Innovation Policy and the Role of Accounting in the Strategic Management of Technology Transfer: A Study in the Scientific, Technological and Innovation Institutions of Northeast Brazil

Rosana de Jesus Santana Nascimento (Corresponding author)
Master's Student Professional Master's Program in Intellectual Property and Technology Transfer for Innovation - PROFNIT - PROFNIT/IFBA.
Administration Assistant at the Federal Institute of Bahia-IFBA, Salvador-Bahia, Brazil.
Email: nascimentorosana@yahoo.com.br

André Luis Rocha de Souza
Professor at the Federal Institute of Bahia - IFBA, Professional Master's Program in Intellectual Property and Technology Transfer for Innovation - PROFNIT - PROFNIT/IFBA Salvador-Bahia, Brazil.
Email: profandre.ifba@gmail.com

Marcelo Santana Silva
Professor at the Federal Institute of Bahia - IFBA, Professional Master's Program in Intellectual Property and Technology Transfer for Innovation - PROFNIT - PROFNIT/IFBA Salvador-Bahia, Brazil.
Email: profmarceloifba@gmail.com

Jerisnaldo Matos Lopes
Professor at the Faculty of Technology and Sciences - FTC, Salvador-Bahia, Brazil.
Email: jerislopes@hotmail.com

Maria Valesca Damásio de Carvalho Silva
Professor at the Federal University of Bahia - UFBA, Salvador-Bahia, Brazil.
Email: mvalesca.ufba@gmail.com

Abstract

This research aims to analyze whether Intellectual Property assets of Federal Institutes (FIs) in Northeast Brazil are being measured, accounted for and evidenced in Financial Statements (FSs) of these Scientific, Technological and Innovation Institutions (STIIs). Therefore, in order to achieve the proposed objective, a bibliographic, exploratory, and descriptive research was carried out. This survey was achieved through a qualitative approach from document analysis and collection of secondary data related to innovation policies of FIs, and valuation and accounting of IP assets. The results showed that patent registrations granted and Technology Transfer (TT) are still incipient, although the majority of the Technological Innovation Nuclei (NITs) of Northeast FIs have innovation policies that support intellectual protection of

inventions. Even though there are Brazilian Accounting Standards (NBCs) that uphold the process of measuring, recording and disclosing of IP assets, such as NBC TG 04 (R4, 2017a) and NBC TSP 08 (CFC, 2017b), this result can also be due to an absence of structured and guiding procedures within the scope of NITs' innovation policies.

Keywords: Asset accounting; Innovation Policy; Intellectual Property; Asset valuation.

1. Introduction

In a contemporary world, whose nations have continuously sought economic and social development in order to meet society demands, it is observed that global governments have resorted to public policies that favor investments as strategic elements for development of science, technology and innovation. Thus, it seeks to induce economic behavior that contributes to leverage national competitiveness and favor foreign capital attraction (Amorim, 2019).

Therefore, from Brazilian Law No.10,973/2004 creation, entitled the Law of Innovation, induction of scientific and technological development was instituted, which seeks to favor innovation generation in productive environment and guide Technology Transfer (TT) processes (Brazil, 2004).

The proposal to induce an innovation ecosystem brought by the Innovation Law also instituted Technological Innovation Centers (NITs), which have the role of managing innovation policy and intermediating TT processes within the scope of Scientific, Technological and Innovation Institutions (STIIs). Thus, NITs are responsible for managing innovation policy and negotiating TT agreements associated with Intellectual Property (IP) assets of these STIIs.

In the midst of creating an innovation environment in Brazil, a new legal framework for science, technology and innovation was instituted in 2016: Law No.13,243/16. It amended Law No.10,973/2004, in addition to bringing innovations in aforementioned processes, it also favored capture and generation of resources for Brazilian STIIs (Brazil, 2016). Thus, with the national legal framework, it is expected that TT processes of IP assets generated by STIIs can happen in a more systematic way, favoring approximation and relationship strengthening among these institutions and the productive sector.

IP assets can be defined as any production of human intellect, whether in industrial, scientific, literary or artistic domain. Due to the effort in the development of these creations, the author has the right to protection, which is protected by law and aims to encourage the continuation of these activities and provide economic return (Santos, 2019).

Thus, it should be noted that both legal aspects and economic-financial aspects of IP assets are directly related to public accounting, to which public STIIs are subjected, due to what accounting legislation imposes regarding the need to measure these assets (monetary valuation), registration in internal controls of these institutions and their evidence through Accounting statements (ASs), according to NBC TSP 08 (CFC, 2017; Brazil, 2007). Furthermore, it is also noteworthy that relationship among public accounting, and scientific and technological development of STIIs is due to the need to control public resources flow involved in these inventions and their transparency to society.

The disclosure of IP assets by public STIIs is an important process for the fulfillment of

accountability to society. Thus, among other innovations, Brazilian Law No. 11,638 created the obligation for organizations to recognize intangible assets in their ASs in 2007, whose item VI, of Art.179, established that IP assets must be classified within the group of non-current assets in an intangible account. In addition, in Article 183, item VII, the Law defines that evaluation criteria for rights classified as intangible should be measured based on the cost incurred, reducing the respective amortization account (Brazil, 2007). In addition, the recognition of intangible assets must comply with the Brazilian Accounting Standards applied to the public sector, according to CFC (2017).

On the other hand, although accounting legislation brings the need for control and management, and the legal bases for recognition and registration of IP assets, in public STIIs scope, absence and/or incipience of measurement, registration and disclosure has influenced both, negotiation and transfer of these assets to the productive sector, regarding marketing aspects, and attraction of interested entities. Consequently, this fact impacts disclosure in ASs, which leads to non-compliance with Brazilian Accounting Standards applied to the Public Sector (NBC TSP) (Ferreira, 2019; Guimarães, Kniess, Maccari, & Quonoan, 2014; Teodoro, 2015).

According to the research by Araújo and Leitão (2019), which aimed to investigate the adoption of NBC TSP 08 by Federal Higher Education Institutions (HEIs), following the example of Universities, analyzing accountants' perception of twenty-four (24) HEIs, the authors noted that STIIs have encountered difficulties in applying NBC, which impacts the disclosure of these intangible assets to society. That is, despite the existence of accounting procedures and criteria for a measurement, recording and disclosure of intangible assets, such as IP assets, defined in particular by NBC TSP 08 (focus on the public sector), some public STIIs have not carried out such procedures, failing to evidence in their ASs and consequently underestimating their assets.

At the Institute of Technological Research of the State of São Paulo (IPT), for example, despite having knowledge of technology valuation methods, according to Guimarães, Kniess, Maccari and Quonoan (2014), there are cases of patents that were not valued (accountably measured), due to problems related to expenditures survey involving technology conception and royalties post-sale for IP commercial exploitation.

This reality has also been common in Brazilian Federal Institutes (FIs), especially in the FIs of the Northeast Region, the object of study in this research (MCTIC, 2017). Created by the Law No. 11,892 in 2008, these FIs are part of the National Innovation System (SNI) (Souza, 2020), which among other objectives, it should contribute to innovation generation, and local, regional and national economic and social development (Brazil, 2008; Souza, 2020). According to Araújo *et al*. (2018), Ferreira (2019) and Souza (2020) these FIs have developed technological production, however processes of valuation (monetary value measurement), negotiation, and TT has not happened systematically.

Given the above and considering that public STIIs need to account for their assets, in particular intangible results of investments in scientific and technological research; considering the importance of an adequate accounting record so that public entities can represent, in a reliable way, their assets and that innovation policies of these federal STIIs must guide IP assets management; whereas measuring IP assets' monetary value is an essential process for trading and transferring them to the productive sector (Ferreira, 2019); and that despite FIs develop IP assets, particularly those in the Northeast region, they have

encountered difficulties in their valuation and accounting (Ferreira, 2019; Teodoro, 2015; Guimarães *et al*., 2014), we sought to answer the following question in this research: **Are the Intellectual Property assets of Federal Institutes (IFs) in Northeast Brazil being measured, accounted for and evidenced in the Financial Statements (FSs) of these Scientific, Technological and Innovation Institutions (STIIs)?**

Therefore, the general objective of this research was to analyze whether the Intellectual Property assets of the Federal Institutes (FIs) of Northeast Brazil are being measured, accounted for and evidenced in the Financial Statements (FSs) of these Scientific, Technological and Innovation Institutions (STIIs). As a secondary objective, the research also investigated the strategic role that accounting can play, as a tool to support assets' negotiation and in management of resources linked to STIIs innovation policy in TT process. To this end, an exploratory, descriptive, bibliography, documentary and qualitative research was carried out, through an analysis of scientific, legal and institutional documents of Northeast FIs.

Northeast FIs were chosen as units of analysis for two reasons: firstly due to its low index of TT records (MCTIC, 2017). Furthermore, until the end of the present study, they had a low percentage of patent production when compared with STIIs in other regions of the country (Araújo *et al*., 2018). In addition, this study is part of the research project financed by CNPq, according to the Universal Notice MCTIC/CNPq 2018, entitled *"IP and TT within the scope of Northeast Region FIs: A study on the patent evaluation and valuation procedures adopted by NITs in TT processes"*.

It is also noteworthy that researches carried out so far has failed to investigate the objective proposed in this research, such as the following: The research by Araújo *et al*. (2018) that carried out IPs evolution analysis (patents, brands and software) deposited/registered at the National Institute of Industrial Property (INPI) by Northeast FIs from 2006 to 2016. Souza (2020) investigated how IFBA's IP and innovation policy contributes to development of technological production and TT. In turn, Ferreira (2019) monetarily valued the first patent granted to IFBA, entitled fish smoker through an alternative valuation method. While Guimarães *et al*. (2014) investigated patents valuation under the IPT NIT.

Thus, this research may contribute to accounting professionals practice at IP assets management within Northeast FIs scope, as well as a support to decision making by STIIs managers in the process of managing innovation policies, negotiation and TT of these assets to the market, as well as in resources control that are invested in innovation.

2. Literature review

2.1 Innovation policies

In the eighteenth and nineteenth century, the State played a role that was aimed at public security and external defense in an event of an enemy attack. With democracy expansion, the responsibility of the State is now directed towards promoting social welfare. In order to achieve it, public policies are used to represent a set of actions, goals and plans that a government determines to achieve society well-being and public interest (Lopes; Amaral; Caldas, 2008).

In Brazil, according to Távora, Dias, Melo and Kelner (2015), public policies promulgated by the government aim to make the country more competitive, through sustainable and equitable development. Some of these measures resulted in FIs emergence, which, through Law No.11,892 of 12/29/08, brought a

new model of professional and technological education, as well as the creation of FIs innovation policies, which, through what is provided by Law No. 10,973/04 and its modifications, should contribute to scientific and technological production, and thereby increase national economic development, driven by innovation (Brazil, 2004; 2008).

According to Emmendoerfer (2019), innovation in the public sector is an idea (new, improved or renewed) and systematized for the scope of its application, aiming to solve a problem of public interest. From problems diagnosis, alternative solutions are analyzed to find out which one is the most appropriate. For him, innovation in the public sector comes from improvements search.

A very broad concept covering innovation is found in the Oslo Manual (2018), as it refers to a new or a significantly improved implementation of a product or process, or marketing method or organizational method in business practices, as well as within an organization workplace, and external relations (OECD, 2018).

One of institutions' growth strategies is through innovation, as it drives economic progress and competitiveness. According to the Schumpeterian Competition Theory, the capitalist economy is dynamic and over time has undergone an evolution through economic changes and innovations. There is a constant search for agents differentiation through strategies or differentiation in product and quality to obtain competitive advantage (Kupfer & Hasenclever, 2013). According to Schumpeter (1984), what drives capitalism and keeps companies on the market is the entry of new consumer goods, new methods of production or transport, markets, as well as new forms of industrial organization.

Given this perspective, it is necessary that institutions constantly remodel scientific and technological processes through innovation. Therefore, Law No.10,973/04 came to encourage strategic alliances formation among universities, technological institutes and companies/productive sector, in addition to encourage these institutions to act on innovative entrepreneurship (Brazil, 2004). Subsequently, the Law No. 13,243/2016, of a new legal framework for innovation emerged, aiming to accelerate TT process (Brazil, 2016).

The Law No.13,243/2016 is oriented to economic development and reinforced implementation of an innovation policy in the entrepreneurial STII model, for which it is necessary to intensify efforts directed to strategies and actions in: (i) training of strategic human resources ; (ii) entrepreneurship in the technological area; (iii) public-private partnerships; and (iv) international cooperation (Brazil, 2016). Thus, it is worth mentioning that people training with deep knowledge and intellectual capital developed in different areas is possible to obtain a favorable result in innovation.

In Nazareno's perception (2016), the new legal framework rewrote most of the innovation law to meet the three constitutional axes, namely: integration, simplification and decentralization. This means private companies participation integrated into public research system; administrative, personnel and financial processes in a simple way in STIIs; and participation of States and Municipalities in supporting innovation by granting scholarships and incentives. The objective of these measures is to accelerate achievement and result of projects and research, in order to generate an increase in STII revenues.

According to Amorim's research (2019), which aimed to analyze whether Northeast FIs innovation policies are aligned with the new legal framework, it was concluded that their patent valuation and negotiation guidelines are distant from the national policy of innovation, these being some possible factors

that hinder effective use and transformation of knowledge into innovation. In addition, according to the author (2019), Northeast FIs innovation policies are distant from the national innovation policy, since the following issues are still incipient: a) stimulating independent inventor; b) investment funds; c) patent valuation and negotiation guidelines; d) STIIs internationalization; e) innovation-related budget; f) accountability; g) contracting of products; and h) goods import for research, development and innovation, among others.

The Innovation Law established that STIIs should create structures and spaces called NITs in order to manage innovation policy, IP and TT (Brazil, 2004). Thus, a NIT is the sector responsible for innovation policy managing, stimulating and monitoring IP-directed activities and actions related to technological innovation (IFBA, 2017). Therefore, its performance is closely linked to accounting as, among other activities, it requires measurement, recording and disclosure of IP assets monetary value and, consequently, has its own methodologies for this purpose.

2.2 Accounting as a strategic tool in the registration and control of intellectual property assets and innovation-related investments in STIIs

According to the research developed by Júnior and Almeida (2019), whose objective was to analyze patents of northeast federal public universities in relation to the market, it was observed that interaction among the productive sector and STIIs is incipient, because inventions generated in the latter are not in line with market demands. Thus, TT is not carried out, generating costs for public coffers.

The research carried out by Cabrera and Arellano (2019) that aimed to identify the main problems faced by university managers in relation to technologies valuation, resulted in: lack of accurate information about the market, production costs, and marketing and specific references on royalty rates, and knowledge lack on valuation methods [emphasis added], as well as low level of technology development, in addition to interest lack of some companies in investing in Research and Development (R&D) because they understand that these activities are not aligned with their business portfolio.

According to the research developed by Araújo and Leitão (2019), highlighted earlier, the authors concluded that these assets disclosure is compromised since there are difficulties in applying the standard. However, most professionals recognize the importance of this information and believe that it can assist in the decision-making process. According to the research carried out by Ferraz (2009), which aimed to analyze an accounting method for IP assets in forty companies in Brazil, it was observed that an effective way to attract investments is to correctly register IP assets values and demonstrate to the real company's situation. It is worth remembering that accounting science is the fundamental tool for valuing, registering and evidencing intangible assets, providing more transparency and facilitating negotiation and TT process.

In some public institutions, lack of valuation and disclosure of IP assets can impact on TT processes, because it creates a commercial barrier and makes it difficult to verify economic, financial and equity advantages return for entities, such as FIs (Ferreira, 2019). It is observed that activities of valuing technologies and patents are still incipient in Brazilian STIIs (Guimarães *et al*., 2014). This is due to a difficulty of measuring an IP value, which makes it difficult to recognize an intangible asset, as well as its accounting and disclosure by STIIs (Adriano & Antunes, 2016).

Thus, it is worth highlighting the role of Accounting, an applied social science, which aims to

provide information on equity and alterations of an entity to users in general (Iudícibus, 2010). Therefore, it has an informative role concerning phenomena and equity variations.

Given its nature and method, Accounting has a strategic role in valuing inventions created by STIIs that can drive national economic progress, through TT towards innovation. Since accounting procedures assist in valuation, negotiation and TT, it becomes possible to bring innovation to the market and obtain a competitive advantage for organizations. Thus, in order to support process of valuation and negotiation of public STIIs through measurement, registration and disclosure, in addition to financial reports, it is essential that these entities incorporate accounting criteria and procedures, guided by Brazilian NBCs in their innovation policies.

Among the accounting tripod (measuring/valuing, from a monetary point of view, recording and evidencing relevant information about an entities' equity changes for decision-making process), valuation stands out, since it consists of monetary value measuring of an asset in order to subsidize both registration/control of the asset and its disclosure in an entities' FSs, in addition to supporting TT process negotiation with potential buyers/licensees. There are several aspects involved in this valuation calculating process, among which the following stand out: (i) technology nature; (ii) development degree; (iii) intellectual protection strength; (iv) potential to generate competitive advantage; (v) market characteristics; (vi) involvement degree of inventors; and (vii) commercialization or entrepreneurship capacity (Cabrera & Arellano, 2019). Furthermore, according to Ferreira (2020), it is important to observe the invention Technological Readiness Level (Ferreira & Souza, 2019; Ferreira *et al*., 2020).

Measurement is a cost assessment that involves complex interactions of economic resources, which hinders its realization. In turn, recognition is when a resource/record appears in an entity's FS. It turns out that when it involves an intangible asset, there is a greater challenge to recognize it, as it cannot be registered when it is not possible to measure previously (Hendriksen & Van Breda, 1999).

According to NBC TSP 08 (CFC, 2017b), which provides for the accounting treatment of intangible assets, an entity should only recognize these assets if the criteria specified in the standard are met, which are: (i) intangible asset definition (identifiable non-monetary asset without a physical form); (ii) when future economic benefits or service potential are probable and asset cost of can be measured with confidence. In this standard, it is also evident how book values measurement of intangible assets should be, and requires specific disclosures about these assets (CFC, 2017b).

Thus, initially, an intangible asset must be measured by costs sum from the date in which met the recognition criteria. Following, the institution must define between the cost or revaluation model. Concerning the first model, recognition is made from total cost, that is, a sum of expenses incurred as of the date that meets the recognition criteria, which should reduce amortization, as well as other accumulated losses. The second model is defined as a fair value on the revaluation date minus any amortization and accumulated losses. This value is based on an active market, and revaluations should be made regularly to avoid distortions in the book value (CFC, 2017b).

According to Teodoro (2015), intangible assets like patents (IP assets), as they do not have an active market, transactions are carried out in confidentiality and, therefore, previous values are not used as a reference. According to the Accounting Manual Applied to the Public Sector (MCASP) (MF, 2019) and NBC TSP 08 (CFC, 2017b), with regard to initial recognition of an intangible asset generated internally, in

addition to meeting general requirements for recognition and initial measurement, as already informed, it is necessary to identify the research phase and the project development phase.

Regarding the first phase, as it is not able to demonstrate an intangible asset existence in generating future economic benefit, this recognition should be a diminishing equity variation and, therefore, recognized as an expense. In the development phase, if an entity demonstrates all aspects contained in item 6.3.2.2. MCASP and item 55 of NBC TSP 08 (CFC, 2017b), the asset should be recognized as intangible. The aspects of item 6.3.2.2, according to CFC (2017b, pp. 12) and MF (2019, pp. 194) consider:

> a. Technical feasibility for intangible asset conclusion so that it is available for use or sale;
> b. Intent to complete the intangible asset in order to use or sell it;
> c. Ability to use or sell the intangible asset;
> d. How the intangible asset should generate future economic benefits. Among other aspects, the entity shall demonstrate the existence of a market for intangible asset products or for intangible asset itself or, if it is intended for internal use, its usefulness;
> e. Availability of technical, financial and other adequate resources to complete its development, in order to use or sell the intangible asset; and
> f. Ability to reliably measure the expenses attributable to the intangible asset during its development (Ministério da Fazenda, 2019, pp. 194); (CFC, 2017b, pp. 12).

NBC 04 (R4, 2017a) and NBC TSP 08 (CFC, 2017b) signal that if there is an active market for intangibles, it should be used. However, there is no such market for brands and patents in Brazil, because this is a particular asset. Negotiations are carried out among parties and there is no prices history for comparison, which makes it difficult to define an asset value and TT.

It should be noted that an intangible asset cost generated internally, which is used for accounting recognition, involves all necessary expenses for creation, production and preparation of the asset to be able to start operating, such as: material and services costs, employee benefits, registration fees, and amortization of patents and licenses that are related to this asset generation (Ministério da Fazenda, 2019; CFC, 2017b).

In addition, it is necessary to evaluate this asset useful life for amortization purpose. If defined, it must be carried out over the course of its life; otherwise, there will be no amortization, as there is no predictable limit for the period during which the asset would generate positive cash flows. In this case, an impairment test must be carried out. This test is performed annually on intangible assets, which have an indefinite useful life in terms of impairment by comparing their carrying amount (CFC, 2017b).

Thus, it is observed that accounting is a strategic tool for innovation policy management of public STIIs, as it allows not only to manage and control financial flows allocated by STIIs in scientific and technological development, but also to measure IP assets monetary value, especially those generated internally. In addition, it helps in an invention negotiation process, through a fair value and contributes to TT in the market, supporting decision-making process of partnerships, through licensing, besides giving transparency to resources invested by STIIs in scientific and technological research (Araújo &Leitão, 2019; Ferreira, 2019; Teodoro, 2015).

3. Methodology

3.1 Research characterization

This research is characterized as an exploratory one, as it aims to know each Northeast FI, study object of the present investigation, as well as to explore their particularities and compare them. According to Gil (2008), the exploratory aspect is a study type that aims to provide the researcher with greater knowledge on a subject, thus being able to improve ideas or create hypotheses to be studied later.

In addition, it is also characterized as a research of survey, descriptive, and with a qualitative approach, which aims to qualify data collected from bibliographic and documentary research.

According to Severino (2007), a survey is a data collection that is more suitable for descriptive studies, without the researcher's intervention and handling. The typology is descriptive, as it addresses description of innovation policies and intangible assets recognition or not of Northeast FIs. According to Gil (2008), this research type describes the characteristics of a specific population or phenomenon, as well as it can establish associations among variables determining a relationship nature.

As for the approach, it is a qualitative research, whose purpose is to describe Northeast FIs innovation policies, as well as, to investigate if there is disclosure of intangible assets in FSs, though with no concern with statistical analyzes. According to Prodanov and Freitas (2013), the qualitative approach is a process based on the interpretation of phenomena and the attribution of meanings, not using statistical methods and techniques.

On the other hand, the research nature is bibliographic and documentary, since the first one results from records analysis in documents (books, articles, theses, dissertations) from previous researches (Severino, 2007). In relation to documentary research source, innovation policies, management reports and Balance Sheet (BS) of Northeast FIs were used. In Gil's (2002, pp. 45) point of view: "a documentary research uses materials that do not yet receive an analytical treatment, or that can still be reworked according to research objects".

3.2 Analysis Unit

The research sample was concentrated in Northeast FIs, which total 11 (eleven) unities, whose campuses are distributed in nine Brazilian states. Bahia and Pernambuco are the only states that has two institutes each one, which are: IFBA and IFBaiano (Bahia), and IFPE and IF-SERTÃO-PE (Pernambuco) (Brazil, 2008). As already highlighted in the introduction, this scope is justified due to a low index of TT records of these institutions (MCTIC, 2017), as well as a low percentage of patent production, according to Araújo *et al.* (2018). Thus, the research sample was constituted by the following institutions: IFAL - Federal Institute of Education, Science and Technology of Alagoas; IFBA - Federal Institute of Education, Science and Technology of Bahia; IFBAIANO - Federal Institute of Education, Science and Technology Baiano; IFCE - Federal Institute of Education, Science and Technology of Ceará; IFMA - Federal Institute of Education, Science and Technology of Maranhão; IFPB - Federal Institute of Education, Science and Technology of Paraíba; IFPE - Federal Institute of Education, Science and Technology of Pernambuco; IFPI - Federal Institute of Education, Science and Technology of Piauí; IFRN - Federal Institute of Education, Science and Technology of Rio Grande do Norte; IFS - Federal Institute of Education, Science

and Technology of Sergipe; IFSERTÃO - Federal Institute of Education, Science and Technology of Pernambuco's Sertão.

According to the Information Form on STIIs IP Policy and Innovation in Brazil (FORMICT, 2017), which aimed to present consolidated data provided by STIIs to the Ministry of Science, Technology, Innovations and Communications (MCTIC), it was found that the Northeast region has a low index of technology contracts, totaling only four (4) contracts, one justifying reason why this analysis unit was chosen in this research.

3.3 Steps and procedures

In order to achieve the proposed objective, the present research was developed in three stages: the first one refers to a bibliographic survey carried out from books, articles, theses and dissertations, and a documentary research related to innovation policies and IP, FIs' management reports, as well as documents related to measurement, accounting and disclosure of IP assets in ASs/FSs. Furthermore, secondary data regarding Innovation Policies and Management Reports were obtained through a search on institutional websites.

The ASs/FSs were obtained through the Union General Comptroller (CGU) e-SIC (Electronic System of the Citizen Information Service) request sent to the STIIs, through an exploratory research. The 2018 request for ASs/FSs aimed to understand how FIs classifies IP assets in their ASs/FSs and to contribute to disclosure improvement of these assets in these institutions' statements. The 2018 length of time was chosen due to the e-SIC protocol opening period, when STIIs had not made 2019 ASs/FSs publications. Requests were sent to the eleven (11) Northeast FIs.

In the second stage, a data treatment and analysis from the information extracted from innovation policies, management reports and FSs was carried out. Finally, in the third stage, data analysis was carried out, as well as the final considerations.

Furthermore, it is noteworthy that this research was limited to investigating whether IP assets generated by Northeast FIs are being measured, accounted for and evidenced in STIIs' FSs, as well as the strategic role that accounting can play in their innovation policies, although it should not be generalized to other FIs.

4 Analysis and Discussion of Results

4.1 Innovation policies of Northeast FIs

A well-defined innovation policy in FIs helps to meet structural needs of technological education and innovation, in addition to being one of the factors that contribute to improvement of the country's macro, microeconomic and social indicators. Thus, it is necessary to define strategies for a correct implementation of these policies according to the country's economic and social interest relevance, and technological development. However, it is observed that not all Northeast FIs have current innovation policies, and thereby there are obstacles to purposes' fulfillment for which they were created (Amorim, 2019), in addition to not meeting the Law on Innovation and to the New Legal Framework.

When analyzing the collected documents, shown in Chart 1, it was observed that the IFs that have a

published innovation policy were IFAL, IFBA, IFCE, IFPB, IFPE, IFRN and IF-SERTÃO-PE. Nevertheless, innovation policies were not identified at other FIs until the end of the research, namely: IFBaiano, IFMA, IFPI and IFS.

Chart 1. Northeast FIs documents

INSTITUTES	DOCUMENTS
IFAL	Superior Council Resolution No.06 of 06/12/17
IFBA	Resolution /CONSEPE No.64 of 10/17/19
IFCE	Resolution No.05 of 02/04/11 and Innovation Policy Draft of 02/15/19
IFPB	Innovation and IP Policy - Resolution *ad referendum* No.13 CS of 05/22/17
IFPE	IP, Technology Transfer and Innovation Policy– Resolution No.31 of 07/02/15.
IFRN	Policy for Scientific and Technological Development, Innovation and Entrepreneurship – Deliberation No.09 of 06/01/17 – CONSEPEX
IFSERTÃO-PE	Innovation Policy - Superior Council Resolution No.34 de 10/26/17

Source: Prepared by the authors (2020) based on research data.

IFAL has the Superior Council Resolution No.06 of 06/12/17, which provides for IP and innovation rights ownership and management. However, there is no information regarding valuation and TT, as well as aspects related to accounting treatment related to IP assets records (IFAL, 2017).

In the IFBA, on 10/17/19, the Innovation Policy approved by Resolution No.64 of the Teaching, Research and Extension Council (CONSEPE) was published. This Policy is aligned with the objectives and guidelines of article 15-A of Marco Legal Law and Decree No.9,283 of 02/07/18. This document contains elements that deal with innovation management, entrepreneurship, IP and TT. In its text, management activities that refers to technology transfer and licensing are included, but it fails regarding measurement and accounting procedures that are essential for valuation of these assets (Brazil, 2016; 2018); (IFBA, 2019).

It turns out that there was a delay in the issuance of such internal IFBA standards in comparison with legal provisions in force today. According to Souza (2020), the time lag of more than three years between Law No.13.243 of 01/11/16 and the innovation policy publication, may have generated losses in some actions developed, since the law established changes that aim to give more autonomy in formulation and execution of innovation processes, stimulating entrepreneurship and innovation. Furthermore, according to the author (2020), it may have compromised NIT activities since assignments were included that aim to improve the relationship among STII and the private sector (Souza, 2020).

Regarding IFCE, Resolution No.05 of 02/04/11 was verified, which provides for the innovation policy, regulates the NIT and provides other measures. The Innovation Policy Draft of 02/15/19suggests elements referring to valuation, negotiation and TT of equity rights in its creations. However, it does not list procedures that should be adopted by this institution, delegating to NIT, in its article 58, to decide on methods and criteria for valuing technology, respecting proper regulations. In addition, it fails to address issues related to accounting treatment of intellectual creations of this institution (IFCE, 2019).

In the IFPB scope, the Innovation and IP Policy - The Superior Council Resolution *ad*

*referendum*No.13 of 05/22/17, whose textual model is similar to the IFPE Policy - Resolution/ CONSUP No.31 of 07/02/15, fail to bring in their content information about: valuation, negotiation and accounting treatment guidelines for patent registrations (IFPB, 2017; IFPE, 2015).

In the IFRN, there is the Policy for Scientific and Technological Development, Innovation and Entrepreneurship, approved by Deliberation No.09 of 07/01/17, which discusses IP activities management, monitoring, valuation, negotiation and TT, and advising on innovation. However, procedures for valuation measuring, and accounting recording in the BS are not listed, which may affect a possible negotiation and TT (IFRN, 2017). As indicated by Guimarães *et al*. (2019), patents' valuation is a tool that helps negotiation for licensing and/or TT to the productive sector.

Regarding the IF-SERTÃO-PE, according to Resolution No.34 of 10/26/17, which deals with the policy of technological innovation, IP, TT and entrepreneurship in article 4, item V, it establishes that one of this policy's objectives is to train human resources according to valuation needs. This resolution also contains guidelines related to TT; nonetheless, it is deficient in relation to IP assets' accounting (IF-SERTÃO-PE, 2017).

In other Northeast IFs, no specific regulation and/or resolution on Innovation Policy was found until the end of this research. However, other documents were identified that are related to instruments of IP and technological innovation, as shown in Chart 2.

Chart 2. Northeast FIs documents

INSTITUTES	DOCUMENTS
IF BAIANO	Resolution/CONSUP No.35 de 09/01/16–NIT Regulation and 2018 Management report
IFMA	Resolution No.111 de 04/24/17
IFPI	Superior Council Resolution No.28 de 12/29/15
IFS	Unavailable - under development

Source: Prepared by the authors (2020) based on research data.

Concerning IFBaiano, the institution reported through CGU that the policy was still under construction. However, the NIT Regulation (Resolution/CONSUP No.35 of 1/9/16) dealing with innovation and IP management is in force. It should also be noted that, until now, IFBaiano has not yet transferred technology from its IP assets and, in turn, has not carried out any type of revenue recording from these assets in its accounting (CGU, 2019). When analyzing IFBaiano's 2018 Management Report, it was identified that the institute, despite having intangible assets produced internally, it was still activated due to valuation lack. Thus, these internally generated assets were recognized as a diminishing equity variation (IFBAIANO, 2018).

In IFMA, it was noted that Resolution No.111 of April 24, 2017 deals with structuring and regulation of technological innovation activities, and follows the guidelines contained in Laws No.10,973/04, No.13,243/16 and Decree No.5.563/05 that was in force in the year the resolution was created. However, issues related to negotiation, valuation and accounting of IP assets were not evidenced in this Resolution (IFMA, 2017).

Within IFPI scope, the Superior Council Resolution No.28 of December 29, 2015 that provides for

industrial equity rights was analyzed. It was found that the policy brings elements in line with the provisions of Law No.10,973/04 and Decree No.5,563/05 that were in force at the time, but there are no guidelines regarding to procedures of valuation, patents negotiation and accounting records. Regarding IFS, it was found that its innovation policy is under construction by the Innovation and Entrepreneurship Department (IFPI, 2015); (IFS, 2019).

Thus, it was observed that IFBAIANO, IFMA, IFPI and IFS need to institute their innovation policies, due to the obligation created by the Innovation Law. In addition, it can generate several benefits for the institution, among them: fostering scientific research, supporting institute's interaction with the productive sector in order to facilitate TT, stimulating an innovative culture generation, and awakening to entrepreneurship. According to Souza (2020), it is not enough to publish an innovation policy. Furthermore, it is important to emphasize mechanism relevance that will be used to allow its effective compliance.

It is worth mentioning that in these policies, specific sections must be created containing general guidelines and the flows that must be followed by managers to conduct valuation and negotiation processes. Therefore, they must follow guidelines applied to the public sector, such as NBC TSP 08 (CFC, 2017b).

In relation to other Northeast FIs policies assessed, only those of IFCE, IFRN and IFSERTÃO-PE have adherent devices with regard to innovation management, valuation, asset trading and TT. On the other hand, it is worth mentioning that it is necessary to have appropriate treatment of accounting procedures in these documents, observing legal and normative provisions, such as NBC TSP 08, as well as MCASP, as it can support patents' measurement and valuation, in addition to being an incentive for records disclosure. In Amorim's (2019) point of view, it is important to emphasize the importance of establishing valuation and negotiation guidelines in its innovation policies, as it strengthens relations with the productive sector.

In Souza's view (2020), it is necessary that an innovation policy is in compliance with legal frameworks so that it fulfills the mission of supporting innovation through TT. Nevertheless, according to Amorim (2019), one of the aspects in which the documents are distant from the national innovation policy is in relation to valuation and negotiation guidelines for patents. In view of this scenario, it can be seen that innovation policies of Northeast FIs are not well defined regarding accounting procedures in order to assist in measurement and TT to the productive sector.

4.2 Measurement, accounting and disclosure of IP assets by FIs of Northeast Brazil

ASs assist in assessing both equity, as well as economic and financial situation of entities, turning decision-making process safer. BS is one of the main ASs and aims to show economic, financial, equity and accounting situation of an entity, in a given period, in which accounts are grouped into assets, liabilities and net equity (Brazil, 1976). In an analysis of BSs and Explanatory Notes (ENs) of Northeast FIs, it was observed that the eleven (11) institutes show intangible assets related to computer systems in *Softwares* account. Nonetheless, only five (5) FIs account for their intangible assets in trademark and industrial patents account, as shown in Chart 3. In addition, institutions that make comments in their ENs regarding intangible assets, and those that do not register in the ASs/FSs, considered here as "Without Disclosure (W/D)" are identified.

Chart 3. Intangible Assets Registration in BSs of the Northeast FIs

Institutes	Intangible Assets		
	Accounting / Financial Statement	Softwares	Trademarks, Rights and Industrial Patents
IFAL	BS	X	
	EN	X	
	W/D		X
IFBA	BS	X	
	EN		X
	W/D		X
IFBAIANO	BS	X	X
	EN		X
	W/D		
IFCE	BS	X	X
	EN	X	
	W/D		
IFMA	BS	X	
	EN		
	W/D		X
IFPB	BS	X	
	EN	X	
	W/D		X
IFPE	BS	X	X
	EN	X	
	W/D		
IFPI	BS	X	X
	EN	X	X
	W/D		
IFRN	BS	X	X
	EN	X	
	W/D		
IFS	BS	X	
	EN	X	
	W/D		X
IFSERTÃO-PE	BS	X	
	EN	X	
	W/D		X

Source: Prepared by the authors from e-sic/CGU (2019).

Based on analyzed ASs, it was found that all of these FIs register their software in the equity accounts identified as Software. However, only IFBAIANO, IFCE, IFPE, IFPI and IFRN measured, accounted for and evidenced intangible assets in trademarks, rights and industrial patents accounts. Therefore, other institutes (IFAL, IFBA, IFMA, IFPB, IFS and IFSERTÃO-PE) do not disclose these assets in their ASs.

Furthermore, no additional information was observed in the IFMA's ENs regarding IP. In ENs of IFAL, IFCE, IFPI and IFRN there is only one general information that says that intangible assets are measured or valued based on acquisition or production value, minus the balance of the respective accumulated amortization account and the accumulated amount of any value loss that has been incurred over its useful life due to impairment.

Thus, IFAL, IFCE, IFPI and IFRN are in compliance with NBC TSP 08 (CFC, 2017b), which comments on amortization allocation of intangible assets over their useful life from the date that is available for use, and concludes when the asset is held for sale, or derecognized, whichever comes first (IFAL; IFCE; IFPI; IFRN, 2018; CFC, 2017b).

IFBA's EN states that an intangible asset is composed of software, brands, rights and industrial patents and this subgroup is still in evaluation process considering the need for information that demonstrates that it is reliably an intangible asset, given the separability criterion or result of contractual/legal right, as well as useful life definition, determinable or indeterminable, for adoption of reclassification measures and economic update (IFBA, 2018).

According to NBC TSP 08 (CFC, 2017), there are difficulties to qualify the recognition of internally generated intangible assets, as it is necessary to identify whether the asset will generate future economic benefit, as well as to specify its value. This is one of the problems that NITs face, since there is a lack of management and control of expenditure on inventions that are necessary to obtain a minimum cost, as well as direct expenses with patents production (Ferreira, 2019). In the research carried out by Araújo and Leitão (2019), it was demonstrated that most public servants report that information system structure does not help NBC TSP 08 adoption (CFC, 2017b), as there is a need for a system that allows efficiently recording and processing of information. In addition, systematic control of financial flows is necessary to better manage investments in innovation in these institutions.

With respect to IFBaiano's EN, there is an internally produced asset, but no information has been identified regarding its measurement and disclosure. Accordingly, there are no record on the asset, which are recognized as a diminishing equity variation (IFBAIANO; 2018). It is worth mentioning that in BS, only the value of R$120.00 is registered in the Trademarks and Industrial Patents account. It is observed that even when NBC TSP 08 (CFC, 2017b) guides how to measure the book value of intangible assets, IFBAIANO has not shown its costs in accounting, and therefore has difficulties in valuing assets.

One of the possible explanations for this problem is information lack from professionals, as it was found in the research carried out by Araújo and Leitão (2019), that accountants studied in the research have a reasonable or weak knowledge degree regarding NBC TSP 08 application (CFC, 2017b). This is due, in part, to lack of training related to the theme, since the standard has complex elements and requires institutional support to assist in this specific knowledge transmission.

In the IFCE EN, intangible assets totaled R$945,184.02 in 2018, and consisted of computer systems. Out of this total, an amount of R$14,536.33 is classified in the Trademarks, rights and industrial patents account (IFCE, 2018). This latter value may be associated with use rights that has been assigned or valued software trademarks or valued patents, but that have not yet been converted into software.

In the IFPB, it was defined in the Internal Plan for Equity Accounting Procedures (PIPCP) that recognition, measurement and disclosure of software, brands and patents, with their respective amortizations, revaluation and impairment value became mandatory as of 01/01/19. However, until the end of this research, it was observed that only software and accumulated amortization were recorded as intangible assets (IFPB, 2018). According to ENs, intangible assets with an indefinite useful life have not yet been tested and, therefore, impairment losses have not yet been recognized. As for software, they represent about 99% of the group's total value (IFPB, 2018).

Regarding IFPE, in its Management Report, specifically in the intangible asset account, there is an amount of R$2,656,386.57, whereas in the software account it has an amount of R$2,646,138.75, which has already been reduced the accumulated amortization value of software (R$150,578.58), and in the trademark, rights and industrial patents account is registered the value of R$10,247.82 (IFPE; 2018). However, there is no information about this amount in the trademarks, rights and industrial patents account in EN, it only informs that the software is recognized at the acquisition price and accounts for 0.65% of total assets, disregarding amortization. It also points out that the methodology of constant quotas is used to calculate amortization (IFPE; 2018).

According to IFPI 2018Management Report, a vast majority of intangible assets are related to software. However, trademarks, rights and industrial patents account only disclosure R$795.00 (IFPI, 2018). This institute does not address details regarding the registered amount accounting in BS brands, rights and industrial patents account in its ENs.

In IFRN scope, there is evidence of values of R$348,803.88 for software and R$120,263.44 for trademarks, rights and industrial patents (IFRN, 2018). According to IFRN's EN, amortization procedures for intangible assets started in 2017, and the method adopted is that of constant quotas. It was segregated into two accounting accounts, one of which is software with a defined useful life, whose life is defined by its license term, and the other is software with an indefinite useful life. The first software is subject to amortization and the second one not. In this EN, there is no mention of the amount registered in trademarks, rights and industrial patents (IFRN, 2018).

According to IFS ENs, all intangible assets are software-related, both with defined and indefinite useful lives (IFS, 2018). Regarding the ENs of IFSERTÃO-PE, there was an increase in intangible group balance, due to software acquisition on a certain campus (IFSERTÃO-PE, 2018).

It should be noted that STIIs must recognize intangible assets in accordance with NBC TSP 08 (CFC, 2017b). Although there are guidelines from the aforementioned NBC, it was observed that measurement/ monetary valuation of intangibles, particularly patents, is still incipient in STIIs, due to knowledge lack and/or difficulties in understanding and applying existing methodologies (Ferreira, 2019). Furthermore, according to Pakes, Borrás, Torkomian, Gomes and Silva (2018), one of TT barriers among universities and companies is the operational difficulty in valuing technological process, for which accounting is strategic and fundamental, considering its role of measuring, recording and evidencing, as

well as, controlling the facts that provoke equity changes. Thus, accounting science is a strategic element to assist in measurement, recording, and disclosure, and should be considered, based on the NBCs, and in STIIs innovation policies. In addition, it is highlighted that recognition, measurement and disclosure of intangible assets in a proper way provide greater transparency in relation to public resources use (Araújo & Leitão, 2019).

It is worth mentioning that assessment and valuation of intangible assets became a great foundation for STIIs growth, as they facilitate invention negotiation for the productive sector. Thus, equity measurement and control can contribute to disclosure of an organization's equity integrity, in addition to valuing the invention, which is one of the fundamental stages for negotiation and TT process (Ritta&Ensslin, 2010).

5. Final considerations

The research aimed to analyze whether Intellectual Property assets of Federal Institutes (FIs) of Northeast Brazil are being measured, accounted for and evidenced in the Financial Statements (FSs) of these Scientific, Technological and Innovation Institutions (STIIs). To this end, a survey, exploratory, descriptive, bibliographic, documentary and qualitative research was carried out, in order to analyze scientific, legal and institutional documents of Northeast FIs.

From this research, it was found that most IP assets generated by Northeast IFs are not measured, accounted for and evidenced in STIIs' FSs. In addition, it was observed that despite the majority of Northeast FIs' NITs have innovation policies that support intellectual protection of inventions, accounting records of granted patents and TT, they are still incipient.

Notwithstanding advances in standardization, one of the causes of this problem may be knowledge lack of the NBC TSP 08 (CFC, 2017b) by public servants, which hinders standard operationalization. Therefore, there is a need for training public servants involved in the sectors responsible for managing innovation policies and accounting records. Furthermore, the importance of systems that contribute to control of invention expenditures and that subsidize reliable information in order to support STII negotiation process is highlighted.

In addition, it was found that there is a low registration in trademarks, rights and industrial patents account in BSs. The absence of structured accounting procedures in FIs' policies was observed. Despite most Northeast FIs having innovation policies, accounting procedures, which are key tools to support measurement, recording and disclosure of IP assets are not included in their guidelines.

When analyzing how intangible assets valuation and IP assets accounting are inserted in Northeast FIs' innovation policies, it was noticed that the innovation policies do not make an approach to this theme, which stands out as one of the factors that may contribute to hamper TT. There is a normative formalization lack regarding accounting aspects in them, which could assist in the operationalization of recognition, and TT negotiation for the productive sector.

The research was limited to analyzing innovation policies regarding accounting aspects, as well as IP assets records in the FSs within Northeast FIs scope, namely: IFAL, IFBA, IFBAIANO, IFCE, IFMA, IFPB, IFPE, IFPI, IFRN, IFS and IFSERTÃO-PE. Through data analysis, it was possible to identify that

four institutes do not have innovation policies: IFBAIANO, IFMA, IFPI and IFS. It is hoped that the results of this research can broaden the discussion for the need to create an innovation policy that includes accounting procedures to support valuation process, with a view to providing a continuous improvement in the process of negotiation and TT for innovation.

Accounting helps to monetize the result of a work done and enables TT to introduce an innovative national technology to the market. It turns out to be a competitive advantage for a receiving company, since it can add value to services offered through a technology that gives greater increment to products that already exist. In order to facilitate this transfer, this research will serve to understand difficulties created by the legislation in order to FIs show their IP assets in their ASs. Thus, in order to guide internal accounting procedures of these institutions, it is suggested to include normative aspects referring to such procedure in innovation policies, since disclosure absence in FSs can have negative impacts on negotiations, as there is no reference value.

Finally, it is recommended, as a future investigation, to carry out researches aimed at creating a proposal for accounting procedures to be included in Northeast FIs innovation policies, so that accounting gaps can be addressed within the scope of these policies in order to favor disclosure of integral public equity in BSs.

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7. References

Adriano, E. & Antunes, M. T. P. (2017). Proposal for measuring patents. Revista de Administração Contemporânea, 21(1), 125-141. https://doi.org/10.1590/1982-7849rac201700123.[Portuguese]

Amorim, V. P. (2019). Analysis of the innovation policies of the Federal Institutes of Education, Science and Technology (IFETS) of the Northeast region: an exploratory study. Undergraduate dissertation. Federal Institute of Science and Technology of Bahia.[Portuguese]

Araújo, A.A. & Leitão, C.R.S. (2019). Intangible assets in the public sector: perceptions of federal higher education institutions regarding compliance with NBC TSP 08. REUNIR: Revista de Administração, Contabilidade e Sustentabilidade, 9 (3), 10-24.https://doi.org/10.18696/reunir.v9i3. [Portuguese]

Araújo, L. O.,Antenor, M. C., Andrade, J. S., Fernandez, R.F., Araújo, G.G., Carneiro, R.F.,& J.M. (2018). Mapping of industrial property in Northeast Federal Institutes of Education. Cadernos de Prospecção. 11, 284-294. http://dx.doi.org/10.9771/cp.v11i2.23078.[Portuguese]

Brazil. (2005). Decree No.5,563 of October 11, 2005. Brazilian Republic Presidency. Available at: http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2005/Decreto/D5563.htm. Access on: 05/02/2020.[Portuguese]

Brazil. (2018). Decree No.9,283 of February 7, 2018. Brazilian Republic Presidency. Available at: http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/decreto/d9283.htm. Accesson:

05/01/2020.[Portuguese]

Brazil. (1976). Law No.6,404 of December 15, 1976. Brazilian Republic Presidency. Available at: http://www.planalto.gov.br/ccivil_03/leis/l6404consol.htm. Access on: 06/14/2020.[Portuguese]

Brazil. (1993). Law No.8,666 of June 21, 1993. Brazilian Republic Presidency. Available at: http://www.planalto.gov.br/ccivil_03/leis/l8666cons.htm. Access on: 04/10/2020.[Portuguese]

Brazil. (2004). Law No.10,973 of December 2, 2004. Brazilian Republic Presidency. Available at: http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2004/Lei/L10.973.htm. Access on: 12/20/2019.[Portuguese]

Brazil. (2007). Law No.11,638 of December 28, 2007. Brazilian Republic Presidency. Available at: http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2007/lei/l11638.htm. Access on: 06/28/2020.[Portuguese]

Brazil. (2008). Law No.11,892 of December 29, 2008. Brazilian Republic Presidency. Available at: http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2008/Lei/L11892.htm. Access on: 07/05/2020.[Portuguese]

Brazil. (2016). Law No.13,243 of January 11, 2016. Brazilian Republic Presidency. Available at: http://www.planalto.gov.br/ccivil_03/_Ato2015-2018/2016/Lei/L13243.htm. Access on: 01/24/2020. [Portuguese]

Cabrera, E. A. M. &Arellano, A. A.(2019). Difficulties of technologies valuation in the university field. Contaduría y Administración, 64 (1), 1-17.http://dx.doi.org/10.22201/fca.24488410e.2019.1811. [Spanish]

Conselho Federal de Contabilidade (CFC). (2017a). Brazilian Accounting Standards: NBC TG 04 (R4) - Intangible Assets. Available at: http://www2.cfc.org.br/sisweb/sre/detalhes_sre.aspx?codigo=2017/NBCTG04(R4).Access on: 07/07/2020. [Portuguese]

Conselho Federal de Contabilidade (CFC). (2017b). Brazilian Accounting Standards: NBC TSP 08 - Intangible Assets. Available at: http://www2.cfc.org.br/sisweb/sre/detalhes_sre.aspx?Codigo=2017/NBCTSP08&arquivo=NBCTSP08. docx. Access on: 02/05/2020. [Portuguese]

Controladoria Geral da União (CGU) (2019). Sistema Eletrônico do Serviço de Informação ao Cidadão (e-SIC). Accounting Statements. Available at: https://esic.cgu.gov.br/sistema/Pedido/DetalhePedido.aspx?id=Zhx9upI89f0=. Access on: 05/26/2020. [Portuguese]

Emmendoerfer, M. L. (2019). Innovation and Entrepreneurship in the Public Sector. Brasília, Brazil: Editora ENAP. [Portuguese]

Ferraz, F. G. L. (2009). Accounting for intangible assets related to companies' industrial property: an assessment of their disclosure. Undergraduate dissertation. University of Sao Paulo. [Portuguese]

Ferreira, A. R. F. (2019). Intellectual property valuation for technology negotiation and transfer: an applied study on methodologies for patent valuation - the NIT / IFBA case. Master's thesis. Federal Institute of Education, Science and Technology of Bahia. [Portuguese]

Ferreira, A. R. F., Souza, A.L.R.,Silvão, C.F., Marques, E.F., Faria, J.A., & Ribeiro, N.M. (2020).

Intellectual property valuation for technology negotiation and transfer: the NIT / IFBA case. Navus, 10, 01-23.https://doi.org/10.22279/navus.2020.v10.p01-23.1046. [Portuguese]

Ferreira, A. R. F. & Souza, A. L. R. (2019). Analysis of procedures and criteria necessary for intellectual property valuation for technology transfer within the scope of Technological Innovation Centers (NITs). Cadernos de Prospecção, 12 (5), 1012-1039.http://dx.doi.org/10.9771/cp.v12i5%20Especial.28240.[Portuguese]

Gil, A.C. (2002). How to design research projects. (4th ed.). São Paulo, Brazil: Editora Atlas. [Portuguese]

Gil, A.C. (2008). Methods and techniques of social research. (6th ed.). São Paulo, Brazil: Editora Atlas. [Portuguese]

Guimarães, Y. B. T., Kniess, C. T., Maccari, E.A., & Quonoan, L. (2014). Patent valuation: the case of a technological innovation nucleus of a Brazilian research institution.Exacta – Engenharia de Produção, 12 (2), 161-172.https://doi.org/10.5585/exactaep.v12n2.4843. [Portuguese]

Hendriksen, E. S. & Van Breda, M. F. (1999). Accounting Theory. (5th ed.). São Paulo, Brazil: Editora Altas. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia de Alagoas (2018). Accounting statements. Available at: https://www2.ifal.edu.br/o-ifal/administracao/arquivos/Demonstracoescontaabeis4otrimestrede2018.pdf. Accesso on:06/23/2020.[Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia de Alagoas (2017). Resolution No.06/CS of June 12, 2017. Available at: https://www2.ifal.edu.br/o-ifal/institucional/orgaos-colegiados/conselho-superior/arquivos/resolucao-no-06-cs-2017-dispoe-sobre-propriedade-e-gestao-de-direitos-sobre-propriedade-intelectual.pdf/view. Access on: 03/19/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia da Bahia (2019). Innovation Policy – Resolution No.64 of October 17, 2019. Available at: https://portal.ifba.edu.br/prpgi/noticias/2019/pdf/politica-inovacao-ifba.pdf. Accesso on:01/25/2020.[Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia da Bahia (2018). 2018 Management Report.Available at: https://portal.ifba.edu.br/proap/transparencia-arquivos/relatorios-de-gestao-do-ifba/2018-relatorio-de-gestao-tcu.pdf/view. Access on: 06/29/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia da Bahia (2017). About the Innovation Department. Available at: http://www.prpgi.ifba.edu.br/sobre-o-departamento-de-inovacao. Access on: 04/06/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia Baiano (2018). Financial Statements and Explanatory Notes. Available at: https://ifbaiano.edu.br/portal/wp-content/uploads/2016/03/Demonstra%C3%A7%C3%B5es-Cont%C3%A1beis-4%C2%BA-trimestre-2018.pdf. Access on: 06/07/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia Baiano (2016). Internal Regulation – CONSUP Resolution No.35 of September 1, 2016. Available at:

http://ifbaiano.edu.br/portal/pesquisa/wp-content/uploads/sites/3/2017/03/Regimento_NIT.pdf. Access on: 01/09/2020.[Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia Baiano (2018). Management report. Available at: https://ifbaiano.edu.br/portal/wp-content/uploads/2019/06/Relat%C3%B3rio-de-Gest%C3%A3o-2018.pdf. Access on: 05/24/2020.[Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Ceará (2019). Innovation Policy Draft of February 15, 2019. Available at: https://ifce.edu.br/noticias/politica-de-inovacao-recebe-contribuicoes-ate-dia-01-03/politica-de-inovacao-ifce-1.pdf/view. Access on: 01/15/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Ceará (2018). Accountability. Available at: https://ifce.edu.br/instituto/documentos-institucionais/processo-de-contas/processo-de-contas-exercicio-2018/view. Access on: 06/20/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Ceará (2011). Resolution No.05 of February 4, 2011. Available at: https://ifce.edu.br/prpi/documentos-1/consup/resolucoes/resolucao-consup-ndeg-005-2011-politica-de-inovacao-tecnologica-do-ifce-e-regulamenta-nit/. Access on: 01/15/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Maranhão (2018). Accounting statements. Available at: https://portal.ifma.edu.br/prestacao-de-contas/prestacao-de-contas-2018/. Acess on: 06/27/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Maranhão (2017). Resolution No.111 of April 24, 2017. Available at: https://prpgi.ifma.edu.br/wp-content/uploads/sites/35/2019/04/Resolu%C3%A7%C3%A3o-111_2017_Pol%C3%ADtica-de-Inova%C3%A7%C3%A3o-IFMA.pdf. Access on: 01/18/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia da Paraíba (2018). Accounting statements. Available at: http://www.ifpb.edu.br/praf/assuntos/documentos-praf/area7/balanco-patrimonial-4-trimestre-ifpb-2018.pdf. Access on: 06/15/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia da Paraíba (2017). Innovation Policy - CS ad Referendum Resolution No.13 of May 22, 2017. Available at: http://www.ifpb.edu.br/orgaoscolegiados/consuper/resolucoes/2017/ad-referendum/resolucao-no-13/view. Access on: 01/18/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Pernambuco (2018). Management report. Available at: https://portal.ifpe.edu.br/o-ifpe/desenvolvimento-institucional/relatorios-de-gestao. Access on: 06/12/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia de Pernambuco (2015). Resolution No.31 of July 2, 2015. Available at: https://portal.ifpe.edu.br/o-ifpe/conselho-superior/resolucoes/resolucoes-2015/resolucao-31-2015-politica-de-propriedade-intelectual-transferencia-de-tecnologia-e-inovacao-do-ifpe.pdf. Access on: 01/22/2020.[Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Piauí (2018). Accounting statements. Available at:

https://www.ifpi.edu.br/acesso-a-informacao/auditorias/relatorios-de-gestao/2018/balanco-patrimonial-26431_2018/view. Access on: 07/04/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Piauí (2015). Resolution No.28 of December 29, 2015. Available at: https://docplayer.com.br/58692806-Resolucao-n-028-conselho-superior.html. Access on: 01/17/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Rio Grande do Norte (2017). Resolution No.09 of June 1, 2017- IFRN's Scientific and Technological Development Policy for Innovation and Entrepreneurship. Available at: http://portal.ifrn.edu.br/pesquisa/nit/politica-de-inovacao-do-ifrn/view. Access on:01/27/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Rio Grande do Norte (2018). Management report. Available at: https://portal.ifrn.edu.br/acessoainformacao/relatorios-de-gestao/2018-relatorio-de-gestao/view. Access on: 06/23/2020.[Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia de Sergipe (2019). Innovation Policy. Available at: http://www.ifs.edu.br/politica-de-inovacao-dinove. Accesson: 01/07/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia de Sergipe (2018). Management report. Available at: http://www.ifs.edu.br/images/gestao2018.pdf. Access on: 06/28/2020. [Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Sertão Pernambucano (2017). Resolução nº 34 do Conselho Superior de 26 de outubro de 2017 - Políticas de Inovação. Available at: https://www.ifsertao-pe.edu.br/images/Pro-Reitorias/Propip/NIT/NovosDocs/Resoluo%2034-2017%20Poltica%20de%20Inovao.pdf. Access on: 01/20/2020.[Portuguese]

Instituto Federal de Educação, Ciência e Tecnologia do Sertão Pernambucano (2018). Management report. Available at: https://www.ifsertao-pe.edu.br/images/Consup/2019/Resoluo%20n%2020.%20Relat.Gestor-mesclado.pdf. Access on: 02/03/2020.[Portuguese]

Iudícibus, S. (2010). Introductory Accounting. (11th ed.). São Paulo, Brazil: Editora Atlas. [Portuguese]

Júnior, A. M. O. & Almeida, J. J. M. (2019). Analysis of the interrelationships of university patents from a market perspective. Navus, 9 (4), 139-160. https://doi.org/10.22279/navus.2019.v9n4.p139-160.907.[Portuguese]

Kupfer, D.&Hasenclever, L. (2013).Industrial Economics: Theoretical Foundations and Evolutionary Practices in Brazil. (2nd ed.). Rio de Janeiro, Brazil: Elsevier. [Portuguese]

Lopes, B. Amaral, J. N. & Caldas, R. W. (2008). Public Policies: Concepts and Practices. Belo Horizonte: Sebrae. Available at: http://www.mp.ce.gov.br/nespeciais/promulher/manuais/MANUAL%20DE%20POLITICAS%20P%C3%9ABLICAS.pdf. Access on: 06/07/2020. [Portuguese]

Ministério da Ciência, Tecnologia, Inovações e Comunicações (2019). 2017 FORMICT Report. Intellectual Property Policy of Scientific, Technological and Innovation Institutions in Brazil. Brasília. Available at: http://www.mctic.gov.br/mctic/export/sites/institucional/tecnologia/propriedade_intelectual/arquivos/Relatorio-Consolidado-Ano-Base-2017.pdf. Access on: 02/18/2020. [Portuguese]

Ministério da Fazenda (MF). Secretaria do Tesouro Nacional (2019). Accounting Manual Applied to the Public Sector (8th ed.). Brasília. Available at: https://sisweb.tesouro.gov.br/apex/f?p=2501:9::::9:P9_ID_PUBLICACAO:31484. Access on: 06/10/2020. [Portuguese]

Nazareno, C. (2016). The Changes Promoted by Law No.13,243 of January 11, 2016 (New Legal Framework for Science, Technology and Innovation) and its impacts on the Sector. Chamber of Deputies. Available at: https://www2.camara.leg.br/atividade-legislativa/estudos-e-notas-tecnicas/publicacoes-da-consultoria-legislativa/areas-da-conle/tema11/2016_7581_mudancas-promovidas-pela-lei-13-243-marco-legal-cti-claudio-nazareno. Access on: 06/08/2020. [Portuguese]

OECD/Eurostat.(2018). Oslo Manual: Guidelines for Collecting, ReportingandUsing Data on Innovation, 4th Edition, The Measurement of Scientific, TechnologicalandInnovationActivities, OECD Publishing, Paris/Eurostat, Luxembourg. https://doi.org/10.1787/9789264304604-en.

Pakes, P. R., Borrás, M.A.A., Torkomian, A.L.V., Gomes, A.O., & Silva, B.B. (2018). The perception of technological innovation centers in the state of São Paulo regarding the barriers to university-company technology transfer. Tecnológica, 22 (2), 120-127.http://dx.doi.org/10.17058/tecnolog.v22i2.12028. [Portuguese]

Prodanov, C. C. & Freitas, E. C. (2013). Methodology of scientific work: methods and techniques of research and academic work. (2nd ed.). Novo Hamburgo, Brazil: Feevale. [Portuguese]

Ritta, C. O. & Ensslin, S. R. (2010). Investigation on the relationship between intangible assets and financial variables: a study on Brazilian companies belonging to IBovespa index in 2007 and 2008. Proceedings of the 10th USP Controllership and Accounting Congress, São Paulo-SP, July 26th to 27th, pp. 1-18. [Portuguese]

Santos, W. P. C. (2019). Intellectual Property Concepts and Applications.v.2. Salvador, Brazil: IFBA. Available at: http://www.profnit.org.br/wp-content/uploads/2020/07/PROFNIT-Serie-Conceitos-e-Aplica%C3%A7%C3%B5es-de-Propriedade-Intelectual-Volume-II-PDF_compressed-1.pdf. Access on: 06/06/2020. [Portuguese]

Schumpeter, J. A. (1984). Capitalism, socialism and democracy. Rio de Janeiro, Brazil: Zahar.[Portuguese]

Severino, A. J. (2007). Methodology of scientific work. (23rd ed.). São Paulo, Brazil: Cortez. [Portuguese]

Souza, J. R. (2020). The Role of Innovation and Intellectual Property Policy as an Inducer of Applied Technological Production: A Study at the Federal Institute of Education, Science and Technology of Bahia. Master's thesis. Federal Institute of Education, Science and Technology of Bahia. [Portuguese]

Távora, L.,Dias, A., Melo, L., & Kelner, S.(2015). Federal Institutes of Education, Science and Technology and Support for Technological Innovation: Analysis and Recommendations. In: XVI Latin-Iberoamerican Congress on Technology Management - ALTEC - Inovação para além da tecnologia, Porto Alegre – RS, October 19th to 22nd, pp. 1-17. [Portuguese]

Teodoro, A. F. O. (2015). Valuation of obtaining and applying process of bioremediation with fungi in environments impacted by oil. Doctoral dissertation. Federal University of Bahia. [Portuguese]