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CHALLENGES IN THE ACCOUNTING OF INTELLECTUAL PROPERTY ASSETS WITHIN THE SCOPE OF BRAZILIAN FEDERAL PUBLIC ICTs

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ABSTRACT

The Research and Development of new technologies has been standing out in Brazil since the advent of Law 10.973/2004. At that time, the Scientific, Technological and Innovation Institutions (ICTs) of the Federal Institutes (IFs) through their servers, students and external collaborators began to produce a diversity of Intellectual Property (IP) assets. In accordance with Law 4,320/1964 and NBC TSP 00 Conceptual Framework of 2016, all intangible assets must be disclosed in their Financial Statements (DC). In order to verify the level of disclosure of these assets in accordance with the infra-constitutional provisions, especially NBC TSP 08, the present study aimed to conduct a survey on the level of recognition, control, disclosure and disclosure of IP assets in the DC of the ICTs of the FIs of the RFEPCT network. This is an exploratory and descriptive research, with a qualitative approach. Nevertheless, the DCs, management reports and explanatory notes (NE) of the 42 ICTs of the RFEPCT, published on the institutional websites, were analyzed. Through the technique of treatment, bibliographic and documentary associated with content analysis. It was possible to verify that only 21 ICTs published in their DCs, IP assets produced internally. It is concluded that although there are accounting standards and legislation for the treatment of IP and intangible assets, the registration, control, disclosure and disclosure of these assets by public ITCs are still incipient, either due to lack of knowledge of the standards, lack of qualified personnel and or difficulty in identifying and controlling the costs of these assets.

Keywords: Intangible Assets, Public Accounting, Intellectual Property, Innovation.

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INTRODUCTION

Technological advancement associated with competition has caused significant changes in organizations. Public and private entities had to develop new methodologies, processes, and flows to adapt and keep up with the changes resulting from the globalized market and the emergence of the new economy, which until then was based only on tangible assets (THIVES JUNIOR, 2019).

The phenomenon of globalization has contributed substantially to the introduction of new technological tools in the industrial process (CAVALCANTE *et al*, 2017). In this scenario, Intellectual Property (IP) has emerged as a prominent theme, being considered essential and strategic for the development, generation and production of new technologies, even giving rise to various types of intangibles, among which we can highlight Invention Patents (IP), Industrial Designs (DI), Utility Models (MU), Computer Programs (PC) and Trademarks. all of them, with great potential for generating wealth for the entities that own them.

Faced with the new challenges involving IPs, the Brazilian government published Law No. 9,279 of 1996, which began to regulate rights and obligations related to industrial property. Once the regulatory framework around IP was established, Brazil sought to induce social and economic development and as a result, in 2004 Law No. 10,973, "Law of Innovation", was enacted. This law established the main guidelines aimed at strengthening and developing scientific and technological research, favoring innovation and technological transfer in the productive environment (BRASIL, 1996; 2004).

At that time, the Scientific and Technological Institutions (ICTs), including the Federal Institutes of Education, Science and Technology (IFs), began to play a prominent role in the production and development of IP assets, especially those developed internally. This made it necessary to promote a more effective control of all intangible assets generated by these ICTs and governed by their Innovation and Technology Centers (NITs).

According to a report published by the Brazilian Patent and Trademark Office (BPTO), public Scientific and Technological Institutions (ICTs) are the second legal entity that filed the most IP in 2023 (BRASIL, 2024). These data, associated with the FORMICT 2019 base year report, published by the Ministry of Science, Technology and Innovation, demonstrate that public ICTs are among the main IP inducing agents in the national scenario (BRASIL, 2023).

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In this context, as highlighted by Nascimento *et al*., (2024), the IPs produced by ICTs contribute and exert a significant influence on the creation and development of the country's economic and innovation ecosystem. But, according to Santos *et al*., (2024), for technologies to become accessible to society, it is essential that ICT, through its NIT, establish a link between academia and the productive sector. This channel's main objective is to promote the transfer of technology for production and distribution in the production market.

For this transfer to occur, it is essential to set monetary values that serve as an initial basis for a negotiation process of these intangible assets (FERREIRA *et al.,* 2020). It is noteworthy that the stage of measuring an IP is considered one of the most difficult, either due to the absence of a market, difficulty in measuring the value of the invention, knowing its potential and often the secrecy present in the contracts (FERREIRA and SOUZA *et al*., 2020; SANTO *et al.,* 2024).

Faced with this contender, the first step is to look for ways to establish economic value for the IP asset. According to Quintella *et al.*(2019), there are several methodologies in the literature that can be adopted by ICTs to value IP assets developed internally.

Thus, most of these methodologies are based on the cost of production (Ferreira, 2019), and in order to be used, it is necessary to strictly control costs, expenses, expenses, and investments, which, according to Nascimento (2021), can only occur through accounting.

It is in this context that accounting emerges as the science responsible for studying equity, being fundamental to identify, interpret, manage, control and evidence all events, acts and facts that occur in the assets of entities (AUGUSTINHO, 2012). Furthermore, it is through accounting that public entities provide information about the reality of transactions, the results achieved, promoting accountability to society of the resources made available to them (ZUCCOLOTTO and TEIXEIRA, 2019). This science is seen as a strategic element in this process.

According to the Brazilian Accounting Standards (NBCs) applied to the public sector, intangible assets, as well as any event with potential reflection and impact on public assets must be duly recognized, so that the potential economic, financial and equity effects on the assets of public entities can be duly evidenced through the Financial Statements (DCs) (CFC, 2017b; 2018).

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However, there is a problem experienced by public ICTs, as highlighted by the research by Gomes and Rocha (2020), Nascimento (2021), Ferrari and Felipetto (2022), Santana (2022), when they point out the incipience in the disclosure of IP assets in the DCs of these institutions. As a consequence, there are indications that this fact may affect the assets of ICTs and compromise the transparency of information, even harming the efficiency of the services provided in the production and development of new technologies.

Stradioto, Santos and Oliveira (2020) state that public entities rarely report internally generated intangible assets in their traditional accounting reports. This is due to the diversity of formats, origins and peculiarities of these assets, making it difficult to identify, register, control and manage them in compliance with the standards, especially NBC TSP 08 Intangible Assets.

Therefore, the strategic role of Accounting Science in the generation and management of equity is considered, and that all intangible assets generated internally, with the potential to generate future financial results and/or services to the entity, must be duly evidenced in the DCs of ICTs (CFC, 2017b). Thus, the following question is asked: **What is the level of *disclosure* of intangible assets generated internally by Brazilian public ICTs, understood here by the Federal Network of Professional, Scientific and Technological Education (RFEPCT), in accordance with NBC TSP 08, identifying the main challenges faced and proposing recommendations to improve the transparency and compliance of accounting information?**

Thus, the present research aimed to carry out a survey on the level of recognition, control, disclosure and *disclosure* of IP assets in the DCs of the ICTs of the FIs of the RFEPCT network.

The justification for the present study lies in the growing importance of intangible assets produced by public ICTs. Improving the quality of the accounting information disclosed, in addition to contributing to technological development and innovation, is essential for the decision-making of managers, investors, and other stakeholders. By addressing the challenges and proposing solutions, this study contributes to strengthening the governance and *accountability* of Brazilian public ICTs, promoting greater trust and transparency in their operations.

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LITERATURE REVIEW

INTELLECTUAL PROPERTY AND GOVERNMENT MANAGEMENT FOR ICTs

The Right to Intellectual Property, as established by law, guarantees to the creators of innovations or those responsible for any production of intangible or intangible goods in the artistic, scientific, industrial or literary fields the right to compensation and exclusivity of use for a period defined by their creation (VANIN, 2017; BRASIL, 1996).

Nascimento (2021) highlights that IP can be defined as any production of the human intellect and ensures the holder the right to exploit, license, and assign inventions developed in the industrial sphere. In addition, it also aims to attract new customers, investments and businesses, providing greater competitiveness in the market and obtaining financial return, collaborating for the growth of public and private institutions.

In order for public sector entities, especially ICTs and their NITs, to be able to effectively manage the production of IP assets (intangible assets), and to comply with all the legal requirements established in the regulations, it is essential to promote the interaction of NITs with other areas of knowledge, in particular with accounting. This interaction aims to ensure the efficient registration, control, monetary valuation and management of these inventions within public ICTs. At this point, accounting associated with its techniques become essential in the disclosure process, contributing to the analysis, evaluation, and control of the financial, economic, and patrimonial situation of inventions, inventors, and institutions involved in the development and possible transfer of these new technologies to the market (NASCIMENTO, 2021).

It can thus be inferred that the production of new technologies is fundamental for the country, as it expands society's access to the technical and scientific knowledge of ICTs, bringing benefits to all sectors of the economy based on scientific knowledge and contributing to the generation of wealth in society (QUINTELA *et al*., 2019).

In this scenario, Bonacim and Araújo (2010, p. 1253), observed that:

> Many managers consider intellectual capital to be the most important resource for the creation of economic value by companies, since its management through measurement methods tends to become relevant for the development of organizations' successful strategies (BONACIM AND ARAÚJO, 2010, p. 1253)

In this context, in 1996, Law No. 9,279 of 1996 came into being, which began to regulate the rights and obligations related to industrial property in Brazil, establishing the principles for the protection of rights related to IP, considering the social interest and the

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technological and economic development of the country (BRASIL, 1996; SANTOS *et al*., 2024).

In Brazil, the institution responsible for certifying or not certifying a patent application is the National Institute of Intellectual Property (INPI), created by Law 5.648 of December 11, 1970, the INPI, whose main purpose is to execute, at the national level, the rules that regulate industrial property (BRASIL; 1970, 2016; INPI, 2021; NASCIMENTO, 2021).

In 2004, due to the advancement of the IP production market, the Innovation Law was enacted, Law No. 10,973 of December 2, 2004, recognized as a regulatory framework for innovation in the country (BRASIL, 2004). For Ferreira (2019), the Innovation Law emerged with the objective of building an environment of partnerships between ICTs and companies, with the purpose of stimulating and fostering innovation in the productive environment.

In addition, with the increasingly competitive innovation environment, the Brazilian government sanctioned Law No. 13,243 of January 11, 2016, promoting a great advance in the country's regulatory framework (BRASIL, 2004; 2016). This Law 13,243/2016, which became known as the New Legal Framework for Science, Technology, and Innovation, was regulated by Decree No. 9,283/2018 in order to facilitate the processes of raising and generating funds for Brazilian ICTs (NASCIMENTO, 2021). In addition, the Federal Government, aiming to consolidate the legal framework on innovation in the country, enacted Decree No. 10,534/2020, which instituted the National Innovation Policy.

These policies had the following main objectives: (i) to articulate, guide and coordinate strategies, programs and actions to foster innovation in the productive sector, aiming to stimulate the increase in productivity and competitiveness of companies and other innovative institutions in the country; and (ii) establish cooperation mechanisms between the States, the Federal District and the Municipalities with a view to promoting and aligning federal initiatives and policies to foster innovation with the policies formulated and implemented by other federative entities (BRASIL, 2020).

In the budgetary field, public ICTs are part of public policies related to Education, Science and Technology, linked to the Ministry of Education (MEC), and their actions are financed by public resources, authorized in the Annual Budget Law (LOA) and included in the General Budget of the Union of each financial year (SOUZA, 2021).

The Federal Institutes (IFs), as public ICTs, have their strategic actions based on the Institutional Development Plan (PDI) and the Institutional Goal Plan (PMI). Such plans aim

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to guide the management of FIs in line with the institutional mission and its strategic objectives for a period of five years (IFBA, 2023). Its execution, total or partial, depends on budget availability, subject to approval in the LOA, in each financial year.

According to Hora (2017), the budget planning of a public ICT, when used as a management tool, has the power to boost the achievement of the goals and objectives defined in government planning. In addition, it plays a key role in the governance structure of state management.

In view of the scenario presented here, it is observed that maintaining excellence in the process of generating, managing and disclosing assets related to IP is essential to face the frequent limitation of budgetary resources, enable the transfer of technology to the market, as well as provide timely information for decision-making when defining how the scarce resources that will be directed to research will be applied. development and innovation (RD&I), and it is therefore necessary to investigate, among other aspects, the lack of evidence of the values of the inventions developed internally in the DCs of ICTs (SOUZA, 2021; NASCIMENTO, 2021; FERREIRA, 2019).

ACCOUNTING STANDARDS APPLIED TO THE IDENTIFICATION AND DISCLOSURE OF INTELLECTUAL PROPERTY ASSETS

The purpose of the preparation and disclosure of accounting information is to provide information for the purposes of accountability and decision-making. Valuing the entity's assets encompasses understanding the registration and disclosure of the equity composition of the public entity. In this regard, the accounting principles and standards aimed at the recognition, measurement and disclosure of assets and liabilities and their equity variations must be complied with. (STN, 2023; CFC, 2022).

According to Silva (2011), the domain of the proper measurement of the economic value of an entity is based on the accurate assessment of its assets, liabilities, revenues and expenses. This analysis is crucial to provide a more accurate representation of the reality of an entity's assets.

In the strategic plan, accounting with its concepts, principles and techniques, assumes an important role in the management of the Republic. As an information system, public accounting assists in the organization and management "of the public sector, serving as a reference for consultation, registration, measurement and disclosure of policies and acts of public management" (CFC, 2017, p. 13).

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According to Souza (2021), ICTs, as an indirect federal public administration entity, are subject to all rules applicable to the execution and control of the public budget, including with regard to the production of intangible assets (which are part of the entity's assets), as most of the resources used in the production of IP make up the public budget.

Within the scope of the Brazilian Public Administration, accounting is conducted based on Law No. 4,320/64 and the Accounting Manuals applied to the Public Sector (MCASP) published by the National Treasury Secretariat (STN) based on the process of international accounting convergence (Brasil, 1964; STN, 2019, 2021). However, as observed by Lorini (2018), Brazilian public accounting has been used as a control instrument, being limited to measuring and controlling the executive's expenses. However, advances can be observed.

In order to detach itself from the budgetary focus and rescue the focus on equity, public accounting has undergone significant changes, which began in 1967 with the publication of Decree-Law No. 200/1967. Considered the initial milestone of Brazilian public management administration, this Decree established the fundamental principles for the management of public assets and resources (HORA, 2017).

Approximately 20 years have passed since the publication of Decree Law No. 200/67, Decree No. 93,872/1986 was published, which established the main criteria for unifying the cash resources of the National Treasury, as well as the accounting control, accountability and auditing of the Union (BRASIL, 1986).

Another important provision for the control of public finances is Complementary Law No. 101/2000, known nationally as the Fiscal Responsibility Law (LRF). According to Souza (2021), from that moment on, *accountability* gained prominence in the Brazilian scenario. The LRF imposed on managers a greater responsibility in the administration of public resources. Subsequently, Law No. 10,180/2001 was enacted, which organizes and establishes guidelines for the Planning, Budget, Financial Administration, Accounting and Internal Control Systems of the Federal Executive Branch (BRASIL, 2001).

This set of laws aims to standardize and consolidate public accounts, promoting convergence with international standards (Ministry of Economy, 2020). This perspective is in line with the legal framework for innovation, due to the need for ITCs through its NIT, it seeks to promote interaction and approximation of its community with the producer market (NASCIMENTO, 2021).

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Substantiated with Nascimento's thinking, Souza (2021) highlights that Accounting applied to the Public Sector (CASP) plays a crucial role in promoting the *accountability* of public ICTs, acting as an instrument of transparency of the public budget and the results achieved by management in the application of public resources made available to them (SOUZA, 2021).

Therefore, in the context of the transformation of the legal apparatus of CASP, the internationalization of accounting standards applied to the public sector, known as *International Public Sector Accounting Standards (IPSAS*), issued by the *International Federation of Accountants (IFAC),* from the 2000s onwards, stands out. With the adoption by Brazil in 2008 of the International *Financial Reporting Standards (IFRS),* the country began to analyze, interpret, translate and publish the CPC Technical Pronouncements (CFC, 2008; 2016). In 2008, the CFC issued the first accounting standards dedicated to the public sector, NBCTs 16, and since then convergence has been happening. Currently, in addition to the NBC TSP Conceptual Framework, there are 34 converged standards and 2 (two) Technical Communications applied to the Public Sector CTSP 01 and 02.

Also in 2008, the Ministry of Finance published Ordinance MF 184 of 2008, which grants the STN the authority to issue and update resolutions, manuals and regulations, in addition to making changes to the chart of accounts in order to guide public entities in the preparation and disclosure of financial statements (MINISTRY of FINANCE, 2008).

In 2008, the STN began to prepare the Accounting Manual Applied to the Public Sector (MCASP), which was published in 2009, with the purpose of standardizing budget expenses and revenues, as well as meeting all the requirements provided for in other legislation aimed at the sector. MCASP is currently in its 10th edition. For Souza (2021), the absorption of CASP enables more homogeneous accounting information regarding the presentation and disclosure of results in the accounting reports of the public administration, including here the ICTs.

In order to advance in the process of convergence to international standards, the CFC in 2015 adopted the strategy of integral convergence of the *International Public Sector Accounting Standards* (IPSAS), giving rise to the Brazilian Accounting Standards Applied to the Public Sector (NBC TSP), a "kind" of translation of international standards, as shown in figure 1

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Figure 1: Evolution of CASP.

Source: Prepared by the Author from Valesca (2023).

The first standard converged for the public sector was the NBC TSP – Conceptual Framework, considered the "norm of norms". The NBC TSP issued in 2016 established the main principles for the Preparation and Disclosure of General Purpose Accounting Information by Public Sector Entities, with a view to ensuring the transparency and consistency of DCs (CFC, 2016).

Regarding the disclosure, measurement and control of intangible assets, the central theme of this research, the converged standard was *IPSAS* 31 – Intangible Assets. This standard gave rise to NBC TSP 08, which aims at the accounting treatment, measurement and disclosure of intangible assets by public entities. In the same year, the STN, through the Manual of Accounting Applied to the Public Sector (MCASP), defined the minimum procedures for identifying and measuring these assets, requiring entities to recognize these assets at acquisition cost or fair value, as well as the likely future economic benefits or the potential for services attributed to these assets (STN, 2017, 2021; ARAÚJO and LEITÃO, 2019).

Following these principles, Nascimento (2021) states that recognizing intangibles is essential to compose and represent the equity reality of ICTs. Also, according to the same author, according to NBC TSP 08, the recognition of intangible assets can occur in three ways, namely: (i) separate acquisition; (ii) internal generation; and (iii) acquisition through transactions without consideration (CFC, 2017b). It is worth mentioning that the IP assets produced internally by ICTs, in addition to meeting all the general requirements of initial recognition and measurement, two distinct phases must be observed, research and development, provided for in NBC TSP 08, as shown in Table 3.

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Chart 1: Measurement of Intangibles Generated Internally in the Institution.

Research Phase	Development Phase
-There is still no guarantee of generating future economic benefits and the viability of the business.	-There is a guarantee of generating future economic benefits and the viability of the business.
- Expenses are recognized as Expense (VPD)	-Expenses are recognized as Active.

Source: Prepared by the authors based on MCASP, (2023).

For Gomes and Rocha (2020), in the research phase, all expenses attributed to the generation of internally generated IP (intangible) assets must be recognized in the Diminutive Equity Variation (VPD). On the other hand, the costs attributed to development, if it meets all the recognition criteria, will be classified as intangible assets according to its purpose.

Subsequently, procedures will be adopted to make the necessary adjustments, such as the Determination of Useful Life, which is related to the period for which the entity expects to use a certain asset.

After the identification and recognition process, all assets with a defined useful life must undergo amortization. The procedure must be initiated from the moment the asset is available for use, however it must cease on the date the asset is classified as held for sale (STN, 2023).

According to paragraph 106 of AASB 08, intangibles with an indefinite useful life should not be amortized (CFC, 2017b). However, it should be noted that the useful life of an intangible asset that is not amortized must be reviewed each fiscal year, to determine whether events and circumstances continue to support the indefinite useful life assessment.

For Nascimento (2021), complying with the legal and formal aspects is important to correctly evidence the scientific and technological production developed internally within the scope of public ICTs. Because, according to the author, these organizations have not adequately evidenced the PIs produced internally in the entity's assets. Properly evidencing these assets allows the various users of accounting information, timely and reliable data on the composition of ICTs' equity and allows managers to make the best decisions.

According to the MCASP (2023) all intangible assets must be disclosed, it is recommended that at the time of registrations the entity separates the internally generated intangible assets from other intangible assets, and in the disclosure of the explanatory notes the following criteria are observed:

> With an indefinite or defined useful life and, if defined, the useful life periods or amortization rates used;
> The amortization methods used for intangible assets with a defined useful life;

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> The gross carrying amount and any accumulated amortization (plus accumulated losses in recoverable amount) at the beginning and end of the period; and
> The reconciliation of the book value at the beginning and end of the period (STN, 2023, p. 253).

If the intangible asset does not meet these definitions, all expenses with internal generation or acquisition will be recognized as expenses (Ministry of Economy, 2023; ARAÚJO and LEITÃO, 2019; CFC, 2017). Also according to the CFC (2017), all the criteria established in NBC TSP 08 must be observed and applied by all public sector entities, including the RFEPCT FIs as of the 2019 financial year.

Another important standard for the control, disclosure and disclosure of intangible assets to be observed by public ICTs is NBC TSP 11 - Presentation of Financial Statements (MINISTRY OF FINANCE, 2023). This standard establishes the complete set of financial statements applied to the public sector and which, together with the standards aimed at the control of intangibles, form the conceptual basis to guide public sector entities regarding the *accountability* and *disclosure* of IP assets produced internally (SOUZA, 2021).

Thus, *disclosure* is related to a set of information of an economic, financial, legal, social and patrimonial nature that is made available in the DCs of the entities, which, in theory, should be understandable by all users, the most diverse. This information has the potential to provide the various users with data that will be analyzed and will serve for decision-making directed to the entity (PEIXE; DE ARAÚJO; BY PAULA PINTO, 2023).

In addition, the ICTs of the FIs need to disclose in real time detailed information on budget and financial execution in electronic means of public access (BRASIL, 2009).

Therefore, it is necessary not only to identify these assets as "Intangibles" but also to describe the potential economic, financial and equity consequences generated in the Financial Statements (DCs) of the ICTs. This is fundamental.

This information is the basis for defining the valuation, the possible transfer to the market and the potential financial returns generated by these inventions and their possible classification as an "Intangible Asset" in the DCs of ICTs.

METHODOLOGY

The method used to design the research was the monographic, which according to Gil (2008), consists of a specific case study, in depth. This type of scientific investigation allows achieving the intended objectives for the research and outlining the best path to be followed by the researcher (SILVA and QUINTELLA, 2021).

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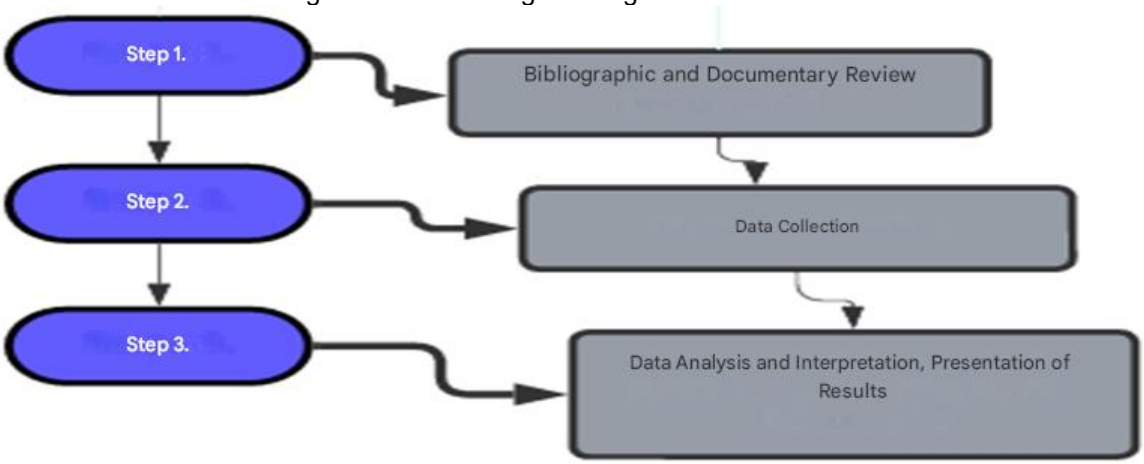
As it is of a bibliographic, documentary and survey nature, this research has an exploratory purpose, from a qualitative approach with a survey of primary and secondary data, collected in:

i. Articles, dissertations, theses, published nationally and internationally;
ii. Technical reports, resolutions and internal ordinances as well as in Laws, available on institutional websites; and
iii. Portal of the INPI and all RFEPCT Budget Units.

STEPS AND PROCEDURES

In order to achieve the objectives intended by this research and to propose the construction of this Technical Report, the steps and procedures adopted are distributed as follows:

Figure 2: Methodological Stages of the Research.



Source: Prepared by the authors (2024).

Regarding stage 1, we sought to identify in the literature the main studies on the *locus* of the research, aiming at greater familiarity with the theme in order to understand, discuss and portray the main problems regarding the lack of disclosure of intangible assets in the DCs of Brazilian public ICTs.

The data collected through documentary research (bibliographic survey) in articles, dissertations, theses, technical reports, institutional websites, resolutions, internal ordinances and laws, in order to understand and deepen the study theme, were made in stage 2,

In relation to stage 3, we sought to analyze and present the main results and indicators, among which are:

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(i) Sources of funds for the production of IP assets in ICTs IFs;

(ii) Quantity of assets produced and which ICTs linked to the Secretary of Professional and Technological Education (SETEC) presented in their DCs a record of intangible assets, having as a cut for analysis the approved LOAs from the years 2020 to 2023, as well as the financial statements for the years 2019 to 2023.

RESULTS AND DISCUSSION

INVESTMENTS IN INNOVATION IN THE FEDERAL NETWORK OF PROFESSIONAL AND TECHNOLOGICAL EDUCATION AND THE CHALLENGES IN IP ACCOUNTING RECORDS.

It is salutary that FIs are among the largest producers and developers of new technologies of "Intangible Assets". For this reason, over the last few years, these ICTs have been seeking to include in their strategic planning RDI portions of budgetary resources destined to Research, Development and Innovation (RD&I). These budget credits are intended for the FIs of the RFEPCT network in order to develop their actions according to the PMI prepared for each year (IFBA, 2023).

As a result, in 2020 the federal government created ACTION 21B3, which aimed to improve budget planning in order to meet the current standards for RD&I, enabling better accountability aimed at presenting the results of the resources allocated in the LOA and committed according to its purpose (BRASIL, 2020).

Table 1 below shows a comparison between the current and updated allocation. The first approved in the LOA, the second after its execution, calculated at the end of each year for the Federal Institutes between the years 2020 and 2023 in **Action 21B3 - Promotion of Research, Extension and Innovation Actions in the Institutions of the Federal Network of Professional, Scientific and Technological Education.**

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Table 1: Comparison between initial allocation x updated action 21B3.

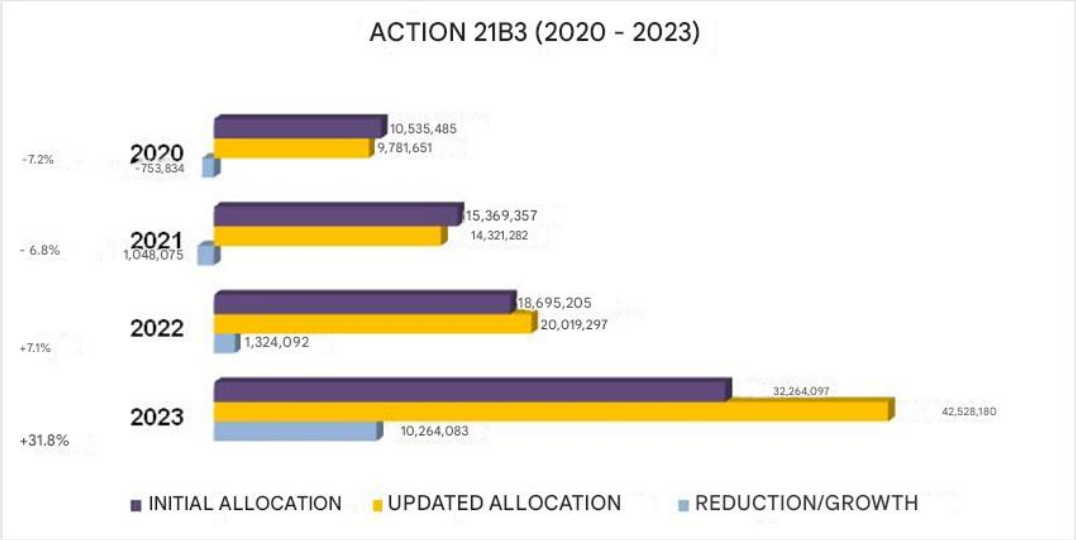
RFEPCT NETWORK BUDGET (ACTION 21B3)	2020	2021	2022	2023	Grand Total
Current Budget (LOA)	**10.535.485**	**15.369.357**	**18.694.588**	**32.264.097**	**76.864.144**
Current Budget (LOA)	**9.781.651**	**14.321.282**	**20.019.297**	**42.528.180**	**86.650.410**
Total	**-753.834**	**-1.048.075**	**1.324.709**	**10.264.083**	**9.786.266**

Source: Prepared by the Authors, based on LOA x siop.planejamento.gov.br (2020, 2021, 2022, 2023).

Between the years 2020 and 2023, the federal government allocated in action 21B3 for twenty-eight FIs of the RFEPCT network a total of R$ 86,650,410.00 (eighty-six million, six hundred and fifty thousand, four hundred and ten reais), these resources are essential for these organizations to be able to develop together with their researchers, students and collaborators, actions aimed at improving the quality of life of society.

Currently, the RFEPCT network is formed by thirty-eight Federal Institutes and two Federal Centers, a Technical School and a Technological University, not all IFs have planned in their PMIs budget allocation for RD&I actions for the period analyzed (BRASIL, 2020, 2021, 2022, 2023). The evolution in the nominal values of these resources in comparison with the initial planning authorized in the LOA can be seen in figure 3.

Figure 3: Comparison between initial allocation vs. updated action 21B3.



Source: Prepared by the Authors, based on LOA x siop.planejamento.gov.br (2020, 2021, 2022, 2023).

As shown in figure 3, the FIs executed in 2020 and 2021 a budget amount lower than the initial allocation authorized in the LOAs for the same period. When analyzing the DCs of the ITC IFs, from the 2020 and 2021 fiscal years, it was possible to verify that there was a rupture in the normal activities of these entities, caused by the emergence of the COVID 19 virus, jeopardizing all the initial planning for the period. In the 2022 and 2023 fiscal years,

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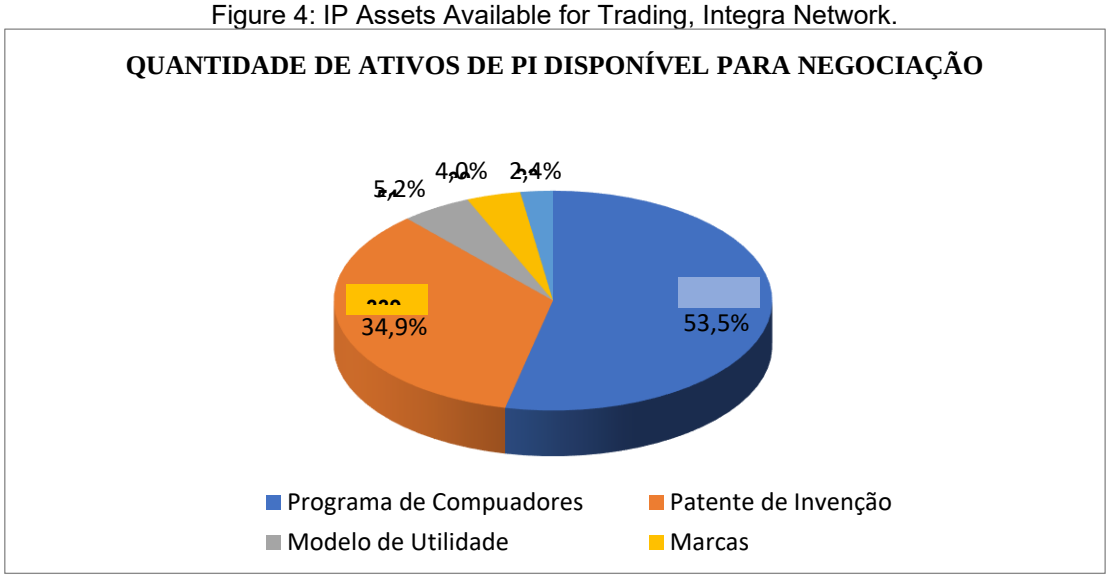
there was a recomposition of this item. However, it is important to emphasize that this budget increase does not represent greater investments in IP research and development by the government, it occurred due to the gradual return of activities in the FIs. These resources are fundamental for the generation of IP assets produced internally in the FIs. For Santos *et al.,* (2024) The planned allocation of scarce budgetary resources aims to prioritize strategic projects for ICT and, consequently, avoids the occurrence of accumulation of resources in projects that are not commercialized or transferred to the market, even avoiding mitigating the risk of stranded patents. According to the authors, evaluating how and where these scarce resources will be allocated enables ex-ante decision-making by the management of Brazilian public ICTs. This analysis promotes greater control of the resources invested in R&D and collaborates with the identification, registration and disclosure of intangible assets generated by ICTs/FIs.

As previously noted, the FIs linked to the Secretary of Professional and Technological Education (SETEC) are among the largest IP producers in the national scenario, this fact can be verified through the data on the technologies that are available for download on the redeintegra.mec.gov.br/tecnologias portal. As shown in figure 4.

Figure 4: IP Assets Available for Trading, Integra Network.



Source: Prepared by the author from MEC (2024).

Of the 33 institutions present in the integra network, 21 have technologies available for negotiation, this does not mean that the other FIs in the network do not produce and do not have any IP assets registered with the BPTO, however, as the basis used for data collection was the integra network, only the technologies available in the technological

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showcase on the portal were presented. The data collection was carried out until May 8, 2024, and was tabulated and organized in an Excel spreadsheet by group of assets. In all, 972 technologies are available in the technological showcase of the portal, including: 520 computer programs, 339 invention patents, 51 utility models, 39 brands and 23 industrial designs. But, as observed by Nascimento (2021), the process of accounting for IP assets produced internally is incipient. The statement by Nascimento (2021) can be seen in table 2.

Table 2: Records of Intangible Assets of the RFEPCT Network - Composition.

Type of Intangible Assets – RFEPCT FIs	**2019**	**2020**	**2021**	**2022**	**2023**
Software Defined Lifespan	32.598.186	27.347.371	36.070.753	28.085.497	29.095.702
Software Indefinite Lifespan	22.611.699	24.632.583	27.617.542	30.001.649	31.079.973
M.D and PI-Indefinite Life	332.030	319.458	273.376	337.309	240.603
Total	55.532.915	52.299.412	63.961.671	58.424.455	60.416.142

Source: Prepared by the authors (2024).

According to paragraph 87 of NTC STP 08, every intangible asset must have its useful life assessed by the entity, thus, all intangibles must be classified as having a defined and indefinite useful life (CFC, 2017b). For Quintella *et al.* (2019), identifying the useful life of the technology, in addition to meeting regulatory requirements, facilitates the identification and management of all expenses, costs and expenses that involve the research and development of the intangible, facilitating its recognition and disclosure in the DCs of ICTs.

Figure 5 shows the percentage composition of these assets.

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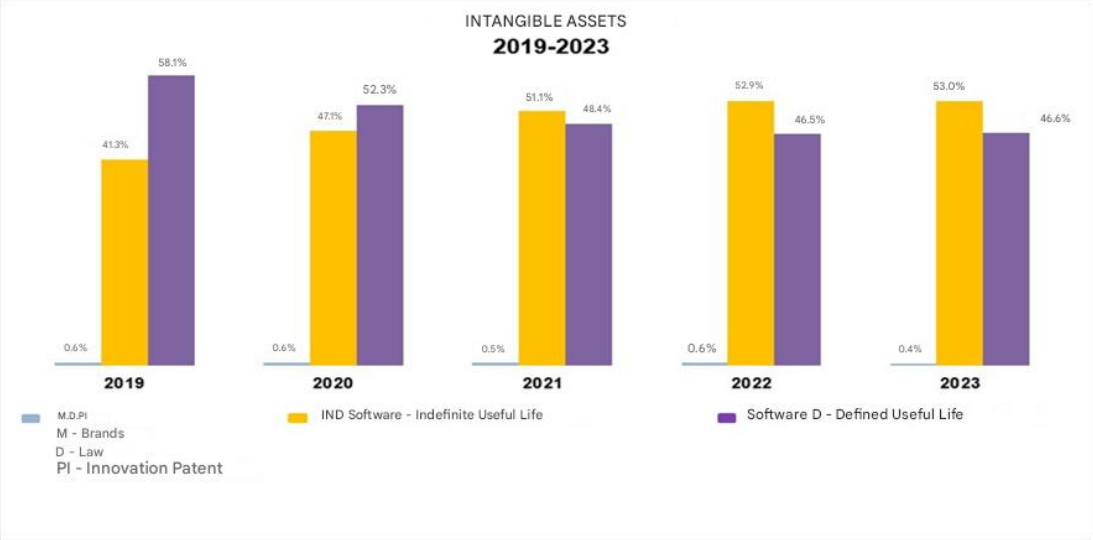
Figure 5: Classification of Intangible Assets by Category.



Source: Prepared by the authors (2024).

Figure 4 shows that 99.6% of the records evidenced by the RFEPCT FIs are software, being classified as having a defined and indefinite useful life. Another important fact about these records is that, according to the NEs of these institutions, this *software* comes from external acquisitions, corroborating Nascimento's (2021) statement. Trademarks, rights and patents of invention did not suffer relevant variations over the period analyzed.

Another important highlight to be noted is that only twenty-one RFEPCT units showed in their DCs records of intangibles in the group of trademarks, rights and patents. The units that showed this category of intangible assets can be seen in table 3.

Table 3: Composition, Intangible Assets, Trademarks, Invention Rights and Patents.

Budget Unit Group: M.D.PI	**2019**	**2020**	**2021**	**2022**	**2023**
CEFET/MG	125.199	84.192	97.390	108.077	6.454
UTFPR	0	0	0	0	185
IF do AMAZONAS	1.180	1.180	1.180	1.180	1.180
IF - BAIANO	120	120	120	120	120
IF - CEARÁ	14.536	14.834	14.834	14.834	14.834
IF - ESPIRITO SANTO	40.697	67.300	5.777	57.746	57.746
IF - MG NORTH	1.038	1.038	1.593	1.663	2.773
IF - SOUTHEAST of MG	400	400	400	400	400
IF - TRIÂNGULO MINEIRO	1.067	2.601	4.289	5.496	9.018
IF - MATO GROSSO	5.646	5.646	5.646	5.646	5.646
IF - MATO GROSSO DO SUL	880	880	880	880	880
IF - PERNAMBUCO	10.248	10.248	10.248	10.248	10.248
IF - FARROPILHA	3.492	3.492	3.492	3.492	3.492
IF - ACRE	908	908	908	908	908
IF of BRASILIA	140	140	140	140	140
IF - SERTÃOPE	446	446	446	446	446
IF - RIO DE JANEIRO	208	208	208	208	208

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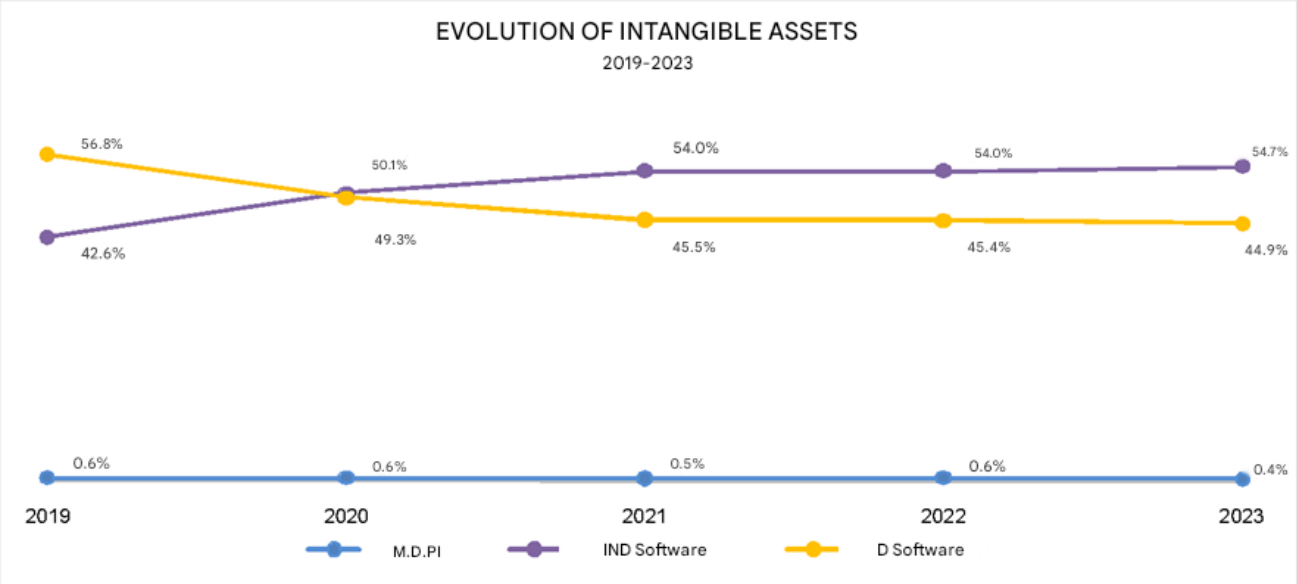
IF - FLUMINENSE	140	140	140	140	140
IF - RIO GRANDE DO NORTE	120.263	120.263	120.263	120.263	120.263
IF - South	3.888	3.888	3.888	3.888	3.888
IF - SÃO PAULO	1.534	1.534	1.534	1.534	1.534
Total	**332.030**	**319.458**	**273.376**	**337.309**	**240.053**

Source: Prepared by the author (2024).

It is also possible to observe that of the total intangibles evidenced in the 2023 fiscal year, only R$ 240,504.00 (two hundred and forty thousand, five hundred and four reais) belongs to this group, which represents only 0.4% of the total records of these assets. The data presented reinforce the lack of records, control, disclosure and management of IP assets produced internally in the DCs of the ICTs of the FIs.

When evaluating the historical evolution of the records of intangible assets in the DCs of the ICTs, it is possible to verify the reduction in the values of *the software* with a defined useful life, as shown in the graph in Figure 6.

Figure 6 – Evolution of Intangibles between the years 2019 and 2023



Source: Prepared by the author (2024).

When analyzing the historical evolution of the composition of intangibles in the DCs of FIs, it can be observed that as of 2020, software registrations with an indefinite useful life came to represent the majority of assets registered in ICTs DCs. Invention trademarks, rights and patents had a slight drop between the years analyzed, from 0.6% in 2019 to 0.4% in 2023. In the NEs of the budget units analyzed, the vast majority of the origin of IP assets are not presented, the entities limited themselves to informing the evidenced value of the assets. This demonstrates that although public ICTs are among the largest producers

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of IP in the national scenario, the tastes, costs and investments directed to R&D are not presented in the DCs and explanatory notes as determined by NBC TSP 08 and the current MCASP (CFC, 2017; STN, 2023; NASCIMENTO *et al*., 2024).

Chart 2 presents the current scenario regarding the use of the accounting procedures adopted for the registration, control and disclosure of intangible assets in the DCs and NEs of the RFEPCT's public ICTs in the 2023 fiscal year. It is important to note that some FIs did not publish all their DCs, and it is necessary to seek information in other institutional documents such as the Management Report, however, most of the documents published contained summarized information on the financial statements.

Chart 2 – Accounting Procedures Adopted by the ICTs of the RFEPCT for the Registration, Control and Disclosure of Intangible Assets in the DCs.

Unidade Orçamentária	Registro de Intangíveis			Avaliação / Mensuração		Amortização		Redução Valor Recuperável (*Impairment*)		Informação em Notas Explicativas	
	Softwares V.Útil Definida	Softwares V.Útil Idefinida	Marcas, Direitos e Patentes	Custo de Aquisição	Custos de Produção	SIM	NÃO	SIM	NÃO	SIM	NÃO
26201 – COLÉGIO P. II		×		×			×		×		×
26256 – CEFET/RJ	×	×		×		×			×	×	
26527 – CEFET/MG		×	×	×			×		×	×	
26528 UTFPR	×		×	×		×			×	×	
26402 – IFAL		×		×			×		×	×	
26403 – IFAM	×	×	×	×			×		×	×	
26404 – IFBAIANO		×	×	×			×		×	×	
26405 – IFCE	×	×	×	×		×			×	×	
26406 – IFES	×	×	×	×			×		×	×	
26407 – IF GOIANO	×			×		×			×	×	
26408 – IFMA	×			×		×			×	×	
26409 – IFMG	×	×		×			×		×	×	
26410 IFNMG	×	×	×	×			×		×	×	
26411 - IFSUDESTEMG		×	×	×			×		×		×
26412 – IFSULDEMINAS		×		×			×	×		×	
26413 – IFTM	×		×	×		×		×		×	
26414 – IFMT	×	×	×	×			×		×	×	
26415 – IFMS	×	×	×	×		×			×		×
26416 – IFPA	×			×			×		×	×	
26417 – IFPB		×		×			×		×	×	
26418 – IFPE	×	×	×	×		×			×		×
26419 – IFRS	×	×		×		×			×	×	
26420 – IFFar	×	×	×	×		×			×		×
26421 – IFRO	×	×		×			×		×		×
26422 – IFC	×	×		×		×			×	×	
26423 – IFS	×	×		×		×			×	×	
26424 – IFTO		×		×			×		×	×	
26425 – IFAC		×	×	×			×		×	×	
26426 – IFAP		×		×		×			×	×	
26427 – IFBA	×	×		×			×		×	×	
26428 – IFB	×		×	×		×			×	×	
26429 – IFG		×		×			×		×	×	
26430 – IFSERTÃOPE		×	×	×			×		×	×	
26431 – IFPI	×			×		×			×	×	
26432 – IFPR		×		×			×		×	×	
26433 – IFRJ	×	×	×	×		×			×	×	
26434 – IFF	×	×	×	×		×			×	×	
26435 – IFRN	×	×	×	×		×			×	×	
26436 – IFSul	×	×	×	×		×			×	×	
26437 – IFRORAIMA		×		×			×		×	×	
26438 – IFSC	×	×		×		×			×	×	
26439 – IFSP	×	×	×	×		×			×	×	

Source: Prepared by the authors (2024).

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According to the analyses carried out in the DCs and NEs and in some management reports of the 42 budget units of the RFEPCT, it was possible to observe that all entities disclose some type of intangible asset in their statements. Of these, 35 evidenced, in their DCs, software registrations with an indefinite useful life, 28 evidenced *software* with a defined useful life and 21 evidenced trademarks, rights and patents. The budget units that showed the three types of intangibles in a segregated manner in their DCs were: IFAM, IFCE, IFES, IFNMG, IFMT, IFMS, IFPE, IFFar, IFRJ, IFF, IFRN, IFSul and IFSP. However, detailed information on the composition of the respective groups was not presented, and it was not possible to identify the origin of most of the intangibles evidenced in the DCs of these bodies.

For Santos *et al.,* (2024) all information on internally generated intangible assets must be identified and controlled strategically. This allows all information about the intelligible to be controlled, generating indicators and metrics that will be used by managers in economic and financial decision-making and that can even contribute to improving the quality of budget execution and generating new sources of revenue for ICTs.

As shown in figure 4 (shown above), the subgroup "trademarks, rights and patents" represents only 0.4% of the total intangibles evidenced by the ICTs of the RFEPCT. The seven FIs with the highest representation in this subgroup of intangibles are: CEFET/MG, IFCE, IFES, IFTM, IFMT, IFPE and IFRN. Only CEFET/MG and IFMT highlighted in their NEs that the group is basically composed of amounts paid in annuity fees and registration of patents with the INPI.

Regarding the group's changes, CEFET/MG was the only one that showed a considerable reduction in its value when compared to the years ended in 2023 and 2022. According to the NE published by CEFET/MG, this reduction occurred due to the reduction of values improperly recorded in this group, and it is necessary to make the aforementioned adjustments. The other budget units provided information summarized in their NEs, without detailing the composition of the values evidenced.

Another important fact to be highlighted is that the vast majority of registrations evidenced in the subgroup "trademarks, rights and patents" of the RFEPCT budget units did not suffer any variation over the four years analyzed. Another highlight is the predominance of records with derisory values. Taking into account these registrations, it is possible to deduce that they represent payment of registration fees and/or maintenance of assets with the BPTO.

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With regard to the form of valuation and measurement of the intangible assets recorded by these institutions, all of them described in their reports that the assets are initially recognized at acquisition cost value. However, although 21 budget units show trademarks, rights and invention patents produced internally, they did not detail in their NEs how production and development costs are measured, recorded and controlled, and all expenses are directly accounted for in the VPD because there is no greater detail and information on the capitalization of these assets.

When analyzing the item "amortization", it is possible to observe that 21 of the 42 budget units do not perform amortization. According to MCASP (2023), intangible assets classified as having an indefinite useful life are not amortized, justifying the lack of amortization procedures by these units. However, it is possible to observe that among the 21 are the IFAM, IFES, IFMG, IFNMG, IFMT, IFRO and the IFBA, which also showed balances in the subgroup "*software* with a defined useful life", and therefore it is necessary to carry out the control and recording of amortization on a monthly basis. As a justification for the lack of implementation of the amortization procedure, all agencies described in their NEs that they do not have an appropriate system to carry out the effective control of the installments to be amortized monthly. According to the agencies, it is expected to solve the problem with the implementation of the SIADS system. Asset management system that is being implemented in all RFEPCT units in compliance with Ordinance No. 232 of June 02, 2020 issued by the MF.

Impairment test, only IFSULDEMINAS and IFTM highlighted in their NEs that they performed the recoverability test, but there are no further details of how such procedures are performed. In accordance with paragraph 108 of AASB 8, intangible assets with an indefinite useful life must be reviewed annually. According to the analysis, it was found that 35 FIs showed in their DCs intangible assets with an indefinite useful life, making it necessary to implement such a procedure. Another important fact to be observed is that although the IFTM describes in its EN that it performs the recoverability test, it has not evidenced assets of this nature in its DC. IFSULDEMINAS did not dedicate any item of its EN to describe the methodology adopted in its units to perform the impairment test.

Finally, regarding the disclosure of information on intangible assets in the DCs and NEs of the RFEPCT's ICTs, all budget units presented some type of information on the composition of intangible assets recorded in their respective DCs, even though they did not meet all the regulatory requirements provided for in NBC TSP 08 as well as in the MCASP

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2023 edition. After the survey, it was observed that COLÉGIO P. II did not release the explanatory notes for the 2023 fiscal year. IFSUDESTEMG, IFMS, IFPE, IFFar and IFRO did not disclose in a specific section on their websites the DCs and NEs for the year 2023, however such information was extracted from the management reports of the respective bodies.

CONCLUSION

The present research aimed to carry out a survey on the level of recognition, control, disclosure and *disclosure* of IP assets in the DC of the ICTs of the FIs of the RFEPCT network. To achieve the proposed objective, a methodological strategy was adopted through bibliographic and documentary research, with a qualitative approach, the survey of primary and secondary data was carried out in articles, technical reports, institutional portals and laws in order to deepen the knowledge and unveil the main problems faced by public ICTs regarding the accounting and disclosure of IP assets produced internally by FIs.

Based on the study, it was possible to verify important advances in the budget planning directed to RD&I in the IFs, this was possible because the government implemented action 21B3, which enabled a better control of investments, tastes and expenses in these areas. It is important to emphasize that the evolution in resources did not represent new investments, but rather adjustments in the strategic planning of the ICTs belonging to RFEPCT.

In relation to the problem identified by the research, which is substantiated by the lack of disclosure in the DCs of the FIs of the IP assets produced internally, as provided for in the Brazilian Accounting Standards together with the MCASP and other regulations issued by the control bodies. The results show that, despite the evolution in investments, as well as the production of IP assets by the ICTs of the RFEPCT, it is not possible to observe an evolution in the disclosure of intangibles in the DCs of these entities.

The results also show that although all the ICTs of the RFEPCT showed intangible assets in their DCs, only 21 ICTs showed registrations in the group of trademarks, rights and patents. It is important to highlight that these records represent only 0.4% of the total intangible records published by ICTs at the end of the 2023 fiscal year. However, there is no detailed information on the composition of these groups, such as amortization, recoverability test and/or identification of intangibles. It was observed that these assets did not suffer major variations over the years analyzed, making it clear that these records need

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to undergo detailed analysis by the units in order to better classify these assets in the DCs of the ICTs.

Among the main problems pointed out in the NEs of the RFEPCT FIs are: (i) the lack of communication between the strategic areas in order to identify in advance the potential research and development projects that are linked to the production of intangible assets; (ii) lack of employees on the staff; (iii) lack of management systems that enable the appropriate control of intangibles; (iv) high turnover of servers allocated to strategic sectors and lack of knowledge of how to operationalize information on IP assets produced internally.

In addition, as observed in the results, the lack of registration and disclosure of intangible assets produced internally, in addition to impairing the *disclosure* and *accoutability* of the information, fails to offer relevant and timely data and indicators that serve to support decision-making gestures, thus reducing the occurrence of *stranded patents.*

The research was limited to demonstrating how accounting procedures and techniques can help the NITs of public ICTs to control, register and evidence the IP produced internally and how this control can help the process of transfer or licensing to the market.

It should be noted that the results of this research should not be generalized to all entities that produce IPs, in view of the specificities of each asset and in particular those generated internally within the scope of FIs.

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