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*Scientific articles*

## **Indicadores de calidad de las Instituciones de Educación Superior (IES) en México: liderazgos, tendencias y áreas de oportunidad**

***Quality indicators of Higher Education Institutions (HEI) in Mexico: leaderships, trends and opportunity areas***

***Indicadores de qualidade das Instituições de Ensino Superior (IES) no México: liderança, tendências e áreas de oportunidade***

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### **Resumen**

Es necesario evaluar la calidad educativa para garantizar su funcionamiento adecuado en la sociedad. Se analizó si el tipo de gobernanza y financiamiento del gobierno influye en los indicadores de calidad de las veinte mejores universidades en México. Los indicadores incluyeron: excelencia académica, perspectiva internacional, investigación disciplinaria y transferencia. Los resultados revelaron una alta excelencia académica y transferencia en universidades públicas autónomas con financiamiento estatal. La transparencia entendida como el proceso de rendición de cuentas abierto a la consulta pública. La Universidad Nacional Autónoma de México destacó en perspectiva internacional, investigación disciplinaria y transferencia. Este estudio destaca que la toma de decisiones y los compromisos institucionales inciden en los indicadores de calidad universitaria. Descentralizar la investigación disciplinaria contribuirá a posicionar mejor a las universidades en *ranking* mundial de calidad educativa. Cada nación tiene el deber de garantizar una educación de calidad y asumir la responsabilidad de no excluir a nadie.

**Palabras clave:** educación de calidad, evaluación, *ranking* mundial, universidades.



## Abstract

Assessing the quality of education is necessary to ensure its effective role in society. It was analyzed whether governance type and government funding influence the quality indicators of the top twenty best universities in Mexico. Indicators included: academic excellence, international perspective, disciplinary research, and transference. Results revealed that autonomous public universities with state financial assistance exhibited high academic excellence and transparency. The *Universidad Nacional Autónoma de México* stood out in international perspective, disciplinary research, and industry contribution. This study highlights that decision-making processes related to institutional commitments mediate the universities' quality indicators. Decentralizing disciplinary research may help universities achieve a better position in the world ranking of education quality. Every nation has the duty to provide quality education and take responsibility for leaving no one behind.

**Keywords:** quality education, assessment, world ranking, universities.

## Resumo

É necessário avaliar a qualidade da educação para garantir seu bom funcionamento na sociedade. Foi feita uma análise para verificar se o tipo de governança e financiamento governamental influencia os indicadores de qualidade das vinte melhores universidades do México. Os indicadores incluíram: excelência acadêmica, perspectiva internacional, pesquisa disciplinar e transferência. Os resultados revelaram alta excelência acadêmica e transparência em universidades públicas autônomas com financiamento estatal. Transparência entendida como o processo de responsabilização aberto à consulta pública. A Universidade Nacional Autônoma do México se destacou por sua perspectiva internacional, pesquisa disciplinar e transferência. Este estudo destaca que a tomada de decisões e os compromissos institucionais influenciam os indicadores de qualidade da universidade. A descentralização da pesquisa disciplinar ajudará as universidades a se posicionarem melhor no ranking global de qualidade educacional. Cada nação tem o dever de garantir uma educação de qualidade e assumir a responsabilidade de não excluir ninguém.

**Palavras-chave:** educação de qualidade, avaliação, ranking mundial, universidades.

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## Introduction

Education is essential to generate knowledge, develop skills and foster values that contribute to the solution of priority problems for humanity (Agenda, 2030; UN, 2023). Continuous training, the link between academia and society and the flow of relevant, verifiable, timely, complete and accessible information is essential to assist in decision-making at local, regional and national levels (Hernández-Ramírez, 2024). To this end, Higher Education Institutions (HEIs) are configured as privileged spaces for the training of professionals who direct their efforts to strengthen capacities and promote improvements in the different areas of knowledge (scientific, technological, humanistic and artistic).

For the State, HEIs are entities that, in addition to using public goods and services, also generate them. Therefore, the evaluation of their quality is crucial as a strategy to promote scientific, technological and humanistic progress within government agendas (Agenda, 2030; NU, 2023). In turn, the quality of education aims for its beneficiaries to access a better quality of life, as well as the development of values and skills that promote more just, inclusive and violence-free societies (NU, 2023). Based on these premises, it is undeniable to evaluate the quality of education in HEIs. However, the criteria for evaluating and accrediting said quality constitute a topic of debate in the educational policies of each nation.

### Higher Education Institutions (HEIs) in Mexico

Enshrined in the Political Constitution of the United Mexican States, higher education is recognized as a right that contributes to the integral development and well-being of people through their solid preparation in the different fields of study, fostering critical and creative thinking, as well as commitment to solidarity and ethics (Diario Oficial de la Federación [DOF], 2019; 2021). The General Law on Higher Education is the main regulatory framework related to HEIs. It establishes the characteristics of each institution, including its type of institutional governance (autonomous or non-autonomous), its dependence on the level of government (federal or state), and its type of financing (public or private) (DOF, 2021). These characteristics influence decision-making within institutions, determining the direction of their study programs, that is, the teaching-learning processes (Hernández-Ramírez, 2024), as well as the type of generation and application of knowledge in the

country's HEIs (Russell *et al.* , 2006; Hernández-Ramírez, 2024; Pagaza-González and Sáenz-López, 2018).

Regarding the study of the educational quality of HEIs in Mexico, Guzmán *et al.* (2024) studied the growth of school enrollment as an indicator that reflects institutional consolidation and prestige, while Paz *et al.* (2023) analyzed the results generated by the body in charge of recognizing and accrediting quality educational programs in the country (Council for the Accreditation of Higher Education AC [COPAES]). In both studies, the center of the country stands out with the highest indicators in terms of the number of accredited educational programs and with the highest school enrollment at the national level (Mexico City and State of Mexico; Paz *et al.* , 2023; Guzmán *et al.* , 2024). These results seem to undermine efforts to decentralize quality education in the country, so it is necessary to understand the factors that can strengthen or limit institutional development linked to quality higher education in the country.

The main objective of this research was to systematize and analyze the indicators used by three world classifications of educational quality independently to position the HEIs of Mexico within the first places of educational quality worldwide (RUM, 2023; RWU, 2023, WUR, 2023). The above was done as a strategic proposal that allows to expand, ensure and standardize the quality of higher education in a broader context than the national level. Likewise, the analysis considered the characteristics of the HEIs to determine if there is a relationship between their type and educational quality in the country. The working hypothesis was that the educational quality indicators would be similar among the HEIs that have positioned themselves in the first twenty places in the world *ranking* in 2023.

The contribution and application of this research includes the recognition of advances, challenges and opportunities for institutional improvement, which can be integrated into public and educational policies at the state and national levels.

## Materials and methods

The global ranking of educational quality allows HEIs to be classified quantitatively and comparatively at a global level. Traditionally, the use of these rankings has given various attributes to institutions that make them visible at a global level and that reflect different achievements from their strategic organization and generation of reliable and quantifiable products (Villaseñor-Becerra *et al.* , 2015; Salazar and Cao, 2022). The basis of this

classification includes the generation of indicators, which synthesize a large amount of information that is subsequently scaled to the size of the institution and the conditions of each country, thus allowing its comparison at an international level (Albornoz and Osorio, 2017; *Times Higher Education*, 2017). *Education* [THE], 2023).

This research carried out an analysis of the indicators that determined that the HEIs in Mexico were positioned in the first twenty places of educational quality in 2023 with respect to three classification indexes that included the *Web Ranking of Universities* [RWU] (2023), the *Mextudia University Ranking* [RUM] (2023) and the *World University Rankings* [WUR] (2023). The *Web Ranking of Universities* (RWU, 2023) was prepared by the National Scientific Research Council based in Madrid, while the *World University Rankings (WUR) is a list of universities that are ranked by the world's universities. University Rankings (WUR, 2023) was generated by Times Higher Education magazine Education*, based in London. These indicators are presented processed and synthesized in different categories, which facilitates their subsequent analysis based on specific criteria associated with the characteristics of HEIs in the country.

The first set of systematized and analyzed indicators was related to the presence and visibility of HEIs on the Internet and included: 1) Impact and visibility: this indicator considers the number of electronic pages of the HEIs' domain, including official pages, indexed pages (subdomains) and available digital resources, such as downloadable visual files (RWU, 2023), 2) Excellence: it counts the number of scientific articles published in high-impact international peer-reviewed journals in their respective disciplines and that are within the Scimago Database ( RWU, 2023), and 3) Openness: it counts the number of citations of the academics attached to the HEI through the use of the *Google Scholar search engine. citations* (RWU, 2023).

The second set of indicators was related to academic excellence criteria linked to the academic work of HEIs in the field of Social Sciences and Humanities, Basic Scientific Research, Engineering and Arts (WUR, 2023). The evaluation of excellence is carried out through the intervention of academic peers and is analyzed in the areas of internationalization, research, knowledge transfer (generation and application of knowledge) and academic impact (WUR, 2023). The specific indicators that were analyzed in this research included: 4) International perspective: it is evaluated as the ability of HEIs to attract international students and who participate as co-authors in publications (WUR, 2023), 5) Research: it evaluates the capacity of HEIs to disseminate the knowledge produced in these

institutions and which goes through a quality evaluation process by academic peers, so it is measured through academic productivity that includes the number of publications per academic in journals indexed in the *Elsevier's Database Scopus* (WUR, 2023), 6) Interdisciplinary research: evaluated through publications that are not located in a specific discipline (WUR, 2023) and 7) Transfer: evaluated as the ability of HEIs to support the industry with innovations, patents, intervention activities and consulting (WUR, 2023).

All indicators are adjusted for the size of the institution and normalized by disciplinary area according to the conditions of each country, which allows for international comparison (RWU, 2023; WUR, 2023). Due to their characteristics, the use of these indicators is ideal for analyzing the contribution of HEIs at the national level in this research. Goodness-of-fit tests were performed in order to determine whether the type of governance of HEIs (autonomous or non-autonomous) and their financial dependence on the level of government (federal or state) influences the indicators of institutional excellence. Additionally, it was analyzed whether the type of government financing (public or private) influences the indicators of educational excellence of HEIs in the cases in which it was possible to make the comparison.

Statistical analyses were performed considering the standardization of educational excellence indicators among HEIs. To do so, the relative use of the indicator (proportion) was used following the assumptions and restrictions of the statistical analysis. Comparisons were made only in a paired manner (same sample size) (Zar, 1988). This allowed to analyze the academic excellence criteria predominant in the country's institutions. However, the graphs show the complete distribution of the HEI excellence indicators, which allows to visualize the general trends of these institutions in relation to the educational quality they offer in the country (RUM, 2023; RWU, 2023; WUR, 2023).

## Results

A list of twenty-six HEIs in the country was obtained using three ranking indices that positioned these institutions among the top twenty places in educational quality in 2023 (RUM, 2023; RWU, 2023; WUR, 2023). The HEIs that predominated in the educational quality ranking were public (73%), compared to private (27%), and those with state funding (74%), compared to those with federal funding (26%) (Table 1).

**Table 1.** Year of foundation and website of the Higher Education Institutions (HEIs) ranked among the top twenty in Mexico according to the RWU (2023), RUM (2023) and WUR (2023) indexes. A) Public type financing and B) Private type financing.

Higher Education Institution (HEI)	Foundation	Page
A) Public financing		
Meritorious Autonomous University of Puebla [BUAP]	1956	<a href="https://www.buap.mx/">https://www.buap.mx/</a>
Center for Economic Research and Teaching [CIDE]	1974	<a href="https://www.cide.edu/">https://www.cide.edu/</a>
Center for Research and Advanced Studies of the National Polytechnic Institute [CINVESTAV]	1961	<a href="https://www.cinvestav.mx/">https://www.cinvestav.mx/</a>
National Polytechnic Institute [IPN]	1936	<a href="https://www.ipn.mx/">https://www.ipn.mx/</a>
National Technological Institute of Mexico [TECNM]	2014	<a href="https://www.tecnm.mx/">https://www.tecnm.mx/</a>
Autonomous University of Baja California [UABC]	1957	<a href="https://www.uabc.mx/">https://www.uabc.mx/</a>
Autonomous University of Yucatan [UADY]	1922	<a href="https://uady.mx/">https://uady.mx/</a>
Autonomous University of the State of Hidalgo [UAEH]	1961	<a href="https://www.uaeh.edu.mx/">https://www.uaeh.edu.mx/</a>
Autonomous University of the State of Mexico [UAEMEX]	1828	<a href="https://www.uaemex.mx/">https://www.uaemex.mx/</a>
Metropolitan Autonomous University [UAM]	1974	<a href="https://www.uam.mx/">https://www.uam.mx/</a>
Autonomous University of Nuevo Leon [UAN]	1933	<a href="https://www.uanl.mx/">https://www.uanl.mx/</a>
Autonomous University of Querétaro [UAQ]	1951	<a href="https://www.uaq.mx/">https://www.uaq.mx/</a>
Autonomous University of San Luis Potosí [UASLP]	1859	<a href="https://www.uaslp.mx">https://www.uaslp.mx</a>
University of Guadalajara [UDG]	1792	<a href="https://www.udg.mx/">https://www.udg.mx/</a>
University of Guanajuato [UGTO]	1945	<a href="https://www.ugto.mx/">https://www.ugto.mx/</a>

Juarez Autonomous University of Tabasco [UJAT]	1958	<a href="https://www.ujat.mx/">https://www.ujat.mx/</a>
Michoacan University of San Nicolas of Hidalgo [UMSNH]	1540	<a href="https://www.umich.mx/">https://www.umich.mx/</a>
National Autonomous University of Mexico [UNAM]	1910	<a href="https://www.unam.mx/">https://www.unam.mx/</a>
Veracruz University [UV]	1944	<a href="https://www.uv.mx/">https://www.uv.mx/</a>
B) Private type financing		
Iberoamerican University [IBERO]	1943	<a href="https://ibero.mx/">https://ibero.mx/</a>
Autonomous Technological Institute of Mexico [ITAM]	1946	<a href="https://www.itam.mx/">https://www.itam.mx/</a>
Jesuit University of Guadalajara [ITESO]	1957	<a href="https://www.iteso.mx/">https://www.iteso.mx/</a>
Anahuac University Network	1964	<a href="https://www.anahuac.mx/">https://www.anahuac.mx/</a>
Monterrey Institute of Technology [TEC]	1943	<a href="https://tec.mx/es">https://tec.mx/es</a>
University of the Americas Puebla [UDLAP]	1940	<a href="https://www.udlap.mx/web/">https://www.udlap.mx/web/</a>
Panamerican University of Mexico [UP]	1967	<a href="https://www.up.edu.mx/">https://www.up.edu.mx/</a>

The HEIs are presented in alphabetical order. Source: Own elaboration.

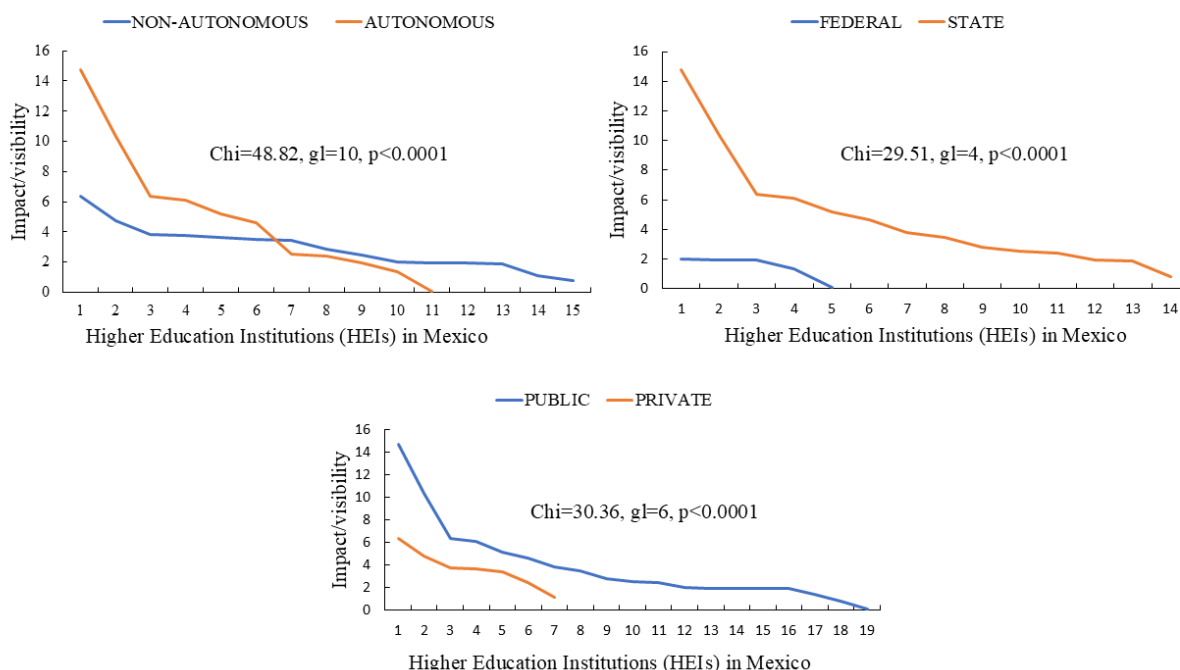
Non-autonomous HEIs accounted for 58% of the educational quality ranking, while autonomous HEIs accounted for 42% (Table 1). The Universidad Michoacana de San Nicolás de Hidalgo (UMSNH) is the oldest institution and the Tecnológico Nacional de México (TECNM) is the most recent institution in terms of its founding time in the country (Table 1). The Universidad Nacional Autónoma de México (UNAM) ranked first in all three ranking indices analyzed in this study. The rest of the HEIs changed their position depending on the index used.

### Impact and visibility of HEIs

State-funded autonomous HEIs presented the highest indicators of impact and visibility, which are associated with open access to institutional information (RWU, 2023; Fig. 1).



**Figure 1.** Comparison of the impact and visibility indicator according to the characteristics of the best-ranked Higher Education Institutions (HEIs) in Mexico. A) Comparison by type of institutional governance (autonomous or non-autonomous), B) Comparison by financing dependent on the Government (Federal or State) and C) Comparison by type of Financing (public or private).

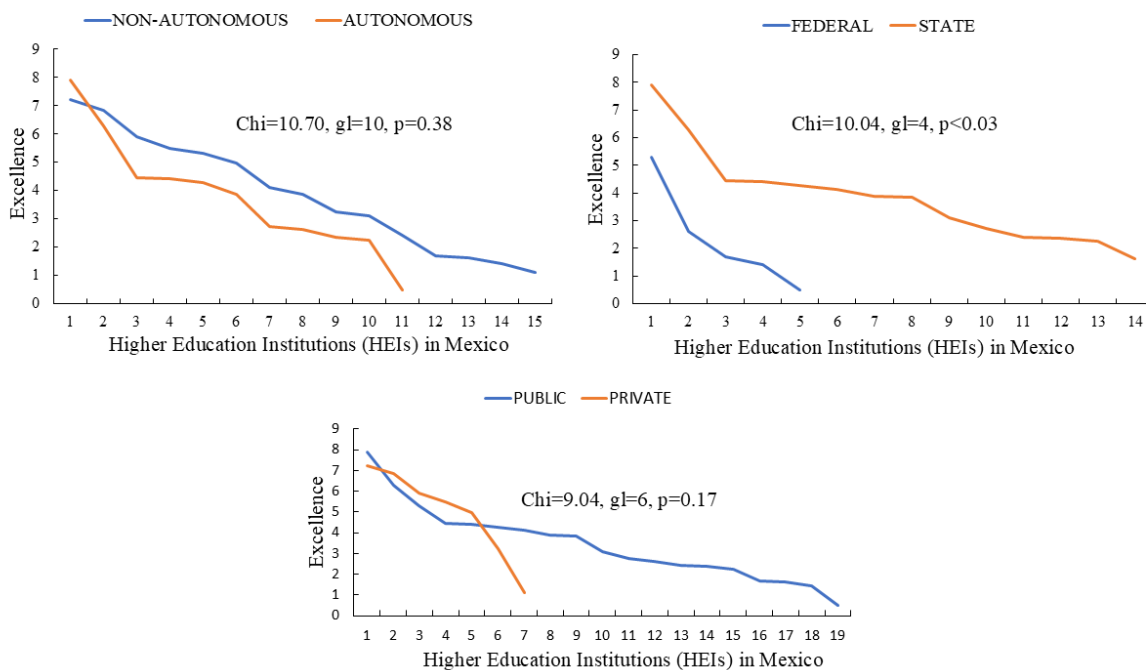


The selection of quality HEIs was based on the RWU (2023), RUM (2023) and WUR (2023) indices. Source: Own elaboration.

### Excellence, openness and international perspective in HEIs

HEIs with public funding from the state government presented the highest values of educational excellence in terms of the number of scientific articles published in high-impact international peer-reviewed journals within the Scimago Database (RWU, 2023; Fig. 2).

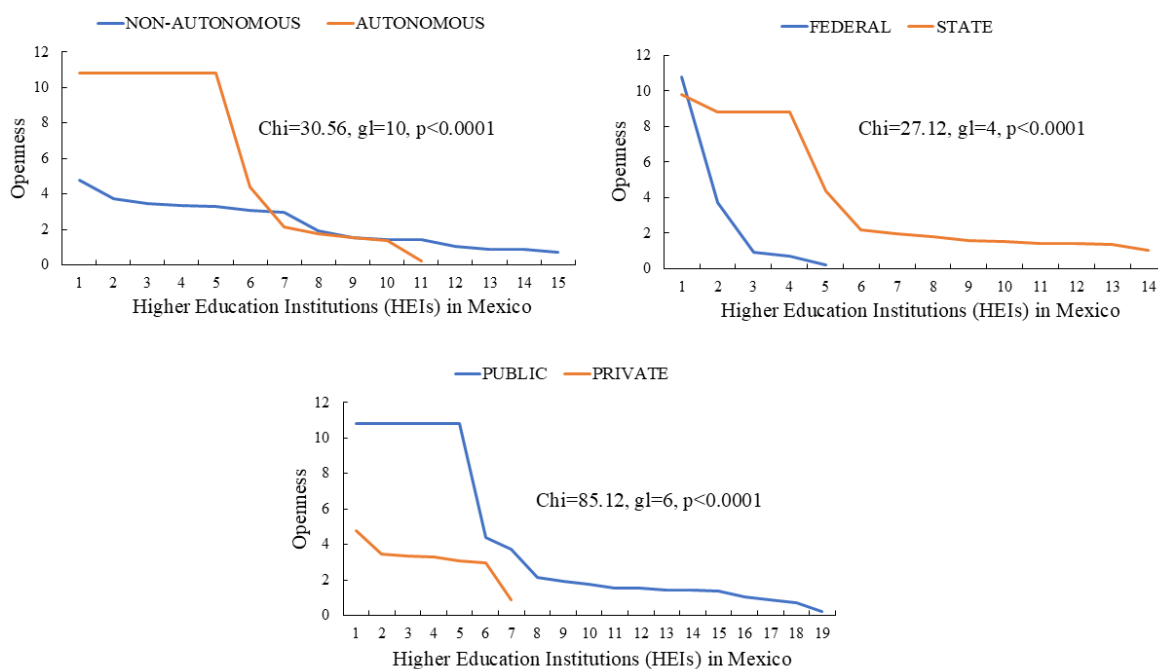
**Figure 2.** Comparison of the excellence indicator according to the characteristics of the best-ranked Higher Education Institutions (HEIs) in Mexico. A) Comparison by type of institutional governance (autonomous or non-autonomous), B) Comparison by financing dependent on the Government (Federal or State) and C) Comparison by type of Financing (public or private).



The selection of quality HEIs was based on the RWU (2023), RUM (2023) and WUR (2023) indices. Source: Own elaboration.

On the other hand, autonomous, public and federally dependent HEIs presented the highest values of openness (number of citations; RWU, 2023; Fig. 3).

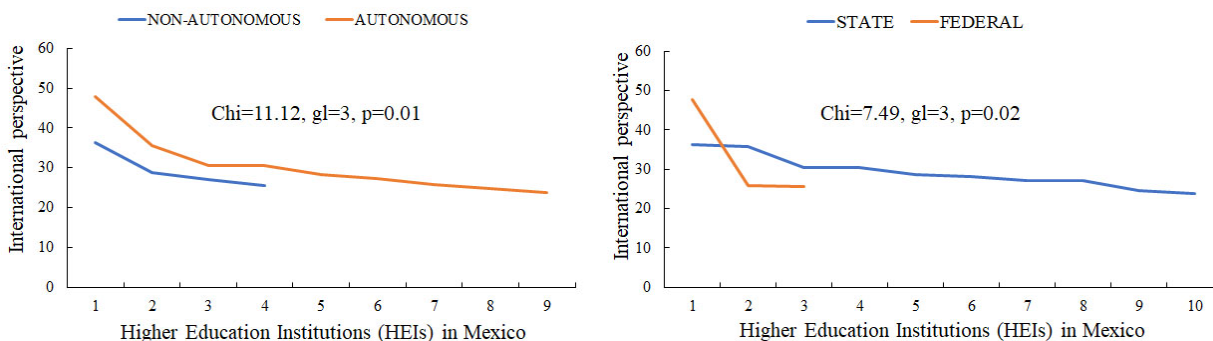
**Figure 3.** Comparison of the openness indicator according to the characteristics of the best-ranked Higher Education Institutions (HEIs) in Mexico. A) Comparison by type of institutional governance (autonomous or non-autonomous), B) Comparison by financing dependent on the Government (Federal or State) and C) Comparison by type of Financing (public or private).



The selection of quality HEIs was based on the RWU (2023), RUM (2023) and WUR (2023) indices. Source: Own elaboration

The international perspective indicator measures the capacity of HEIs to attract international students and encourage their participation as co-authors in scientific publications (WUR, 2023; Fig. 4). Autonomous, public HEIs dependent on the federal government were the entities that presented the highest values. The case of UNAM stands out, as it is the institution that gives this weight to the indicator during the analysis (Fig. 4).

**Figure 4.** Comparison of the international perspective indicator according to the characteristics of the best-ranked Higher Education Institutions (HEIs) in Mexico. A) Comparison by type of institutional governance (autonomous or non-autonomous) and B) Comparison by government-dependent financing (Federal or State).



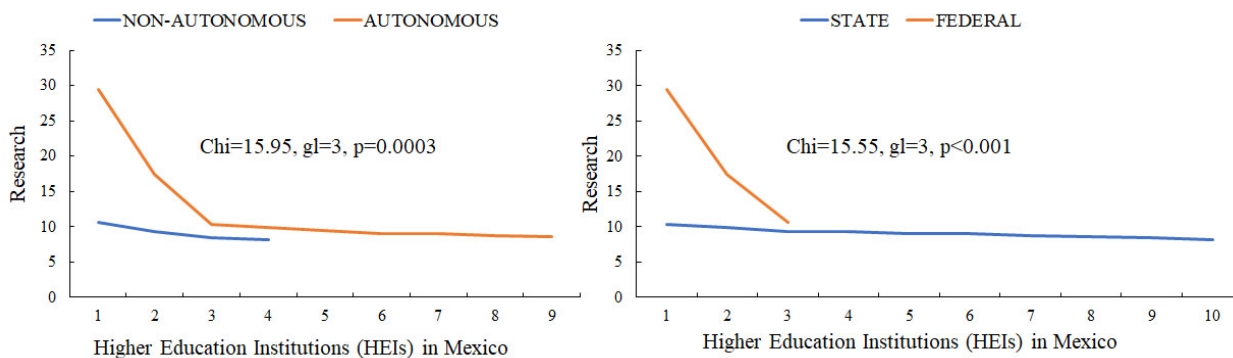
The selection of quality HEIs was based on the RWU (2023), RUM (2023) and WUR (2023) indices. Source: Own elaboration.

Note: There was insufficient data to analyze by type of financing.

### Research, interdisciplinary research and transfer in HEIs

*Elsevier's Database Scopus* (WUR, 2023; Fig. 5).

**Figure 5.** Comparison of the disciplinary research indicator according to the characteristics of the best-ranked Higher Education Institutions (HEIs) in Mexico. A) Comparison by type of institutional governance (autonomous or non-autonomous) and B) Comparison by government-dependent funding (Federal or State).

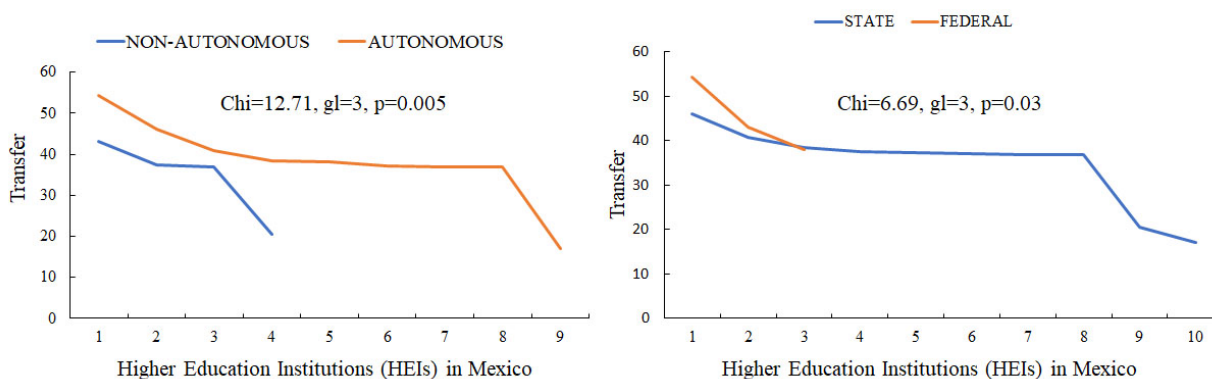


The selection of quality HEIs was based on the RWU (2023), RUM (2023) and WUR (2023) indices. Source: Own elaboration.

Note: There was insufficient data to analyze by type of financing.

Similarly, autonomous HEIs with funding from the federal government presented the highest values of transfer measured as the ability of HEIs to support the industry through innovations, patents, intervention activities and consulting (WUR, 2023; Fig. 6).

**Figure 6.** Comparison of the transfer indicator according to the characteristics of the best-ranked Higher Education Institutions (HEIs) in Mexico. A) Comparison by type of institutional governance (autonomous or non-autonomous) and B) Comparison by government-dependent financing (Federal or State).

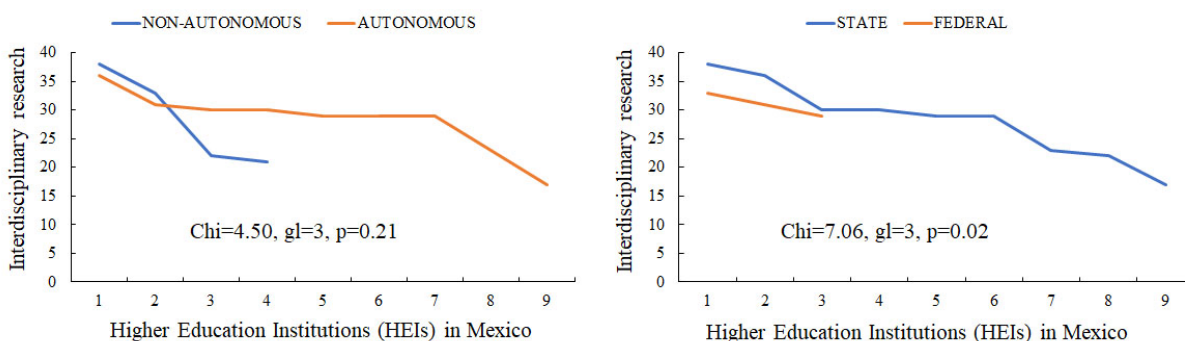


The selection of quality HEIs was based on the RWU (2023), RUM (2023) and WUR (2023) indices. Source: Own elaboration.

Note: There was insufficient data to analyze by type of government financing.

Regardless of disciplinary research, state HEIs presented the highest values of interdisciplinary research estimated as the number of publications not located in a specific discipline (WUR, 2023; Fig. 7).

**Figure 7.** Comparison of the interdisciplinary research indicator according to the characteristics of the best-ranked Higher Education Institutions (HEIs) in Mexico. A) Comparison by type of institutional governance (autonomous or non-autonomous) and B) Comparison by government-dependent funding (Federal or State).



The selection of quality HEIs was based on the RWU (2023), RUM (2023) and WUR (2023) indices. Source: Own elaboration.

Note: There was insufficient data to analyze by type of government financing.

## Discussion

In Mexico, twenty-six universities were ranked in the top twenty in educational quality, according to three ranking indexes: the *Web Ranking of Universities (RWU, 2023)*, the *Mextudia University Ranking (RUM, 2023)* and the *World Ranking of Universities (WRU, 2023)*. *University Rankings (WUR, 2023)*.

The international recognition of the educational quality of these HEIs represents a step towards reducing the gap between higher education in developed countries and in developing countries. The first finding indicates that quality higher education is concentrated mainly in public universities, followed by private ones.

A relevant finding of this research is the limited availability of information by private HEIs, which makes it difficult to compare them with public HEIs. This may be due to the fact that these institutions do not depend on state or federal funding, so their accountability processes are subject to internal decisions. In this regard, Pagaza-González et al. (2018) recognized that private HEIs are those that keep the information related to their planning, management, financing and evaluation processes in their custody. This may be due to the fact that these are institutions that do not depend on state and/or federal funding, so their accountability processes are subject to decision-making within the institution. Regardless of

the opacity of their functions, the work of private HEIs is important and contributes to diversifying the quality educational offer in the country.

### **Impact and visibility of HEIs**

The indicator of impact and visibility of HEIs in the country includes the digital resources that give identity to the institution in a particular way, as well as the information and materials produced in universities regarding the academic work of their community (RUM, 2023; RWU, 2023). This indicator stood out in autonomous HEIs with public funding from the state government.

From a regulatory perspective, HEIs are configured as obligated subjects that require making visible and easily accessible the information they generate and that is linked to the institutional functioning (students, faculty, infrastructure, financial resources; DOF, 2015, 2016, 2017). Buendía Espinosa and Salas Durazo (2020) recognized that HEIs with public funding from the state government make commitments to their governments in order to justify the public financial investment they collect, which encourages academic work linked to the agendas of their respective heads of government. This linking of activities in turn encourages greater dissemination of institutional achievements aligned with the goals and objectives achieved by state governments, which helps explain the greater impact and visibility of these institutions.

Regarding the governance attribute, transparency and accountability are crucial for autonomous entities as a way to legitimize and reinforce their independent management (DOF, 2015, 2016, 2017, 2019), so it is expected that these institutions will stand out in the impact and visibility indicators in the country.

### **Excellence, openness and international perspective in HEIs**

Scimago Database (RWU, 2023), while the openness indicator is measured by the number of academic citations (RWU, 2023).

In Mexico, the idea persists that the autonomy of HEIs is synonymous with educational excellence, while the dependence on state governments negatively affects their quality indicators (Russell *et al.* , 2006; Pagaza-González and Sáenz-López 2018; Buendía Espinosa and Salas Durazo 2020). This research observed that HEIs with public funding from the state government were the academic entities that presented the highest values of

educational excellence, which is contrary to the previously mentioned idea. In this sense, the need to corroborate in qualitative and quantitative terms the discourses, foundations and arguments linked to quality higher education in the country is highlighted.

Although state-funded HEIs had the highest excellence values, their openness indicator (number of citations) was surpassed by federally funded autonomous HEIs (RWU, 2023).

The analysis highlights the case of UNAM, which is autonomous, dependent on the federal government and which presented the highest values for the number of citations from academics affiliated with said institution (openness) and detected by the *Google Scholar search engine. citations* (RWU, 2023). Russell *et al.* (2006) recognized that international collaboration in UNAM's scientific production results in an increase in the number of citations of the works published by the institution, which contributes to explaining the results obtained in this work.

In line with the above, UNAM stood out in the international perspective indicator (autonomous and federal HEIs) which has to do with the ability of HEIs to attract international students and who participate as co-authors in publications (international perspective; WUR, 2023).

The analysis of this set of indicators reveals that UNAM is an example of an HEI that generates innovative and quality information derived from international contributions, which promotes its use as a reference in other research. In other words, the internationalization strategy is key and necessary to incorporate HEIs in the country in order to achieve the international educational quality indicators.

Although UNAM stands out in its quality indicators, when its effect is eliminated in the analysis, it is observed that non-autonomous, public institutions dependent on the state government are the HEIs that presented the highest values of excellence and openness. The educational policy in the country has focused its efforts on improving the quality of higher education through the evaluation, recognition and stimulation of the productivity of the academic staff assigned to these public institutions (DOF, 2022, 2023). Specifically, the productivity of academic staff is considered a measure of effectiveness, efficiency and social commitment. This evaluation is carried out by decentralized public agencies of the federal public administration and includes the Program for Professional Teacher Development [PRODEP] of the Ministry of Public Education [SEP] (DOF, 2022) and the National System



of Researchers [SNII] of the National Council of Humanities, Sciences and Technologies [CONAHCYT] (DOF, 2023).

For state governments, the subsidy they provide to their HEIs is based on results, both in terms of productivity and goals and objectives aligned with government policies (results-based budgeting; Pagaza-González and Sáenz-López, 2018; Buendía Espinosa and Salas Durazo, 2020). In this regard, there is a debate associated with the forms of production and legitimation of knowledge linked to these institutional forms that in practice regulate and determine the quality of education in Mexico. Therefore, keeping this debate open promotes the maintenance of the different visions and approaches aimed at achieving a pertinent and quality education in the country.

Although this debate is beyond the scope of this research, this work highlights the importance of maintaining and promoting academic production in order to improve the indicators that allow reducing the differential gap that exists between the quality education offered by HEIs in developed countries with respect to the quality education offered by HEIs in developing countries. For countries such as Mexico that have a high cultural wealth, it is important to promote diversification in higher education where other initiatives are inserted that have a strong vocation to address rural and sectorized problems of a local and/or regional nature linked to the already established HEIs in the country (Intercultural Universities; SEP, 2023; UV, 2023).

### **Research, interdisciplinary research and transfer in HEIs**

*Elsevier 's Database ) Scopus ; WUR, 2023)* and the transfer indicator (support to industry through innovations, patents, intervention activities and consulting; WUR, 2023). Similar to what was observed in the excellence, openness and international perspective indicator, UNAM exerts a differential weight in the evaluation of the indicators circumscribed to disciplinary research and transfer linked to industry. Russell and collaborators recognized that disciplinary specialization has been key in terms of publications, collaborations, number of citations and application of knowledge (Russell *et al* ., 2006). This same trend has been observed in HEIs located in Mexico City and the State of Mexico, which denotes a strong centralization with respect to the validation and accreditation of higher education in the country (Paz *et al* ., 2023; Guzmán *et al* ., 2024).

In contrast to what was observed regarding disciplinary research and transfer, state HEIs presented the highest values of interdisciplinary research estimated as the number of publications that are not located in a specific discipline (WUR, 2023). In this sense, interdisciplinary, multidisciplinary and transdisciplinary approaches seem to be the niches of opportunity that will allow for improvement in the indicators and, therefore, the impact and positioning of public HEIs with funding dependent on the state government within quality higher education at national and international levels. In addition to this, this type of approach can contribute to decentralizing -disciplinary- education in alternative research paths in the country. The above highlights the value of quality higher education linked to new currents of thought and that include complex and systemic thinking (Morin, 2003, 2006).

The contribution of this research includes the recognition of the strengths, limitations, weaknesses and areas of opportunity with respect to the analysis of educational quality from the point of view of world rankings. First, the strength of the research includes the analysis of educational quality at the higher level from the use of new evaluation metrics (quality indicators). These metrics respond to quality standards at a global level in the different fields of knowledge (Social Sciences and Humanities, Basic Scientific Research, Engineering and Arts). Understanding and making these elements visible allows directing efforts to achieve international quality standards in order to reduce the gap that exists between quality education in developed countries with respect to those in developing countries.

Scimago Database and *Google Scholar. citations* , thereby leaving aside other publications of quality and value.

The weakness in this research is associated with the use of indicators of academic excellence that may underestimate the value of other social and community actions carried out within HEIs in the country. This weakness, in turn, is configured as an area of opportunity for the academic staff and students of HEIs to direct their efforts to systematize and publish this type of experiences in order to add to the quality indicators of HEIs without diminishing their social value.

## Conclusions

Mexico has a diverse educational offering at the higher level. Decision-making in public HEIs, mediated by their type of governance and their commitments to the federal or state government, influences their educational quality indicators. HEIs must manage their resources, educational proposals and academic products in a relevant, efficient and transparent manner, with the aim of strengthening their institutional development and their positioning as quality entities at a national and international level.

UNAM maintains its leadership as a quality HEI in the country, standing out for its internationalization strategy and disciplinary specialization.

Non-autonomous HEIs dependent on state governments have diversified their academic activities by aligning themselves with state political agendas. This has led to greater visibility and impact in their activities, as well as greater compliance in terms of transparency and institutional accountability.

Areas of opportunity for improving the quality of higher education institutions in Mexico include the decentralization of disciplinary education through multidisciplinary and transdisciplinary approaches. Likewise, the incorporation of internationalization and educational diversification is recommended as an institutional development strategy to improve quality indicators in higher education. In turn, these strategies must address the country's priorities and needs, so the incorporation of cultural diversity is key in higher education.

Based on the above, the working hypothesis is rejected, since the educational quality indicators were not homogeneous among the HEIs ranked in the top twenty places in the world *ranking* in 2023.

Every nation faces the challenge of reducing inequality and guaranteeing the fundamental right to quality education. In this sense, recognizing its trends, challenges and achievements is key to institutional improvement.

## Future lines of research

At the national level, it is recommended to complement this research by analyzing other parameters and metrics that allow the evaluation of the quality of higher education in Mexican HEIs. To this end, it is suggested that the first stage include the systematization and analysis of the work carried out by Intercultural Universities, with the aim of highlighting

the value of this educational offering within its sociocultural context. In a second stage, it is recommended to identify the areas of opportunity and institutional improvement that favor the positioning of Intercultural Universities in world quality *rankings* .

At the international level, it is suggested that this research be replicated in different countries in the Ibero-American space, in order to identify areas of opportunity that promote academic exchange and allow for improving internationalization indicators in the countries involved.

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