

Higher Professional Education in Brazil and France: A Model for an Identity Profile of Technological Graduations

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Abstract: This work presents an analytical model for the analysis and construction of the identity profile of the Technological Undergraduate courses (higher professional education) in Brazil based on the comparison between the Brazilian models represented by SENAI-SP, FATEC and “X” University with the PHE model -Professional Education in the Union European of the Conservatoire National des Arts et Métiers - CNAM (France) with emphasis on Management courses. The research approach is qualitative, made through multiple case studies, triangulated by the application of questionnaires, in-depth interviews, document analysis and direct observation. The results suggest a contradiction between the labor market, the proposal for technological courses and professional education, highlighting the need for the proposed model.

Key words: higher professional education; Brazil and France; technological degrees; management technology courses

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1. Introduction

According to the Brazilian Classification of Occupations (CBO), the technologist is a professional with a higher level, able to fully develop a certain technology. Its duties include: planning services, scheduling activities, administering and managing resources, promoting technological changes, improving safety, quality and environment conditions (BRASIL, Ministério do Trabalho, 2018).

Higher education, when approached within the education scenario in Brazil, has undergone several remodeling in recent years (Favretto & Moretto, 2013, p. 409) that analyzed professional education from the perspective of technological education.

Analyzing the coincidence of objectives of the bachelor’s and technological higher education courses, the apparent lack of characteristics that distinguish them, unequivocally, from the technological degrees as well as the mistakes suggested by the Management Technology courses when compared to the Bachelor’s degrees in Administration in Brazil, this research was carried out.

The research is based on the proposition of an analytical model for defining the identity profile of higher education technology courses in management, even though this term (management) appears implicitly in the name

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of those courses.

Its main objective is to propose an analytical model for defining the identity profile of Brazilian Technological Undergraduate courses, with an emphasis on Higher Management Technology Courses based on international parameters and models of national excellence.

The specific objectives of this research are constituted, with a view to proposing an analytical model: to present the scope of the Technological Undergraduate courses in Brazil, opening an outline for the State of São Paulo, with emphasis on the Higher Courses in Management Technology; to present the scope of the Brazilian models National Service of Industrial Learning - SENAI (SP) and Higher Education Institute of Technology of São Paulo, of the Paula Souza Center - FATEC (SP) with clearly defined profiles and of the Higher Education Institute "X" (SP), which represents institutions higher education institutions that offer technological degrees in their curricula, present the scope of the French model of the Conservatoire National des Arts et Métiers - CNAM (Île de France) as an international model and prepare a comparative study between the French (CNAM) and Brazilian models (FATEC - Higher Education Institute of Technology of São Paulo, SENAI-SP and Higher Education Institute "X"), comparing the construction of the model, the profile of the courses and their trajectory.

Higher education, when approached within the education scenario in Brazil, has undergone several remodeling in recent years (Favretto & Moretto, 2013, p. 409) that analyzed professional education from the perspective of technological education.

Under the lens of law, higher technology courses are considered regular undergraduate courses, regulated by the National Curriculum Guidelines established by the National Education Council. These guidelines propose that the focus of technological undergraduate courses is focused on mastering and applying technological knowledge in one or more professional areas (emphasis added). Its main objective is the development of professional skills that facilitate the use of a certain technology.

The beginning of the years between 1960 and 1969 was the scene of discussions about the need to reformulate Brazilian higher education, mainly regarding the duration of higher education courses. With its roots in the University Reform of 1968, technological higher education gained strength. The Reformation proposed the installation of short professional courses, with intermediate qualifications of higher education (BRASIL, 2002).

Only in 1968, with the publication of Law No. 5,540 of 28 November, University Reform in Brazil was established, "which formally and legally opened the space for the offer of short-term intermediate courses in different areas, to meet the heterogeneity labor market" (Brandão, 2006).

The projects of technological undergraduate courses in Brazil were supported by the Ford Foundation, which advocated the "transfer of a higher education model already developed in the United States to qualify professionals suitable for the operation of the technologies that Brazil imported" (Brandão, 2006).

Neves (2004) and Kuenzer (1995) presented studies that deal with the formation of higher education in the country. These studies reveal that, for a long time, universities have established themselves as educational institutions par excellence in the formation of thought from different social layers, as well as in the production of scientific knowledge and cultural development in general.

Also according to the authors, higher education institutions faced several issues, often paradoxical: meeting the requirement for higher education degrees to enter the labor market, the need to address an increasingly heterogeneous public. Adding to this the necessary training for the labor market, in order to meet the demand of companies, higher education had to surrender to technological changes, offering courses in new professional fields.

Increasingly, the advances caused by the latest technology and the global economic and productive scenario favor the need for solid educational training, in order to keep up with the contemporary solutions.

The idea of technological degrees or higher technology courses influenced the industry's need for training that went beyond the technical level.

Although the purposes are defined in the Catalog of Technology Courses produced by MEC (Education and Culture Ministry), the purpose of its existence (of the Courses) seems to be confused with the purpose of the existence of the technical or qualification courses, among others.

This absence of identity, with its own characteristics and unequivocally distinguished in the educational scope and in the community, seems to need urgent construction and modeling.

2. Literature Review

Brazil has technological education models in public and private institutions, considered by the media to be excellent. The SENAI website, for example, in its national dimensions, points out the excellence awards won in the long trajectory of its existence (SENAI, 2017).

Germany and France influenced the courses mentioned in the previous paragraph. This influence was confirmed by the interviewee FDG (in an interview carried out in 2018), from FATEC-SP - Higher Education Institute of Technology at Centro Paula Souza, who stressed: "the Germans had great influence in the elaboration of the formative process of FATEC Technology Courses ...".

According to data available on the Map of Higher Education of SEMESP - Union of Maintaining Entities of Higher Education Establishments in the State of São Paulo, which uses data from the 2010 Census of IBGE - Brazilian Institute of Geography and Statistics, Brazil maintains one of the largest educational centers in the world, which brought together, by 2010, a total of 2,378 institutions of higher education, of which 2,100 private and 278 public HEIs (SEMESP, 2012, p. 6). It is worth remembering that 2010 represents the year of the last official CENSO in Brazil, carried out by IBGE - Brazilian Institute of Geography and Statistics, which takes place every ten years.

Brazilian higher education was responsible for the training of more than 835 thousand students, 657 thousand of whom were graduates in face-to-face courses in the private sector and 178 thousand in public schools (SEMESP, 2012, p. 6).

When related to technological courses, data from SEMESP indicate a number of enrollments in public and private HEIs in Brazil, in 2010, concentrated in the age group of 19 to 24 years old, totaling 243,071 enrolled students, 123,225 male and 119,846 female. This teaching modality also registered 219,886 students enrolled between 25 and 34 years old (SEMESP, 2012, p. 9).

Gonçalves (2007, p. 13), states that higher technology courses have existed since the 1960s, with the primary objective of training professionals focused on the job market, with skills to deal with the daily situations of organizations. There is also the position of Peterossi (1970, p. 32) who goes backwards in the timeline, affirming that the emergence of such courses is based on "trades" that developed and needed absorption by the labor market.

By "crafts", the work carried out in specific posts, that is, the activity, must be understood. As an example, mention "goldsmith craft", "shoemaker craft", among others, all related to the practical execution of specific jobs that were considered "professionals" (Gonçalves, 2007, p. 13).

Technological graduations are understood here as technology courses that propose, in a shorter period of time

than Bachelor's and Bachelor's degrees, to offer a higher level diploma that aims at proximity to the labor market (Silva, 2014, p. 84 emphasis added).

Technological degrees have been referred to as short courses and higher courses in technology. These formations would, as a goal, train the individual to exercise a job with managerial characteristics within the various segments of the labor market (BRASIL, 2008, p. 379).

To date, three editions of the National Catalog of Higher Technology Courses have been made available: the first in 2006, which listed 98 course names; the second in 2010, which increased the number of denominations to 113 and the third edition, which included 134 technological degrees, updating the previous ones: (BRASIL, 2016). Among the various course options offered by the National Catalog of Technology Courses, currently in its third edition (2016), the existence of 134 Technological Undergraduate courses stands out, as part of this study, of which there are 20 courses with the term "management" explicitly and 6 courses where the term "management" exists tacitly, which can be understood.

The Bologna Declaration of 1998 designed for 2010 the establishment of the European Higher Education Area with a view to competitiveness and making the European higher education system desirable. It also intended to improve the employability of students, in addition to facilitating transit between the various educational institutions in the member countries of the European Union (Stallivieri, 2004, p. 38).

In Europe, higher vocational education must meet the expectations of employers and universities.

France has a partial unitary PHE (Professional Higher Education) system, such as the IUT's - Instituts Universitaires de Technologie. IUTs are partly autonomous colleges or affiliated institutions at a university. The first such institutions were created in the 1960s (11 IUT offers provide 25 programs).

The main challenges for PHE institutions in this system are to maintain and develop close links with scientific research, which is at the heart of their mission, including close ties to regional educational programs.

French universities are in the process of "professionalizing" their programs, which will lead to an even greater unification of the system.

The IUTs in France have awarded the University Diploma of Technology (DUT) for 40 years, thanks to companies that have requested graduates immediately employable. These graduates must have the ability to adapt very quickly to changing conditions and start their career with greater knowledge about the world of work without compromising their academic performance.

Stéphane Lauwick, Vice President (International Relations) of the IUT Association presents national regulations and incentives to promote skills related to work in France, as well as learning (Camilleri et al., 2018). The companies receive tax incentives from the French State for the partnership with the reception of the graduates.

3. Method

This research, with a qualitative approach, was characterized by its exploratory and descriptive character, with the option of studying multiple cases, whose comparison between them came to support the proposal of the analytical model, triangulated with interviews and analysis of the content of texts and official information.

From the in-depth study of the normative and legislative aspects that guide graduations in the Brazilian and French models, the following investigative techniques were used: multiple case study, based on Yin (2010), Gil (2015), Vergara (2006) and Eisenhardt (1989), so that the comparison between them would support the proposal

of the analytical model; documentary research in the archives of SENAI, FATEC and CNAM; techniques of semi-structured interviews and observation performed directly with the actors of the process during the researcher's stay as a teacher of technological undergraduate courses in the higher education institutions used.

The objects of the research or case units were: technological undergraduate courses from the National Service for Industrial Learning (SENAI - SP); technological undergraduate courses at the Higher Education Institute of Technology of the Paula Souza Center (FATEC - SP), technological undergraduate courses at the Higher Education Institute "X" - SP and technological undergraduate courses at the Conservatoire National des Arts et Métiers (CNAM - Île-de-France).

The first stage consisted of bibliographic research and analysis of the available documentation and determined the construct, that is, the current conceptual model that served as a parameter to identify a technological undergraduate course in the area of management (among others). Then, each research object was analyzed based on its explicit identity, that is, based on its mission, values, vision and its relationship with the labor market. Also taken into account were the items that the object should meet to justify its study as a case. The generated groups were transformed into item categories. After categorization, a search was made for possible cross-sections between sections. The result supported the wording of the scope of the text. The initial interviews were characterized as semi-structured and have the questions prepared in order to contain, either explicitly or implicitly, the qualifiers used, whose crossing of the information obtained with the theory suggested topics for discussion.

The research subjects were chosen from the category of coordinators, directors and professors, according to indications and availability, being considered a non-probabilistic sample, since it is a qualitative approach. The criteria for accessing Brazilian models were established based on the degree of acceptance and legitimacy, availability of research documentation with access and easy access for interviews and observation.

4. Results and Discussion

The model for the identity profile was generated based on four main axes: nomenclature (or denomination based on the terminology used), construction of the course, internships and graduates.

Nomenclature: the name of a course embodies, in a way, its purpose and helps to identify its profile. The terminological divergence observed between the various factors that make up the "puzzle" of technological undergraduate courses disperses the purpose of the course and confuses its profile. In view of the Brazilian and French model, it is suggested, first, a more precise segmentation: Higher academic education and higher professional education (always close to the job market). From this segmentation, the terminological unification, adapting the Brazilian legislation, whose tendency is already inclined towards this point, could be a way of contributing to the construction of an identity profile. In higher professional education, it is suggested a further division that characterizes the profile with greater precision: higher professional technological education and higher professional education for management. While professional technological education would encompass industrial sectors that, like SENAI, FATEC and CNAM, are directed to the demand of industry and services (graphic technology, telecommunications technology, etc.), professional higher education for management would return its purpose for leadership in different areas of activity, such as Human Resources Management.

Construction: the course construction process should involve at least five actors. Their presence would be an indicator of the course profile being built. The five main factors considered, would be:

a) **Academy:** Academy should be understood as the body responsible for executing the course. In France there are Universities that hold Institutes of Vocational Training, which suggests the possibility of combining isolated professional education courses with higher academic courses;

b) **Legislation:** this includes the legal framework maintained by government agencies and the Ministries, Sectors and others, which launch the standards for the certification of professional education courses. Standardization is an essential factor for a precise profile;

c) **Labor market:** the participation of the labor market can be the difference between the future of courses and their graduates. Since the legislation requires proximity to the market, its demands need to be known. Europe only authorizes the construction of a new professional higher education course by demonstrating evidence that justifies its inclusion in the labor market. SENAI, in this detail, presents itself as a suggestive case, since all the courses it offers are based on the demand of the industry and the extent of absorption by the market. This factor can prevent excess graduates or outdated content over the years;

d) **Class institutions:** this item includes associations, labor unions, professional councils etc. Their presence in the development of guidelines for the construction of courses favors their legitimation within society and their peers;

e) **Civil society:** civil society is responsible for disseminating the profile of the course and maintaining its functioning, since most students are the result of this society and the result of the course will revert to it. In addition, social legitimation is fundamental for the consolidation of the identity profile.

Internships: curricular internships, which are not mandatory in Brazilian law (for technological undergraduate courses), help to bring courses closer to the labor market. The internship, whether in the scope of Bachelor's or Bachelor's degrees, seeks the practical application and/or observation of the theory assimilated in the classroom. Often, the internship is a preparatory replica for the student to enter the job market. The absence of mandatory internships in professional higher education at many higher education institutions suggests a paradox, as the simple teaching experience does not reflect the student's practical involvement in the tasks of a particular type of profession. Therefore, the internship can be considered the first foundation for the proximity of the school to the labor market and a fundamental requirement for the exercise of the profession.

Graduates and monitoring: the last axis of the model for the identity profile incorporates the assessment of performance in the labor market, its validation by the human resources sectors and the continuous improvement and updating to consolidate the professional profile in an evolutionary way. The graduate's profile must have technical and objective coincidence with the course.

It can be considered as a fact that higher education institutions, in general, do not monitor graduates. In the case of higher professional education, due to the direct connection between the objective of the course and market demand, the monitoring (even if partial) could be a thermometer of the development of the courses offered, their evolutionary dimension and the continuous self-analysis for curricular changes.

5. Conclusion

This article, with a qualitative approach, had as premise the proposition of an analytical model for the construction of the identity profile of higher management technology courses, even though this term (management) appears implicitly in the denomination of the referred courses.

The profiles of technological undergraduate courses in other countries (in particular, France) and the

consolidated profiles of courses in Brazil (SENAI, FATEC in addition to private colleges) were used as parameters, maintaining the final focus in the area of Applied Social Sciences.

In order to achieve the proposed objectives, the scope of the Technological Undergraduate courses in Brazil was presented, opening a section for the State of São Paulo, with emphasis on the Higher Courses in Management Technology, followed by the presentation of the Brazilian models: National Service of Industrial Learning - SENAI (SP) and São Paulo School of Technology, Centro Paula Souza - FATEC (SP) with clearly defined profiles and Higher Education Institute "X", representative of Brazilian higher education institutions that offer technological degrees in their catalog courses. It was used as an international comparison model, the Conservatoire National des Arts et Métiers - CNAM (Île de France) was used. The choice of the model was based on a brief stint in education in Europe and Germany. A study carried out based on a survey of all countries in the European Union presented the results that guided explanations about education in France. The comparative established revealed an inconsistency that begins at the moment of the construction of the Brazilian legal act itself, when, when proposing the approximation of technological undergraduate courses with the labor market, it does not include employers in the discussion. This contributes to the Brazilian professional higher education participating in an unemployment scenario whose diploma (of the course), currently, does not show ease in the job market.

The excess of legislation combined with a mistaken and confused understanding about the technologist's profile leads to ignorance on the part of the human resources areas and in some cases even calls into question the validity of the content absorbed in class.

While the European model, represented by CNAM (France) has a clearly defined trajectory, the Brazilian model (except SENAI and FATEC) lacks foundations in its construction process.

From the EURASHE Report (CAMILLERI, 2018; EUROSTAT, 2017) it is known that, even when using the partnership with the labor market to build a higher professional education course, there is no guarantee of employability of the graduate. However, the market recognizes the graduate, the study path, since it was part of the course design. In Brazil, despite the examples of excellence shown, the reality is quite different. With the legislative hodgepodge, the use of content, the technologist does not have a sequence that allows him to raise his bachelor's degree in continuation of the course.

With regard to Technological Management Courses, Higher Professional Education in Brazil is confused with Administration, in terms of uses and customs, leaving unknowns unanswered by the labor market, due to the reflection of mistaken curricula, apparent disconnection with the reality of employment and uncertainties about the final product of the training, including the identity profile of the graduate's training.

The analytical model does not intend to be Cartesian, where the dimensions are precise and dogmatic, but it wants to be a contribution to the deepening of the reflection on the theme, in order to reduce mistakes.

This reduction may be consolidated in joint actions between educational institutions, their regulatory bodies, the labor market, class bodies, civil society. The actions should aim at building a profile of higher professional education, compatible with the Brazilian reality, based on the French model.

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