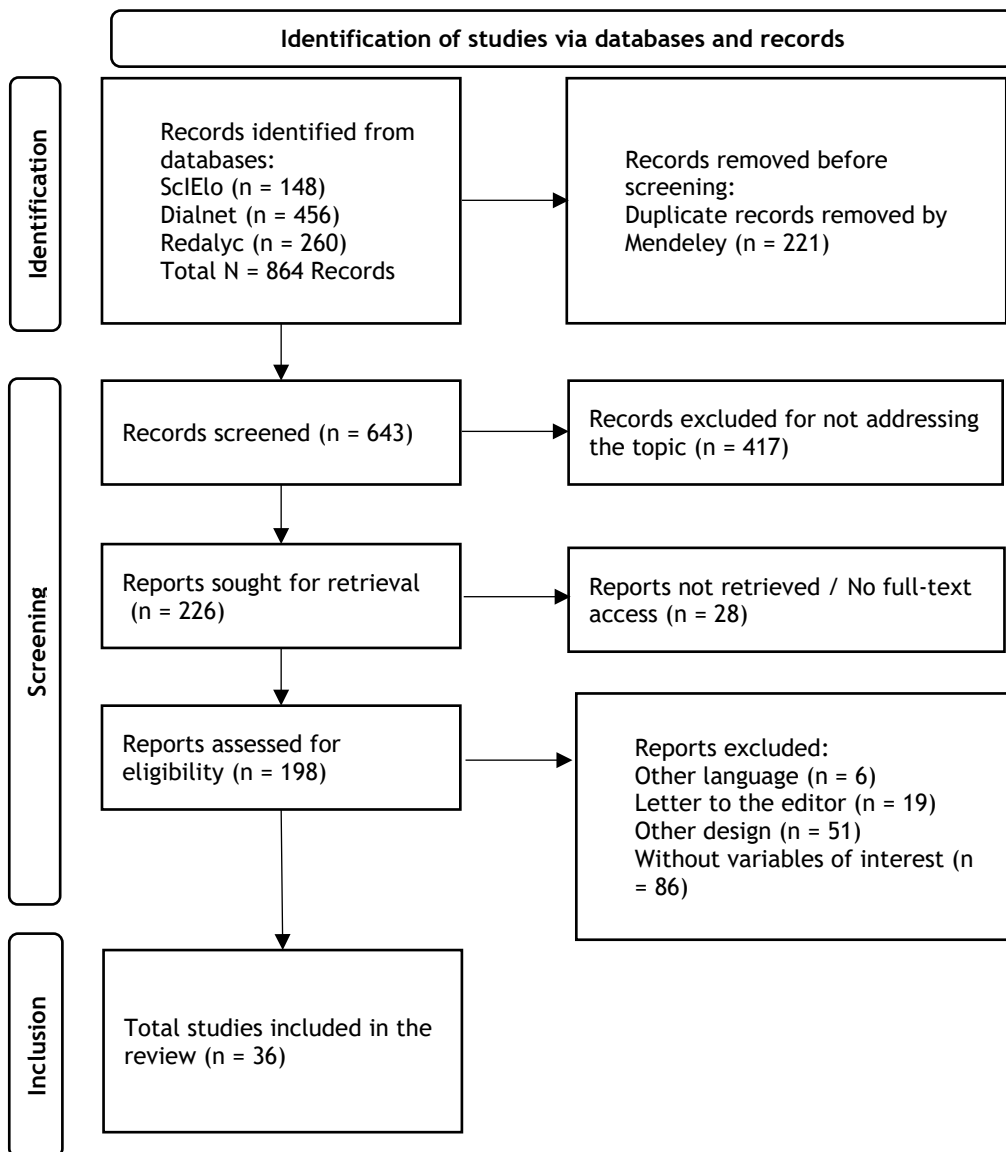
Selection and screening process

The identification, screening, and selection process was reported using a PRISMA flow diagram, following recommendations for transparency in presenting the flow of records, exclusions, and reasons for exclusion (Page et al., 2021).

In the identification phase, 864 results were registered: SciELO (n = 148), Dialnet (n = 456), and Redalyc (n = 260). Before screening, 221 duplicates were removed using Mendeley, leaving 643 records for title and abstract examination. At this stage, 417 were excluded for not addressing the topic. Subsequently, 226 reports were sought for retrieval; 28 could not be retrieved due to lack of full-text access. Full-text analysis for eligibility was applied to 198 reports. In this phase, 162 documents were excluded for the following reasons: other language (n = 6), letter to the editor (n = 19), other design (n = 51), and absence of variables of interest (n = 86). The final corpus consisted of 36 studies included in the review.

Figure 1

Flow diagram of the study selection process according to PRISMA



Source: Authors' own elaboration.

Quality criteria

Given the narrative nature and methodological heterogeneity of the corpus, a descriptive assessment of reporting quality and thematic relevance was conducted during the full-text analysis, paying attention to the clarity of the objective, coherence of the design, transparency of the procedure, and relevance to the study's axes. This decision is consistent with recommendations that propose explicit criteria for evaluating narrative reviews and maintaining their editorial rigor.

Results and discussion

The results are organized into four thematic axes. The first synthesizes the recent evolution of academic networks in the 2020-2026 period. The second identifies mechanisms that explain the continuity or fragility of networks, with emphasis on governance, leadership, and digital mediation. The third examines how networks operate as infrastructure for articulating internationalization and territorial engagement. The fourth integrates strategic implications for university management, highlighting criteria for alliance activation, results-based evaluation, and digital governance challenges.

The evolution of academic networks in higher education

Academic networks are no longer seen as a mere accessory for exchange but are increasingly and consistently described as a structural condition of university functioning. In the recent period, the network has become a space where a substantive part of knowledge circulation, agenda coordination, and institutional responsiveness is defined. This shift is linked to digital transformation, which has reconfigured teaching and research routines, accelerated platform-mediated collaboration, and turned connectivity into a strategic resource that influences visibility, productivity, and relevance (Ramos-Zaga, 2024; Sánchez Arreaga et al., 2025). Academic interaction now unfolds in hybrid environments that combine institutional spaces and open settings, expanding opportunities for sustaining distributed cooperation, though it also introduces frictions related to platform dependency, speed pressures, and the reorganization of academic time. Here, the discussion on "platformization" provides a framework for understanding how digital infrastructures affect rhythms, autonomy, and modes of collaboration, with direct implications for the continuity of ties (Jiménez & González, 2026).

In network-focused studies, another shift is observable: the language of "collaboration" gains density and begins to structure the field, displacing readings centered on "exchange." A narrative review on scientific collaboration in education positions collaboration as the core of networks, implying they should be understood as spaces where shared repertoires are built, cognitive tasks are distributed, and knowledge production routines are stabilized (Román-Cao et al., 2025). In the same vein, a transition from individual efforts to collective synergies is reported, emphasizing that a network's value is expressed when it manages to coordinate capacities and sustain interaction continuously; in virtual environments, moreover, its motivational and organizational support function in high-demand scenarios is documented (Román Acosta & Rodríguez Torres, 2024).

This evolution connects with a cross-cutting problem in academic practice: the conditions that facilitate or hinder research in real-world settings. A systematic review identifies that scientific production depends on institutional and relational mediations typically organized through support, mentoring, and access to active communities (Perines & Roman-Acosta, 2026). Finally, network strengthening appears associated with institutional priorities of internationalization, quality, and social relevance, which push toward more consistent and comparable forms of cooperation (Gacel-Ávila et al., 2024; Fliguer et al., 2025), with an additional turn

toward an internationalization oriented to social contributions and external impact (Cai & Leask, 2026).

Even though the literature coincides in describing a shift toward networks as infrastructure, analytical limitations should be noted. A portion of the work treats a network as a desirable outcome or as evidence of institutional modernization, with little attention to the mechanisms that produce continuity and the conditions that make collaboration verifiable. This tendency pushes toward descriptions of "network expansion" without distinguishing relational density, reciprocity, and quality of interaction. Furthermore, several contributions assume that digitalization inherently strengthens cooperation, while analyses of platformization warn of frictions that reorganize academic time, incentives, and collaborative depth, risking faster but less sustainable links (Jiménez & González, 2026; Ramos-Zaga, 2024). An evidence gap is also identified: diagnoses and typologies predominate, while comparative approaches showing how a network translates into concrete products, agenda continuity, and institutional capacities remain scarce, a central issue in reviews that position collaboration as the operational core of networks (Román-Cao et al., 2025). This set of tensions suggests that the evolution of networks must be read alongside criteria of functioning and generated value, paving the way for the sustainability mechanisms addressed in the next axis.

As a synthesis of this axis, Table 1 organizes the identified trends and the references that support them.

Table 1

Evolution of academic networks in higher education

Trend 2020-2026	How it is expressed in the literature	Corpus references (2020-2026)
Digitalization and hybridization of collaboration	Connectivity and hybrid environments reorder academic routines and expand possibilities for cooperation	Ramos-Zaga (2024); Sánchez Arreaga et al. (2025)
Intensification of platformization	Digital mediation modifies time, coordination, and conditions of academic work	Jiménez & González (2026)
Consolidation of collaboration as the core of networks	Networks are described as spaces for coordinating practices, repertoires, and shared production	Román-Cao et al. (2025)
Networks as motivational and continuity support	The network sustains faculty participation and commitment in virtual environments	Román Acosta & Rodríguez Torres (2024)
Networks as a condition for sustaining research in teaching practice	Research is facilitated or blocked according to institutional and relational	Perines & Roman-Acosta (2026)

	conditions associated with active networks	
Networks and reorientation toward internationalization/quality with a social purpose	Cooperation and societal orientation push networks toward greater consistency and verifiable products	Gacel-Ávila et al. (2024); Fliguer et al. (2025); Cai & Leask (2026)
Networks and university educational transformation	Networks become a device for responding to changes in educational models and relevance	Sánchez-Pástor (2024)
Digitalization and hybridization	Overload/fragmentation due to platformization	Jiménez & González (2026)

Source: Authors' own elaboration.

Mechanisms that sustain or weaken academic networks

Recent evidence converges on a point of direct interest to university management: an academic network becomes sustainable when its interaction leaves repeatable traces. These traces take the form of coordinated work, shared learning, the circulation of repertoires, project continuity, and outcomes recognized by the community. When these signals fade, the network becomes intermittent, dependent on individual will, and fragments in the face of any change in agenda or leadership. Therefore, the question shifts from "what is a network" to a more demanding one: what keeps it alive when institutional pressure grows and academic time is squeezed (Román-Cao et al., 2025; Perines & Roman-Acosta, 2026).

A first set of mechanisms is located at the level of governance. The literature on distributed leadership underscores that the sustainability of complex initiatives improves when coordination capacities are shared, roles are clarified, and a decision-making structure not dependent on a single figure is created (Cuenca, 2025; Ahumada Figueroa et al., 2023). Within this framework, the network is strengthened when operational agreements exist regarding responsibilities, priorities, and coordination methods. Transformational leadership provides a relevant complement by focusing on institutional climate, collective motivation, and the strategic direction of collaborative effort, elements associated with innovation and cultural change in educational institutions (Muñoz-Chávez et al., 2022; Pallango Espín et al., 2025). In managerial terms, these approaches converge on a practical idea: without leadership and rules for continuity, a network behaves like a sum of contacts; with governance, the network functions as institutional infrastructure.

A second set of mechanisms appears in digital mediation. Between 2020 and 2026, the hybridization of academic work and dependence on digital environments for coordinating teaching, research, and collaboration were consolidated. This shift opens opportunities for sustaining distributed interaction, though it also introduces frictions related to overload, speed, productivity pressures, and the reorganization of academic time (Ramos-Zaga, 2024; Sánchez Arreaga et al., 2025). The discussion on platformization describes an additional tension: when cooperation is organized

around platform logics, interaction can become transactional and fragmented, affecting the sense of intellectual work and the stability of collaborative ties (Jiménez & González, 2026). For university management, this evidence suggests a concrete task: equipping networks with infrastructure and usage norms that reduce friction, protect collaboration time, and maintain focus on pertinent academic outcomes.

A third set of mechanisms relates to the quality of interaction and the conditions that facilitate research in practice. The literature examining the facilitators of and barriers to research within teaching work warns that research continuity depends on institutional supports, access to academic communities, and mediations that sustain the process beyond individual intention (Perines & Roman-Acosta, 2026). This line connects with studies on scientific collaboration in networks, where the network is understood as a space for coordinating practices and shared production, with direct effects on learning and career consolidation (Román-Cao et al., 2025). In management terms, this invites looking at a network through the lens of installed capacity: the network grows when it offers practical guidance, feedback, and clear pathways for converting interaction into verifiable products.

The discussion on regulatory approaches to artificial intelligence in different contexts underscores that technological adoption demands frameworks of transparency, accountability, and usage criteria, especially when it intervenes in institutional decisions (Pérez-Ugena Coromina, 2024). Debates on algorithmic biases and dialogic reflection add that technological mediation can reinforce inequalities if applied without a focus on inclusion and critical oversight (Peña-García et al., 2026). For academic networks operating in digital environments, this evidence translates into a direct implication: the sustainability of collaboration also depends on trust in the devices, clarity about interaction rules, and the protection of fair academic practices. Table 2 organizes the mechanisms that the 2020-2026 literature associates with the sustainability or weakening of academic networks, indicating their typical manifestation and their interpretation from a university management perspective.

Table 2

Sustainability mechanisms of academic networks

Mechanism	How it manifests in academic networks	Interpretation for university management	References
Distributed governance	Shared roles, horizontal coordination, continuity of initiatives	Design roles, decision-making rules, and responsibilities; avoid dependence on a single figure	Cuenca (2025); Ahumada Figueroa et al. (2023)
Leadership oriented toward change and innovation	Collaborative climate, collective	Align networks with strategic priorities; sustain	Muñoz-Chávez et al. (2022);

Institutional infrastructure and support	motivation, impetus for new practices Spaces, time, minimum resources for coordination and production	a collaborative culture Provide "light infrastructure" that reduces friction and sustains continuity	Pallango Espín et al. (2025) Perines & Roman-Acosta (2026); Román-Cao et al. (2025)
Hybridization and digital mediation	Remote coordination, asynchronous work, continuity via platforms	Establish usage norms, protect academic time, manage overload	Ramos-Zaga (2024); Sánchez Arreaga et al. (2025)
Platformization and productivity pressure	Fragmented interaction, acceleration, loss of collaborative depth	Design indicators that reward collaboration quality and verifiable products	Jiménez & González (2026)
Conditions for sustaining research in teaching practice	Barriers and facilitators influence participation and continuity	Prioritize mentoring, resources, and an active academic community	Perines & Roman-Acosta (2026)
AI governance and regulatory frameworks	Need for transparency, accountability, and risk control	Define criteria for use, auditing, and accountability in mediated decisions	Pérez-Ugena Coromina (2024)
Inclusion and bias control in digital mediation	Risk of inequality and algorithmic biases	Incorporate a focus on inclusion, critical review, and correction mechanisms	Peña-García et al. (2026)

Source: Authors' own elaboration.

Networks as infrastructure for articulation

The reviewed literature shows that internationalization is increasingly understood less as an administrative block and more as a dynamic activated when networks capable of coordinating sustained academic cooperation exist. In this approach, value shifts toward integration with curriculum, research, quality standards, and institutional responsibility. Internationalization of the curriculum and academic mobility are presented as connected components whose effectiveness depends on coherence with institutional purposes (Álvarez-Salgado et al., 2024), while quality assurance places internationalization within a logic of internal and external improvement linked to evaluation and organizational consistency (Fliquer

et al., 2025). In the Latin American context, structural restrictions, asymmetries, limited resources, and models that can drift toward competition or privatization are noted when cooperation is reduced to visibility, reinforcing the need for stable links and active networks as a condition for institutional practice (Gacel-Ávila et al., 2024; Labraña Vargas & Brunner, 2020; De Giusti, 2025).

In parallel, outreach and societal engagement appear as a space where the public legitimacy of the university is validated by connecting academic capacities with social, productive, and community problems (Verdezoto Reinoso et al., 2025). Territorially focused models agree that impact requires continuity, defined actors, coordination, and follow-up; in operational terms, it requires a network. Evidence shows that environmental needs guide priorities and strengthen extension when it is structured as a process with a trajectory (López & Obregón, 2025a, 2025b), and that research gains social traction when a framework exists that connects knowledge, decisions, and application settings (Maldonado Moreno & Obregón, 2025).

This logic is confirmed in the transfer from postgraduate programs, where the university-society link is recognized as a condition for results to circulate and translate into social and educational value (Ayala & Rivas-Martínez, 2026). In this axis, networks operate as a bridge that stabilizes cooperation through task coordination, the circulation of repertoires, and shared production (Román-Cao et al., 2025), in addition to sustaining faculty motivation and interaction in virtual environments (Román Acosta & Rodríguez Torres, 2024).

An "outside-in" approach reinforces that internationalization gains legitimacy when oriented toward social contributions, shifting attention toward public value and institutional responsibility (Cai & Leask, 2026), with instrumental supports for translating cooperation into plans and decisions (Herrera Timana, 2022). Finally, external projection is linked to responsibility and coexistence, where university action is validated by its impact on community life through sustained relationships (Insuasty Rodríguez & Espinosa Menéndez, 2024; Alcaraz-Herrera et al., 2023; López Morales et al., 2020; Vorontsova et al., 2023).

Strategic implications for university management

The reviewed literature converges on an uncomfortable but clarifying warning: an academic network does not sustain itself by inertia. It is sustained when the institution decides to govern it, assigns responsibilities, protects collaboration time, and translates cooperation into verifiable products. This emphasis shifts the conversation from celebrating connections to a question of strategic direction: what decisions convert dispersed links into institutional capacity? In this line, studies on quality and internationalization situate internal coherence as a decisive factor; cooperation gains value when it is integrated into processes and standards, when it becomes traceable, evaluable, and useful for institutional improvement (Fliguer et al., 2025; Becerra et al., 2024).

A first set of implications relates to leadership and governance. Approaches to distributed leadership highlight the need to broaden the scope of leadership and prevent continuity from depending on a single authority. This approach encourages creating organizational arrangements where coordination is shared, roles are clarified, and decision-making becomes more horizontal (Cuenca, 2025; Ahumada

Figueroa et al., 2023).

In parallel, transformational leadership appears associated with innovation and the mobilization of the academic community, with effects on the willingness to collaborate, sustain changes, and convert initiatives into institutional practices (Muñoz-Chávez et al., 2022; Pallango Espín et al., 2025). The management implication is direct: strengthening networks requires leadership, simple rules, coherent incentives, and a culture that legitimizes collaborative work.

A second set of implications emerges when analyzing the management of alliances and agreements. Analyses of agreements show that the document itself does not guarantee activation; the problem centers on follow-up, continuity, and alignment with institutional priorities (Barquero Morales et al., 2024). The literature on alliances for development proposes criteria that help differentiate formal cooperation from operational partnerships: shared objectives, coordination, resources, evaluation mechanisms, and mutual learning (Rodríguez Cotilla, 2023; Paletta, 2024).

In practice, this approach invites a strategic decision often postponed: prioritizing partnerships, closing agreements that produce no activity, and concentrating resources on relationships that do generate academic and social results. The notion of circular cooperation reinforces this agenda by placing reciprocity and shared responsibility as attributes that increase sustainability and legitimacy (Glennie, 2025).

A third set of implications appears in the operationalization of results. The literature on societal engagement and territorial models suggests that cooperation gains meaning when expressed in products recognized by the environment: projects with external actors, transfer, situated training, continuity of community work, and evidence of impact (Verdezoto Reinoso et al., 2025; López & Obregón, 2025a).

At the research and postgraduate level, the discussion on transfer reinforces that the university-society link requires stable mechanisms that translate academic results into practices and decisions for use (Ayala & Rivas-Martínez, 2026). This evidence feeds a useful criterion for university management: evaluating networks by the volume of agreements produces an illusion of cooperation; evaluating networks by products and continuity reveals their real capacity.

A fourth set of implications relates to digital infrastructure and its governance. Digital transformation presents opportunities for coordinating distributed collaboration, though it also introduces frictions: overload, acceleration, platform dependency, and the reorganization of academic time (Ramos-Zaga, 2024). The discussion on platformization alerts that collaboration risks fragmentation and loss of depth when adjusted to logics of immediacy and performance, affecting the stability of academic ties (Jiménez & González, 2026).

Added to this is the debate on artificial intelligence: comparative regulation shows that technological adoption demands frameworks of transparency, accountability, and responsibility (Pérez-Ugena Coromina, 2024), while studies on algorithmic bias warn that digital mediation can reproduce inequalities if incorporated without critical oversight and an inclusion focus (Peña-García et al.,

2026). The strategic implication is clear: the digital support of academic networks requires rules, protection of time, ethical criteria, and risk assessment.

University cooperation is navigating a paradoxical scenario: institutional connectivity and the visibility of networks and alliances are increasing, while the conversion of these ties into installed capacity remains uneven. The reviewed literature tends to celebrate the expansion of connections as a sign of modernization, yet offers less clarity on the conditions that convert interaction into continuity, verifiable academic products, and territorial impact. This analytical asymmetry explains why certain contributions remain at a descriptive level: the "existence of networks" is reported with little discrimination regarding relational density, reciprocity, governance, and the quality of the link. In this sense, the relevant debate for university management is no longer about expanding contacts; it is about building mechanisms that stabilize cooperation, with measurable effects on quality, research, relevance, and strategic coherence (Fliguer et al., 2025; Becerra et al., 2024).

In internationalization, the literature converges on the idea that its effectiveness depends on integration with substantive processes, particularly curriculum, research, and quality assurance. Works on internationalization of the curriculum and mobility show value when institutional coherence and formative consistency exist (Álvarez-Salgado et al., 2024), while quality analyses place internationalization within a logic of improvement with standards and evaluation (Fliguer et al., 2025). The contrast appears when observing regional approaches: comparative views in Latin America warn of risks of drifting toward competition, privatization, or "visibility" disconnected from substantive cooperation (Gacel-Ávila et al., 2024; Labraña Vargas & Brunner, 2020; De Giusti, 2025). This point necessitates a critical reading: part of the literature confuses internationalization with reputational outcomes, while another part insists on criteria of verifiable cooperation. The "outside-in" approach further stresses the field by shifting legitimacy toward social contributions, which demands networks capable of producing public value and not merely academic circulation (Cai & Leask, 2026).

In outreach and territorial engagement, the literature provides a criterion that serves as a practical test of cooperation: continuity with external actors, coordination, and outcomes recognizable in the territory. Engagement studies highlight its relationship with relevance and positioning, warning that the link weakens when reduced to episodic actions (Verdezoto Reinoso et al., 2025). Territorial models agree that impact requires a relational architecture: defined actors, follow-up mechanisms, and translation of knowledge into settings of use (López & Obregón, 2025a, 2025b; Maldonado Moreno & Obregón, 2025).

The review on transfer in postgraduate programs reinforces this argument by situating the university-society link as a condition for results to circulate and become applicable capacities (Ayala & Rivas-Martínez, 2026). Overall, the literature suggests that networks and territorial impact connect when project governance, continuity, and verifiable products exist. This evidence also reveals a gap: the importance of engagement is widely discussed, yet criteria for evaluating whether a network truly sustained transfer or merely accompanied activities are less operationalized.

The field of alliances and governance introduces a second critical contrast. Several studies show that a signed agreement does not activate cooperation by itself; the decisive factor lies in follow-up, resources, shared objectives, evaluation rules, and institutional learning (Rodríguez Cotilla, 2023; Paletta, 2024; Barquero Morales et al., 2024). This finding questions metrics based on the volume of partners or number of agreements and pushes toward portfolio decisions: prioritizing partnerships, purging nominal links, and concentrating efforts on relationships with products and continuity. Circular cooperation adds a further requirement of legitimacy: reciprocity and shared responsibility, especially relevant when asymmetries erode cooperation (Glennie, 2025). In practice, this literature forces the recognition that a network is not managed by the number of nodes; it is managed by coordination capacity and generated value.

The technological dimension deepens the debate and helps explain why some networks become fragile. Digital transformation expands possibilities for distributed coordination, though it alters academic time, expectations, and modes of interaction (Ramos-Zaga, 2024; Sánchez Arreaga et al., 2025). Platformization introduces additional frictions: acceleration, loss of collaborative depth, productivity pressures, and the erosion of cooperation (Jiménez & González, 2026). The artificial intelligence component introduces a governance layer: comparative regulation, transparency, and accountability, along with risks of biases and inequity in technology-mediated decisions (Pérez-Ugena Coromina, 2024; Peña-García et al., 2026). This literature leads to an operational implication: sustainable networks require usage rules, protected time, technical support, and ethical criteria to preserve trust and continuity.

Based on the reviewed corpus, the manuscript proposes an integrative lens to resolve the concern about concept "diffusion": epistemic utility is defined as the cognitive-practical value attributed to exchanges within a network when it guides criteria, reduces uncertainty, and converts interaction into verifiable capacities and products. Its operationalization is proposed through observable dimensions that allow moving from the concept to evidence: criterion guidance (justifiable decisions on a problem, method, or strategy), uncertainty reduction (decrease in rework, clarification of next steps), access to repertoires (literature, frameworks, methodological pathways, pertinent contacts), translation of tacit knowledge (improvements in writing, argumentation, responses to evaluation), agency and continuity (persistence of participation, assumption of roles, sustaining of projects), and conversion into products (projects, co-authorships, training materials, engagement actions, transfer).

Regarding limitations, the narrative design prioritizes conceptual integration over exhaustiveness, so the corpus does not claim to represent the totality of global production. The coverage is restricted to SciELO, Redalyc, and Dialnet, with expected biases of availability and open access, in addition to a limited time window. The heterogeneity of included designs (reviews, empirical studies, cases) conditions the type of inferences and demands caution when generalizing across institutions with different capacities. These limitations open a research agenda applicable to other investigative contexts: comparative case studies on active networks, qualitative evaluation of generated value using epistemic utility

indicators, analysis of alliance governance, and studies on the effects of platforms and artificial intelligence on collaborative continuity (Ayala & Rivas-Martínez, 2026; Pérez-Ugena Coromina, 2024).

Conclusions

Academic networks have evolved into coordination infrastructure for universities, with their value observable through continuity, work organization, and verifiable products. Their sustainability is associated with distributed governance, leadership, institutional support, and digital infrastructure governed by clear rules. These networks facilitate the articulation between internationalization and outreach/engagement by connecting academic cooperation with external actors, projects with follow-up, and transfer. It is proposed that networks be managed by the value they generate, using the lens of epistemic utility, which is the cognitive-practical value that guides criteria, reduces uncertainty, and converts interaction into results, thus guiding alliance prioritization, incentives, evaluation, and impact.

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Declaration of author responsibility

Daniel Roman-Acosta 1: Conceptualization, Data curation, Formal analysis, Research, Methodology, Resources, Software, Supervision, Validation/Verification, Visualization, Writing/original draft and Writing, review and editing.

Yanet Domínguez Albear 2: Data Curation, Formal Analysis, Investigation, Resources, Software, Supervision, Validation/Verification, Visualization, Writing—Original Draft, and Writing—Review & Editing.

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