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Difficulties in the Profession of Public Accountant: a Systematic Mapping in the Federal Executive Branch

Dificuldades na Profissão do Contador Público: um Mapeamento Sistemático no Poder Executivo Federal

Dificultades en la Profesión de Contador Público: un Mapeo Sistemático en el Poder Ejecutivo Federal

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Abstract

Research objective: The objective of this research was to identify, group and analyze the main factors associated with the difficulties faced in the profession of accountants in the public sector of the Federal Executive Branch.

Theoretical Framework: Literature review of the profile, the skills and the competences of accounting professionals and adoption of international accounting standards for the public sector (IPSAS).

Method: Twenty-four possible situations of difficulty in the accountants' routine were identified. Methodologically, a quantitative, exploratory approach was used, with a cross-section and a questionnaire. Data collection was carried out by means of an electronic questionnaire, whose sample was represented by 169 respondents from the federal executive branch in all states of Brazil.

Results: The results pointed to the inefficient training of the surveyed accountants as the main difficulty, given the new changes in Brazilian public accounting.

Originality: Factors associated to the difficulties of public accountants, before the adoption of IPSAS in Brazil, it is a contribution that enables the achievement of the necessary actions to improve the training of accountants public sector and potential changes in the organizational environment of the Brazilian public administration.

Theoretical and practical contributions: In accordance with the convergence with the international public sector accounting standards in Brazil (IPSAS), the study contributes to the academic debate in the process of training and professionalization of the public sector accountant of the federal government, because the results will be useful for the effectiveness and/or or improvement of technical, methodological, managerial and organizational guidelines in order to mitigate the difficulties faced and identified in this research.

Keywords: Public accountants, Difficulties in the profession, Public accounting, Accounting professionals, Convergence with IPSAS.

Resumo

Objetivo da pesquisa: O objetivo desta pesquisa foi identificar, agrupar e analisar os principais fatores associados às dificuldades enfrentadas na profissão dos contadores do setor público do Poder Executivo Federal.

Enquadramento Teórico: Revisão da literatura sobre perfil, habilidades e competências dos profissionais da contabilidade e adoção das normas internacionais de contabilidade no setor público (IPSAS).

Método: Foram identificadas vinte e quatro possíveis situações de dificuldades na rotina dos contadores. Metodologicamente, utilizou-se a abordagem quantitativa, exploratória, com corte transversal e aplicação

de questionário. A coleta de dados, foi realizada por meio de questionário eletrônico, cuja amostra foi representada por 169 respondentes do poder executivo federal em todos os estados do Brasil.

Resultados: Os resultados apontaram a formação ineficiente dos contadores pesquisados como sendo a principal dificuldade, diante das novas mudanças na contabilidade pública brasileira.

Originalidade: O mapeamento de vinte e quatro fatores associados às dificuldades dos contadores públicos, ante a adoção das IPSAS no Brasil, representa uma contribuição que possibilita promover ações necessárias ao aperfeiçoamento da formação dos contadores do setor público e consequentes mudanças no ambiente organizacional da administração pública brasileira.

Contribuições teóricas e práticas: Consoante a convergência com as normas internacionais de contabilidade do setor público no Brasil (IPSAS), o estudo contribui para o debate acadêmico no processo de formação e profissionalização do contador do setor público do governo federal, isto porque os resultados serão úteis para efetivação e/ou aperfeiçoamento de diretrizes técnicas, metodológicas, gerencias e organizacionais de forma a mitigar as dificuldades ora enfrentadas e identificadas na presente pesquisa.

Palavras-chave: Dificuldades dos contadores públicos, Contabilidade pública, Formação dos contadores públicos, Liderança, convergência com IPSAS.

Resumen

Objetivo de la investigación: El objetivo de esta investigación fue identificar, agrupar y analizar los principales factores asociados a las dificultades enfrentadas en la profesión de contadores en el sector público del Poder Ejecutivo Federal.

Marco teórico: Revisión de literatura sobre el perfil, habilidades y competencias de los profesionales contables y adopción de las normas internacionales de contabilidad en el sector público (IPSAS).

Método: Se identificaron veinticuatro posibles situaciones de dificultades en la rutina de los contadores. Metodológicamente se utilizó un enfoque cuantitativo, exploratorio, con corte transversal y aplicación de un cuestionario. La recolección de datos se realizó a través de un cuestionario electrónico, cuya muestra estuvo representada por 169 encuestados del poder ejecutivo federal en todos los estados de Brasil.

Resultados: Los resultados apuntaron a la formación ineficiente de los contadores encuestados como la principal dificultad, frente a los nuevos cambios en la contabilidad pública brasileña.

Originalidad: Factores asociados a las dificultades de los contadores públicos, frente a la adopción de las NICSP en Brasil, es una contribución que posibilita la consecución de acciones necesarias para mejorar la formación de los contadores en el sector público y potenciales cambios en el clima organizacional de la administración pública brasileña.

Contribuciones teóricas y prácticas: De acuerdo con la convergencia con las normas internacionales de contabilidad del sector público en Brasil (IPSAS), el estudio contribuye al debate académico en el proceso de formación y profesionalización del contador del sector público del gobierno federal, porque los resultados serán útiles para el efectividad y/o mejoramiento de lineamientos técnicos, metodológicos, gerenciales y organizacionales para mitigar las dificultades enfrentadas e identificadas en esta investigación.

Palabras clave: Contadores públicos, Dificultades en la profesión Contabilidad pública, Profesionales de la contabilidad, Convergencia con IPSAS.

1 Introduction

Accounting surprises with the breadth of nuances that arise every day, and it is up to the accounting professional to seek useful answers in the process of generating information for decision making. Accounting, as it is a social science, can have different interpretations in the same event, enabling the accounting professional, in different situations, to portray the same reality with different perceptions (Szuster, 2015). In addition, studies by Dillard and Vinnari (2019) and Marin, Lima and Nova (2014) found that the phenomenon of globalization and the search for convergence with international accounting standards have valued the accounting professional, allowing decision-making in favor of the public interest and facilitating the common good.

When carrying out their activities, accountants must generate quality information and must not be restricted to pre-established rules, being able to make judgments duly based

on accounting principles and standards (Szuster, 2015). It is a new paradigm built by constant changes on the world stage, requiring new skills and growing needs for professional improvement. Better accounting will not solve poverty, however, if neglected, it will negatively interfere with development mechanisms (Hopper, Lassou, & Soobaroyen, 2017).

In the global context, transformations in society and organizational changes are increasingly challenging the accounting professional, thus requiring knowledge that goes beyond the technical and scientific, such as the development of new skills, critical-reflective thinking skills, teamwork and problem solving (Silva, Azevedo, & Araújo, 2018). This new professional profile is achieved through formal education and practical experience in the accounting field, acting in accordance with the profession's code of ethics (Paisey & Paisey, 2018).

In this scenario, this article set out to answer the following research question: in view of the new standards applied to the Brazilian public sector, what are the main factors associated with the difficulties faced in the profession, from the perspective of accountants in the Federal Executive Branch?

To answer this question, the objective of the study was to identify, group and analyze the main factors associated with the difficulties faced in the profession of accountants in the public sector of the Brazilian Federal Executive Branch.

The research approach was exploratory, based on quantitative methods. The sample was non-probabilistic due to accessibility and the study environment was the federal public administration of Brazil. The target population was made up of a sample of accountants working in federal executive bodies in all Brazilian states and the Federal District.

169 responses were collected from public accountants who responded to a 33-question questionnaire with factors related to the main difficulties in exercising the profession, raised in the literature. Exploratory factor analysis was used to group the constructs associated with the difficulties faced by accountants in the profession.

As a contribution, the results can be used as motivation and reflections for institutional bodies to formulate public actions and policies, which contribute to the professional development of public sector accountants. They can also be used in proposals for guidelines, techniques, methods and management and organizational strategies, making it possible to mitigate the difficulties faced by accountants, identified and analyzed in this research.

2 Theoretical Framework

2.1 Accounting professional profile: skills and competencies

The process of accounting convergence with international standards has changed the profile of accountants, requiring them to strengthen their ability to provide strategic information for decision making, in addition to the need for training and understanding of other areas of knowledge (Bosco & Carvalho, 2017).

The American Institute of Certified Public Accountants (AICPA) and Institute of Management Accountants (IMA), when investigating the profile of accounting professionals, they added that, after the process of accounting convergence, organizations have demanded from them a diverse set of skills and personal attributes, concluding that positive attitudes are often more important than theoretical and technical accounting skills (Ahadiat & Martin, 2015). The discussion about the skills and abilities of accounting

professionals has been present in world literature, as can be seen in Hassall, Joyce, Montañó and González (2010), Lin (2008), Oro, Beuren and Carpes (2014).

The changes that have been occurring in the accounting environment require reflection with a global approach (Abbasi, 2013), leading to the need to review some accounting practices adopted (Morás & Klann, 2018). It is necessary to train professional accountants with leadership skills and qualified to interpret and put into practice international accounting standards (Costa, Souza, Baihe, & Santos Filho, 2018; Crawford, Helliard, Monk, & Veneziani, 2014). Along this path, there are skills that can be acquired from Higher Education Institutions (HEIs), capable of preparing future accountants with a multidisciplinary perception that can go beyond scientific knowledge (Howieson et al., 2014). Others can be achieved in the exercise of the profession (D'abate, Youndt, & Wenzel, 2009); for example, experience that requires professional judgment from accountants and not just technical skills (Rasouli, Banimahd, & Royae, 2015).

The International Accounting Education Standards Board (IAESB), aiming to guide higher education institutions in the training of accountants, contributed to the appreciation of accounting professionals by publicizing eight initiatives: HEI 1 to HEI 8, whose contents deal, respectively, with professional education programs in accounting, technical skills, professional skills, practical experience, criteria on the assessment of professional competence, continuous professional development and, finally, competence for audit professionals (Pratama, 2015).

It is clear that these initiatives aim to encourage accounting professionals to adopt a new stance, expanding skills, keeping up to date with information technologies in the context in which the organization operates, in addition to complying with norms and ethical and integrity standards (Bloomfield, Brüggemann, Christensen, & Leuz, 2017; Voss, 2017).

For Yusof and Noh (2016), the objective of the IAESB and the logic of establishing HEIs have been of great use in the development of professional accountants in the world, since the International Federation of Accountants (IFAC), through the Statement of Membership Obligations (SMO), has called for the convergence of accounting standards to international standards as an attempt to reduce international differences between countries and to increase global mobility among people around the world.

2.2 Adoption of IPSAS

The International Public Sector Accounting Standards (IPSAS), published by the IPSASB (International Public Sector Accounting Standards Board), independent body of IFAC (International Federation of Accountants) (Olusegun, 2019), are a set of accounting standards to be used by government entities in all countries in the preparation of financial statements (Erin, Okoye, Modebe, & Ogundele, 2016). International organizations, such as the International Monetary Fund and the World Bank, have recommended its implementation (Adhikari & Gårseth-Nesbakk, 2016), as they are references for high quality standards and have international acceptance (Benito, Brusca, & Montesinos, 2007), capable of producing relevant financial information, used for transparency and accountability purposes (Lapsley, Mussari, & Paulsson, 2009).

The private sector was a pioneer in the process of convergence with international accounting standards, which was later adopted by the public sector (Marques, Bezerra Filho, & Caldas, 2020).

Countries that adopted IPSAS showed an improvement in the level of responsibility, transparency and reduction of corruption (Nzewi & Enuenwemba, 2020), confirming that

changing accounting standards is not only a technical issue, but also a cultural one (Manes-Rossi, Cohen, Caperchione, & Brusca, 2016).

In Brazil, the Federal Accounting Council (CFC) issued, in 2016, the NBC T SP - Conceptual Structure (NBC TSP EC), considered the first standard of convergence with international public sector accounting standards, demonstrating, at that time, the intention to adopt IPSAS (Lima & Lima, 2019).

Lima and Lima (2019) found that accountants in the Brazilian public sector are aware of the need to change public accounting to international standards, despite being a complex understanding not shared by managers, a low number of active and qualified accountants in the public sector, the plurality of accounting systems, the absence of demands for quality information from decision makers and the different cultures, geographies and economic realities throughout Brazilian territory.

Salato, Gomes and Ferreira (2022) state that, in the internal environment of organizations, difficulties in implementing IPSAS range from resistance to changes, high implementation cost, technical knowledge of accounting professionals, even the lack of technological structure. For Diniz, Silva, Santos and Martins (2015), It is necessary to train accountants and provide information and control instruments capable of meeting the requirements brought by the standards.

In recent research on the adoption of IPSAS in Brazil, several factors have been discussed that lead to the low speed of convergence in the country (Lima & Lima, 2019; Azevedo, Aquino, & Neves, 2020; Bilhim, Azevedo, & Santos, 2022). Despite more than 10 years since the beginning of convergence (2008), it is discussed that adoption may be affected by the need to adapt IT systems to changes, as well as limited time and attention of accountants have hampered efforts to effectively implement accounting policies (Lino, Aquino, & Neves, 2022; Bilhim et al., 2022).

The lack of interest of public managers associated with political pressure and the adoption of the accrual basis are the main challenges in the process of convergence of Brazilian standards to international accounting standards applied to the public sector (Marques et al., 2020).

These difficulties need to be identified and addressed before any implementation attempt in order to reduce risks during the process (Ouda, 2008).

2.3 Difficulties faced by public sector accountants in exercising their profession

Accounting as a social science seeks to affirm the transparency and reliability of information, using techniques and technologies to identify and correct possible failures (Wuerges & Borba, 2014). To achieve this, accounting activities and operations must be guided by technology (Lartey et al., 2019). The public sector accountant has been asked to adapt to a new set of techniques, in addition to demonstrating the ability to manage the impacts of imperfections in control structures (Fu, 2019).

In the current situation, the growing demand for accountability, combating fraud and errors, risk analysis and management, as well as improving accounting compliance are challenges to be faced by accounting professionals, demonstrating the urgent need to develop new preventive control instruments (Frecka, Griffin, & Stevens, 2018; Heinz, Alves, Roratto, & Dias, 2019; Novaes & Almeida, 2020).

Lack of preparation to deal with new convergence information, the lack of knowledge and constant training and the low experience of professionals on the accrual basis are factors that add to those that affect the adoption of IPSAS in Brazil (Azevedo, Lino & Diniz, 2019; Bilhim, et al., 2022).

General low levels of compliance in public administration challenge the work routine of public sector accountants (Lartey, Kong, Bah, Santosh, & Gumah, 2019), with a mechanism for monitoring and verifying the accuracy of accounting data being necessary (Everett, Neu, & Rahaman, 2007).

Therefore, preventive control emerges as a very useful tool for accounting professionals, due to its proactive ability to reduce inconsistencies and restore compliance (Lartey et al., 2019; Medeiros & Demo, 2020), allowing monitoring of functions - administrative, legal, budgetary, accounting, financial and assets - in search of the best results, being an important source of information for decision making (Garcia, Mello, & Resende, 2013), which contributes to the consolidation of a more conservative accounting policy and better levels of controls (Adedeji & Olubodun, 2018).

In the public sector, budgetary and financial planning that is close to reality is necessary, both in forecasting revenue and in fixing expenditure, as they are central functions of the budget (Williams & Calabrese, 2016). When executing public expenditure, for example, this is the moment when the accountant faces a universe of bureaucratic compliance procedures, established by relevant legislation. For Chengyin (2019) it is the opportunity to use a modern management and technology standard, guided by standards, aiming to reduce costs, in order to solve irrational spending problems and improve the quality and efficiency of administrative processes.

In the field of modern governance, public sector accountants are increasingly required, for improving the quality and reliability of accounting information. For this to happen, an effective internal control system is necessary, key element in risk management and essential in compliance processes and consistency of accounting information (Eulerich, Theis, Velte, & Stiglbauer, 2013). This does not mean that effectiveness can extend into subsequent years, as new risks are emerging along with an increasing scope of organizations' responsibilities (Farrar, Hausserman, & Rennie, 2018). It is necessary for the public administration to make use of tools capable of offering a periodic risk assessment (Lokanan, 2015).

Regarding the relational aspects of accountants with their subordinates, authentic leadership has been reducing the difficulties faced by accountants within their team, being able to strengthen the commitment of its employees and, at the same time, reduce stress, conflicts and/or intentions to leave the team. Authentic leadership is a leadership style that promotes positive psychological capabilities and a positive ethical climate, being known by public sector accountants as a detail-oriented occupation (Kalay, Brender & Kantor, 2018).

In view of the above, in order to meet the objective of this research, Table 1 briefly presents 24 difficulties faced by public sector accountants extracted from the literature and capable of being grouped into factors, making it possible to form the constructs of the study.

Table 1 Difficulties faced by public sector accountants researched in the literature

N	Difficulties	Sources of literature
1	Need for training	The accounting convergence process has changed the profile of accountants and required greater training from accountants (Bosco & Carvalho, 2017; Azevedo, et al., 2019; Bilhim, et al., 2022; Marcelino & Gonçalves 2021).

2	Non-participation in strategic meetings	If the accountant is not called into meetings to provide strategic information, his/her performance decreases (Boscof & Carvalho, 2017).
3	Lack of skills and personal attributes of the accountant	The accountant's personal skills and attributes are often more important than accounting theories and techniques (Ahadiat & Martin, 2015).
4	Lack of ability to work under pressure	The accountant's ability to work under pressure is often more important than accounting knowledge (Ahadiat & Martin, 2015).
5	Lack of ability to interpret and implement international standards	It is necessary to train professional accountants who are effectively capable of interpreting and implementing international accounting standards (Crawford, et al., 2014).
6	Lack of professional experience	Experience favors accountants' professional judgment and not just their technical skills (Rasouli, et al., 2015).
7	Lack of adaptation to accounting standards	The public accountant has been required to adapt to a new set of techniques that may be able to manage the impacts of imperfections in control structures (Fu, 2018).
8	Lack of implementation of preventive controls	New preventive control instruments to improve compliance and meet the growing demand for accountability (Frecka et al., 2018).
9	Failure to use technology prevents the identification and correction of possible failures	The transparency and reliability of accounting information occurs with the use of techniques and technologies that can identify and correct possible errors (Wuerges & Borba, 2014).
10	Accounting not driven by technology	Accounting activities and operations must be technology-driven (Wuerges & Borba, 2014).
11	The lack of an effective preventive internal control system impedes risk management and compliance with accounting acts and facts	An effective internal control system is considered a key element in risk management and a practical component of compliance (Eulerich et al., 2013).
12	Periodic lack of risk assessment	It is necessary for public administration to make use of tools that offer periodic risk assessment (Lokanan, 2015).
13	Lack of compliance at a level compatible with the complexity of the body and other indicators	Overall compliance levels in the public sector are low compared to other performance indicators such as risk management (Lartey et al., 2019).
14	Lack of segregation of functions in the sectors	Segregation of functions is essential for public administration (Matei & Drumasu, 2015), as it is a preventive control procedure, used before errors and irregularities occur (Ter Bogt & Tillema, 2016; Adedeji & Olubodun, 2018).
15	Inefficiency in administrative processes	A modern management and technology standard is required, guided by standards and aimed at reducing costs, in order to solve irrational spending problems and improve the quality and

		efficiency of administrative processes (Chengyin, 2019).
16	Expenses incurred without prior commitment	When budgeting the expenditure, it appears that one of the most common errors made by accounting is the expenditure being carried out without prior commitment (Araújo, 2019).
17	Illegal order from superior	The unethical behavior of a superior with the public accountant (Alleyne et al., 2018).
18	Lack of implementation of a Code of Ethics	Implementing a supportive ethical culture within the organization helps improve attitudes and encourage public accountants to report questionable acts (Alleyne et al., 2018).
19	Lack of training plan, aligned with the organization's skills management	It is understood that training is one of the main ways to make employees more productive and make them grow professionally (Méndez & Sepúlveda, 2016).
20	Lack of training compatible with the complexity and responsibilities of accountants	Training is one of the measures that can reduce the negative effects caused by accountant job turnover (Azevedo et al., 2019).
21	Financial statements with inconsistent information about accounting depreciation and its adopted criteria	It is essential that accountants are proactive, with alternatives to improve information capacity, providing an accounting statement that portrays reality, despite all the existing difficulties, for example, regarding the inevitable process of accounting depreciation (Szüster et al., 2005).
22	Financial statements with inconsistent information about the accounting treatment in the revaluation of assets	It is important that accountants look for alternatives aimed at improving and perfecting the revaluation of assets that will be evidenced in the financial statements (Szüster et al., 2005).
23	Lack of budgetary and financial planning that supports budgetary and financial execution	In all organizations, budgets are plans that reveal objectives established by decision makers, such as how the organization will obtain resources and how it will use those resources to achieve goals. To achieve this, budgetary and financial planning that is close to reality is necessary (Williams & Calabrese, 2016).
24	Lack of a type of leadership that best suits one's team	A leadership style that promotes favorable psychological capabilities and a positive ethical climate has reduced the difficulties faced by accountants within their teams, making them capable of strengthening the commitment of their subordinates and, at the same time, reduce stress and intentions of not being part of the team (Kalay at al., 2018).

3 Method adopted

To achieve the objective of this research, we adopted a quantitative, exploratory approach, with cross-sectional and primary data (Hair, Black, Babin, Anderson, & Tatham, 2009). The methodological model was built considering the aspects and particularities of public accountants' difficulties, using world scientific literature as a basis, applying data triangulated by the theoretical framework, questionnaire and statistical methods.

The object of study was the perception of public accountants under the aegis of convergence with international accounting standards (IPSAS), whose target population, chosen due to the common characteristic presented, was composed of a sample of public accountants from the Federal Executive Branch of all Brazilian states. Furthermore, we chose to use non-probability sampling for accessibility.

It is worth clarifying that the option for accountants, linked to the Federal Executive Branch, was motivated by similar characteristics inherent to current accounting in the respective bodies, such as specific manuals and rules, job plan and salaries, deadlines for applying asset accounting procedures.

To carry out data collection, we created a questionnaire with 33 questions, divided into three parts, the first being a question of control; in the second we used 24 questions based on the difficulties faced by public accountants, identified in the literature review; and, in the third part, we inserted 8 questions characterizing the respondent.

We transformed the 24 questions (2nd part of the questionnaire) into positively directed statements, accompanied by a Likert Scale, which ranged from completely disagree (1) to completely agree (5). For each statement, the respondent declared their level of agreement.

Before applying the questionnaire, we carried out a pre-test, in a controlled sample, with 21 public accountants from 15 Brazilian states, whose participants validated the statements in the questionnaire.

The questionnaire was applied between March and June 2020, using the Google Forms platform, whose online access link was sent via email to accountants belonging to the public administration staff of the Federal Executive Branch.

After collecting and consolidating the data, we used the statistical method of sample characterization, descriptive statistics and exploratory factor analysis. The research results were processed in the Stata 15 software tool.

Data variability was guaranteed by the use of descriptive statistics, which allowed checking the behavior of the mean, standard deviation, median and the variation in respondents' perceptions for each variable investigated.

To validate the sample, we used the Bartlett's test that examined the presence of correlations between the indicators (affirmative) and the "Kaiser-Meyer-Olkin (KMO)" test. The reliability of the results was verified using the Cronbach's alpha statistical tool (Table 2).

Table 2 Factors (grouping of questions)

Indicator (Difficulties)	Factor	Cronbach's alpha
Questions 2, 3, 6, 8, 7, 9, 20	(1) Professional Training	0.88
Questions 23, 22, 24, 25	(2) Leadership and Professional Performance	0.85
Questions 17, 18, 16, 13, 21	(3) Common risks and errors	0.78
Questions 11, 19, 10, 15	(4) Accounting and Technological Management	0.84

Questions 14, 12, 5 and 4	(5) Compliance	0.68
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The results of the exploratory factor analysis method demonstrated adequate quality levels, contributing as an instrument to evaluate the perception of public sector accountants regarding the difficulties in the profession, which made it possible to form 5 factors that represent the 24 indicators with explanatory power of 47% of the total variance.

4 Analysis and Discussion of Results

4.1 Descriptive statistics of indicators

Table 3 Descriptive statistics of indicators

Indicator (Proxies)	Mean	Standard Deviation	Percentile 25	Median	Percentile 75
Q2 - Need for training	4.44	0.93	4.00	5.00	5.00
Q3 - Non-participation in strategic meetings	4.14	1.07	4.00	4.00	5.00
Q4 - Lack of skills and personal attributes of the accountant	3.67	1.27	3.00	4.00	5.00
Q5 - Lack of ability to work under pressure	2.96	1.35	2.00	3.00	4.00
Q6 - Lack of ability to interpret and implement international standards	4.31	1.05	4.00	5.00	5.00
Q7 - Lack of professional experience	3.79	1.21	3.00	4.00	5.00
Q8 - Lack of adaptation to accounting standards	4.04	1.13	4.00	4.00	5.00
Q9 - Lack of implementation of preventive controls	4.21	1.04	4.00	5.00	5.00
Q10 - Failure to use technology prevents the identification and correction of possible failures	4.12	1.05	4.00	4.00	5.00
Q11 - Non-technology-driven accounting	4.19	0.99	4.00	4.00	5.00
Q12 - The lack of an effective preventive internal control system impedes risk management and compliance with accounting acts and facts	4.21	1.08	4.00	5.00	5.00
Q13 - Periodic lack of risk assessment	4.00	1.13	4.00	4.00	5.00
Q14 - Lack of compliance at a level compatible with the complexity of the body and other indicators	3.47	1.14	3.00	4.00	4.00
Q15 - Lack of segregation of duties in the sectors	4.37	1.08	4.00	5.00	5.00
Q16 - Inefficiency in administrative processes	3.93	1.05	4.00	4.00	5.00

Q17 - Expenses incurred without prior commitment	3.30	1.52	2.00	4.00	5.00
Q18 - Illegal order from hierarchical superior	3.62	1.39	2.00	4.00	5.00
Q19 - Lack of implementation of a Code of Ethics	4.05	1.02	4.00	4.00	5.00
Q20 - Lack of training plan, aligned with the organization's skills management	4.38	0.98	4.00	5.00	5.00
Q21 - Lack of training compatible with the complexity and responsibilities of accountants	3.46	1.25	2.00	4.00	4.00
Q22 - Financial statements with inconsistent information about accounting depreciation and its adopted criteria	4.11	1.16	4.00	5.00	5.00
Q23 - Financial statements with inconsistent information about the accounting treatment in the revaluation of assets	4.18	1.04	4.00	4.00	5.00
Q24 - Lack of budgetary and financial planning that supports budgetary and financial execution	4.02	1.18	3.00	4.00	5.00
Q25 - Lack of a type of leadership that best suits one's team	4.18	1.02	4.00	4.00	5.00

Source: Authors' own elaboration based on research data.

Analyzing the main results presented in Table 3, it is possible to infer that the indicators **Q2 - Need for training and Q20 - Lack of training plan, aligned with the organization's skills management**, obtained the two highest means among the indicators, demonstrating a high level of convergence among respondents. This fact can be explained based on the findings by Boscov and Carvalho (2017), when they found that the implementation of the accounting convergence process changed the professional profile of the accountant, increasing their need for training. In that same sense, Marcelino and Gonçalves (2021), in a previous study, corroborate these results, showing that 100% of public accountants highlighted the importance of training and courses.

Q15 - Lack of segregation of duties in the sectors - presented the third highest average, an understanding supported by the findings of research by Ter Bogt and Tillema (2016), when realizing the relevance of implementing segregation of duties between individuals, as a form of preventive control.

At the other end, the indicators with the lowest means were **Q5 - Lack of ability to work under pressure**, corroborating with studies by Ahadiat and Martin (2015), when they found that the ability to work in pressure situations is the second main skill of public accountants. The other low mean was **Q17 - Expenses incurred without prior commitment**. In the perception of accountants, when asked, more disagreed than agreed with this question, implying ratifying the need for coherence with Brazilian financial law legislation.

4.2 Exploratory factor analysis

For the purpose of validating the sample and exploratory factor analysis, we used the Bartlett’s test that examines the presence of correlations between the indicators (affirmative) and the “Kaiser-Meyer-Olkin (KMO)” test.

Table 4 Result of the KMO and Bartlett’s sphericity test

Kaiser-Meyer-Olkin	0.93
Bartlett's Chi-square	2306.33
gl	276
p-value	0.00***

Note: *** Significant at the 1% level.

Source: Authors’ own elaboration based on research data.

Analyzing Table 4, in relation to the Bartlett’s test, we verified a p-value (significance) of 0.00, that is, there was the presence of correlations between the variables. Regarding the “Kaiser-Meyer-Olkin (KMO)” test, the KMO statistic estimated a value of 0.93. Therefore, these measures suggest that the set of indicators (correlation matrix) is suitable for use in exploratory factor analysis.

4.2.1 Descriptive statistics of the factors

Table 5 presents the descriptive statistics of the constructs created from the factor analysis.

Table 5 Descriptive statistics of the factors

Factors	Mean	Standard Deviation	Percentile 25	Median	Percentile 75
Professional qualification	4.19	0.82	1.14	4.43	4.71
Leadership and Professional Performance	4.12	0.92	1.00	4.25	4.75
Common risks and mistakes	3.66	0.93	1.20	3.80	4.40
Accounting and Technological Management	4.18	0.85	1.00	4.25	4.75
Compliance	3.58	0.87	1.25	3.75	4.25

Source: Authors’ own elaboration based on research data.

From the results in Table 5, it is possible to see that 3 of the 5 factors had a mean above 4.00, with a small standard deviation, that is, below 1, therefore, close to the mean, characterizing a homogeneous sample. It is also possible to verify that 2 factors had means greater than 3 and less than 4, with standard deviation below 1, also resulting in a homogeneous sample. Regarding the “**Professional Training**” factors, around 50% of the respondents, those agreed more than disagreed or totally agreed, presenting a Median of 4.43. This suggests, in their perception, the importance of professional updating and training.

When evaluating the factors **“Leadership and Performance”** and **“Accounting and Technological Management”** the mean was 4.12 and 4.18, respectively, with 50% responding that they agree more than disagree or completely agree, indicating the same value for the median, that is, 4.75. It is noted that the factors with the lowest averages were **“Common risks and errors”** and **“Compliance”**, that is, in the opinion of the respondents, the perception was between "Indifferent" and "More agree than disagree", and it can be seen from the 25th percentile that 42 of the 169 respondents totally disagreed.

Table 6 presents the mean of the constructs for each sample characterization factor accompanied by the comparison of the differences in the mean of the factors. The statistics used were single-factor Analysis of Variance (ANOVA) and Tukey’s procedure, applied for multiple comparisons.

In general, using the single-factor ANOVA statistics, with the exception of the variables **“Gender”** and **“Position”**, all other variables that characterize the sample exposed differences in mean values between the groups, as follows:

- Age group - differences were evident in all constructs for respondents over 60 years old;
- Education - those with higher education have a lower mean in the constructs “Professional Training”, “Leadership and Professional Performance” and “Accounting and Technological Management”;
- Income - those who earn more than 15 thousand, present a different opinion in the constructs “Leadership and Professional Performance”, “Accounting and Technological Management” and “Accounting Compliance”;
- Ties - the eleven respondents classified as “other” also had a lower mean than the others; and finally,
- Professionals with more than 30 years’ service - differ in opinion on all constructs.

Table 6 Comparison of means – Single-factor ANOVA and Tukey procedure

Variable	Description	Professional qualification	Leadership and professional	Common risks and mistakes	Accounting and Technologic	Accounting Compliance
Gender	Female	4.20	4.19	3.69	4.23	3.53
	Male	4.18	4.07	3.64	4.15	3.62
Age Group (a)	21 to 30 years old	4.39	4.54	3.69	4.39	3.72
	31 to 40 years old	4.27	4.15	3.69	4.26	3.63
	41 to 50 years old	4.32	4.25	3.93	4.32	3.78
	51 to 60 years old	3.84	3.75**	3.39	3.92	3.17*
	Over 60 years old	3.06**	3.11**	2.66***	2.71***	2.71**
	Education	Higher education	3.47*	3.41***	3.24	3.27***
	Postgraduate/Specialization	4.33	4.30	3.84	4.36	3.66
	Master’s degree	4.05	4.08	3.56	4.12	3.54
	Doctorate degree	4.73	3.63	3.18	4.13	3.47
Income (a)	BRL 1,500.00 to BRL 3,000.00	4.11	4.31	3.50	3.69	4.00

	BRL 3,001.00 to BRL 5,500.00	4.26	4.22	3.90	4.14	3.34
	BRL 5,501.00 to BRL 8,500.00	4.24	4.27	3.74	4.33	3.62
	BRL 8,501.00 to BRL 11,500.00	4.21	4.07	3.62	4.25	3.73
	BRL 11,501.00 to BRL 15,000.00	4.21	3.72	3.75	4.28	3.78
	Above BRL 15,001.00	3.80	3.48**	3.09	3.36***	3.05*
Professional ties (a)	Effective Server	4.23	4.19	3.72	4.26	3.63
	Temporary Server	4.04	4.54	4.06	4.14	3.89
	Others	3.64**	2.95***	2.56***	3.18***	2.68***
Leadership position?	No	4.12	4.04	3.63	4.16	3.52
	Yes	4.30	4.25	3.70	4.22	3.67
Service time (a)	Up to 5 years	4.35	4.43	3.85	4.36	3.90
	5 to 10 years	4.16	4.10	3.68	4.23	3.50
	10 to 15 years	4.26	4.18	3.60	4.26	3.69
	15 to 20 years	4.44	4.25	3.77	4.33	3.69
	20 to 25 years	4.43	4.25	4.09	4.43	3.68
	25 to 30 years	4.50	4.33	3.97	4.25	3.88
	Over 30 years old	2.80***	2.78***	2.55***	2.41***	2.41***
Grand total		4.19	4.12	3.66	4.18	3.58

Note:*, ** and *** Significant at the level of 1%, 5% and 10% respectively; (a) Significant difference at the level of up to 10% by single-factor ANOVA test.

Source: Authors' own elaboration based on research data.

4.2.2 Result of the factorial model

We noticed, in Table 7, that the factor analysis was carried out, simultaneously, through a rational combination of variables, extracting five factors that explained 47% of the total variance. Factors 1 and 2, with 12% each, were individually the most significant, explaining most of the total variance, followed by, in order of magnitude (variance explained), by factors 3 (9%), 4 (8%) and 5 (6%).

Table 7 Grouping of indicators into factors

Indicator	Factor				
	1	2	3	4	5
Q2 - Need for training	0.74				
Q6 - Lack of ability to interpret and implement international standards	0.68				
Q8 - Lack of adaptation to accounting standards	0.63				
Q9 - Lack of implementation of preventive controls	0.60				
Q20 - Lack of training plan, aligned with the organization's skills management	0.49				
Q3 - Non-participation in strategic meetings	0.46				
Q7 - Lack of professional experience	0.44				

Q23 - Financial statements with inconsistent information about the accounting treatment in the revaluation of assets	0.73				
Q22 - Financial statements with inconsistent information about accounting depreciation and its adopted criteria	0.67				
Q24 - Lack of budget and financial planning that supports budget and financial execution	0.53				
Q25 - Lack of a type of leadership that best suits one's team	0.52				
Q17 - Expenses incurred without prior commitment	0.79				
Q18 - Illegal order from hierarchical superior	0.59				
Q16 - Inefficiency in administrative processes	0.43				
Q13 - Periodic lack of risk assessment	0.37				
Q21 - Lack of training compatible with the complexity and responsibilities of accountants	0.34				
Q11 - Non-technology-driven accounting	0.61				
Q19 - Lack of implementation of a Code of Ethics	0.50				
Q10 - Failure to use technology prevents the identification and correction of possible failures	0.50				
Q15 - Lack of segregation of functions in the sectors	0.46				
Q14 - Lack of compliance at a level compatible with the complexity of the body and other indicators				0.51	
Q12 - The lack of an effective preventive internal control system impedes risk management and compliance with accounting acts and facts				0.47	
Q5 - Lack of ability to work under pressure				0.42	
Q4 - Lack of skills and personal attributes of the accountant				0.35	
% Variance Explained	12%	12%	9%	8%	6%
% Accumulated Variance	12%	24%	34%	41%	47%

Source: Authors' own elaboration based on research data.

Analyzing each factor individually, it is clear that the first factor **(F1) "Professional Training"**, with 12% of the variance explained, it was considered one of the most important in clarifying the difficulties faced by accountants in adopting the new converged standards (NBC TSP) in Brazil, as the results presented suggest that the need for qualification expressed by these professionals is directly related to the process of convergence of norms with international accounting standards (IPSAS). This fact has required accountants to continually improve their interpretation of each accounting phenomenon, in addition to the ability to produce useful, timely and reliable responses for accounting users. In previous research Boscov and Carvalho (2017) reinforced this understanding, when they found that the level of training of accounting professionals did not keep up with the complexity of the accounting change process.

The second factor **(F2) "Leadership and Professional Performance"** also obtained 12% of the explained variance. Suggesting that professional performance is directly related to leadership style, in line with the findings by Kalay et al., (2018) when they found that an environment of dialogue, transparency and trust, helps accounting professionals

to better deal with challenging situations, with less uncertainty and conflicts. Furthermore, a psychological bond is created between employees and the organization, giving them a feeling of stability and security, making them more resistant to pressures in the workplace.

The third factor (**F3**) “*Common risks and errors*”, despite obtaining 9% of the variable explained, makes it possible to infer the high degree of responsibilities of the public sector accountant, and that facing such difficulties depends, increasingly, the ability to analyze and manage risks, in addition to the implementation of efficient preventive internal control mechanisms, by these professionals. The researched literature also agrees with the indicated result, by presenting evidence that the risks of common errors, day-to-day activities, are directly related to the lack of training of public sector accountants (Heinz et al., 2019; Azevedo et al., 2019; Bilhim, et al., 2022).

In the fourth factor (**F4**) “*Accounting and Technological Management*”, it is possible to infer that accountants understand how important technology-driven accounting management is. A fact that may be related to the phenomenon of globalization, whether in technological advances or in the pressing need to adopt international accounting standards. This finding corroborates the results Chengyin (2019), Eulerich et al. (2013) and Wuerges and Borba (2014), in the sense that public sector accountants must perform their technology-driven activities with the aim of managing risks, reduce costs and improve the quality and efficiency of administrative processes.

The factor (**F5**), concerning “*Compliance*”, demonstrated the least impact among the difficulties in the accounting profession. This may be related to the fact that the Federal Executive Branch carries out budget execution, financial and patrimonial through the Federal Government's Integrated Financial Administration System – SIAFI, which includes an important internal control tool - the “Management Record Compliance”, having the ability to segregate functions and reduce the risk of errors and fraud. The result of this factor is in line with those by Lartey et al. (2019) and by Garcia et al. (2013), in the sense that the results of general levels of compliance verified in the public sector are still low.

It can be seen, after the analyses, that there are still many difficulties and challenges for the full adoption of IPSAS in the Brazilian public sector. It is imagined that, if the context of federal accountants demonstrates a reality of obstacles and difficulties, how could this situation not be the case with the accountants of subnational entities (states and municipalities)? The present study makes this reflection possible, providing support for the implementation of actions by the competent authorities (CFC, control bodies, academia, public managers, etc.), in order to seek solutions together with accountants to change the scenario.

5 FINAL CONSIDERATIONS

The aim of this research was to identify, group and analyze the main factors associated with the difficulties faced by accountants in the public sector of the Federal Executive Branch in Brazil. To this end, we identified 24 variables in the literature that make it difficult to practice the profession, given the adoption of IPSAS in Brazil.

We observed that the analysis of each variable, in isolation, would imply a high degree of complexity, therefore, we carried out an exploratory factor analysis, reducing the number of variables into factors, enabling identification and understanding. Analysis of the results allowed responding to the research problem and achieving the proposed objective.

The descriptive results pointed to the inefficient training of the accountants surveyed as the main difficulty, given the new changes in Brazilian public accounting. Furthermore, of the 24 difficulties raised in the literature, 21 presented a significant heterogeneity of opinions.

Regarding the grouping results, the factorial structure developed showed that there is no preponderant factor that is capable of explaining all the difficulties, that is, all 5 factors formed contributed concomitantly. The “Professional Training” factor represented 29% of the total variables, becoming the most important in the accountants’ perception to clarify their difficulties.

In practical terms, this study contributes to debate and reflection on the topic in academia, also assists in the formulation and implementation of public policies, promoting training and qualification programs for different groups of users and professionals. Another contribution is the dissemination of good practices by accounting profession regulatory bodies and control bodies, which may result in the provision of quality public services for society.

It is suggested that future research includes or excludes new variables and identifies new factors. The values obtained by the factorial, for example, can be used in a regression, explaining the general perception of difficulty. It is also suggested that future studies can identify, systematize and group the difficulties in the profession of accountants in the public sector of the state executive power, throughout the Brazilian territory. Another research suggestion could be to carry out a systematic mapping that identifies and associates, in factors, the main difficulties in the profession of accountants in the private sector.

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