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From academic doctorates to professional doctorates: Comparative analysis of experiences in Ibero-America

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Abstract

Professional Doctorates (PD) as a model of doctoral training, parallel to and independent from the traditional Academic Doctorates, began to expand throughout the 1990s in countries of the Anglo-Saxon world, echoing timidly in Ibero-American countries. This article carried out a comparative study between the PDs of Brazil and Mexico, the only countries in the Ibero-American region that have created PDs in their educational systems, aiming to analyze their convergences, divergences, and specificities. This is an exploratory, analytic-descriptive, bibliographic, and documental study. Among other important findings, it is noteworthy that unlike the Mexican norms that relate PD specifically to the professional development of doctoral students, in Brazil there is a broader, prevailing conception aimed at increasing the productivity of companies and public and private organizations, technology transfer and the production of innovative knowledge.

Keywords: Professional Doctorate. PhD. World Class University. Brazil. Mexico.

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1 Introduction

Given the demand for qualified professionals and considering the growing economic transformations, Professional Doctorates (PD) have gradually become part of the portfolio of courses offered by many Higher Education Institutions (HEIs) around the world (Patiño Salceda, 2019).

According to the Australian Council of Deans and Directors of Graduate Studies, PD can be defined as:

A program of research and advanced study, which enables the candidate to make a significant contribution to practice and knowledge in their professional context [...], scholarship within a discipline or field of study (McWilliam *et al.*, 2002, p.11).

The Council identifies that the main purpose of a PD is to provide the graduate student with opportunities for advanced and applied development, within a particular field of professional knowledge (McWilliam *et al.*, 2002).

In 1990, 38 Australian universities developed a PD course, starting their academic activities in 1991, with their first students graduating in 1994. In 1996, also in Australia, PDs were already available in several fields, such as Education, business, law, psychology, health sciences, humanities, design and architecture (Bourner; Bowden; Laing, 2001).

Maxwell and Shanahan (1997) suggest that the growing interest and successive expansion of PD programs are phenomena with similarities in different parts of the Anglo-Saxon world and northern Europe. As seen herein, this trend is now being reproduced in Ibero-American countries.

According to Patiño Salceda (2020), we are witnessing the transformation of the traditional conception of university, which would no longer be an Institution that produces and disseminates academic knowledge, but rather an Organization that is part of national innovation systems, capable of generating competitive advantages and transferring knowledge between different actors and sectors of society.

In this context, it can be said that a “new paradigm of excellent doctorates” is emerging, internationalized and as a result of collaborative synergies between universities and research, development and innovation agents (C. Horgué

Baena, 2012, p. 400, *apud* Ramon, 2016). Where we once had a single type of doctoral training, now the Academic Doctorate (ACD) and the PD coexist (Ramon, 2016).

When researching the reality of PD in Ibero-America in the main databases, such as Scopus, SciELO and Google Scholar, we found studies that reference only two national Higher Education systems in this modality: Mexico (Patiño Salceda, 2019; De La Fare; Rovelli, 2021) and Brazil (Calderón *et al.*, 2019; Serva; Calderón; Dias, 2017). This bibliographical review shows that only in these two countries are there state regulations that allow the coexistence of two types of doctoral training: academic and professional (De La Fare; Rovelli, 2021), which have specific and distinct degrees.

It is worth highlighting that in academic literature there are also articles on the so-called Industrial Doctorates (ID), existing in Portugal (Cardoso; Orlanda; Sin, 2019) and Spain (Ramon, 2016; Jimenez-Ramirez, 2017), promoted as part of the programs of the European Union to bring industries closer to universities, which cannot be confused with PDs, since IDs do not generate an academic degree but rather a mention or specialization within the ACD diploma.

In relation to Spain and Portugal, countries that did not create PDs, it is important to highlight that the European Union, respecting the specificities adopted by each member country in terms of doctoral training, does not impose a common policy on its member countries. However, as Ramón (2016, p. 72) states, it exists not as an auxiliary policy, but as “a complete system that tries to penetrate state regulations”. For the author, European Union institutions have promoted significant changes, both within the scope of doctorates and in other important aspects of the European Higher Education Area, without having competences in this matter (Ramon, 2016, p. 72).

As a sample of this vision, we can highlight the financing for the implementation of ID in European universities, programs offered by some universities in Spain and Portugal, through which, while on the one hand the creation of PD is not imposed on member countries, on the other hand, it indirectly encourages traditional ACDs to change and get closer to companies and industries, opening up space for the creation of a culture of research, development and innovation, as part of doctoral training.

Another example is the work of the European University Association (EUA), an organization that brings together more than 800 European universities and

rectors' conferences in 48 European countries, which stands out for the “stimulus given to doctoral schools inspired by the experiences of some prestigious Anglo-Saxon universities”, at the heart of the “insistent idea that a research doctorate is no longer the only modality”, also recognizing “the viability of a professional doctorate” (Ramon, 2016, p. 72).

In this scenario, this article aims to carry out a comparative study between PD in Brazil and Mexico, the only Ibero-American countries that have specific legislation for this type of doctoral training, aiming to analyze their convergences, divergences and specificities.

This is a study of an exploratory, analytical-descriptive nature, which falls within the field of comparative Education of educational programs and systems (Ferreira, 2008), inserted in the context of, in Latin America and Ibero-America as a whole, “works beginning to be published that address the topic of offering professional doctorates” (De La Fare; Rovelli, 2021, p. 4).

This article not only produces original knowledge in the field of doctoral training, but it also presents itself as a potential contribution to the design of more consistent Higher Education policies in Ibero-American countries, using strategies such as *benchmarking*, that is, “the process of comparing and evaluating quality and performance in peer countries and institutions”, which is generally “carried out as part of a strategic or political approach to improvement” (Hazelkorn, 2019, p. 30).

The comparison of the Mexican and Brazilian realities was carried out using the following analytical indicators as reference: creation, objectives, subject areas and requirements for obtaining the degree, number of courses, regional distribution and main universities.

We analyzed data resulting from an exhaustive bibliographical review, both of books and scientific articles, gathered from the main databases through the following descriptors as search references: Doctorate, ACD, PD, PD Mexico and PD Brazil. Careful documentary research was also carried out, using legislation, documents and official information from the aforementioned governments as references.

For the analysis of the main Brazilian and Mexican universities offering PD, we referenced the research carried out by Hazelkorn, Loukkola and Zhang (2014), who consider the following classification tables to be most influential: Academic

Ranking of World Universities (ARWU), World University Rankings (THE) and QS – World University Rankings¹.

2 From ACD to PD

The ACD is the highest degree that a university can award to a student who has successfully completed a work program, and it is the only recognized form of doctorate in many countries.

The ACD has a long history. Studies claim that it was born in medieval Europe as a license to teach at universities, having its revival as a research degree offered in Germany in the early 1800s. The redefinition as we know it today occurred in the USA from 1860, having its subsequent diffusion to Europe and the rest of the world (PARK, 2007; SIMPSON, 1983).

Depending on the country, the ACD takes different forms, depending on the area and curriculum offered (Noble, 1994). In the US, for example, a doctoral program typically includes students taking advanced-level courses and carrying out academic research, with access to a variety of advisors and supervisors along the way. In Europe (including the UK) and Australia, the doctorate is typically based largely or exclusively on research, with the student actually completing an internship under the guidance of a main supervisor (Park, 2007).

In a review of international literature carried out by Calderón *et al.* (2019), it is highlighted, among other aspects, that the distinctions between ACD and PD are not clearly defined, as ACD, traditionally focused on research, began to incorporate components from the business world.

Despite this, as a common aspect between ACD and PD, the defense of original work as a result of research stands out. The difference would be rooted in the relationship between theory and practice, a mandatory aspect in PD, with a view to improving the professional field.

¹Based in Ganga-Contreras *et al.* (2020), the ARW uses objective information focused on concrete products of university activities, essentially quantitative data, predominantly on scientific research. The THE presents a relative balance between objective and subjective indicators, considering that, among other differences, 30.0% of the evaluation carried out depends on subjective data, obtained by applying questionnaires between peers to measure the university's academic reputation – teaching dimension – and prestige – research dimension. Finally, the QS - World University Rankings also presents a relative balance between objective and subjective indicators, supporting 50.0% of its evaluation of universities on subjective data resulting from questionnaires applied to both academics and employers, to assess the university's reputation.

Tennant (2004) describes PD as a link between doctoral Education and the challenges of the business world, suggesting that this situation goes beyond putting knowledge into practice, to the generation of knowledge from the professional environment itself. In relation to PD, Lee (2009) makes its connection with professional practice explicit, defining it as:

A programme of advanced study which, whilst satisfying the University criteria for the award of a doctorate, is designed to meet the specific needs of a professional group external to the University, and which develops the capability of individuals to work within a professional context (Lee, 2009, p. 6).

The distinction between the two types of doctoral training led authors such as Bourner, Bowden and Laing (2001) to pointing out the existence of two types of researchers: professional researchers, linked to traditional ACD, and researching professionals, linked to the PD. For these authors, the doctoral candidate in an ACD would be interested in pursuing an academic career and carrying out basic research, while the doctoral candidate in a professional program would aspire to carry out useful research to improve their practice in working life, orienting themselves towards the development of applied research.

As is shown, both the ACD and PD courses consist of offering more in-depth knowledge than in a master's degree, providing the student with the opportunity, in an ACD, to seek real and relevant advances in their subject area, and in a PD, increase their professional performance.

From this perspective, Sousa Junior and Verhine (2020) highlight that professional programs, due to their innovative, interventionist character, generate expectations in terms of public interest in improving quality, not only in private sector organizations, but also of the public sector.

3 Creation, objectives, subject areas and requirements for obtaining the degree

The effective possibility of creating PDs in Brazil, concomitantly with Professional Master's, emerged with Ordinance No. 389, of March 23, 2017 (Brasil, 2017a). Subsequently, the Brazilian Coordination for the Improvement of Higher Education Personnel (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*, Capes) approved Ordinance No. 131, of June 28, 2017 (Brasil, 2017b), which regulated the submission of proposals for new *stricto sensu* graduate courses in the professional

modality, at master's and doctoral levels. Such guidelines were revoked and deepened by Ordinance No. 60, of March 20, 2019 (Brasil, 2019). In this sense, within the scope of *Stricto Sensu* Graduate Studies, in addition to the Professional Master's Degree (PM) existing since the implementation of Ordinance No. 47, on October 17, 1995 (Brasil, 2005), the PD was established in Brazil. This Capes Ordinance No. 60 paved the way to give concreteness to the guidelines of Ministerial Opinion No. 977/65, of December 3, 1965 (Almeida Júnior *et al.*, 2005), the so-called Sucupira Opinion, which, for 58 years, established the foundations of Graduate Studies in Brazil, by contemplating the need to create PM and PD courses.

In Mexico, on the other hand, PDs were incorporated into the Programa Nacional de Posgrados de Calidad (PNPC) of the Consejo Nacional de Ciencia y Tecnología (Conacyt) in 2014, three years before the creation of PDs in Brazil (Conacyt, 2022; Patiño Salceda, 2020).

In Table 1, it is possible to observe the comparative data of PD objectives in Brazil and Mexico and see a visible difference in the guidelines between both countries.

Table 1 - Comparative analysis of the objectives of Professional Doctorates between Brazil and Mexico, 2022

Analytical Category	Brazil	Mexico
Objectives	a) To train qualified professionals for advanced, innovative and trans formative practices in work processes, aiming to meet the social, economic and organizational demands of different sectors of the economy;	a) To deepen and expand knowledge and skills to improve professional practice;
	b) To transfer knowledge to society in order to meet social and economic demands, aimed at national, regional and local development;	b) To acquire specific knowledge through training practices, laboratory or professional practices applied to work;
	c) To contribute to the aggregation of knowledge in order to best productivity in companies and public and private organizations;	c) To train to solve problems in a specific occupation;
	d) To pay attention to innovation processes and procedures, whether in industrial activities the generate products, or in the organization of public or private services;	d) To give lectures and seminars as a complementary activity;
	e) To train a doctor with a profile characterized by autonomy, the ability to generate and transfer innovative technologies and knowledge.	e) To work on research area related to the professional activity.

Source: The authors, 2022

While in Mexico the legislation is limited to mentioning that PD training is carried out to “improve professional practice” with the aim of professional development, in Brazil, the emphasis is on the development of “advanced”, “innovative” and “transformative” practices.

In Mexico, emphasis is placed on acquiring knowledge through training practices to solve problems specific to the workplace. In Brazil, the focus is on meeting the demands of different sectors of the economy. In this sense, in Brazil, PDs are inserted in a logic focused on the “transfer of technology and innovative knowledge”, which is not addressed in Mexico’s guidelines.

In the Mexican guidelines, increased productivity, innovation and technology transfer are not mentioned, as in the Brazilian case, where PDs aim to explicitly boost productivity, not only of companies, but also of public and private organizations nationally, regionally and locally.

In relation to the types of research carried out in PDs (Table 2), the legislation of the countries analyzed converge, covering research projects focused on professional environments, practices and activities.

There was no difference with regard to the part-time regime of the PD student between Brazil and Mexico (Table 2). We can infer that the part-time modality meets the objective of the course modality, which is to improve business processes, since, supposedly, these are working students.

In relation to the requirements for obtaining the degree, there is a significant difference between the countries studied. In Brazil, final papers are flexible, allowing different formats, in addition to the traditional thesis typical of ACD. Its purpose is to ensure innovation and the applicability of studies to the segment of society in which the graduate will be able to work.

In the case of Mexico, as the PNPC regulations point out, PD programs culminate in the defense of a thesis focused on a problem in the doctoral candidate’s profession or occupation. Unlike Brazil, there are no other types of final papers or assignments to obtain a PD degree besides the thesis.

Although it is assumed that applied rather than basic research is developed in PD, as in ACDs in Mexico, the rules do not contemplate the possibility of diversifying final papers. This indicates that the PNPC guidelines still maintain the characteristics of the so-called first generation PD, treated by Seddon

(2000, *apud* Maxwell, 2003, p. 279-280). In other words, these are PDs with very similar characteristics to ACD, since they are linked to this traditional teaching model where the defense of a thesis is the main means of obtaining an academic degree. From this perspective, PDs in Brazil fall into what Seddon (2000, *apud* Maxwell, 2003, p. 279-280) calls second-generation PD, in which the assessment of doctoral students' performance is not restricted to just a thesis, being more flexible in relation to ACD, validating other products or results of the research project, always related to the professional field and the development of solutions to problems in the work environment. To exemplify the second-generation PD, Maxwell (2003, p. 284) points to the case of the University of Western Sydney, in which his PD in Education broke "the straitjacket" of the requirement to defend a thesis to obtain the doctorate degree, insofar as academic authorities accepted, for the granting of said degree, the preparation of portfolios and their evaluation to check whether they meet the requirements for obtaining a Doctorate.

Table 2 - Comparative analysis between Brazil and Mexico of the types of research, regime and requirements for obtaining the Professional Doctorate degree

Analytical Category	Brazil	Mexico
Type of research	Courses with research projects focused on the workplace and professional practices.	Knowledge generated and applied to the needs and priorities of the professional activities addressed by the graduate program.
Regime	Part-time	Part-time
Requirements for obtaining the degree	The formats of final papers and assignments are explained in the guiding documents for each assessment area, allowing, in addition to the traditional theses, other innovative formats, highlighting the relevance, innovation and applicability of these assignments to the segment of society in which the graduate will be able to work.	A thesis must be produced with the following attributes: <ul style="list-style-type: none"> • Systematic understanding of a professional field and mastery of skills and analysis methods related that field; • Conceive, design, implement and adopt a transcendent process of practice related to the professional field; • Contribute through original research that expands the frontiers of knowledge in the professional field researched; • Carry out a critical analysis, evaluation and synthesis of new and complex ideas.

Source: The authors, 2022

When addressing subject areas and number of PD courses offered in Brazil and Mexico, Table 3 shows that 58 PDs were created in Brazil and 11 PDs in Mexico.

In the case of Mexico, the PNPIC has 11 PDs out of a total of 721 existing doctorates, which represents 1.5%. As for master’s degrees, there are 438 PMs out of a total of 1,295, which represents 34.0% of the total recognized programs (México, 2022).

In the case of Brazil, there are 58 PDs out of a total of 2,496 doctorates, which is equivalent to 2.3%. In the case of PMs, there are 860 out of 4,531 master’s degrees, a number equivalent to 19.0% (Brasil, 2022).

These data lead us to some questions, such as: a) why is there a higher percentage of PDs in Brazil compared to Mexico, considering that in Mexico the first programs appeared earlier?; b) Why were a greater number of courses created in Brazil than in Mexico in three years?; c) Why has Brazil, despite its smaller number of PMs compared to Mexico, managed to have a significant increase in PDs in such a short space of time? Our assumption is that, in Brazil, there is less resistance on the part of universities in relation to PDs as an emerging doctoral training modality, when compared to the Mexican reality. This hypothesis is further explored throughout this article.

Table 3 - Subject areas and number of Professional Doctorate courses offered in Brazil and Mexico, 2022

PD subject area in Brazil	Amount	PD subject area in Mexico	Amount
Business Administration	1	Strategic Administration	1
		Economics and Administrative Sciences	1
		Organizational Management	1
		Administration and Senior Management	1
Controllership and Finance	1	Program not offered	
Project Management	1	Program not offered	
Business and Management	1	Program not offered	
Accounting Sciences and Administration	1	Program not offered	
Micro and Small Business Administration	1	Program not offered	

Continue

Continuation

PD subject area in Brazil	Amount	PD subject area in Mexico	Amount
Program not offered		Maritime and Port Administration	1
Ecology	1	Program not offered	
Biotechnology	5	Program not offered	
Computer Science	2	Program not offered	
Political Science	3	Program not offered	
Sciences of Religion and Theology	1	Program not offered	
Program not offered		National Security and Defense	1
Economy	3	Program not offered	
Education and Technologies	2	Innovation in Educational Technology	1
School Education	1	Program not offered	
Physical Education	1	Program not offered	
Nursing	2	Program not offered	
Production Engineering	1	Program not offered	
Program not offered		Mechatronics Engineering	1
Mechanical Engineering	1	Program not offered	
Pharmacy	1	Program not offered	
History	3	Program not offered	
Interdisciplinary	7	Program not offered	
Materials	1	Program not offered	
Veterinary Medicine	1	Program not offered	
Dentistry	1	Program not offered	
Program not offered		Applied Psychology	1
Urban and Regional Planning	1	Program not offered	
Public Health	3	Program not offered	
Program not offered		Tourism	1
Science and Mathematics	6	Science and Educational Mathematics	1
Technological Teaching	2	Program not offered	
Health Education in the Amazon	1	Program not offered	
Total	58	Total	11

Source: The authors, 2022

Still in Table 3, it is possible to observe the convergence between Brazil and Mexico in courses related to business administration and Education and technologies. In Mexico, there are PDs in specific fields of business administration (strategic administration, economics and administrative sciences, organizational management and administration and senior management), which are included in the PDs in Business Administration that exist in Brazil. However, Brazil offers PDs in specific fields of business administration not offered in Mexico, such as: controllership, finance, project management, business, accounting sciences and administration, and micro and small business administration.

It appears that Mexico offers PDs that do not yet exist in Brazil, such as: maritime and port administration, national security and defense, mechatronics engineering, applied psychology and tourism.

In turn, in Brazil, there are courses that have not yet been created in Mexico, such as: ecology, biotechnology, computer science, political science, environmental sciences, sciences of religion and theology, economics, school Education, physical Education, nursing, production engineering, mechanical engineering, pharmacy, history, interdisciplinary, materials, veterinary medicine, dentistry, urban and regional planning, public health, technological teaching and health Education in the Amazon.

It is observed that both in Brazil and Mexico, engineering courses have PD programs in different subject areas, whereas in Brazil, the courses are focused on the areas of production engineering and mechanical engineering, and in Mexico, they are focused on mechatronics engineering.

4 Number of courses, regional distribution and main universities

Until the date of completion of this article, in Brazil, there were a total of 58 graduate courses in the PD modality recognized by the Ministry of Education (MEC) (Table 4), of which 5.17% (3 courses) are found in the central-west region, 20,68% (12 courses) in the northeast region, 10.34% (6 courses) in the north region, 41.37% (24 courses) in the southeast region and 22,44% (13 courses) in the southern region.

Table 4 - Total number of professional doctorates by Region and States of the Brazilian Federation. 2022

Region	Federative United	Number of PD per State	Number of PD per Region	Percentage
Midwest	Federal District	2	3	5,17%
	Goias	1		
	Bahia	1		
	Ceará	1		
Northeast	Maranhão	2	12	20,68%
	Paraíba	1		
	Pernambuco	6		
	Rio Grande do Norte	1		
North	Amazonas	1	6	10,34%
	Pará	3		
	Rondônia	1		
	Tocantis	1		
Southeast	Espirito Santo	3	24	41,37%
	Minas Gerais	1		
	Rio de Janeiro	11		
	São Paulo	9		
South	Paraná	6	13	22,44%
	Santa Catarina	2		
	Rio Grande do Sul	5		
Total		58	58	100%

Source: The authors, 2022

As can be seen, the majority of PD courses are concentrated in the southeast and south of the country, representing 63.81% of the total, a fact that reflects regional asymmetries, as well as the way in which *stricto sensu* graduate courses have historically been distributed in Brazil, concentrated in regions with greater economic development, such as the southeast region, considered

as the most economically evolved and where large part of the national industry resides (Brasil, 2012).

It is worth highlighting that this situation persists, despite the efforts of graduate public policies aimed at alleviating these regional asymmetries (Nazareno; Herbetta, 2019), and “we must not forget that the federative principle requires more balance and regional development is a constitutional principle” (Cury, 2004, p. 871).

In a relationship somewhat similar to Brazil, data from Mexico reveal that, despite there being only 11 PD courses recognized by the PNPC (Table 5), there is a greater concentration of courses in the central, central-south and northern regions, with 72.73% of the total number of courses, as opposed to regions with fewer courses, such as the south, southeast and west, each with 1 course (9.09%).

Table 5 - Total professional doctorates by Region and States of the Mexican Federation. 2022

Region	Federative Unit	Numer of PD per State	Number of PD per Region	Percentage
Central	Querétaro	1	2	18,18%
	Puebla	1		
South-Central	Ciudad de México	2	2	18,18%
	Sonora	1		
North	Sinaloa	1	4	36,37%
	Baja California	1		
	Coahuila	1		
South	Yucatán	1	1	9,09%
Southeast	Tabasco	1	1	9,09%
West	Nayrit	1	1	9,09%
Total		11	11	100%

Source: CONACYT, PNPC (México, 2022)

These data reaffirm the reality of graduate studies in Mexico which, similarly in Brazil, presents marked regional asymmetries. In the case of Mexico, graduate courses have been concentrated in states with greater economic development

(Hernández Licona, 2019)² and a lower percentage of the population in poverty (México, 2020)³.

Table 3 shows that, in Brazil, despite PD courses being created a few years later than in Mexico, this doctoral modality had a greater expansion in the number of recognized courses in different subject areas, surpassing Mexico.

Another observation concerns institutions in Brazil offering more than one course and a greater diversity of PD courses (Table 6).

Table 6 - Institutions that offer more than one Professional Doctorate course in Brazil, 2022

Country	Thematic Axis	Main University
Brazil	Public Health	
	Management, research and development in the pharmaceutical industry.	Fundação Oswaldo Cruz (FIOCRUZ)
	Business Administration	
	Economics, cultural goods and social projects	Fundação Getúlio Vargas - São Paulo (FGV/SP)
	Research and development (medical biotechnology)	Universidade Estadual Paulista Júlio de Mesquita Filho – Botucatu (UNESP-BOT)
	Nursing	
	Technology, Society and Environment (CTSA)	Universidade Tecnológica Federal do Paraná (UTFPR)
	Education	

Source: The authors, 2022

In Brazil, the institutions offering the highest number of courses were: *Fundação Oswaldo Cruz - Fiocruz (Fiocruz)*, *Fundação Getúlio Vargas - São Paulo (FGV/SP)*, *Universidade Estadual Paulista Júlio de Mesquita Filho (Unesp -*

²According to data from Mexico's System of National Accounts and population projections for 2016, it is estimated that Mexico City, Coahuila, Sonora, Querétaro, Tabasco, Baja California, Sinaloa and Yucatán are among the 20 states with the highest Gross Domestic Product (GDP) *per capita* monthly; on the other hand, Nayarit and Puebla will be among the 10 states with the lowest monthly GDP *per capita* (Hernández Licona, 2019).

³According to estimates by the *Consejo Nacional de Evaluación de la Política de Desarrollo Social (Coneval)*, based on the National Household Income and Expense Survey (ENIGH) 2020, of the 10 Mexican states that have PD in the PNP, seven had the lowest percentages of people in poverty: Baja California (22.5), Nuevo León (24.3), Coahuila (25.6), Sinaloa (28.1), Sonora (29.1), Querétaro (31.3), Mexico City (32.6), Yucatán (49.5) and Tabasco (54.5) are the states with the highest percentage of people living in poverty (México, 2020).

Botucatu) and *Universidade Tecnológica Federal do Paraná* (UTFPR). The main thematic axes were: public health and management, research and development in the pharmaceutical industry, administration, economics, cultural goods and social projects, nursing, research and development (medical biotechnology), Education, and technology, society and environment (CTSA).

Table 7 - Total of Institutions that offer Professional Doctorates in Mexico. 2022

Country	Thematic Axis	Main University
Mexico	Innovation and Educational Technology	Universidad Autónoma de Querétaro
	Strategic Administration	Universidad Autónoma de Sinaloa
	Applied Psychology	Universidad Autónoma de Yucatán
	Economics and Administrative Sciences	Universidade Juárez Autónoma de Tabasco
	Mechatronics Engineering	Universidad Popular Autónoma de Puebla, A.C.
	International Doctorate in Tourism	Investigaciones y Estudios Superiores, S.C.
	National Security and Defense	Secretaria de Marina
	Maritime and Port Administration	
	Tourism	Universidad Autónoma de Baja California
	Administration and Senior Management	Universidad Autónoma de Coahuila
Organizational Management	Universidad Autónoma de Nayarit	

Source: CONACYT, PNPC (México, 2022)

Table 7 reveals not only the reduced number of PDs in Mexico, but also the fact that none of the Mexican universities that appear in the main world rankings⁴ have this type of doctoral training, although they have PM programs in their list of courses offered, for example, the renowned National Autonomous University of Mexico (Unam), which has 13 types of PM registered with the PNPC, 8 of them recognized for their high degree of excellence, other examples being the National Polytechnic Institute, with 17 PMs, and the *Universidad Autónoma*

⁴In Mexico, in 2021, only two universities were placed among the best in the world in the ARWU (2021): the National Autonomous University of Mexico (UNAM), occupying position 201 – 300, and the National Polytechnic Institute, occupying position 501 - 600, none of them having DPs recognized by the PNPC.

Metropolitana, with 4 PMs (México, 2022). The question that arises is: for what reasons have these excellent universities, having already implemented PMs, not yet created PDs?

Taking Mexican literature as reference, this could be explained based on the hypothesis that, in Mexico, as in other countries, PD courses are seen as of inferior quality, compared to traditional ACD (Díaz-Barriga, 2009; Fresán Orozco, 2013; Patiño Salceda, 2020). As also highlighted by Maxwell and Shanahan (1997, p. 3-4), in relation to PDs and ACDs, there is a feeling that they are equal but different, indicating a concern with the academic status of PDs. For the authors, PDs may be viewed negatively by some, and it is possible that the term *professional* carries a pejorative meaning, since the academic-scientific environment could conceive basic research as being of greater prestige than applied research.

If, on the one hand, this hypothesis seems to apply to the Mexican reality, on the other, it does not apply so categorically to the Brazilian context. Although it is a fact that the main Brazilian universities highlighted in world rankings⁵ do not have PDs, it is worth highlighting three issues: a) the process of creating PDs in Brazil is very recent; b) the expansion of PDs is currently being regulated very carefully by accreditation agencies of the Brazilian State, to the point that few PD proposals presented by Brazilian universities were approved; c) just as in Mexico, the main Brazilian universities also offer PMs. State University of Campinas (Unicamp), for example, has 26 PM courses, while USP maintains 82; one could argue that the creation of PDs in these universities is just a matter of time. PMs in these institutions will mature, whereby the creation of PDs will be a natural consequence. Furthermore, specifically in terms of the Brazilian reality, it should be mentioned that this high number of PMs offered by the main Brazilian universities could mean that the initial resistance to the creation of PMs and PDs in Brazil, coming from organizations representing researchers from different subject areas, have gradually been diluted and overcome, as highlighted in the literature (Calderón *et al.* 2019).

⁵In 2021, in ARWU (2021), the University of São Paulo (USP) appears in position 101-150, obtaining the best overall placement, also highlighting the Unesp, *Universidade Federal do Rio Grande do Sul* (UFRGS) and the Unicamp, which appear in the group between positions 301-400. In the THE ranking (2021), the Brazilian universities with the best classification were: USP - position 201-250 (better performance than in 2020 - 251-300), Unicamp - position 401-500 (better performance than in 2020 - 501-600) and the Federal University of Minas Gerais (UFMG) - position 601-800. In QS (2022), USP is in position 121, Unicamp in position 219 and the Federal University of Rio de Janeiro (UFRJ) in position number 369.

5 Final considerations

This study allows us to verify some elements and findings that can help reflect on the reality of PDs in both countries researched.

Firstly, it was evident that only Brazil and Mexico, in the Ibero-American context, have specific regulations that recognize PDs in their territories apart from ACD programs. However, we must highlight the changes currently taking place in Mexican Higher Education. Although the PNPC recognized PDs in 2014, with the new Mexican government elected in 2018, the new Mexican legislation for Higher Education, that is, the *Ley General de Educación Superior* (México, 2021), limited itself to mentioning the existence of ACDs, without mentioning anything about PDs, which will lead the PNPC to stop evaluating and recognizing the quality of PDs in Mexican territory.

Moreover, PDs in Mexico are limited to establishing the link between this modality and the student's work space and their professional development, becoming a way for the university to "consolidate its links with sectors of society" (México, 2015, p. 8). In Brazil, normative legislation goes further, highlighting the strong link between PDs and increased productivity in companies and public and private organizations, denoting that it is more involved with a policy of economic development, technology transfer and innovation.

On a third level, it is observed that, despite the recognition of PDs by the Mexican PNPC being older than the Brazilian procedure, the number of programs offered in Brazil (58) is five times greater than the number of programs offered in Mexico (11), suggesting that this divergence would be due to the fact that in Mexico, PDs would be seen, in an ingrained way, as educational programs of inferior quality, a concept believed to have been diluted in Brazil.

A fourth aspect evidenced is the courses that exist in Mexico and that are not available in Brazil: maritime and port administration, national security and defense, mechatronics engineering, applied psychology and tourism. In turn, in Brazil, there is a variety of courses that are not offered in Mexico, of which we highlight: biotechnology, environmental sciences, production engineering, mechanical engineering, pharmacy, urban and regional planning, public health, science and mathematics, technological teaching, among others.

A fifth observation is that, in both countries, the geographical distribution of courses is arranged in greater concentration in regions with greater economic

development and lower poverty rates, highlighting similarities rooted in regional asymmetries.

Finally, with regard to the structuring of PD programs, there is a significant difference between Mexico and Brazil. While in the former, PDs fall into what the literature calls first-generation PDs, insofar as the traditional thesis is required, similarly to ACDs to obtain the degree, in Brazil, PDs fall into the so-called second-generation PDs, as there is room for innovation and the creation of new grading possibilities, since universities have the autonomy to define other products equivalent to the thesis to obtain an academic degree.

Dos doutorados acadêmicos aos doutorados profissionais: análise comparativa de experiências na Ibero-América

Resumo

Os Doutorados Profissionais (DP) como modelo de formação doutoral, paralelo e independente dos tradicionais Doutorados Acadêmicos, começaram a se expandir ao longo dos anos 1990 por países do mundo anglo-saxão, ecoando timidamente nos países ibero-americanos. Este artigo realizou um estudo comparativo entre os DP do Brasil e México, únicos países da região ibero-americana que criaram DP em seus sistemas educacionais, visando analisar suas convergências, divergências e especificidades. É um estudo de natureza exploratória, analítico-descritiva, bibliográfica e documental. Entre outras importantes constatações, destaca-se que diferentemente das normatizações mexicanas que relacionam os DP especificamente com a melhoria da prática profissional dos doutorandos, no Brasil, prevalece uma concepção mais ampla direcionada ao aumento da produtividade das empresas e organizações públicas e privadas, à transferência tecnológica e à produção de conhecimentos inovadores.

Palavras-chave: Doutorado Profissional. Doutorado Acadêmico. Universidade de Classe Mundial. Brasil. México.

Del doctorado académico al doctorado profesional: análisis comparativo de experiencias en Iberoamérica

Resumen

Los Doctorados Profesionales (DP) como modelo de formación doctoral, paralela e independiente de los Doctorados Académicos tradicionales, comenzaron a expandirse a lo largo de la década de 1990 en países del mundo Anglosajón, haciéndose eco tímidamente en países Iberoamericanos. Este artículo realizó un estudio comparativo entre los DP de Brasil y México, los únicos países de la región iberoamericana que han creado DP en sus sistemas educativos, con el objetivo de analizar sus convergencias, divergencias y especificidades. Este es un estudio exploratorio, analítico descriptivo, bibliográfico y documental. Entre otros hallazgos importantes, es digno de mención que, a diferencia de las normas Mexicanas que se relacionan específicamente con el desarrollo profesional de los estudiantes de doctorado, en Brasil hay una concepción más amplia y prevaleciente destinada a aumentar la productividad de las empresas y las organizaciones públicas y privadas, la transferencia de tecnología y la producción de conocimiento innovador.

Palabras clave: Doctorado Profesional. Doctorado Académico. Universidad de Rango Mundial. Brasil. México.

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