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CONVERGÊNCIA, DIVERGÊNCIA E LACUNAS NA ACREDITAÇÃO DO ENSINO SUPERIOR VIRTUAL: UMA REVISÃO SISTEMÁTICA

CONVERGENCE, DIVERGENCE, AND GAPS IN VIRTUAL HIGHER EDUCATION ACCREDITATION: A SYSTEMATIC REVIEW

CONVERGENCIA, DIVERGENCIA Y BRECHAS EN LA ACREDITACIÓN DE LA EDUCACIÓN SUPERIOR VIRTUAL: UNA REVISIÓN SISTEMÁTICA

Jorge Fernando Gómez Reategui¹  <https://orcid.org/0000-0001-6894-5375>

Jorge Poma Deza²  <https://orcid.org/0000-0002-5042-2047>

María Julia Cabrera³  <https://orcid.org/0000-0002-5361-6541>

Angie Giulliana Avalos Naveda⁴  <https://orcid.org/0000-0002-7403-0240>

Andy Williams Chamolí Falcón⁵  <https://orcid.org/0000-0002-2758-1867>

¹ Universidad Nacional Mayor de San Marcos, Lima, Perú

² Universidad San Ignacio de Loyola, Lima, Perú

³ Universidad César Vallejo, Trujillo, Perú

⁴ Universidad Femenina del Sagrado Corazón, Lima, Perú

⁵ Universidad de Huánuco, Huánuco, Perú

Jorge Fernando Gómez Reátegui – jgomezr@unmsm.edu.pe | Jorge Poma Deza – jorge.poma@usil.pe | María Julia Cabrera – majuscsc2111@gmail.com |
Angie Giulliana Avalos Naveda – Angieavalosn@unife.pe | Andy Williams Chamolí Falcón – andy.chamoli@udh.edu.pe



Corresponding Author:

Andy Williams Chamolí Falcón

Calle Los Ficus

20001 – Piura – Perú

andy.chamoli@udh.edu.pe

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RESUMO

Introdução: A expansão acelerada da educação virtual no ensino superior aumentou a demanda por marcos de garantia da qualidade e acreditação capazes de responder aos desafios multidimensionais dos ambientes digitais, evidenciando inconsistências em seus fundamentos conceituais e na sua implementação, especialmente em contextos ibero-americanos.

Objetivo: Analisar o grau de convergência e divergência entre os marcos de acreditação da qualidade aplicados ao ensino superior virtual na Ibero-América, identificando dimensões comuns, particularidades contextuais e lacunas em relação aos padrões internacionais.

Métodos: Foi realizada uma revisão sistemática seguindo o protocolo PRISMA 2020, por meio da identificação, seleção e síntese de literatura científica indexada na Scopus, garantindo rigor metodológico e transparência no processo.

Resultados: Observou-se convergência estrutural em dimensões como governança institucional, infraestrutura tecnológica, desenho pedagógico e suporte ao estudante. No entanto, identificou-se divergência operacional decorrente de diferenças nas capacidades institucionais, marcos regulatórios e níveis de desenvolvimento tecnológico. Também persistiram lacunas na avaliação dos resultados de aprendizagem, integração pedagógica digital e alinhamento com padrões internacionais.

Conclusão: A principal limitação não reside na ausência de marcos, mas na sua aplicação fragmentada e na limitada adaptação contextual, exigindo modelos de acreditação mais integrados, flexíveis e sensíveis ao contexto para garantir resultados educacionais sustentáveis.

Palavras-chave: garantia da qualidade; ensino superior virtual; avaliação educacional; padrões internacionais; sistemas de acreditação

ABSTRACT

Introduction: The accelerated expansion of virtual education in higher education has increased the demand for quality assurance and accreditation frameworks capable of addressing the multidimensional challenges of digital environments, revealing inconsistencies in their conceptual foundations and implementation, particularly in Ibero-American contexts.

Objective: To analyze the degree of convergence and divergence among quality accreditation frameworks applied to virtual higher education in Ibero-America, identifying common dimensions, contextual particularities, and gaps relative to international standards.

Methods: A systematic review was conducted following the PRISMA 2020 protocol, involving the identification, selection, and synthesis of scientific literature indexed in Scopus, ensuring methodological rigor and transparency.

Results: Structural convergence was observed in dimensions such as institutional governance, technological infrastructure, pedagogical design, and student support. However, operational divergence emerged due to differences in institutional capacities, regulatory frameworks, and levels of technological development. Persistent gaps were also identified in learning outcomes assessment, digital pedagogical integration, and alignment with international standards.

Conclusion: The main limitation lies not in the absence of frameworks but in their fragmented application and limited contextual adaptation, requiring more integrated, flexible, and context-sensitive accreditation models to ensure sustainable educational outcomes.

Keywords: quality assurance; virtual higher education; educational evaluation; international standards; accreditation systems

RESUMEN

Introducción: La expansión acelerada de la educación virtual en la educación superior ha incrementado la demanda de marcos de aseguramiento de la calidad y acreditación capaces de responder a los desafíos multidimensionales de los entornos digitales, evidenciando inconsistencias en sus fundamentos conceptuales y en su implementación, especialmente en contextos iberoamericanos.

Objetivo: Analizar el grado de convergencia y divergencia entre los marcos de acreditación de la calidad aplicados a la educación superior virtual en Iberoamérica, identificando dimensiones comunes, particularidades contextuales y brechas respecto a estándares internacionales.

Métodos: Se desarrolló una revisión sistemática siguiendo el protocolo PRISMA 2020, mediante la identificación, selección y síntesis de literatura científica indexada en SCOPUS, garantizando rigor metodológico y transparencia en el proceso de análisis.

Resultados: Se evidenció una convergencia estructural en dimensiones como gobernanza institucional, infraestructura tecnológica, diseño pedagógico y soporte al estudiante. No obstante, se identificó divergencia operativa derivada de diferencias en capacidades institucionales, marcos regulatorios y niveles de desarrollo tecnológico. Asimismo, persistieron brechas en la evaluación de resultados de aprendizaje, integración pedagógica digital y alineación con estándares internacionales.

Conclusión: La principal limitación no radica en la ausencia de marcos, sino en su aplicación fragmentada y escasa adaptación contextual, lo que exige modelos de acreditación más integrados, flexibles y sensibles al contexto para garantizar resultados educativos sostenibles.

Palabras clave: aseguramiento de la calidad; educación superior virtual; evaluación educativa; estándares internacionales; sistemas de acreditación

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INTRODUCTION

Quality assurance in higher education has progressively consolidated as a strategic mechanism aimed at promoting institutional improvement and ensuring the relevance of academic programs within increasingly complex and dynamic educational systems. From a theoretical perspective, quality at this level is conceived as a multidimensional construct that integrates internal coherence—associated with teaching processes, curriculum design, and learning outcomes—and external coherence, linked to national quality assurance systems and broader educational environments. In addition, the adequacy of institutional resources and processes, including infrastructure, academic support, and student services, constitutes a fundamental dimension for evaluating educational effectiveness (Medina-Manrique et al., 2022). This multidimensional perspective becomes particularly relevant in virtual education contexts, where technological infrastructure, digital mediation, and support systems play a central role that is not always adequately captured by traditional accreditation models.

The expansion of virtual education has significantly transformed higher education systems, positioning quality assurance as a critical factor for institutional legitimacy and sustainability. In this context, evaluation processes and accreditation standards function as key instruments to validate the effectiveness of online learning environments. However, the proliferation of diverse evaluation models—such as Quality Matters, e-Learning Quality (ELQ), SERVQUAL, and SERVPERF—reflects the conceptual breadth of the field while simultaneously revealing a lack of convergence in quality criteria. This fragmentation limits the consolidation of a unified and stable framework for assessing quality in virtual education and constitutes a significant barrier to the accreditation of online programs, particularly within the Ibero-American context (Ortiz-López et al., 2022).

From the perspective of quality assurance agencies, recent studies indicate that these institutions are undergoing a stage of critical maturation, which requires a reassessment of their effectiveness as participatory regulatory mechanisms. Among the main international concerns are the need to strengthen institutional autonomy from political influence, enhance transparency and accountability processes, and prioritize the evaluation of learning outcomes (Pedró, 2022). These challenges become more pronounced in virtual education environments, where traditional evaluation criteria—originally designed for face-to-face modalities—are insufficient to address the pedagogical, technological, and organizational specificities of digital learning systems. Recent literature has provided relevant insights into the evolution of quality assurance systems in Ibero-America and the challenges arising from the accelerated growth of virtual education. Medina-Manrique et al. (2022), through a systematic review of 85 studies indexed in Scopus and SciELO between 2012 and 2021, identified a strong concentration of research focused on internal and external quality assurance mechanisms, alongside a notable scarcity of studies addressing infrastructure, academic resources, and support services, which represented only 1% of the analyzed literature. Their findings also indicate that virtual education emerged as a significant research focus after 2013 and gained particular relevance during the COVID-19 pandemic, highlighting the need for accreditation frameworks specifically adapted to this modality.

Similarly, Chévez-Reynosa et al. (2021), based on a qualitative study involving postgraduate instructors in Central America, revealed that accreditation agencies still lack evaluation models specifically designed for fully virtual programs. Although initiatives such as those developed by SINAES and CSUCA incorporate elements related to distance education, these frameworks were not originally conceived for fully digital environments, thereby evidencing a critical gap between the rapid expansion of online education and the limited capacity of accreditation systems to evaluate it adequately.

In a complementary perspective, Breña et al. (2022) analyzed the relationship between quality assurance models and ISO-based management systems (ISO 9001 and ISO 21001) in several Ibero-American countries, identifying both complementarities and structural differences across national approaches. While synergies between certification and accreditation processes were observed, significant variations in implementation underscore the importance of comparative analyses to identify points of convergence and divergence, particularly in the context of virtual education.

Despite these contributions, significant gaps persist in the literature. First, there is a lack of integrated and consensual frameworks capable of consolidating the diverse approaches to quality evaluation in virtual education, which limits the comparability of accreditation systems across countries (Ortiz-López et al., 2022). Second, the insufficient differentiation between face-to-face and virtual modalities within accreditation processes reduces the validity and contextual adequacy of evaluation criteria (Valdés-Montecinos et al., 2021). Third, a persistent gap remains between international quality standards and national regulatory frameworks, particularly in emerging contexts, where compliance with requirements related to technological infrastructure, learning outcomes, and teaching competencies is often partial or inconsistent (Caicedo & Calvachi, 2021).

In light of these limitations, there is a need for a comprehensive and systematic analysis that examines how accreditation frameworks for virtual education converge, diverge, and align with international standards across Ibero-America. Accordingly, this study aims to analyze the degree of convergence and divergence among quality accreditation frameworks applied to virtual higher education programs in Ibero-American countries, identifying shared dimensions, contextual particularities, and existing gaps in relation to international benchmarks.

In order to achieve this objective, the following research questions were formulated:

- What criteria, dimensions, and indicators are applied by Ibero-American accreditation systems to evaluate the quality of virtual higher education programs?
- To what extent do these frameworks converge or diverge in terms of shared dimensions and contextual particularities?
- What gaps exist between national accreditation frameworks and international standards established by organizations such as INQAAHE, ENQA, and CALED?

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1. METHODS

A systematic review was conducted following the PRISMA 2020 guidelines in order to ensure transparency, methodological rigor, and replicability in the identification, selection, assessment, and synthesis of the evidence. This approach was considered appropriate because the study aimed to analyze the convergence, divergence, and gaps in accreditation frameworks for virtual higher education, with particular attention to the Ibero-American context.

The review was guided by the research questions stated in the introduction, which structured the search strategy, eligibility criteria, data extraction, and thematic synthesis.

Search strategy

The search was conducted in Scopus, selected as the main database due to its broad coverage of peer-reviewed scientific literature and its relevance for systematic reviews in higher education, quality assurance, accreditation, and digital education. The search was applied to the title, abstract, and keyword fields.

The following Boolean search expression was used:

("accreditation" OR "quality assurance" OR "quality assessment" OR "quality evaluation" OR "acreditación" OR "aseguramiento de la calidad" OR "evaluación de la calidad") AND ("virtual education" OR "e-learning" OR "online education" OR "distance education" OR "online learning" OR "educación virtual" OR "educación a distancia" OR "enseñanza en línea") AND ("higher education" OR "university" OR "universities" OR "educación superior" OR "universidad" OR "universidades").

The search was limited to publications from 2020 to 2025 in order to capture the most recent developments in virtual education and quality assurance after the accelerated expansion of online higher education. Publications in English, Spanish, and Portuguese were considered.

Although the review focused on the Ibero-American context, selected studies from other geographical contexts were also included when they provided theoretical, methodological, or comparative value for understanding quality assurance and accreditation in virtual higher education. These studies were not used to characterize Ibero-America directly, but to contrast international trends, identify transferable analytical dimensions, and clarify gaps between global standards and regional implementation challenges.

In addition to scientific articles, official documents from accreditation and quality assurance bodies were considered when they provided relevant institutional or normative information. This decision was adopted because accreditation is not only an academic field of inquiry, but also a regulatory and institutional practice shaped by national and international agencies. To strengthen the institutional and normative basis of the review, documents and guidelines from accreditation and quality assurance bodies were considered, including RIACES and CALED for the Ibero-American and Latin American context; SINEACE, CNA Chile, CNA Colombia, CONEAU Argentina, COPAES Mexico, and ANECA for national quality assurance systems; and ENQA and INQAAHE as international reference frameworks. These documents were used to contextualize the findings and to contrast the scientific literature with official accreditation and quality assurance standards.

Eligibility criteria

To ensure the relevance and quality of the selected documents, inclusion and exclusion criteria were established before the screening process. These criteria were based on thematic relevance, geographical scope, type of publication, language, time frame, and methodological clarity.

Table 1 - Inclusion and exclusion criteria

Type of criteria	Description
Inclusion criteria	1. Studies addressing accreditation, evaluation, or quality assurance in virtual, distance, online, or e-learning programs in higher education. 2. Studies conducted in Ibero-American countries or including the region in comparative analyses. 3. Studies from other geographical contexts with clear theoretical, methodological, or comparative relevance to the objective of the review. 4. Publications between 2020 and 2025. 5. Studies published in English, Spanish, or Portuguese. 6. Peer-reviewed articles, systematic reviews, academic essays, and official accreditation or quality assurance documents with full-text availability.
Exclusion criteria	1. Studies focused exclusively on face-to-face education without reference to virtual, distance, online, or e-learning modalities. 2. Studies conducted outside Ibero-America without theoretical, methodological, or comparative relevance. 3. Conference abstracts, editorials, letters, opinion pieces, and book reviews. 4. Publications prior to 2020. 5. Duplicate records. 6. Studies with insufficient methodological clarity or without direct contribution to the research questions.

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Study selection process

The study selection process followed the four phases of the PRISMA 2020 flow: identification, screening, eligibility, and inclusion. In the identification phase, records were retrieved from Scopus using the predefined search strategy. Duplicate records were removed before the screening stage.

In the screening phase, titles and abstracts were reviewed according to the inclusion and exclusion criteria. Records that did not address accreditation, quality assurance, quality evaluation, virtual education, online education, distance education, or higher education were excluded. In the eligibility phase, the full texts of the remaining studies were assessed to determine their relevance to the research questions, their contribution to the Ibero-American focus, and their usefulness for identifying convergence, divergence, or gaps in accreditation frameworks.

Finally, the studies that met the eligibility criteria were included in the qualitative synthesis. The selection process was documented through a PRISMA flow diagram, which shows the number of records identified, screened, excluded, assessed for eligibility, and finally included in the review.

This methodological procedure enabled the identification, screening, eligibility assessment, and final selection of relevant studies, following the PRISMA 2020 flow process, as shown in Figure 1.

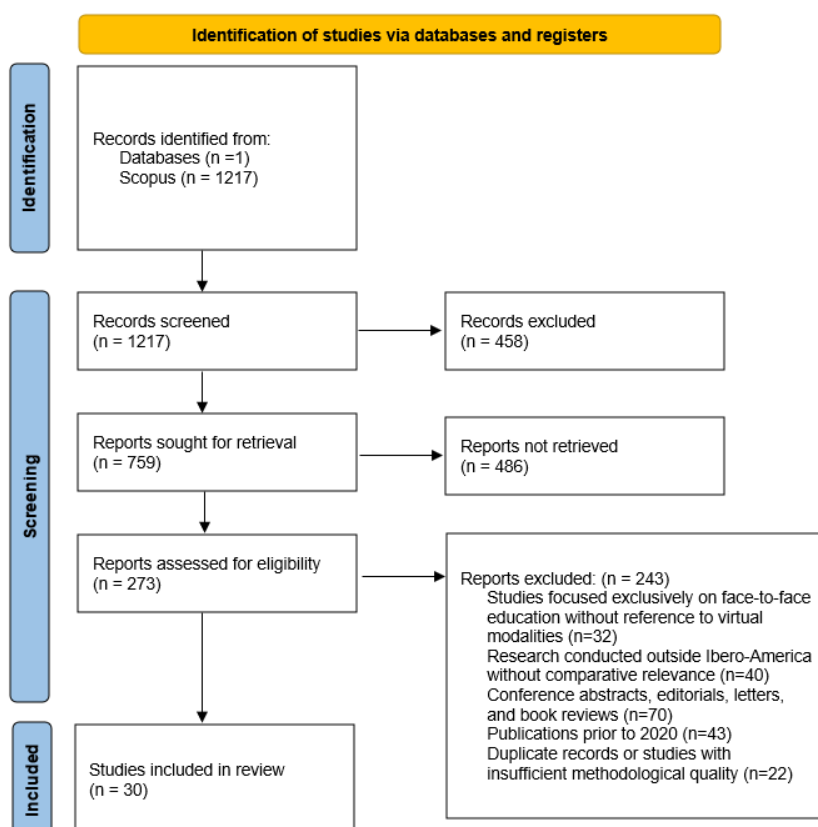


Figure 1 - PRISMA flow diagram

Assessment of included sources

The included sources were assessed using an analytical appraisal matrix designed for this review. The purpose of this assessment was not to exclude studies based on a single methodological hierarchy, but to determine their relevance, reliability, and contribution to the synthesis.

The appraisal considered five criteria: direct relationship with accreditation or quality assurance in virtual higher education; relevance to the Ibero-American context or comparative value for the study objective; methodological clarity; contribution to the identification of accreditation dimensions, divergences, or gaps; and full-text availability and traceability of the source.

This assessment allowed the review to prioritize studies with stronger analytical relevance and to distinguish between sources used to characterize the Ibero-American context and sources used for international comparison.

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Data extraction and synthesis

Data were extracted using a structured matrix that included the following information: author, year of publication, country or geographical scope, type of study or document, accreditation or quality assurance model, key dimensions, type of indicators, identified divergences, gaps in relation to international standards, and main analytical contribution.

The synthesis was conducted qualitatively through thematic analysis. This approach was appropriate because the purpose of the review was not to estimate effect sizes, but to identify patterns, conceptual relationships, convergences, divergences, and gaps across accreditation frameworks and quality assurance models.

Development of analytical categories

The analytical categories were developed through a mixed deductive-inductive procedure. First, three deductive categories were established based on the objective and research questions of the review: quality structures in virtual education accreditation frameworks, structural tensions in accreditation frameworks, and misalignments between national accreditation systems and international standards.

Second, during the full-text analysis, these categories were refined inductively according to recurring patterns identified in the selected studies. These patterns included institutional governance, technological infrastructure, pedagogical design, student support, learning outcomes assessment, operational divergence, regulatory differences, institutional capacity, and simulated quality.

As a result, the findings were organized into three analytical dimensions: quality structures in virtual education accreditation frameworks; structural tensions between convergence and divergence; and misalignments between national accreditation systems and international standards.

This procedure ensured coherence between the research questions, the extracted evidence, and the organization of the results.

2. RESULTS

The evidence analyzed in this review was organized into two complementary groups. The first group consisted of Ibero-American studies and official accreditation or quality assurance documents, which were used to characterize regional challenges in virtual higher education. The second group consisted of international studies included for comparative purposes, which helped identify global trends, transferable analytical dimensions, and gaps between international standards and regional implementation. This distinction allowed the review to preserve its Ibero-American focus while situating the findings within broader international quality assurance debates.

Quality structures in virtual education accreditation frameworks

Table 2 presents the principal models and analytical approaches used to assess quality in virtual higher education. The table synthesizes the core dimensions, types of indicators, and analytical contributions identified across the reviewed studies, providing an integrated view of how quality is operationalized in virtual education contexts.

Table 2 - Quality structures in virtual education accreditation frameworks

Author	Model	Key dimensions	Type of indicators	Analytical contribution
Barrios-Ipenza et al. (2024)	HiEduQual + Kano	Satisfaction, quality attributes	Output	Differential prioritization of criteria
Bosov et al. (2024)	Automated evaluation	Digital content quality	Process–output	Objectification of evaluation
Khan et al. (2025)	ISS (DeLone & McLean)	System, information, service quality	Multidimensional	Functional structuring of LMS quality
Gampine et al. (2025)	Integrated model	System, content, support, evaluation	Input–process–output	Causal integration of dimensions
Nepal et al. (2025)	SERVQUAL adapted	Dimensions + virtual environment	Perception-based	Inclusion of digital infrastructure
Ramezani et al. (2025)	OEDE model	Organization, education, research, support, technology	Multilevel	Comprehensive model with subcriteria
Sepúlveda-Parrini et al. (2024)	Conceptual approach	Flexibility, equity, instructional design	Contextual–subjective	Quality as a situated construct
Stefany & Helmi (2024)	Digital teaching competence	Digital literacy, instructional design	Process–outcome	Teaching–quality relationship
Timbi-Sisalima et al. (2024)	Validated guideline	Organization, teaching, student, infrastructure	Multidimensional	Empirical validation
Wang et al. (2025)	LDA-PMC	Content, resources, support	Dynamic	Longitudinal evaluation
Ramezani & Mostafavi (2025)	Validated OEDE scale	Organization, teaching, research, support, technology	Validated multidimensional	Robust validated instrument

The evidence summarized in Table 2 responds to the first research question by identifying the main criteria, dimensions, and indicators used to evaluate quality in virtual higher education. Across the reviewed studies, quality is consistently understood as a multidimensional construct that integrates institutional, technological, pedagogical, and student-support components. This

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convergence is particularly visible in models that emphasize governance, digital infrastructure, instructional design, learning resources, academic support, and student satisfaction.

The studies with an Ibero-American focus show that quality evaluation in virtual higher education tends to be linked to institutional management, accessibility, pedagogical design, and continuous improvement. For example, Barrios-Ipenza et al. (2024) emphasize the prioritization of service quality attributes in a Peruvian university context, while Sepúlveda-Parrini et al. (2024) highlight flexibility, equity, and instructional design as key concepts for online higher education quality. Similarly, Timbi-Sisalima et al. (2024) contribute with a validated guideline that includes organization, teaching, students, and infrastructure as central dimensions of accessible virtual education.

At the same time, international studies included for comparative purposes broaden the analytical scope by introducing automated, data-driven, and validated multidimensional models. Bosov et al. (2024), Wang et al. (2025), and Ramezani and Mostafavi (2025) illustrate the growing relevance of technological and instrument-based approaches for evaluating digital content, online course quality, and accreditation standards in e-learning institutions. These contributions do not directly characterize the Ibero-American context, but they provide useful comparative references for identifying possible methodological gaps in regional accreditation frameworks.

Overall, the results show that convergence exists at the level of broad quality dimensions, especially regarding institutional governance, technological infrastructure, pedagogical design, and student support. However, differences emerge in the operationalization of indicators. Some studies prioritize perception-based indicators, others focus on input-process-output models, and others incorporate automated or validated measurement tools. This finding suggests that virtual higher education accreditation has achieved conceptual convergence but still lacks a unified operational framework capable of ensuring comparability across systems.

Structural tensions in accreditation frameworks

Table 3 summarizes the main structural tensions identified in accreditation frameworks for virtual education, focusing on the relationship between shared dimensions and divergent implementation patterns.

Table 3 - Structural tensions in accreditation frameworks for virtual education

Author	Common dimensions	Identified divergences	Explanatory factors	Analytical contribution
Bayhan & Bayhan (2025)	QA, digitalization	Institutional implementation	Globalization	Discursive convergence vs operational divergence
Cavique (2023)	Planning, evaluation	Pedagogical structure	Institutional model	Structural divergence
Marcial Alamilla et al. (2025)	Management, technology	Organizational implementation	Institutional capacity	Organizational divergence
Lysenko et al. (2023)	Digital adaptation	Infrastructure, motivation	Health crisis	Contextual divergence
Nguyen et al. (2025)	QA, technology, OER	Regional approaches	Scientific evolution	Field fragmentation
Minerva et al. (2024)	Online expansion	Perception of quality	System growth	Expansion–quality gap
Skliar et al. (2025)	Partial compatibility	Regulation and culture	International cooperation	Global divergence
De la Mora et al. (2025)	Technological adoption	Faculty motivation	Behavioral factors	Adoption divergence
Wen et al. (2024)	Automated evaluation	Measurement capacity	Technological limitations	Technical–methodological divergence

The findings presented in Table 3 respond to the second research question by showing the extent to which accreditation frameworks converge and diverge in terms of shared dimensions and contextual particularities. The reviewed studies reveal a clear pattern: accreditation systems and quality assurance models tend to converge in their discourse around digital transformation, institutional planning, pedagogical innovation, and quality assurance; however, they diverge substantially in their implementation.

In the Ibero-American context, this tension is especially evident in studies that analyze institutional quality assurance processes and distance education programs. Cavique (2023) shows that pedagogical structure and institutional models affect the way online teaching and learning are organized. Marcial Alamilla and Villalobos Lara (2025) identify organizational implementation and institutional capacity as key factors influencing internal quality assurance in distance programs. These findings suggest that, even when institutions adopt similar quality principles, their actual capacity to implement them depends on organizational maturity, available resources, and regulatory conditions.

Other studies included for comparative purposes reinforce this interpretation by showing that operational divergence is not exclusive to Ibero-America. Lysenko et al. (2023) associate digital adaptation with infrastructure and motivational factors during

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crisis contexts, while De la Mora et al. (2025) relate faculty participation in course quality reviews to behavioral and technological adoption factors. Likewise, Wen et al. (2024) identifies technical and methodological limitations in automated quality evaluation. These studies help explain why accreditation frameworks may appear similar in their conceptual design but produce different outcomes in practice.

The main result emerging from this section is the existence of a dynamic of discursive convergence and operational divergence. In other words, accreditation frameworks tend to share a common vocabulary around quality, innovation, digitalization, and improvement, but their implementation varies depending on institutional capacity, technological infrastructure, regulatory development, and academic culture. This finding is particularly relevant for Ibero-American higher education systems, where inequalities in resources and regulatory maturity may limit the consistent application of virtual education accreditation standards.

Misalignments between national accreditation systems and international standards

Table 4 presents the principal gaps identified between national accreditation frameworks and international quality standards, highlighting structural and methodological inconsistencies.

Table 4 - Misalignments between national accreditation frameworks and international standards

Author	Type of gap	Nature of the gap	Relation to international standards	Theoretical implication
Aheto et al. (2025)	Structural	Infrastructure limitations	Lack of institutional support compliance	Resource-dependent quality
Aminova et al. (2025)	Functional	Incomplete tech–pedagogy integration	Pedagogical misalignment	Digitalization ≠ quality
Davies et al. (2025)	Substitutive	Accreditation replaces QA	Distortion of accreditation role	Loss of evaluative function
du Preez & Jacobs (2025)	Pedagogical	Lack of instructional design	Omission in standards	Didactic gap
Gold et al. (2025)	Cognitive	Lack of critical thinking assessment	Misalignment with deep learning	Superficial quality
Heiser et al. (2024)	Epistemological	Student exclusion	Inconsistency with user-centered approach	Student invisibility
Fernández-Concha et al. (2025)	Simulated	Discursive compliance without QA	Symbolic use of standards	Simulated quality
Mathur et al. (2024)	Methodological	Lack of valid instruments	Weak measurement	What is not measured is not ensured
Susilawati et al. (2025)	Institutional	Limited capacity	Resource–demand gap	Organizational dependency
Tajsic et al. (2025)	Technological	AI use without validation	Lack of regulation	Challenge to traditional QA

The evidence presented in Table 4 responds to the third research question by identifying the main gaps between national accreditation frameworks and international quality standards. The findings indicate that these gaps are multidimensional and cannot be reduced to technological limitations alone. Instead, they involve structural, functional, pedagogical, methodological, epistemological, and regulatory dimensions.

A first group of gaps concerns the relationship between technological infrastructure and pedagogical quality. Several studies show that the existence of digital platforms, online resources, or technological tools does not automatically guarantee educational quality. Aminova et al. (2025), du Preez and Jacobs (2025), and Gold et al. (2025) demonstrate that virtual education quality also depends on instructional design, critical thinking development, and the effective integration of technology into learning processes. This is highly relevant for accreditation systems because it shows that quality assurance should evaluate not only access to technology, but also its pedagogical use.

A second group of gaps refers to methodological weaknesses in the assessment of learning outcomes and student-centered quality. Mathur et al. (2024) highlights the importance of valid instruments for measuring competencies, while Heiser et al. (2024) emphasizes the need to include student perceptions in quality evaluation. These findings reveal that accreditation frameworks may remain incomplete when they focus mainly on institutional compliance and do not sufficiently assess students’ learning experiences, competencies, and outcomes.

A third gap relates to the risk of formal or symbolic compliance. Fernández-Concha et al. (2025) contributes to understanding how institutional discourse may simulate quality without necessarily ensuring substantive quality assurance practices. This finding supports the idea of simulated quality, understood as the discrepancy between formal adherence to accreditation standards and the effective implementation of mechanisms that improve teaching, learning, and institutional performance.

In relation to international standards, the findings suggest that national accreditation systems still need to strengthen their alignment with principles such as student-centered learning, evidence-based evaluation, continuous improvement, transparency, technological-pedagogical integration, and valid measurement of outcomes. The comparison with international literature shows

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that the main challenge is not only to adopt standards, but to ensure that they are implemented in a meaningful, contextualized, and verifiable manner.

Integrated interpretation of findings

The integration of evidence from Tables 2, 3, and 4 confirms that quality accreditation in virtual higher education is characterized by three interrelated patterns: structural convergence, operational divergence, and systemic gaps. These patterns provide an integrated response to the objective of the study.

First, structural convergence is observed in the recurrence of similar quality dimensions across the reviewed literature. Institutional governance, technological infrastructure, pedagogical design, student support, and learning outcomes appear as central components in the evaluation of virtual higher education. This indicates that there is a broad consensus regarding the main dimensions that should be considered in accreditation processes.

Second, operational divergence emerges because these shared dimensions are implemented differently across countries, institutions, and regulatory systems. The results show that contextual factors such as institutional capacity, availability of technological resources, faculty training, regulatory maturity, and academic culture influence the effectiveness of accreditation frameworks. Therefore, convergence at the conceptual level does not necessarily produce uniformity in practice.

Third, the review identifies persistent gaps between national accreditation practices and international quality standards. These gaps are particularly evident in the insufficient evaluation of learning outcomes, the weak integration between technology and pedagogy, the limited use of validated assessment instruments, and the marginal inclusion of student-centered approaches. These limitations indicate that many accreditation frameworks still prioritize formal compliance over substantive quality improvement. Taken together, the results suggest that virtual higher education accreditation requires integrated and context-sensitive frameworks. Such frameworks should combine common international quality principles with flexible implementation mechanisms adapted to institutional and regional realities. This is especially important in the Ibero-American context, where the diversity of accreditation systems and the unequal development of virtual education demand models that are comparable, but not rigidly uniform.

3. DISCUSSION

The findings of this systematic review provide a comprehensive understanding of the current state of quality accreditation in virtual higher education within the Ibero-American context. In alignment with the first research question, the results confirm that accreditation frameworks consistently incorporate multidimensional criteria, particularly in relation to institutional management, technological infrastructure, pedagogical design, and student support systems. This convergence is consistent with prior studies that conceptualize quality as an integrated construct rather than a set of isolated indicators (Medina-Manrique et al., 2022; Ortiz-López et al., 2022). However, the present study extends this perspective by demonstrating that such multidimensionality is not only conceptual but also increasingly structured through system-based and data-driven evaluation models.

In relation to the second question, the results reveal a clear distinction between conceptual convergence and operational divergence. While accreditation frameworks adopt similar quality discourses—emphasizing digital transformation, innovation, and quality assurance—their implementation varies significantly across institutional and national contexts. This finding is consistent with the notion of critical maturation of quality assurance systems proposed by Pedró (2022) but adds a new interpretative layer by identifying a structural dynamic in which global standards are locally reconfigured. In this sense, the study confirms that quality accreditation cannot be understood as a uniform process but rather as a context-dependent phenomenon shaped by institutional capacity, technological development, and regulatory environments.

Furthermore, the identified divergences reinforce previous evidence regarding inequalities in digital readiness and institutional resources (Caicedo & Calvachi, 2021) but go beyond by demonstrating how these disparities directly affect the consistency and effectiveness of accreditation processes. Unlike prior research, which tends to describe these differences, the present study conceptualizes them as a systemic feature of accreditation frameworks, highlighting the limitations of standardized models when applied to heterogeneous contexts.

Regarding the third research question, the findings reveal persistent and multidimensional gaps between national accreditation systems and international standards. These gaps are particularly evident in three key areas: the integration of technology and pedagogy, the evaluation of higher-order learning outcomes, and the inclusion of student-centered approaches. These results are consistent with studies emphasizing the limitations of traditional accreditation models in digital environments (Chávez-Reynosa et al., 2021) but introduce a critical contribution by identifying the phenomenon of simulated quality.

The concept of simulated quality represents a significant theoretical contribution, as it captures the discrepancy between formal compliance with accreditation standards and their effective implementation in practice. This finding suggests that accreditation processes may operate at a symbolic level, where adherence to standards does not necessarily translate into meaningful quality

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assurance. This interpretation aligns with broader critiques of regulatory systems in higher education but provides a novel application within the context of virtual education.

Additionally, the results highlight the limitations of current accreditation frameworks in addressing emerging challenges, particularly those associated with artificial intelligence and advanced digital technologies. While existing models emphasize infrastructure and access, they lack validated criteria for evaluating the pedagogical and ethical implications of these technologies. This gap underscores the need for a paradigm shift in quality assurance, moving from static evaluation models toward adaptive and forward-looking frameworks.

The inclusion of international studies should be understood as a comparative strategy rather than a departure from the Ibero-American focus of the review. While Ibero-American studies and official accreditation documents provided the regional basis of the analysis, international literature made it possible to identify broader quality assurance trends and to contrast them with the specific challenges faced by Ibero-American higher education systems. This comparison revealed that the region shares global concerns regarding technological infrastructure, pedagogical quality, student support, and learning outcomes assessment, but also faces particular limitations related to regulatory heterogeneity, institutional capacity, and uneven digital development.

Overall, the findings suggest that quality accreditation in virtual higher education should be reconceptualized as a dynamic and context-sensitive process. The interaction between institutional structures, technological systems, and pedagogical practices plays a central role in shaping educational quality, indicating that effective accreditation requires not only standardized criteria but also flexible implementation mechanisms. In this regard, the study contributes to the literature by proposing an integrated perspective that bridges the gap between global standards and local realities, emphasizing the importance of adaptability, contextualization, and substantive evaluation.

Practical implications

The findings have practical implications for higher education institutions, accreditation agencies, and future research. For higher education institutions, the results suggest the need to strengthen internal quality assurance systems that integrate technological infrastructure, pedagogical design, student support, and learning outcomes assessment. For accreditation agencies, the study highlights the importance of developing context-sensitive standards for virtual education, avoiding the direct transfer of face-to-face accreditation criteria to digital environments. For future research, the findings point to the need for empirical studies evaluating the real impact of accreditation processes on student learning, institutional improvement, and the sustainability of virtual education programs.

CONCLUSION

This study analyzed the convergence, divergence, and gaps in quality accreditation frameworks for virtual higher education in Ibero-America through a systematic review based on the PRISMA methodology. Based on the three analytical dimensions developed in the results, the study found that virtual higher education accreditation is shaped by structural convergence in quality dimensions, operational divergence in implementation processes, and systemic gaps in relation to international standards. The findings confirm that accreditation systems share a common conceptual foundation characterized by multidimensional quality criteria, particularly in relation to institutional management, technological infrastructure, pedagogical design, and student support.

However, despite this structural convergence, the implementation of accreditation frameworks is highly variable across contexts. Differences in institutional capacity, technological development, and regulatory environments generate significant operational divergence, limiting the consistency and comparability of quality assurance processes. These results demonstrate that the primary challenge in virtual education accreditation is not the absence of frameworks but their fragmented and context-dependent application.

The study also identified critical gaps between national accreditation systems and international standards. These gaps include the insufficient integration of technology and pedagogy, the limited evaluation of higher-order learning outcomes, and the marginalization of student-centered approaches. Additionally, the emergence of simulated quality highlights a discrepancy between formal compliance with accreditation standards and their effective implementation, revealing a key limitation in current quality assurance practices.

From a theoretical perspective, the findings suggest that quality in virtual higher education should be understood as a dynamic and context-dependent construct, shaped by the interaction between institutional, technological, and pedagogical factors. This challenges traditional accreditation models based on standardized and uniform criteria, emphasizing the need for more flexible and adaptive frameworks.

In practical terms, improving quality assurance in virtual higher education requires the development of integrated accreditation models that combine standardized evaluation criteria with context-sensitive implementation mechanisms. Such models should

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address the complexity of digital learning environments, incorporate emerging technologies, and ensure the meaningful evaluation of learning outcomes.

Ultimately, advancing quality in virtual higher education depends on the ability of accreditation systems to move beyond formal compliance and toward substantive, contextually grounded, and pedagogically relevant evaluation processes. This shift is essential to ensure sustainable and effective educational outcomes in increasingly digitalized higher education systems.

AUTHORS' CONTRIBUTION

Conceptualization, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; data curation, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; formal analysis, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; funding acquisition, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; investigation, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; methodology, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; project administration, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; resources, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; software, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; supervision, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; validation, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; visualization, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; writing – original draft, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.; writing – review & editing, J.F.G.R., J.P.D., M.J.C., A.A.N. and A.W.C.F.;

CONFLICT OF INTERESTS

The authors declare no conflict of interests.

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