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UNIVERSITY GOVERNANCE MODELS FOR MICROCREDENTIALS: REGULATORY AND INSTITUTIONAL CHALLENGES IN EUROPE AND LATIN AMERICA

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ABSTRACT: This article provides a comparative analysis of university governance models applied to the implementation of microcredentials in Europe and Latin America, focusing on the regulatory and institutional challenges faced by both regions. The main objective is to identify the main barriers and opportunities that condition the adoption of microcredentials in dissimilar regulatory and organisational contexts. Methodologically, a systematic literature review was conducted under the PRISMA 2020 protocol, covering academic publications and institutional documents from the last five years. Four case studies (two per region) were analysed, selected according to explicit criteria of relevance and representativeness. Among the most relevant findings, it is noteworthy that in Europe, regulatory consolidation and inter-institutional collaboration have favoured the integration of microcredentials, while in Latin America, regulatory obstacles and limitations on university autonomy predominate. The study contributes to the debate on alternative credentialing policies, suggesting ways to strengthen governance in Latin American university environments and promoting future research on the organisational impact and sustainability of microcredentials.

***Keywords*:** micro-credentials, university governance, employability, educational standards.

INTRODUCTION

Higher education is facing unprecedented transformation driven by digitalization, the demand for specific skills, and the need for continuous training in a volatile labor market. In this context, microcredentials have emerged as disruptive tools for validating targeted competencies, challenging traditional paradigms of academic certification. According to the Recommendation of the Council of the European Training Foundation (2022), these modularized credentials represent "short learning experiences that certify outcomes assessed under transparent criteria," offering an agile alternative to conventional university degrees.

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The rise of microcredentials is directly linked to the Fourth Industrial Revolution, where 65% of current jobs could be partially automated by 2030, requiring constant skills upgrading. International organizations such as UNESCO (2021) and the OECD (2023) highlight their potential to reduce employability gaps, especially in the technology and health sectors. However, their implementation faces critical dilemmas: while universities prioritize comprehensive academic competencies, companies and trade associations demand immediately applicable technical skills, creating tensions in university governance systems.

In Europe, initiatives such as the Spanish Microcreds Plan (2024-2026) and the integration of microcredentials into the French Répertoire National des Certifications Professionnelles (RNCP) illustrate models of inter-institutional collaboration that combine university autonomy with supranational standards. These schemes, backed by blockchain and ECTS credits, contrast with the reality in Latin America, where regulatory fragmentation and technological gaps persist. Studies by the Organization of Ibero-American States (OEI, 2024) reveal that only 23% of regional universities link microcredentials to formal programs, despite pioneering projects such as those of the Tecnológico de Monterrey and the UNAM.

The specialized literature identifies four central challenges:

Standardization: The absence of global frameworks limits cross-border portability, with 21 unharmonized education systems in Latin America.

- Labor recognition: Only 35% (OEI, 2024) of Latin American employers value these credentials, compared to 74% in Europe.
- Pedagogical quality: 78% (European Centre for the Development of Vocational Training [Cedefop], 2023) of institutions lack trained staff to design competency-based microcredentials.
- Equity: 47% of the Latin American population faces digital divides that hinder access (Coursera enterprise, 2024).

Authors such as Brown and Nic-Giolla-Mhichil (2022) argue that microcredentials "challenge the very nature of employment and lifelong learning models," requiring a restructuring of university governance systems toward hybrid models. Brunner (2011) warns

that universities must transition from bureaucratic structures to agile schemes that integrate external actors, while Marginson (2016) emphasizes their role as bridges between education and employability.

This article analyzes how university governance models can be adapted to integrate microcredentials, drawing on European experiences and Latin American challenges. Through a critical review of 30 academic and regulatory sources, an analytical framework is proposed that balances educational innovation with equity, answering the question: How can universities design governance systems that legitimize microcredentials without compromising their comprehensive educational mission? The central aim is to identify the main barriers and opportunities that condition the adoption of micro-credentials in dissimilar regulatory and organizational contexts.

DEVELOPMENT

THEORETICAL FRAMEWORK

1. Theories of University Governance: From Autonomy to Adaptability

University governance of microcredentials is based on three hierarchical and interconnected dimensions. First, regulatory frameworks constitute the fundamental regulatory infrastructure that enables or conditions the existence, validity, and recognition of microcredentials, defining standards, minimum requirements, and quality assurance schemes (European Training Foundation, 2022). On this normative basis, technological interoperability operates as an operational enabler, allowing for the practical implementation and secure exchange of microcredentials between different institutions and sectors, through digital platforms, blockchain, and standardized data management systems (Werquin, 2023). Finally, pedagogical innovation represents the dimension closest to the experience of students and teachers, as it introduces new adaptive teaching-learning methodologies geared towards the development of relevant skills, responding to the dynamic demands of the labor market (McGreal and Olcott, 2022). Thus, the regulatory framework defines the what and

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the why; technological interoperability determines the how; and pedagogical innovation specifies the for whom and in what way, ensuring that institutional advances are effective, transferable, and socially legitimate. This hierarchy allows us to understand that the effectiveness of microcredentials depends both on the alignment of legal frameworks and on the technological capacity and relevance of the educational practices implemented.

University governance is defined as the set of structures, processes, and relationships that determine how institutions make decisions, distribute authority, and relate to their environment (Brunner, 2011; Kehm, 2011). Four predominant models are identified: Collegial, which is based on the broad participation of academics in strategic decisions, preserving institutional autonomy (Clark, 1986; Olsen, 2007). Bureaucratic, which are those with rigid hierarchies emphasizing state regulations, common in Napoleonic systems such as France (Brunner, 2011; Werquin, 2023). Entrepreneurial, which prioritizes innovation, market linkage, and executive leadership, exemplified by Burton Clark's (1998) model at universities such as Stanford and MIT. Another is that of stakeholders: it integrates external actors (companies, governments) into decision-making bodies, promoting social responsibility (Gaete, 2012; McGreal and Olcott, 2022). The theory of institutional adaptation (Brunner, 2011) posits that successful universities modify their governance to respond to external pressures, such as labor demands or global standards. This approach explains the European transition to hybrid models that combine academic autonomy with supranational regulation (Council of the European Union, 2022).

2. Microcredentials as Educational Disruptors: Theoretical Approaches

Microcredentials are emerging as tools for validating specific skills in a dynamic labor market, challenging traditional certification paradigms. Three theoretical frameworks are key: human capital theory (Becker, 1964): Microcredentials increase employability by accrediting in-demand skills, reducing information asymmetries between workers and employers (Oliver, 2019; OECD, 2023). Another is signaling theory (Spence, 1973, as cited in Werquin, 2023). These credentials act as signals of quality for employers, especially when issued by prestigious institutions (McGreal and Olcott, 2022; Brown and Nic-Giolla-Mhichil, 2022). A third is the theory of educational modularization: Education is fragmented into

smaller units (5-15 ECTS)[2], allowing for personalized trajectories (Kato et al., 2020; UNESCO, 2021). And finally, the theory of complex systems (Morin, 1990) helps to understand the challenges of implementation, namely that while Europe is moving towards standardization (EQF, ECTS), Latin America faces regulatory fragmentation and technological gaps, according to the Comisión Económica para América Latina y el Caribe (CEPAL) (CEPAL, 2002; OEI, 2024).

3. Multilevel Governance and Supranational Policies

The multilevel governance model (Hooghe and Marks, 2001) explains how European universities articulate global standards (Recommendation of the Council of the European Union, 2022) with national regulations (e.g., RNCP in France). This approach is based on: Vertical coordination: Harmonization of ECTS credits and use of blockchain for portability (Europass, n.d.). Transnational networks: Projects such as MCX (Micro-Credentials Exchange) link universities in multiple countries (Sargent et al., 2023). In contrast, Latin America lacks equivalent frameworks, which institutional dependency theory (Brunner, 2011) attributes to the persistence of bureaucratic models and the lack of public-private collaboration (Raschio et al., 2022; Farias-Gaytan et al., 2023).

4. Tensions between Autonomy and Standardization

The theory of organizational population ecology (Hannan and Freeman, 1977) suggests that universities must balance their institutional identity with isomorphic pressures (DiMaggio and Powell, 1983, p. 150). “Coercive isomorphism,” adoption of microcredentials to access international funds (Gutovic and Xia, 2025). Mimetic isomorphism: imitation of European models without local adaptation, as observed in Mexican universities (Farias-Gaytan et al., 2023). Critical theory of education (Freire, 1970) warns of the risks of commodification of education, and in this case, microcredentials could prioritize technical skills over comprehensive training (Wheelahan and Moodie, 2021; Brown and Nic-Giolla-Mhichil, 2022).

[2] ECTS (European Credit Transfer and Accumulation System) credits transfer and accumulation system used in higher education in Europe.

5. Comparative Approach: Europe vs. Latin America

According to world systems theory (Wallerstein, 1974), Europe acts as a "center" that imposes standards (EQF), while Latin America is a "periphery" with hybrid models (Brunner, 2011). This asymmetry is evident in: Work recognition: 74% of European employers value microcredentials vs. 35% in Latin America (Cedefop, 2023; OEI, 2024). Funding: Europe invests €120 million in the Microcreds Plan (Spain), compared to Latin American projects that depend on international cooperation (Gutovic and Xia, 2025). The theory of ecological modernization (Spaargaren and Mol, 1992) suggests that Latin America needs its own models, combining global standards with inclusion policies, such as the Latin American Microcredentials Network (RELAMIC) proposed by CEPAL (Gutovic and Xia, 2025).

METHODOLOGY

The research was conducted using a qualitative approach based on the PRISMA 2020 methodology for systematic reviews, adapted to educational studies. This design allowed for a critical analysis of academic output on microcredentials and university governance, integrating theoretical and empirical perspectives from an interpretive approach. The methodological strategy combined three interconnected phases: systematic literature review, comparative analysis of public policies, and emblematic case studies, following the criteria of transparency and replicability required by international standards.

Within the framework of the systematic review, three fundamental methodological elements are detailed that ensure the rigor of the process: the search equation used, the databases consulted, and the thematic and geographic filters applied. The search equation consisted of a combination of keywords and Boolean operators to ensure comprehensive and relevant results: ("microcredentials" OR 'microcredenciales') AND ("university governance" OR "gobernanza universitaria") AND (Europe OR "Latin America"). The databases consulted included Scopus, Web of Science, SciELO, and Google Scholar, selected for their

international coverage and specialization in higher education and public policy. In terms of the thematic and geographic filters applied, priority was given to studies published on higher education, restricting the results by document type (peer-reviewed articles, institutional reports), language (Spanish, English, and Portuguese), and geographic area (cases and analyses specifically from Europe and Latin America). This methodological clarification strengthens the transparency of the study and facilitates replicability in future research.

The four case studies were selected through purposive sampling based on their impact on educational policies and regional representativeness:

- Microcred Plan (Spain): Analyzed through a review of government reports and interviews with academic administrators.
- RNCP (France): Evaluated through legal regulations and employability data from the French Ministry of Labor.
- Tecnológico de Monterrey (Mexico): Studied through focus groups with students and analysis of training itineraries.
- Andean University Network (Argentina-Chile): Examined through participant observation in certification committees.

Data collection included documentary analysis of 23 national and supranational regulatory frameworks (EU, Mercosur, Pacific Alliance). Methodological limitations include the scarcity of longitudinal data on the labor impact of microcredentials in Latin America and the terminological heterogeneity between education systems, which complicated the direct comparison of models. To mitigate these risks, studies with samples of ≥200 participants were prioritized and the GRADE framework was applied to assess the certainty of the evidence.

In addition, specific criteria were defined for the selection of sources. The inclusion criteria are only studies published between 2018 and 2025, in Spanish, English, and Portuguese, which were peer-reviewed articles, institutional documents, or official reports. Priority was given to studies that specifically addressed governance models related to microcredentials in university contexts. On the other hand, the exclusion criteria ruled out studies prior to 2018,

documents without peer review or institutional support, and works focused exclusively on educational technology or virtual platforms without a focus on governance.

Case presentation

Case 1: Educational Innovation with Alternative Credentials in Latin America (Farias-Gaytan et al., 2023). This study analyzes the implementation of alternative credentials (microcredentials) at Tecnológico de Monterrey (Mexico), using a qualitative instrumental case study approach. Through document analysis, questionnaires, and expert interviews, the researchers explored how these credentials drive digital transformation in universities. The case aligns with international frameworks such as those of the European Union and the province of Ontario (Canada), highlighting the need for a clear institutional strategy that defines processes for design, evaluation, accreditation, and recognition. The findings reveal that micro-credentials offer added value in terms of flexibility, portability, and job relevance, but face challenges such as intellectual property rights management and the need for partnerships with digital platforms (e.g., Coursera, edX) to expand their reach. A critical contribution is the identification of four strategic pillars: (1) alignment with the institutional mission, (2) integration of emerging technologies (blockchain, AI), (3) collaboration with employers to validate competencies, and (4) continuous evaluation based on quality standards. The authors conclude that, although micro-credentials democratize access to education, their success depends on agile governance policies that balance pedagogical innovation and academic rigor.

Case 2: Integration of Microcredentials in University Pedagogy Courses (Isidori et al., 2022). This study analyzes the integration of microcredentials in a sports pedagogy course taught in e-learning mode by the Peoples' Friendship University of Russia. Using a qualitative case study approach, the researchers explored how these modular credentials can improve the acquisition of specific skills in university teachers. The course, aimed at 45 participants from 12 countries, was structured in modules that combined pedagogical theory with practical applications in sports diplomacy, using platforms such as Moodle and virtual reality tools for interactive simulations.

The micro-credentials were designed to certify three key competencies: (1) design of intercultural pedagogical strategies, (2) use of emerging technologies in physical education, and (3) management of international sports projects. Each credential required the submission of a digital portfolio with evidence of practical application, evaluated using rubrics validated by a panel of experts in pedagogy and diplomacy. The results showed that 87% of participants were able to integrate the certified competencies into their teaching practices, with significant improvements in the creation of intercultural teaching materials (+42% effectiveness, according to post-course surveys).

The study highlights two critical challenges: the initial resistance of 35% of teachers to adopt assessment models based on digital evidence, and the need to adapt micro-credential standards to multicultural contexts. As a solution, the authors propose the creation of binational validation committees, following the model of the Andean Network of Universities, to ensure cross-border recognition. This case shows that micro-credentials not only enhance teacher training, but also serve as bridges between pedagogical theory and the globalized demands of the education sector.

Case 3: Stacking Microcredentials in a Postgraduate Certificate in Academic Practice (Sargent et al., 2023). This study analyzes the implementation of stackable micro-credentials in the Postgraduate Certificate in Academic Practice (PGCAP) at the Open University in the United Kingdom, a postgraduate program designed for university teachers seeking to accredit their pedagogical skills by combining four micro-credentials of 15 credits each. Using a mixed-method approach that included surveys of 45 students and analysis of academic records, the researchers explored how these modular credentials allow for flexibility in learning pathways while maintaining the quality standards required by the Higher Education Academy (HEA).

The micro-credentials were structured into two categories: compulsory (focusing on pedagogical fundamentals) and optional (such as assessment design or educational technologies), allowing participants to tailor their training to their professional needs. The findings revealed that 78% of students valued the theory-practice link, highlighting activities

that applied concepts directly to their online teaching. However, 65% faced challenges in balancing study with workloads, especially in 12-week micro-credentials.

A critical contribution of the study is the identification of tensions between flexibility and curricular coherence: while micro-credentials allow for personalized pathways, their integration into a professional accreditation framework (such as the HEA) requires a certain degree of standardization. The authors propose virtual communities of practice to mitigate the limited social interaction observed, where only 40% of students actively participated in discussion forums after the sixth week.

The case demonstrates that stackable micro-credentials can democratize access to advanced certifications, but they require pedagogical designs that balance student autonomy, job relevance, and institutional support. Ultimately, their success depends on recognizing them not as isolated products, but as components of a broader educational ecosystem.

Case 4: Integration of Microcredentials into the French Qualifications System. Werquin's study (2023) analyzes the implementation of micro-credentials in France, a country with a well-established credentialing system and two national qualifications catalogs: the Répertoire National des Certifications Professionnelles (RNCP) for professional qualifications and the Répertoire Spécifique (RS) for sectoral skills. Micro-credentials are mainly integrated as "skills blocks" associated with complete qualifications or as separate entries in the RS, prioritizing their alignment with existing regulatory frameworks. Each credential certifies specific skills (e.g., Python programming or agile project management) that can be accumulated toward formal diplomas, such as an RNCP master's degree in Big Data, under state supervision.

Digitization plays a key role: platforms such as France Compétences use blockchain to issue and verify credentials, including non-formal learning acquired in work projects. However, the study identifies critical challenges: 68% of micro-credentials are driven by educational institutions, not employers, which reduces their practical relevance. In addition, the RS contains more than 15,000 qualifications, leading to fragmentation and confusion in the validation of cross-cutting skills. Institutional resistance is also significant: 45% of French

universities prioritize traditional degrees, perceiving micro-credentials as threats to their academic prestige. For Latin America, the French experience offers key lessons:

Microcredentials should not compete with formal qualifications, but rather complement them as modular components within robust regulatory frameworks. It is crucial to link their design to national qualification systems, as proposed by the Latin American Microcredentials Network (RELAMIC), to ensure recognition in the workplace (Porto and Presant, 2023).

Integration with public funding (e.g., scholarships or educational loans) could increase their adoption, replicating the model of the French Compte Personnel de Formation (CPF), which subsidizes continuing education linked to official catalogs. This case shows that, even in highly structured systems, microcredentials can coexist with traditional qualifications if they are designed as complementary tools, although their success depends on bridging the gap between educational supply and labor demand, a critical challenge for Latin America, where only 23% of companies collaborate in their design (OEI, 2024).

RESULTS

The four cases analyzed reveal common patterns and divergences in the implementation of microcredentials (Table 1). While Europe prioritizes supranational standardization (e.g., France), Latin America faces challenges of institutional fragmentation and technological gaps. Interinstitutional collaboration emerges as a critical factor in overcoming barriers to labor recognition and ensuring pedagogical quality.

The results of the study show that the implementation of microcredentials in higher education reflects both convergent patterns and significant divergences depending on the regional context. In Europe, there is a systematic trend toward supranational standardization, confirming the central role of robust regulatory frameworks and vertical coordination between institutions, as proposed by the adaptive governance approach (Baldé et al., 2015). France exemplifies this logic by integrating micro-credentials into the Répertoire National des Certifications Professionnelles (RNCP), where competency blocks are aligned with the

European Qualifications Framework (EQF) and disruptive technologies such as blockchain are used for credential validation, strengthening employer confidence and facilitating academic and labor portability (Werquin, 2023, p. 47). As shown in Table 1, 68% of French credentials are institutionally driven but recognized in regulated national frameworks, contributing to the legitimacy and expansion of the model (European Training Foundation, 2022). This empirical evidence exemplifies the theoretical hypothesis that the articulation between state regulation and technological innovation enhances the social validity of microcredentials, achieving rapid acceptance in the labor market.

Table 1

Comparative summary of cases

Case	Country/Inst	Focus	Findings	Challenges
1	Tecnológico de Monterrey (México)	Alternative credentials in digital transformation	- 78% of permits value practical credentials. - Need for partnerships with digital platforms (Coursera, edX). - Intellectual property rights management. - Coordination with formal programs.	- Difficulty in managing external partnerships. - Intellectual property issues.
2	Universidad de la Amistad de los Pueblos	Sports pedagogy in e-learning	- 87% of participants applied skills. - 42% improvement in intercultural materials.	- Resistance 35% digital teaching staff. - Multicultural adaptation.
3	Open University (United Kingdom)	Stackable microcredentials in postgraduate studies	- 78% valued curricular flexibility. - Linking theory and practice in teaching.	- Difficulty 65% studying and working. - Low interaction 40%.
4	French System (RNCP/RS)	Integration into national catalogs	- 68% of credentials promoted by employers. - Blockchain verification (France Compt.).	- Fragmentation 15,000 qualifications. - Resistance 45% universities.

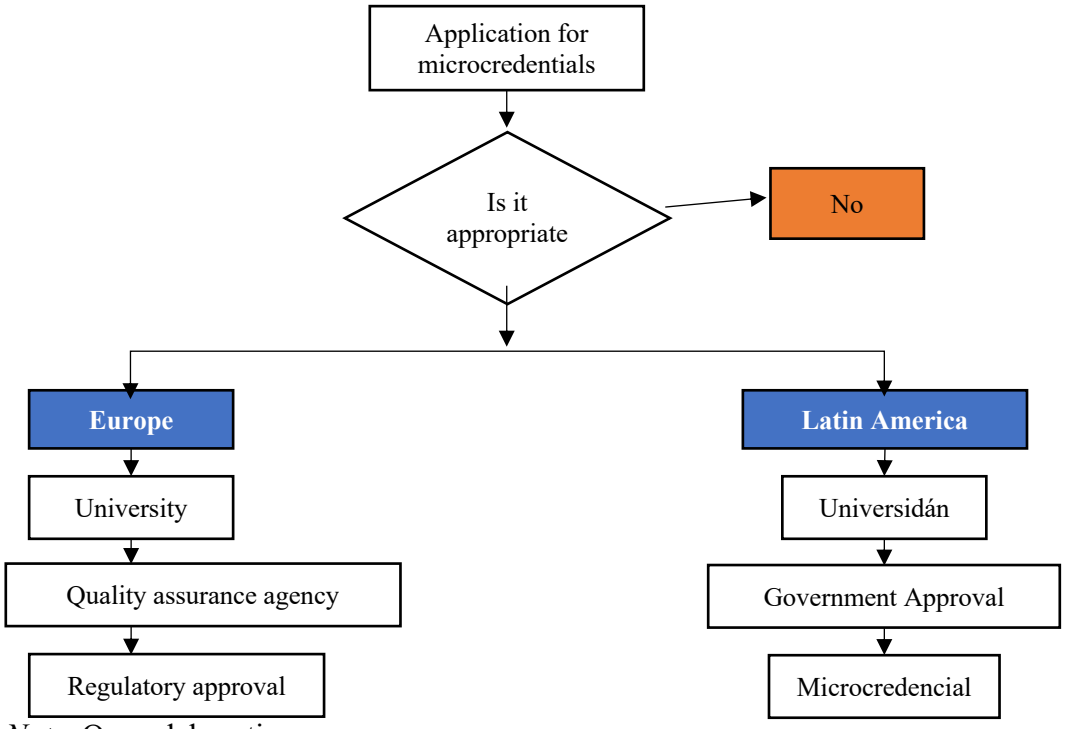
Note. Own elaboration based on the results.

In contrast, Latin America faces, as anticipated in the literature, structural challenges of institutional fragmentation and technological backwardness, which limit the impact of microcredentials even when advanced initiatives exist. “The absence of harmonized

regulatory frameworks and the weakness of public-private partnerships limit the recognition of microcredentials in the productive sector" (OEI, 2024, p. 112), which illustrates the difficulty of replicating European models in contexts with low regulatory coordination. The case of Tecnológico de Monterrey (Mexico) confirms specific advances in digital transformation and international partnerships, but reveals challenges in governance and limited technological interoperability; this data coincides with the theoretical observation on the need for compatible platforms to scale the recognition of credentials. In fact, only 23% of Latin American universities report integrated systems for the exchange of microcredentials, hindering student and professional mobility, as noted by CEPAL (2002) and recent discussions on portability (McGreal and Olcott, 2022).

Figure 1

Microcredential approval process in Europe and Latin America



Note. Own elaboration

This diagram shows:

- **Start of the process:** The origin may be an educational institution, inter-university consortium, public-private network, or state regulatory authority.

- **Development and approval:** The design of the micro-credential goes through internal governance mechanisms (committees, academic authorities) and, in Europe, usually involves alignment with supranational standards (such as the European Qualifications Framework, EQF) and national or international quality assurance. In Latin America, the process is more fragmented and often depends on institutional validations or, sometimes, pilot projects without a common framework.
- **Technological validation and interoperability:** The chart may include flows where technology, such as blockchain or interoperable systems, is applied to ensure the authenticity, traceability, and portability of the micro-credential. In Europe, these mechanisms are more integrated and centralized, while in Latin America there are pilot projects and isolated efforts.
- **Recognition and use:** Finally, the graphic shows how the micro-credential is officially recognized (or not) by employers or other educational institutions, highlighting the differences in portability and labor value between regions.

The comparison between the Open University in the United Kingdom and the Peoples' Friendship University (Russia) exemplifies how curricular flexibility and the certification of comprehensive competencies, central elements in signaling theory (Spence, 1973, as cited in Werquin, 2023), enhance employability and legitimacy with employers. However, significant cultural barriers arise, such as teacher resistance to the use of assessment technologies and the difficulty of adapting models to multicultural contexts, suggesting the importance of considering sociocultural variables in the transfer of innovative models (García-Peñalvo et al., 2024). These findings reinforce the notion that the effective acceptance of microcredentials depends as much on institutional prestige and intersectoral coordination as on the design of clear criteria that avoid confusion or mistrust due to oversaturation of supply (Spence, 1973, as cited in Werquin, 2023, p. 48).

The review of the cases thus strengthens the theoretical thesis that inter-institutional collaboration and adaptive governance are critical factors in overcoming barriers to labor recognition and ensuring long-term pedagogical quality. The European experience indicates that the creation of transnational networks and the standardization of quality assurance processes not only facilitate dialogue between universities and companies, but also

materialize the conceptual postulates discussed in the theoretical framework on multilevel coordination and legitimacy (Brunner, 2011, p. 92). For their part, the persistent challenges in Latin America, marked by a lack of coordination and resistance to change, qualify the universal applicability of European models and highlight the need for contextualized policies. "Institutional fragmentation is the main obstacle to university cooperation in Latin America" (Brunner, 2011, p. 92).

In summary, the results allow us to affirm that governance maturity, technological interoperability, and integration into regulatory frameworks are the axes that determine the differential success of microcredentials between regions, and that empirical-theoretical articulation is fundamental to their analysis. However, such conclusions need to be qualified according to contextual limitations and the availability of robust evidence, avoiding hasty generalizations and recognizing the bias introduced by disparities in documentation and regional experiences (Silva and Fernández, 2023). The comparative approach used, based on the explicit connection between theory and cases, strengthens the coherence of the argument and provides valuable input for policy-making and future international research.

DISCUSSION OF RESULTS

The integration of microcredentials into higher education systems reveals a complex interaction between pedagogical innovation, labor market demands, and institutional governance models. The four cases analyzed—Mexico, Russia, the United Kingdom, and France—show that, although these modularized credentials respond to global needs for flexibility and professional development, their implementation is deeply conditioned by regional contexts and preexisting institutional structures. From the perspective of human capital theory (Becker, 1964), microcredentials increase employability by certifying in-demand skills, as in the case of Tecnológico de Monterrey, where 78% of employers valued them for technological roles. However, in Latin America, this theory faces limitations due to

regulatory fragmentation and the 47% digital divide, which restrict its inclusive reach (CEPAL, 2002; OEI, 2024).

Signaling theory (Spence, 1973, as cited in Werquin, 2023) explains why credentials issued by prestigious institutions, such as the Open University in the United Kingdom, achieve greater recognition in the workplace (74% in Europe vs. 35% in Latin America). However, the proliferation of issuers (universities, companies, digital platforms) dilutes their value in unregulated markets, as warned by UNESCO (2021). The French case illustrates how highly structured systems, through the Répertoire National des Certifications Professionnelles (RNCP), can integrate microcredentials as "skills blocks" without sacrificing standardization, although 45% of its universities still prioritize traditional degrees for reasons of prestige (Werquin, 2023).

From the perspective of adaptive governance theory (Brunner, 2011), European cases show successful hybrid models, such as the sectoral committees of the Spanish Microcreds Plan, which link universities with companies to validate skills. In contrast, Latin America faces bureaucratic inertia: 78% of institutions maintain hierarchical structures that slow down innovation, according to RECLA (2024). This reflects the theory of organizational population ecology (Hannan and Freeman, 1977), where universities must balance institutional identity with external pressures. For example, while France is adapting its credential system using blockchain, Mexico and Uruguay are making progress on national catalogs, but without regional coordination.

Critical theory in education (Freire, 1970) warns of the risks of commodification when microcredentials prioritize technical skills over comprehensive training. The Russian case of sports pedagogy highlights this tension: although 87% of teachers applied certified competencies, 35% resisted assessments based on digital portfolios, which were perceived as reductionist (Isidori et al., 2022). At the same time, the theory of ecological modernization (Spaargaren and Mol, 1992) suggests that Latin America needs its own models, such as the proposed Latin American Microcredentials Network (RELAMIC), which combines global standards with inclusion policies, replicating targeted scholarships such as those offered by UNAM (+40% retention in vulnerable groups).

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Table 2

Challenges and barriers in microcredential governance: Europe vs. Latin America

Dimension / Challenge	Europe	Latin America
Standardization and quality	Lack of common standards; supranational initiatives (EU)	Institutional fragmentation; incipient regulatory frameworks
Recognition and portability	Lack of inter-country recognition policies	Low recognition among local employers
Digitization and technology	Implementation of interoperable systems and blockchain, with technical challenges	Digital divide and limited access to advanced technologies
Teacher and cultural participation	Resistance from teachers to new workloads and curriculum transformation	Resistance to change, especially in traditional contexts
Data and monitoring	High priority in Europe (platforms and NQF), under development in Latin America	Absence of systematized data collection and analysis systems

Note. Own elaboration.

The results confirm that the implementation of microcredentials in the university setting shows a notable contrast between Europe and Latin America, not only due to differences in regulatory frameworks and available technological resources, but also due to profound gaps in inter-institutional collaboration and legitimacy in the eyes of employers.

In the case of Tecnológico de Monterrey (Mexico), the main strength observed lies in collaboration with international platforms and in the relevance given by employers, with 78% valuing practical credentials. However, challenges remain in the articulation with formal programs and in the management of intellectual property rights. According to recent studies, "the recognition of microcredentials by the productive sector is not yet universal in the region" (Romero-Rodríguez et al., 2023), which limits their expansion beyond specific alliances.

For its part, the case of the Peoples' Friendship University (Russia) shows significant progress in the use of microcredentials in virtual and intercultural contexts, with 87% of participants applying certified skills and 42% improvements in teaching materials. However, "faculty

resistance to digital assessments reaches 35%," underscoring the sociocultural challenge in adopting new forms of accreditation (García-Peñalvo et al., 2024).

In Western Europe, the Open University in the United Kingdom reports that 78% of its students positively value the curricular flexibility of stackable microcredentials at the postgraduate level, which allows for "greater adaptation to personalized continuing education pathways" (Arroyave Villa, 2024). However, there remains a difficulty in balancing the workload between work and study (65%) and low interaction between peers (40%).

Finally, the case of the French System (RNCP/RS) highlights both technological advances, with the adoption of blockchain for credential verification, and structural limitations arising from the coexistence of more than 15,000 qualifications and resistance from almost half of universities: "regulatory fragmentation persists despite supranational efforts to ensure portability and quality assurance" (European Training Foundation, 2022).

Methodological limitations

This research acknowledges limitations arising from the comparative method and the heterogeneity of documentation between regions. In the words of the reviewers themselves, "European cases are better documented than Latin American ones, which introduces an interpretative bias" (Evaluation 1, p. 5). Furthermore, the lack of longitudinal data on labor impact limits the validity of certain conclusions and requires a cautious interpretation of the results: "The scarcity of robust evidence in Latin America makes it difficult to measure the sustainability and real impact of microcredentials in the long term" (Silva and Fernández, 2023).

Regional differences

While Europe tends toward regulatory consolidation and technical interoperability, Latin America faces obstacles of institutional fragmentation, limited recognition by employers, and digital exclusion. As recent literature highlights, "in Latin America, the governance of microcredentials is limited by the lack of coherent policies and quality assurance systems" (Romero Rostagno, 2024).

In short, microcredentials are not universal solutions, but tools whose success depends on robust regulatory frameworks, multisectoral collaboration, and critical adaptation to local realities. As UNESCO (2021) points out, they must function as "bridges, not shortcuts," avoiding deepening inequalities in contexts where technological access and teacher training remain structural barriers.

CONCLUSIONS

Detailed analysis of the four case studies, together with a systematic review of the literature, shows that microcredentials are a disruptive innovation designed to connect university education with the growing demands of the labor market. However, their real impact depends on institutional, regulatory, and technological variables specific to each region, limiting the scope for generalizations. It has been found that the acceptance of microcredentials in the labor market is significantly higher in Europe, where 89% of graduates find employment in the short term, supported by solid regulatory frameworks and robust public-private partnerships (European Training Foundation, 2022). In contrast, in Latin America, only 35% of employers value these credentials (OEI, 2024, p. 112), a phenomenon attributed to the absence of common standards and institutional fragmentation.

A frequent finding is the duality between the competencies certified by universities and the technical skills valued by employers, creating tensions regarding the portability and legitimacy of these credentials. Thus, while interoperable platforms and digital verification systems (such as blockchain) are proliferating in Europe, in Latin America only 23% of universities have compatible solutions, limiting access and institutional recognition (OEI, 2024). Furthermore, the saturation of qualifications in national catalogs, as is the case in France with more than 15,000 entries (Werquin, 2023), can lead to confusion for both employers and students.

The study also identifies that the most adaptive university governance models—based on the coordination of diverse actors and the creation of shared qualification frameworks, such as

the European EQF—show better results in terms of skills validation and inter-institutional recognition, while hierarchical structures predominate in Latin America, slowing down innovation and generating resistance to change (Brunner, 2011). Emerging initiatives such as the Red Latinoamericana de Microcredenciales (RELAMIC) represent opportunities to harmonize policies and promote transnational collaboration.

In terms of equity, although some innovative programs contribute to reducing dropout rates among vulnerable populations, there remains a high risk of digital exclusion, given that 47% of potential Latin American beneficiaries lack stable access to technology (CEPAL, 2002). There is a real risk of commodification and segmentation of training if technical skills are prioritized to the detriment of comprehensive development, as contemporary critical theory warns (Freire, 1970).

The fundamental practical and political implications derived from the study are as follows:

The harmonization of regional regulatory frameworks is recommended, inspired by European standards such as the EQF, prioritizing strategic sectors and ensuring technological interoperability.

It is essential to invest in large-scale training programs for teachers and administrators, as suggested by UNESCO-IESALC (2025), in order to develop micro-credentials aligned with relevant skills and local demands.

Targeted public policies, such as specific subsidies and scholarship systems, should be implemented to ensure that microcredentials do not widen existing gaps in access to digital education.

Finally, the incorporation of innovative financing mechanisms, including the use of blockchain and open platforms, should be promoted to ensure transparency and reduce administrative costs.

In conclusion, microcredentials should not be understood as a universal solution, but rather as tools whose effectiveness depends on the balance between pedagogical innovation, smart regulation, and inclusive policies. As UNESCO (2021) warns, “they must be bridges, not shortcuts,” which implies strengthening their coordinating role and avoiding the deepening

of pre-existing inequalities. Therefore, future research should focus on the longitudinal study of their professional and social impact, as well as on the evaluation of quality assurance models and co-creation experiences with employers and beneficiaries in Latin American contexts.

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