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TRANSPARENCY OF FEDERAL AUTONOMOUS SOCIAL SERVICES: AN ASSESSMENT OF RELIABILITY OF FINANCIAL STATEMENTS BASED ON THE NEWCOMB-BENFORD LAW

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ABSTRACT

The objective of this paper is to evaluate the reliability of the financial statements (the balance sheet and the result account of the income statement) presented by autonomous social services. The prescriptions of the Newcomb-Benford Law (NBL) were used as a method for indirect evaluation. The hypothesis that the financial statements of the selected entities (Senai, Sesi, Senac, Sesc) do not present discrepancies with the NBL prescriptions was not confirmed for almost all selected cases, compromising the reliability of the statements.

Keywords: transparency; autonomous social services, financial statements; Newcomb-Benford Law.

JEL: H11; H83; M42.

1. INTRODUCTION

Transparency in the management of resources and public entities, in its most diverse meanings, is a primary requirement of any representative democratic system. The providing, made by society, of such resources to common well-being application constitutes the center of necessity of knowledge of the way they were used and the outcome of the allocation.

Brazilian public finances, however, present recurrent and persistent cases of budgetary-financial opacity and low fiscal transparency, including large parafiscality and relevant extrabudgetary operations, as a counterpoint to what prescribe the literature of the area and the best international references.

In certain cases, the inherent characteristics of the resources or entities that managed them contribute to the worsening of the scenario. This is the case of autonomous social services (SSA), a kind of non-profit extrabudgetary institution with highly bureaucratic insulation and relevant parafiscal resources. These entities present institutional weaknesses related to *ex-ante*

transparency, related to the absence of inclusion in the budget process (VIEIRA, 2018), and *ex-post*, related to the presentation of accountability and reliable accounting information that meet the qualitative characteristics of a general-purpose accounting report (relevance, reliable representation, comprehension, timing, comparability, and verifiability).

The objective of this paper is to evaluate the reliability of the financial statements (*ex-post* transparency) presented by selected federal autonomous social services.

Reliability is a concept that refers to the full representation of information in the sense of being complete and neutral and being free of materially relevant mistakes, constituting a qualitative characteristic of a general-purpose report, of which the financial statements are examples. For this paper, reliability was tested indirectly using the Newcomb-Benford Law (NBL).

NBL demonstrates a nonlinear trend towards digit distribution in several sources of real cases other than expected homogeneity with random data. Without homogeneity, this distribution shows that digit 1 has a 30% chance of appearing in a set of statistical data while larger values are less likely to appear.

The four largest federal autonomous social services were selected by materiality of managed resources: Senac, Senai, Sesc and Sesi and two financial statements were examined: the balance sheet and the income statement.

The hypothesis is that the financial statements of the highlighted federal autonomous social services do not present discrepancies with the NBL prescriptions. Compliance with this paradigm may constitute a proxy for reliability of the accounting and financial information presented. The failure to comply, however, is a strong indication that this accounting statement is not reliable, and may be incomplete or contain material mistakes, and even be a fraud.

Regarding this point, it is important to highlight that only with the use of NBL it is not possible to affirm with absolute certainty that there is necessarily fraud in the presentation of data. It implies the need to deepen the analysis, something that may not be available at the academic level, but only to accounting-financial auditors — with access to microdata, records, and accounting books of the entity. Moreover, NBL compliance also does not imply that there was no fraud.

This paper is divided into four sections. In addition to this introduction, section two presents theoretical, legal, and analytical references related to autonomous social services and to the financial transparency of them, including considerations about the accounting model

applicable to these entities: public accounting standards. In section three, a general analysis of the balance sheets and the income statement of two financial years, 2018 and 2019, is made to the four entities selected. Lastly, the final considerations are in section four.

Suggestions for improvement are presented for the important points identified.

In the end, it is expected that, more than a conclusive and definitive assessment of the reliability of the financial statements, it could be expanded the reflection on the need for financial transparency about compulsorily collected public funds and insulated entities, in addition to starting a field of research on the subject

This paper is particularly relevant in the current context of new disorganization of public finances with prominent fiscal crisis.

2. AUTONOMOUS SOCIAL SERVICES AND FINANCIAL TRANSPARENCY

2.1. Characteristics of Autonomous Social Services

Brazilian autonomous social services (SSA) are parastate collaborative entities established by law and non-profit institutions. They do not fall as entities that are part of direct or indirect federal administration, but they can collect public revenue and manage it on behalf of the Government or receive budgetary resources from a public agency or entity.

At the federal level, they can be divided between two types: a) those maintained by budget appropriations directly from the Federal General Budget (OGU); and b) those that collect parafiscal contributions, incidents on the employers' payroll, based on articles 149 and 240 of the Federal Constitution, namely “Sistema S”, as presented in figure 1.

Figure 1. Types of SSA Regarding the Source of Managed Resources

Budget Allocation	►	Brazilian Export Promotion Agency (ApexBrasil) Brazilian Industrial Development Agency (ABDI) Association of Social Pioneers (APS) National Agency for Technical Assistance and Rural Extension (Anater)
Collection of Parafiscal Contribution	►	Social Service of Industry (Sesi) National Industrial Learning Service (Senai) Social Service of Trade (Sesc) National Trade Learning Service (Senac) Brazilian Support Service for Micro and Small Enterprises (Sebrae) National Rural Learning Service (Senar) Social Service of Transportation (Sest) National Transportation Learning Service (Senat) National Cooperative Learning Service (Sescoop)

Source: prepared by the author.

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These entities, either by the source of revenue (collection or budget allocation designated) or by the nature of the expenditure, since they provide services, for example, in social assistance, cultural and professional qualification, perform public tasks typically, even if legally constituted under the private nature.

Despite managing public resources and having a considerable set of characteristics of a public nature (immunity on taxes on property, income, and services, need for selection process for employee entry, submission to ministerial supervision and internal and external controls, for example), these entities do not submit to the provisions of the Fiscal Responsibility Law. Similarly, only some of them used the prescriptions of Law 4,320/1964 regarding the accounting regime, without, however, any submission to the budget regime provided there or to any rite of general and unrestricted budgetary transparency (VIEIRA, 2018).

The budgets for the 2019 federal SSA fiscal year, approved by the respective supervisory ministries, are presented in Table 1. It is possible to observe that the four largest entities, all members of the Sistema S group, account for 71.17% of the overall sum.

Table 1. Federal Autonomous Social Services Budget - Fiscal Year 2019

	Autonomous social services	Budget		
1	Sesi	**7,856,699,890.78**	**21.71%**	(1)
2	Sesc	**7,029,173,307.00**	**19.42%**	(2)
3	Senai	**5,902,501,839.41**	**16.31%**	(3)
4	Senac	**4,968,427,500.00**	**13.73%**	(4)
5	Sebrae	4,835,162,410.00	13.36%	(5)
6	Senar	1,231,369,253.00	3.40%	(6)
7	APS	1,088,164,000.00	3.01%	(7)
8	Sest	1,002,102,110.74	2.77%	(8)
9	ApexBrasil	795,618,000.00	2.20%	(9)
10	Senat	761,910,119.92	2.11%	(10)
11	Sescoop	553,880,005.93	1.53%	(11)
12	ABDI	169,641,186.82	0.47%	(12)
13	Anater	-	-	(13)
	Total	**36,194,649,623.60**	**100.00%**	

Source: prepared by the author.
Notes: (1) Ordinance No 2.124 of the Ministry of Citizenship, November 4, 2019; (2) Ordinance No 2.123 of the Ministry of Citizenship, November 4, 2019; (3) Ordinance No 1.221 of the Ministry of Labor and Employment, December 28, 2018; (4) Ordinance No 6.201 of the Ministry of Economy, March 4, 2020; (5) https://transparencia.sebrae.com.br/or%C3%A7amentos, accessed on August 21, 2020; (6) Ordinance No 8.820 of the Ministry of Economy, November 4, 2019; (7) http://www.sarah.br/media/3744/execucao_orcamentaria_2019.pdf, accessed on August 21, 2020; (8) Ordinance No 2.122 of the Ministry of Citizenship, of November 4, 2019; (9) Ordinance No 1.015 of the Ministry of Foreign Affairs, December 13, 2018; (10) Ordinance No 8.837 of the Ministry of Economy, November 4, 2019; (11) Ordinance No 1.219 of the Ministry of Labor and Employment, December 28, 2018; (12) Ordinance No 2.169 of the Ministry of Economy, September 13, 2019; (13) No budget has been identified for this SSA.

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They are managed with a high degree of autonomy and independence, under the constant risk of "bureaucratic isolation" (NUNES, 1997) and on the margins of greater political and social control (VIEIRA, 2018). From a fiscal point of view, they constitute a severe case of parafiscality (CTF, 2014; VIEIRA, 2018), completely absent from the general allocation process. They are not included in the annual budget laws (LOA) or any other documents that are part of the budget process, except for a brief mention of the need for electronic disclosure of a limited set of information in the annual budget guidelines laws[1].

The institutional framework in which they were inserted contributes to the generation of rent-seeking behaviors (BUCHANAN & TULLOCK, 1999), distributive conflicts, welfare costs to citizens, microeconomic inefficiency due to the unproductive allocation of production factors and even macroeconomic problems (VIEIRA, 2018).

2.2. Financial Transparency (*ex-post*)

Until 2007, the federal SSAs did not have a single accounting standard. The representative entities of industry (Sesi, Senai) and trade (Sesc, Senac) disclosed their financial statements under the model of Act 4.3240/1964 or model of "accounting applied to the public sector". The entities most recently created (Senar, Sescoop and Sebrae, except for Sest/Senat and ABDI), for example, used the models of Act 6.404/1976 (corporate accounting) or "commercial accounting" model, as shown in figure 2.

Figure 2. SSA accounting models even before the TCU's decision

Public accounting model	Business accounting model
▼	▼
Sesi, Senai, Sesc, Senac, Sest, Senat, ABDI	Sebrae, Senar, Sescoop, APS, ApexBrasil, Anater

Source: prepared by the author.

With the setting of Resolution No 1.128/2008 (Brazilian Accounting Standard — NBC T 16.1), the Federal Accounting Council (CFC) disciplined that the model to be used by the SSA was that of accounting applied to the public sector. From this moment on, for the first time, there was an attempt to standardize the accounting model to be used by these entities.

However, in an audit carried out by the Brazilian Court of Audit (TCU) in 2015[2], it was found that, in fact, the SSAs still did not use the standards issued by the CFC or the public

[1] Act 13,898/2019 (Budget guidelines act for 2020), articles 131 and 134.
[2] Decision 699/2016-TCU Plenary, rapporteurship of the Deputy Minister Weder de Oliveira.

accounting model then prescribed, which led to the action of the Court of Accounts to deliberate by the need to adoption the standardized model.

The current position, consolidated from a set of decisions of the TCU,[3] is that the SSAs must adopted the accounting standards applied to the public sector, in accordance with the principles of public finance and fiscal transparency, which prescribe that these kinds of resources are public and have influence in fiscal policy, considering yet the International Public Sector Accounting Standards (IPSAS) converged by the CFC into NBC TSP[4].

The stabilization of the model promotes the dissemination of more complete and transparent financial information, which generates positive externalities for all users and society in general. It is not possible, however, to affirm that daily practice already reflects, in all SSAs, the new regulations, with updates from converged international standards.

2.2.1. Disclosure Characteristics of Financial Information

To meet the objectives of appropriate disclosure and presentation of accounts, general-purpose accounting reports (RCPG), of which the financial statements are part, must undergo a set of qualitative characteristics that make the information useful to users (NBC TSP-Conceptual Structure).

The qualitative characteristics of the information included in the RCPG are a) relevance, b) reliable representation, c) comprehensibility, d) timing, e) comparability and f) verifiability. For the purposes of this article, the reliable representation was highlighted as a qualitative characteristic to be studied.

Reliable representation is achieved when the representation of the phenomenon is a) complete (the omission of some information may cause the representation of the economic phenomenon or any other to be false or misleading, not being useful to users), (b) neutral (corresponds to the presentation of information without bias) and (c) free of material error (there are no errors or omissions that are individually or collectively relevant in the description of the phenomenon) as much as possible , since in practice it is not possible to be absolutely sure about this.

[3]Decision 991/2019-TCU-Plenary and 1.567/2020-TCU-Plenary, all the rapporteurship of the Deputy Minister Weder de Oliveira.
[4] Based on Article 6, "f", Decree-law 9295/1946, as amended by Act 12249/2010.

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3. EVALUATION OF THE RELIABILITY OF FINANCIAL INFORMATION

3.1. NBL Applications in Financial Irregularities

According to Varian (1972, *apud* Costa *et al.*, 2013), an important application of the NBL is given in aiding the detection of financial deviations. Costa *et al*. (2013, p. 3) highlight, in robust bibliographic reference, that several studies have shown that the NBL applies in numerical data that present invariance with respect to scale and that come from a random nature[5] and, particularly, in the context of detection of financial irregularities[6].

In Brazil, there is already a considerable number of articles and studies related to the subject[7]. Three articles were used as main references for this article. Oliveira *et al.* (2018) and Cella & Reich (2017) applied, in separate articles and differently, the NBL to Petrobras' statements. Forster (2011) applied to third sector entities.

Oliveira *et al.* (2018, p. 23) applied the NBL to Petrobras's balance sheets from 2008 to 2015, and obtained completely compatible results with good accounting practices for the 1st digit and worrying differences for the 2nd, 3rd and 4th digits. The authors examined NBL compliance based on graphical analyses of deviations and statistical tooling of z test and chi-square.

Cella & Reich (2017, p. 94) chose to apply NBL to specific accounts (suppliers, fixed assets, inventories, revenue, cost of products sold, cash and profit before taxes) extracted from Petrobras's consolidated quarterly financial information (January 2004 to June 2012), resulting in 238 observations. The authors' focus was on fraud investigation, and the accounts selected were the largest indications of red flags (alert point, control point or fraud symptom).

The data were compared to other companies listed on the BM&FBovespa corresponding to the same variables and in the same approach period. Companies from the food and beverage, electronics, industrial machinery, pulp and paper industry, oil and gas, textile, vehicles, and parts sectors were selected out of a total of 80.

[5] Costa *et al.* (2013) refer to the following authors: Hill, 1995,1996; Pinkham, 1961 and Raimi, 1969.
[6] Costa *et al.* (2013) refer to: Carslaw, 1988; Nigrini, 1996; Nigrini and Mittermaier, 1997; Watrin, Struffert and Ullmann, 2008. An important case was the use of NBL to test macroeconomic data. Rauch *et al.* (2011) carried out an analysis of the first digits of data reported to the Statistical Office of the European Union (Eurostat), building a ranking among the member countries, and noting that the country with the highest Deviation and consequently with possible suspicions of data manipulation went to Greece.
[7] Francischetti (2007), Costa (2012), Cunha & Bugarin (2014), Silva et Al. (2017), among others.

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As a result, contrary to expectations, the authors concluded that the asset followed the NBL and the suppliers presented lower discrepancy to revenue, pre-tax profit and inventories. And, in general, they agreed that fraud at Petrobras could not have been detected previously only based on the application of the NBL on the values of the elements of red flags. Therefore, according to them, the NBL applied only to the 1st digit of red flags was not efficient, emphasizing that the non-alignment with the NBL is not necessarily indicative of a proven fraud (Bonache *et al*., 2009, *apud* Cella & Reich, 2017, p. 98).

Foster (2011) applied the NBL to third sector entities (non-profit institutions). It was examined cash account data (129 observations in 2002 and 148 in 2003), banks (244 observations in 2002 and 234 in 2003), revenues (137 observations in 2003 and 144 in 2003) and expenditure (137 observations in 2002 and 144 in 2003) for the years 2002 and 2003 of 159 institutions based in the Federal District. The information was provided by the Public Prosecutor's Office of the Federal District and Territories (MPDFT) which has the legal attribution of collecting and consolidating the data.

The author concluded that the cash and bank accounts, for the two fiscal years collected, follow the NBL and that the revenue and expense accounts are compliant for the fiscal year 2003. However, it presented problems in digit 2 for revenues and digits 5, 6 and 9 for expenses in 2002. The non-conformity for expense was confirmed by the z and chi-square tests.

3.2. Analysis of Results

3.2.1. Framework for Analysis

This paper chose to adopt a hybrid structure between the approaches of Oliveira *et al.* (2018), Cella & Reich (2017) and Forster (2011).

To test the reliability of balance sheets, it was applied the NBL for the years 2018 and 2019, according to the approach of Oliveira *et al*. (2018). The NBL was applied to separate financial years, based on Forster (2011), and not to the grouping of the amounts of various financial years, as did Oliveira *et al*. (2018). Data were collected from the balance sheets for the years 2018 and 2019 of the entities and, subsequently, each digit (1st to 3rd) of the set of accounts were tested, excluding the synthetic accounts — which represent only the sum of the previous ones. Thus, in all balance sheets, current assets, non-current assets, total assets, current liabilities, non-current liabilities, and total liabilities were excluded. In certain balance sheets, total accounts of offset assets and liabilities were also excluded.

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For the assessment of the reliability of the results account of the income statement, it was used the framework by Forster (2011) who applied the NBL to specific accounts and items without, however, joining them in a single database. It means maintaining the observations for separate financial years like Cella & Reich (2017) model. Data were collected from results account presented in the income statement for the years 2018 and 2019 of all national and regional units of the selected entities (Tables 57 and 58 of Appendix 6.2). Subsequently, each digit was testing (1st to 3rd).

Data were collected manually. In none of the SSA sites it was possible to directly obtain the financial statements in electronic format that would enable their recording, to facilitate the analysis of information (Act 12.527/2011, Access to Information Act, article 8, paragraph 3, II). Not even the management report submitted to the Brazilian Court of Audit (TCU) (Act 8.443/1992) contained open information. Manual collection, besides being susceptible to errors, limits the conclusion about the results applied. This aspect could only be resolved if there was database availability on the entities.

For analysis, the four SSAs that have the largest budgets were selected, as presented in Table 1, which are: Social Service of Trade (Sesc), Social Service of Industry (Sesi), National Trade Learning Service (Senac) and National Industrial Learning Service (Senai). Coincidentally, these entities also use the government accounting model since their respective constitutions. This choice ended up being positive, because it allows to minimize the possibility that eventual findings observed are related to the possible transition of accounting models (from business to government).

After the tabulation and data preparation step, two analyses were performed: a) the deviation-based analysis between the expected frequency (p_e) and the total digit frequency of the observed balances (p_o), that is, the one prescribed by the NBL; and b) the analysis of the z and chi square tests.

The frequency distributions (p_e) for the first three digits are arranged in Table 2. It should be observed that the probabilities associated with digits 1 to 5 are higher than those of digits 6 to 9, a fact that contradicts the common sense that the occurrences of digits are associated with equiprobable events (COSTA *et al*,2013).

Table 2. Probabilities of Occurrence of the Digits According to NBL (in %)

Digits	0	1	2	3	4	5	6	7	8	9
1º	0.00	30.10	17.61	12.49	9.69	7.92	6.69	5.80	5.12	4.58
2º	11.97	11.39	10.88	10.43	10.03	9.67	9.34	9.04	8.76	8.50
3º	10.18	10.14	10.10	10.06	10.02	9.98	9.94	9.90	9.86	9.83

Source: Oliveira *et al.* (2018)

The 1st digit test is a primary test that examines the frequencies with which numbers 1 through 9 repeats in the first digits of the items in a database. This is a "macro" vision test processed from the division of the original sample into 9 potentially very large groups (CUNHA & BUGARIN, 2014). Given this characteristic, the test may not identify certain anomalies in the data, which may make it difficult to certify that there is good adherence to the NBL and make a more thorough investigation unfeasible (NIGRINI, 2012 *apud* Cunha & Bugarin, 2014, p. 18).

By analyzing the deviations, it is possible to notice, in many cases, some differences in relation to frequency distributions along the 1st to 4th digit. Generally, a variation around 5% is acceptable. Variations above this value indicate the existence of some distortion (errors, fraud or simply a difference due to the database and the analyzed period) in relation to the data considered with the reality proposed by the frequency of the NBL. Although the differences observed by deviations analysis indicate some conformity or non-conformity with the frequency distribution of NBL, it is advisable to take an additional approach through the statistical tooling of the z test and chi-square (NIGRINI, 2000 *apud* Oliveira et al., 208, p. 33), the most used in the conformity analysis of a data set with the NBL.

This is necessary because, as the amount of data or digits increases, there may be a reduction in the gap between their differences and, consequently, cover up some evidence that should be verified (OLIVEIRA *et al.*, 2018). Both tests contribute to achieving greater veracity of the results.

The z test (1) samples, for more than 20 observations, the deviation of a statistic sample in relation to a theoretical value, showing whether the actual observed proportion (p_o) of a specific digit significantly diverts from the expected proportion (p_e), that is, that prescribed by the NBL. Nigrini (2012, *apud* Cunha & Bugarin, 2014, p. 21) uses a significance level of 5% for this test. Thus, the generally acceptable critical z is 1.960, which will also be used here, and values above it indicates a strong probability of discrepancy.

$$Z = \frac{|po - pe| - \frac{1}{2n}}{\sqrt{\frac{pe(1-pe)}{n}}} \qquad (1) \qquad X^2 = \sum_{d=1}^{9} \frac{(PO - PE)^2}{PE} \qquad (2)$$

Where "n" is the number of observations and the value (1/2n) is the continuity correction term that is only used when it is less than $| p_o - p_e |$.

The chi-square test (2) compares a set of actual results (p_o) with a set of expected results (p_e), that is, those prescribed by the NBL. It aims to verify that the digits of a distribution conform to the NBL. Similarly, to the z test, it can be accepted a significance level of 5%, which corresponding to x^2 of 15.507, with a degree of freedom equal to 8 (from 1 to 9) valid for the 1st digit. For a degree of freedom equal to 9 (0 to 9) valid for the 2nd and 3rd digits, with the same significance level, the x^2 is 16.919. Values greater than this limit indicate a large discrepancy in the complete set of data.

The values of PO (PO = p_o x population) and PE (PE = p_e x population) are the observed and expected proportions multiplied by the population of all numbers evaluated.

3.2.2. Analysis of the Reliability of the Financial Situation (Balance Sheet)

Regarding the results, it should be noted that deviations in numbers may not indicate, individually, severe distortions, and may be, in a few cases — one or two — mere coincidence. Otherwise, discrepancies in the z-tests and, particularly, in the chi-square may indicate compromise of the entire database tested. In other words, it would imply a lack of credibility of the entire balance sheet.

Tables with the data processed are set out in Appendix 6.1.

For the case of Sesc, the 2019 balance sheet from the perspective of the NBL seems to be generally reliable (Tables 6, 7 and 8 of Appendix 6.1), with no substantive discrepancies in deviations or statistical tests. This, of course, does not imply peremptorily stating that the demonstration is, in fact, reliable. The 2018 Sesc balance sheet (Tables 9, 10 and 11 of Appendix 6.1), however, deserves further examination due to the alerts brought by the application of the NBL. There are strong indications that the demonstration may not be reliable, and deviations were observed in the first (numbers 1, 2, 3 and 4) and 3rd digits (numbers 4 and 5), both with changes in chi-square.

For Senac, the analysis presented for both the financial year 2018 and 2019 shows considerable discrepancies regarding NBL requirements. However, since the number of observations (19 and 20, respectively, for 2019 and 2018) related to the balances presented in the balance sheet could have influenced the result obtained, an additional analysis was made for this case.

Thus, the explanatory notes accompanying the financial statements were examined to see if it was possible to extract any additional information. Senac, however, released explanatory notes, with information that could add to the analysis, only in relation to the 2019

fiscal year. These presents, however, only two information that could be aggregated to the balance sheet and understood as analytical developments of the accounts presented. They are the items: short-term credits and provisions for contingencies.

Regarding the first case, the information presented does not allow treatment, since it was not possible to establish the relationship between the information provided and the accounting accounts disclosed in the balance sheet. In relation to the second case, the information set out in the following Table was presented.

Table 3. Provisions for Contingencies of Senac for 2019

Provisions for contingencies	Short term	Long term
Provisions for labor risks	5,658,442.24	28,522,232.20
Provisions for tax risks	583,310.38	7,721,704.66
Provisions for civil risks	2,800,216.20	14,424,702.68
Other provisions	896,497.79	16,554,251.46

Source: explanatory notes of the financial statements (p. 6-7).

The accounts can be considered details of the main account and were aggregated to the balance sheet in a total of 8 items for analysis (4 short-term accounts and 4 long-term accounts), which resulted in 27 observations instead of the 19 constants originally on the balance sheet.

The detailing slightly improves the analysis of the number of deviations (deviations in numbers 1, 2, 4, 6, 7, 8, 9 for the 1st digit in the first case and deviations in numbers 1, 2, 8 and 9 for the same 1st digit with additional observations), but does not modify the chi-square test result of this 1st digit (Tables 12 and 18 of Appendix 6.1). There are also changes in the 2nd and 3rd digits (Tables 13, 14, 15, 16, 17, 19 and 20 of Appendix 6.1).

Thus, in general, the analysis according to the NBL of the balance sheets of Senac points to possible lack of reliability for the balance sheets of 2018 (chi-square high in the 1st and 3rd digits) and 2019 (high chi-square in the 1st digit with deviations in the 2nd and 3rd digits), all these conclusions, however, with reservations due to the publication of very synthetic financial statements, which provides little data for analysis. In any case, there are indications of discrepancies that deserve specific treatment.

For the case of the 2019 Sesi balance sheet, it is possible to observe that there are relevant deviations for the numbers 1, 2, 3, and 8, without discrepancies for the z test and for the chi-square test, in the case of the 1st digit. For the 2nd digit it was also possible to observe that there are deviations relevant to the numbers 1 and 4, with a z test changed to the number 1 and a chi-square test below the limit value. And, for the 3rd digit, new relevant deviations were

identified for numbers 1 and 5, with no discrepancies for the z test and for the chi-square test (Tables 21, 22 and 23 of Appendix 6.1).

For the 2018 Sesi financial year, important deviations for numbers 1 to 3 were also identified for the 1st digit, with no discrepancies for the z test and the chi-square test. A relevant deviation was observed for the number 1, in the 2nd digit, without discrepancies for the z test and for the chi-square test. From the analysis of the deviations of frequencies of the 3rd digit of the accounts of the consolidated balance sheet of Sesi 2018 it is possible to notice discrepancies in numbers 1, 4 and 9, with changes in the z test to the number 1 one chi-square above the limit value (Tables 24, 25 and 26 of Appendix 6.1).

In general, Sesi's balance sheets deserve further examination due to the alerts brought by the NBL application. There are indications that the demonstration may not be reliable, particularly in the 2018 financial year. It is necessary to deepen the accounting information.

For the 2019 Senai balance sheet, there is a deviation relevant to the number 1 of the 1st digit, with no discrepancies for the z test and the chi-square test. For the 2nd digit, relevant deviations were observed in numbers 3, 4 and 8, with z test changed to numbers 3 and 4 and a chi-square test above the limit. The analysis, however, of the deviations of frequencies of the 3rd digit did not present non-conformities (Tables 27, 28 and 29 of Appendix 6.1).

As for the 2018 fiscal year, deviations are observed in numbers 1 and 9, with no discrepancies in the z and chi-square tests for the Senai balance sheet. For the 2nd digit, relevant deviations are observed in numbers 0, 3 and 9, with z test changed to number 0 and a qui-square test near, but below the limit. The analysis of the frequency deviations of the 3rd digit of the accounts of Senai's consolidated balance sheet of 2018 showed discrepancies in numbers 0, 6 and 7, with a z test changed to number 0 and a chi-square test near limit (Tables 30, 31 and 32 of Appendix 6.1).

In general, Senai's balance sheets deserve further examination due to the alerts given by the application of the NBL. There are indications that the statement may not be reliable. It should be clarified that this finding does not necessarily imply the occurrence of fraud, but only generates alerts for further analysis of balance sheets.

The following table summarizes the discrepancies identified. In 2018, Sesc presented four deviations in the 1st digit, with a z-test greater than 1.96 in 2 numbers of the same 1st digit and a chi-square test higher than the limit. For the 2nd digit, no deviations of any nature were

identified. In several cases, deviations appeared in up to 4 single-digit numbers — Sesi's case in 2019 with no discrepancies in statistical tests.

Table 4. Summary of Discrepancies in SSA Balance Sheets

	2018			2019		
	1st digit	*2nd digit*	*3rd digit*	*1st digit*	*2nd digit*	*3rd digit*
Sesc	4 deviations z in 2 numbers X^2	No deviations	2 deviations z in 2 numbers X^2	No deviations	No deviations	No deviations
***Senac* (*)**	4 deviations z in 1 number X^2	5 deviations z in 1 number	6 deviations z in 2 numbers X^2	4 deviations z in 1 number X^2	3 deviations	3 deviations
Sesi	3 deviations	1 deviation	3 deviations z in 1 number X^2	4 deviations	2 deviations z in 2 numbers	2 deviations
Senai	2 deviations	3 deviations z in 1 number	3 deviations z in 1 number	1 deviation	3 deviations z in2 numbers X^2	No deviations

Source: prepared by the author based on the results.

Note: (*) adjusted by the explanatory notes.

Based on the previous table, the conclusions regarding reliability can be summed up as well:

1. Sesc: probable reliability for the 2019 balance sheet (no discrepancy of any nature) and possible lack of reliability for the 2018 balance sheet (high chi-square in the 1st and 3rd digits).
2. Senac: possible lack of reliability for the 2018 (high chi-square in the 1st and 3rd digits) and 2019 (high chi-square in the 1st digit with deviations in the 2nd and 3rd digits), all these conclusions with reservations due to the small amount of data.
3. Sesi: possible lack of reliability for the 2018 and 2019 balance sheets.
4. Senai: possible lack of reliability for the 2018 and 2019 balance sheets.

Therefore, it is not possible to affirm the established hypothesis that the financial statements of the selected federal autonomous social services do not present discrepancies with the prescriptions of the LNB. Most have simple or even severe discrepancies that compromise the reliability of the information presented.

3.2.3. Analysis of the Reliability of the Results Account in the Income Statement

Several federal SSAs have instituted a profit-sharing payment program, even though they do not receive profits in the strict sense of expression or constitute themselves as companies. Companies that institution such a program make these payments based on the net

income obtained in their income statements for the year (DRE). The accounting statement equivalent to the DRE, in the accounting[8] [9] model used by the SSAs, is the statement called DVP. The purpose, therefore, is to verify whether, by the requirements of the NBL, there is any indication of manipulation of results for the purpose of favoring the payment of benefits.

Tables with the data processed are set out in Appendix 6.2.

For Sesc 2019 DVP it is possible to observe high deviations in digits 3, 4 and 5 without discrepancies in the z test and chi-square. For the 2nd digit, more deviations are observed in digits 1, 2, 3, 6 and 7, with no discrepancies in the z test and chi-square. For the 3rd digit, deviations were observed in digits 0, 1, 3, 5 and 7, with emphasis on the number 5 in the z test and without discrepancies in the chi-square test. The data seem to suggest that there are no major discrepancies related to the possible manipulation of results in the national and regional units of Sesc for the financial year 2019 (Tables 33 to 35 of Appendix 6.2).

For the 2018 financial year, the deviations of frequencies of the 1st digit of the results account disclosed in the 2018 DVP indicate deviations in digits 1, 2 and 4 without discrepancies in the z test and chi-square. For the 2nd digit, deviations are observed in the numbers 4, 5, 8 and 9 without discrepancies in the z test and chi-square. For the 3rd digit, deviations were identified in the numbers 1, 3, 6, 7, 8 and 9, with emphasis on number 6 in the z test and without discrepancies in the chi-square test. Similarly, to the previous year, the data seem to suggest that there are no major discrepancies related to the possible manipulation of results in the national and regional units of Sesc (Tables 36 to 38 of Appendix 6.2).

For the 1st digit of the results account disclosed in the 2019 Senac DVP, with the reservation of some deviations identified in numbers 2, 3, 8 and 9, no discrepancies were identified in the z test and in the chi-square test. As for the 2nd digit, although some deviations were detected in numbers 7 and 8, no discrepancies were identified in the z test and in the chi-square test. Similarly, deviations were identified in numbers 2, 3 and 7 of the 3rd digits. Therefore, the data seem to suggest that there are no major discrepancies related to the possible manipulation of results in the national and regional units of Senac for the financial year 2019 (Tables 39 to 41 of Appendix 6.2).

[8] Based on a peculiar interpretation of Law 10.101/2000 and on several favorable decisions of the TCU (Judgments 519/2014-TCU-Plenary and 3554/2014-TCU-Plenary of the rapporteurship of Minister Aroldo Cedraz).

[9] Guan *et al*. (2006; *apud* Cella & Rech, 2017, p. 92) analyzed the net income of U.S. companies in the period from 1993 to 2003, based on the NBL, and concluded that there is manipulation of results.

In general, the same conclusion was reached for Senac for the financial year of 2018, with certain deviations in specific numbers, without discrepancies in the z and chi-square tests (1st digit: numbers 1, 4 and 7; 2nd digit: numbers: 1, 3, 5, 8 and 9; 3rd digit: numbers 2, 5 and 8) (Tables 42 to 44 of Appendix 6.2).

For the case of Sesi, in both exercises and for the first three digits analyzed, with different deviations in different numbers without discrepancies in the z and chi-square tests, the data seem to suggest that there is no manipulation of results in the national and regional units (Tables 45 to 50 of Appendix 6.2).

As for Senai, for the 2019 fiscal year, deviations were identified in virtually all digit numbers, with significant z test for number z and a chi-square test higher than Limit. Therefore, the results of the Senai entity group do not converge with the NBL prescriptions (Tables 51 to 53 of Appendix 6.2).

For the 2018 fiscal year, with deviations in different numbers without discrepancies in the z and chi-square tests, the data seem to suggest that there is no manipulation of results (Tables 54 to 56 of Appendix 6.2).

The summary of the findings is presented in Table 5. In general, no discrepancies were identified in the statistical tests z and chi-square of the observations, except for Sesc (in 2018 and 2019, in the 3rd digit of both) and Senai (in 2019, in the 2nd digit, with chi-square beyond the limit). Some cases, however, present deviations in several numbers, especially Senai again in 2019, regarding the 2nd digit.

Table 5. Summary of Discrepancies in the SSA Results Account in Income Statement

	2018			**2019**		
	1st digit	*2nd digit*	*3rd digit*	*1st digit*	*2nd digit*	*3rd digit*
Sesc	3 deviations	4 deviations	6 deviations z in 1 number	3 deviations	5 deviations	6 deviations z in 1 number
Senac	3 deviations	5 deviations	3 deviations	4 deviations	2 deviations	3 deviations
Sesi	3 deviations	3 deviations	6 deviations	7 deviations	3 deviations	6 deviations
Senai	1 deviation	4 deviations	2 deviations	3 deviations	8 deviations z in 1 number X^2	3 deviations

Source: prepared by the author based on the results.

It should be noted that this analysis refers to the compilation of the results account (negative or positive) of the income statement of several autonomous regional units of the selected SSAs.

It was not possible to obtain the standardizations on how the participations in the results are paid. However, no evidence of manipulation of DVP results was identified. This may be correct and reflect reality. An additional hypothesis, however, is that the payment can be made

based on other results, such as the budget result calculated in the budget statement, or non-quantitative results.

Here again it is not possible to affirm the established hypothesis that the financial statements of the selected federal autonomous social services do not present discrepancies with the prescriptions of the LNB. Although to a less severe degree, there are deviation in all entities and exercises examined.

4. FINAL CONSIDERATIONS

Other additional findings obtained by this work are:

a) the absence of a single standard of publication of balance sheets by the SSAs, as some SSAs present the statements with more detailed information and others at an extremely synthetic level;
b) direct unavailability on the SSA websites of information on financial statements in open format, contrary to the Access to Information Act (LAI).

For the first case, the presentation of very synthetic statements interferes with the result of the analysis because the number of observations is very scarce. For the second case, manual collection, besides being susceptible to errors, limits the expansion of the analysis and the consistency and robustness of the results. The amount of observations could have been enhanced by increasing information from more financial years, if this was not of high collection cost. Both cases could be resolved by the actions of regulatory bodies that could standardize the disclosure of information and constitute databases, as the national public sector balance sheet released by the National Treasury Secretariat.

It should be noted that not only the financial statements, but also the rules that regulate participation in results have not been identified on the websites.

Among the suggestions for improvement are the need to standardize the minimum level of evidence of the balance sheet accounts and the dissemination of independent audit practices to verify these statements.

As common in academic papers, it is appropriate to suggest additional works that could be done to refine the method and conclusions. The most natural here is the expansion of the sample for more financial exercises or for the SSA universe. Testing certain accounting accounts, particularly financial availability (cash, banks, and financial investments), revenues and expenses, as made by Forster (2011), could yield interesting results. The use of the budget

result calculated in the budget information statement as a complement to the equity result calculated in the statement of DVP would be another possibility to be explored in the future.

Finally, the general purpose here was to analyze the *ex-post* transparency of highly independent entities that manage public resources compulsorily earned from the society. At no time is the social importance and services provided by the SSAs questioned.

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6. APPENDICES

6.1. Tables on Reliability Analysis of the Financial Situation (Balance Sheet)

6.1.1. Social Service of Trade (Sesc)

Table 6. 1st Digit Analysis of Balance Sheet - Sesc 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (p_o)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	48	39	36.64%	30.10%	6.54%	1.537	1.862
2	19	23	14.50%	17.60%	-3.10%	0.816	0.714
3	13	16	9.92%	12.50%	-2.58%	0.760	0.696
4	9	13	6.87%	9.70%	-2.83%	0.947	1.081
5	14	10	10.69%	7.90%	2.79%	1.021	1.288
6	10	9	7.63%	6.70%	0.93%	0.253	0.170

7	7	8	5.34%	5.80%	-0.46%	0.037	0.047
8	7	7	5.34%	5.10%	0.24%	-0.072	0.015
9	4	6	3.05%	4.60%	-1.55%	0.636	0.681
N	**131**	**131**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**6.555**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 7. 2nd Digit Analysis of Balance Sheet - Sesc 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (p_o)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	18	16	13.74%	11.97%	1.77%	0.490	0.343
1	18	15	13.74%	11.39%	2.35%	0.709	0.635
2	12	14	9.16%	10.88%	-1.72%	0.492	0.356
3	14	14	10.69%	10.43%	0.26%	-0.047	0.008
4	16	13	12.21%	10.03%	2.18%	0.687	0.623
5	14	13	10.69%	9.67%	1.02%	0.246	0.140
6	7	12	5.34%	9.34%	-4.00%	1.422	2.240
7	11	12	8.40%	9.04%	-0.64%	0.104	0.060
8	16	11	12.21%	8.76%	3.45%	1.244	1.784
9	5	11	3.82%	8.50%	-4.68%	1.765	3.380
N	**131**	**131**	**1**	**1.000**	**-0.01%**		
						X^2 Real	**9.570**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 8. 3rd Digit Analysis of Balance Sheet - Sesc 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (p_o)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	13	13	9.92%	10.18%	-0.26%	-0.047	0.008
1	12	13	9.16%	10.14%	-0.98%	0.227	0.124
2	15	13	11.45%	10.10%	1.35%	0.368	0.237
3	14	13	10.69%	10.06%	0.63%	0.093	0.051
4	12	13	9.16%	10.02%	-0.86%	0.182	0.097
5	18	13	13.74%	9.98%	3.76%	1.290	1.856
6	10	13	7.63%	9.94%	-2.31%	0.736	0.701
7	14	13	10.69%	9.90%	0.79%	0.155	0.082
8	7	13	5.34%	9.86%	-4.52%	1.587	2.710
9	16	13	12.21%	9.83%	2.38%	0.770	0.757
N	**131**	**131**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**6.623**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 9. 1st Digit Analysis of Balance Sheet - Sesc 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	52	39	40.00%	30.10%	9.90%	2.365	4.233
2	14	23	10.77%	17.60%	-6.83%	1.930	3.446
3	8	16	6.15%	12.50%	-6.35%	2.055	4.188
4	19	13	14.62%	9.70%	4.92%	1.745	3.238

5	9	10	6.92%	7.90%	-0.98%	0.250	0.157
6	11	9	8.46%	6.70%	1.76%	0.628	0.602
7	9	8	6.92%	5.80%	1.12%	0.360	0.283
8	4	7	3.08%	5.10%	-2.02%	0.849	1.043
9	4	6	3.08%	4.60%	-1.52%	0.620	0.656
N	**130**	**130**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**17.847**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 10. 2nd Digit Analysis of Balance Sheet - Sesc 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	15	16	11.54%	11.97%	-0.43%	0.016	0.020
1	13	15	10.00%	11.39%	-1.39%	0.361	0.221
2	19	14	14.62%	10.88%	3.74%	1.227	1.667
3	17	14	13.08%	10.43%	2.65%	0.844	0.873
4	12	13	9.23%	10.03%	-0.80%	0.157	0.083
5	10	13	7.69%	9.67%	-1.98%	0.615	0.526
6	11	12	8.46%	9.34%	-0.88%	0.194	0.107
7	11	12	8.46%	9.04%	-0.58%	0.077	0.048
8	13	11	10.00%	8.76%	1.24%	0.345	0.228
9	9	11	6.92%	8.50%	-1.58%	0.487	0.380
N	**130**	**130**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**4.154**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 11. 3rd Digit Analysis of Balance Sheet - Sesc 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	16	13	12.31%	10.18%	2.13%	0.657	0.578
1	17	13	13.08%	10.14%	2.94%	0.964	1.106
2	8	13	6.15%	10.10%	-3.95%	1.348	2.004
3	16	13	12.31%	10.06%	2.25%	0.706	0.653
4	22	13	16.92%	10.02%	6.90%	2.475	6.182
5	5	13	3.85%	9.98%	-6.13%	2.187	4.901
6	7	13	5.38%	9.94%	-4.56%	1.589	2.714
7	9	13	6.92%	9.90%	-2.98%	0.990	1.164
8	19	13	14.62%	9.86%	4.76%	1.672	2.982
9	11	13	8.46%	9.83%	-1.37%	0.377	0.248
N	**130**	**130**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**22.531**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

6.1.2. National Trade Learning Service (Senac)

Table 12. 1st Digit Analysis of Balance Sheet - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2

1	3	6	15.79%	30.10%	-14.31%	1.110	1.293
2	0	3	0.00%	17.60%	-17.60%	1.713	3.344
3	2	2	10.53%	12.50%	-1.97%	-0.087	0.059
4	3	2	15.79%	9.70%	6.09%	0.509	0.726
5	1	2	5.26%	7.90%	-2.64%	0.001	0.167
6	3	1	15.79%	6.70%	9.09%	1.126	2.343
7	0	1	0.00%	5.80%	-5.80%	0.591	1.102
8	2	1	10.53%	5.10%	5.43%	0.554	1.097
9	5	1	26.32%	4.60%	21.72%	3.971	19.478
N	**19**	**19**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**29.609**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 13. 2nd Digit Analysis of Balance Sheet - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	1	2	5.26%	11.97%	-6.71%	0.547	0.714
1	2	2	10.53%	11.39%	-0.86%	-0.243	0.012
2	2	2	10.53%	10.88%	-0.35%	-0.319	0.002
3	4	2	21.05%	10.43%	10.62%	1.140	2.056
4	3	2	15.79%	10.03%	5.76%	0.454	0.628
5	2	2	10.53%	9.67%	0.86%	-0.262	0.014
6	1	2	5.26%	9.34%	-4.08%	0.216	0.338
7	1	2	5.26%	9.04%	-3.78%	0.174	0.300
8	0	2	0.00%	8.76%	-8.76%	0.945	1.664
9	3	2	15.79%	8.50%	7.29%	0.728	1.188
N	**19**	**19**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**6.917**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 14. 3rd Digit Analysis of Balance Sheet - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	1	2	5.26%	10.18%	-4.92%	0.329	0.451
1	2	2	10.53%	10.14%	0.39%	-0.324	0.003
2	3	2	15.79%	10.10%	5.69%	0.442	0.609
3	1	2	5.26%	10.06%	-4.80%	0.314	0.435
4	1	2	5.26%	10.02%	-4.76%	0.309	0.429
5	2	2	10.53%	9.98%	0.55%	-0.303	0.006
6	4	2	21.05%	9.94%	11.11%	1.236	2.360
7	1	2	5.26%	9.90%	-4.64%	0.293	0.413
8	2	2	10.53%	9.86%	0.67%	-0.287	0.009
9	2	2	10.53%	9.83%	0.70%	-0.283	0.009
N	**19**	**19**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**4.723**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 15. 1st Digit Analysis of Balance Sheet - Senac 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	2	6	10.00%	30.10%	-20.10%	1.716	2.684
2	1	4	5.00%	17.60%	-12.60%	1.186	1.804
3	2	3	10.00%	12.50%	-2.50%	0.000	0.100
4	6	2	30.00%	9.70%	20.30%	2.690	8.497
5	2	2	10.00%	7.90%	2.10%	-0.066	0.112
6	1	1	5.00%	6.70%	-1.70%	-0.143	0.086
7	2	1	10.00%	5.80%	4.20%	0.325	0.608
8	3	1	15.00%	5.10%	9.90%	1.504	3.844
9	1	1	5.00%	4.60%	0.40%	-0.448	0.007
N	**20**	**20**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**17.742**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 16. 2nd Digit Analysis of Balance Sheet - Senac 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	6	2	30.00%	11.97%	18.03%	2.140	5.432
1	3	2	15.00%	11.39%	3.61%	0.156	0.229
2	1	2	5.00%	10.88%	-5.88%	0.485	0.636
3	1	2	5.00%	10.43%	-5.43%	0.429	0.565
4	4	2	20.00%	10.03%	9.97%	1.112	1.982
5	2	2	10.00%	9.67%	0.33%	-0.328	0.002
6	0	2	0.00%	9.34%	-9.34%	1.051	1.868
7	1	2	5.00%	9.04%	-4.04%	0.240	0.361
8	1	2	5.00%	8.76%	-3.76%	0.199	0.323
9	1	2	5.00%	8.50%	-3.50%	0.160	0.288
N	**20**	**20**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**11.686**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 17. 3rd Digit Analysis of Balance Sheet - Senac 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	1	2	5.00%	10.18%	-5.18%	0.396	0.527
1	6	2	30.00%	10.14%	19.86%	2.572	7.779
2	6	2	30.00%	10.10%	19.90%	2.582	7.842
3	1	2	5.00%	10.06%	-5.06%	0.381	0.509
4	0	2	0.00%	10.02%	-10.02%	1.120	2.004
5	2	2	10.00%	9.98%	0.02%	-0.370	0.000
6	0	2	0.00%	9.94%	-9.94%	1.112	1.988
7	1	2	5.00%	9.90%	-4.90%	0.359	0.485
8	2	2	10.00%	9.86%	0.14%	-0.354	0.000
9	1	2	5.00%	9.83%	-4.83%	0.350	0.475
N	**20**	**20**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**21.610**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 18. 1st Digit Analysis of Balance Sheet with Information on the Notes - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	5	8	18.52%	30.10%	-11.58%	1.102	1.203
2	2	5	7.41%	17.60%	-10.19%	1.138	1.594
3	2	3	7.41%	12.50%	-5.09%	0.509	0.560
4	3	3	11.11%	9.70%	1.41%	-0.077	0.055
5	3	2	11.11%	7.90%	3.21%	0.262	0.352
6	3	2	11.11%	6.70%	4.41%	0.532	0.784
7	1	2	3.70%	5.80%	-2.10%	0.054	0.205
8	3	1	11.11%	5.10%	6.01%	0.982	1.913
9	5	1	18.52%	4.60%	13.92%	2.993	11.371
N	**27**	**27**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**18.037**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 19. 2nd Digit Analysis of Balance Sheet with Information on Notes - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	1	3	3.70%	11.97%	-8.27%	1.027	1.541
1	2	3	7.41%	11.39%	-3.98%	0.349	0.376
2	2	3	7.41%	10.88%	-3.47%	0.270	0.299
3	4	3	14.81%	10.43%	4.38%	0.431	0.498
4	4	3	14.81%	10.03%	4.78%	0.507	0.616
5	4	3	14.81%	9.67%	5.14%	0.579	0.739
6	2	3	7.41%	9.34%	-1.93%	0.014	0.108
7	2	2	7.41%	9.04%	-1.63%	-0.040	0.080
8	2	2	7.41%	8.76%	-1.35%	-0.092	0.056
9	4	2	14.81%	8.50%	6.31%	0.832	1.267
N	**27**	**27**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**5.580**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 20. 3rd Digit Analysis of Balance Sheet with Information on Notes - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	2	3	7.41%	10.18%	-2.77%	0.158	0.204
1	2	3	7.41%	10.14%	-2.73%	0.152	0.199
2	4	3	14.81%	10.10%	4.71%	0.494	0.594
3	2	3	7.41%	10.06%	-2.65%	0.138	0.189
4	2	3	7.41%	10.02%	-2.61%	0.132	0.184
5	5	3	18.52%	9.98%	8.54%	1.159	1.972
6	5	3	18.52%	9.94%	8.58%	1.168	1.999
7	1	3	3.70%	9.90%	-6.20%	0.756	1.047
8	2	3	7.41%	9.86%	-2.45%	0.105	0.165
9	2	3	7.41%	9.83%	-2.42%	0.100	0.161
N	**27**	**27**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**6.714**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

6.1.3. Social Service of Industry (Sesi)

Table 21. 1st Digit Analysis of Balance Sheet - Sesi 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	18	15	35.29%	30.10%	5.19%	0.656	0.457
2	12	9	23.53%	17.60%	5.93%	0.928	1.019
3	10	6	19.61%	12.50%	7.11%	1.323	2.061
4	6	5	11.76%	9.70%	2.06%	0.262	0.224
5	2	4	3.92%	7.90%	-3.98%	0.794	1.022
6	1	3	1.96%	6.70%	-4.74%	1.074	1.710
7	1	3	1.96%	5.80%	-3.84%	0.873	1.296
8	0	3	0.00%	5.10%	-5.10%	1.337	2.601
9	1	2	1.96%	4.60%	-2.64%	0.565	0.772
N	**51**	**51**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**11.162**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 22. 2nd Digit Analysis of Balance Sheet - Sesi 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	6	6	11.76%	11.97%	-0.21%	-0.171	0.002
1	13	6	25.49%	11.39%	14.10%	2.949	8.902
2	4	6	7.84%	10.88%	-3.04%	0.472	0.432
3	3	5	5.88%	10.43%	-4.55%	0.833	1.011
4	8	5	15.69%	10.03%	5.66%	1.112	1.627
5	5	5	9.80%	9.67%	0.13%	-0.205	0.001
6	4	5	7.84%	9.34%	-1.50%	0.127	0.122
7	3	5	5.88%	9.04%	-3.16%	0.542	0.563
8	2	4	3.92%	8.76%	-4.84%	0.975	1.363
9	3	4	5.88%	8.50%	-2.62%	0.419	0.411
N	**51**	**51**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**14.434**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 23. 3rd Digit Analysis of Balance Sheet - Sesi 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	7	5	13.73%	10.18%	3.55%	0.606	0.630
1	9	5	17.65%	10.14%	7.51%	1.544	2.834
2	5	5	9.80%	10.10%	-0.30%	-0.162	0.004
3	4	5	7.84%	10.06%	-2.22%	0.294	0.249
4	4	5	7.84%	10.02%	-2.18%	0.285	0.241
5	2	5	3.92%	9.98%	-6.06%	1.210	1.876
6	6	5	11.76%	9.94%	1.82%	0.202	0.171
7	7	5	13.73%	9.90%	3.83%	0.680	0.754
8	4	5	7.84%	9.86%	-2.02%	0.248	0.210
9	3	5	5.88%	9.83%	-3.95%	0.712	0.809
N	**51**	**51**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**7.778**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 24. 1st Digit Analysis of Balance Sheet - Sesi 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	18	15	35.29%	30.10%	5.19%	0.656	0.457
2	13	9	25.49%	17.60%	7.89%	1.296	1.804
3	2	6	3.92%	12.50%	-8.58%	1.641	3.002
4	6	5	11.76%	9.70%	2.06%	0.262	0.224
5	3	4	5.88%	7.90%	-2.02%	0.275	0.263
6	1	3	1.96%	6.70%	-4.74%	1.074	1.710
7	4	3	7.84%	5.80%	2.04%	0.325	0.367
8	3	3	5.88%	5.10%	0.78%	-0.064	0.061
9	1	2	1.96%	4.60%	-2.64%	0.565	0.772
N	**51**	**51**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**8.661**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 25. 2nd Digit Analysis of Balance Sheet - Sesi 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	6	6	11.76%	11.97%	-0.21%	-0.171	0.002
1	10	6	19.61%	11.39%	8.22%	1.627	3.024
2	5	6	9.80%	10.88%	-1.08%	0.022	0.054
3	3	5	5.88%	10.43%	-4.55%	0.833	1.011
4	6	5	11.76%	10.03%	1.73%	0.179	0.153
5	3	5	5.88%	9.67%	-3.79%	0.678	0.757
6	7	5	13.73%	9.34%	4.39%	0.836	1.050
7	5	5	9.80%	9.04%	0.76%	-0.054	0.033
8	4	4	7.84%	8.76%	-0.92%	-0.016	0.049
9	2	4	3.92%	8.50%	-4.58%	0.921	1.258
N	**51**	**51**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**7.391**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 26. 3rd Digit Analysis of Balance Sheet - Sesi 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	5	5	9.80%	10.18%	-0.38%	-0.143	0.007
1	14	5	27.45%	10.14%	17.31%	3.864	15.072
2	6	5	11.76%	10.10%	1.66%	0.162	0.140
3	7	5	13.73%	10.06%	3.67%	0.637	0.681
4	2	5	3.92%	10.02%	-6.10%	1.217	1.893
5	4	5	7.84%	9.98%	-2.14%	0.276	0.233
6	3	5	5.88%	9.94%	-4.06%	0.734	0.845
7	5	5	9.80%	9.90%	-0.10%	-0.211	0.000
8	3	5	5.88%	9.86%	-3.98%	0.718	0.818
9	2	5	3.92%	9.83%	-5.91%	1.182	1.811
N	**51**	**51**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**21.501**

	X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

6.1.4. National Industrial Learning Service (Senai)

Table 27. 1st Digit Analysis of Balance Sheet - Senai 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	17	17	29.82%	30.10%	-0.28%	-0.099	0.001
2	11	10	19.30%	17.60%	1.70%	0.163	0.093
3	6	7	10.53%	12.50%	-1.97%	0.250	0.178
4	2	6	3.51%	9.70%	-6.19%	1.356	2.252
5	6	5	10.53%	7.90%	2.63%	0.490	0.498
6	3	4	5.26%	6.70%	-1.44%	0.169	0.176
7	4	3	7.02%	5.80%	1.22%	0.110	0.146
8	3	3	5.26%	5.10%	0.16%	-0.245	0.003
9	5	3	8.77%	4.60%	4.17%	1.187	2.157
N	**57**	**57**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**5.504**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 28. 2nd Digit Analysis of Balance Sheet - Senai 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	8	7	14.04%	11.97%	2.07%	0.276	0.203
1	8	6	14.04%	11.39%	2.65%	0.420	0.350
2	6	6	10.53%	10.88%	-0.35%	-0.127	0.007
3	13	6	22.81%	10.43%	12.38%	2.841	8.372
4	0	6	0.00%	10.03%	-10.03%	2.300	5.717
5	6	6	10.53%	9.67%	0.86%	-0.005	0.043
6	4	5	7.02%	9.34%	-2.32%	0.375	0.329
7	4	5	7.02%	9.04%	-2.02%	0.302	0.258
8	2	5	3.51%	8.76%	-5.25%	1.168	1.794
9	6	5	10.53%	8.50%	2.03%	0.311	0.275
N	**57**	**57**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**17.349**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 29. 3rd Digit Analysis of Balance Sheet - Senai 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	8	6	14.04%	10.18%	3.86%	0.744	0.832
1	5	6	8.77%	10.14%	-1.37%	0.123	0.105
2	5	6	8.77%	10.10%	-1.33%	0.113	0.100
3	4	6	7.02%	10.06%	-3.04%	0.543	0.524
4	7	6	12.28%	10.02%	2.26%	0.348	0.291
5	6	6	10.53%	9.98%	0.55%	-0.083	0.017
6	8	6	14.04%	9.94%	4.10%	0.812	0.962
7	5	6	8.77%	9.90%	-1.13%	0.063	0.073
8	4	6	7.02%	9.86%	-2.84%	0.498	0.467
9	5	6	8.77%	9.83%	-1.06%	0.046	0.065

N	**57**	**57**	**1**	**1.0001**	**-0.01%**		
						X² Real	**3.436**
						X² Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 30. 1st Digit Analysis of Balance Sheet - Senai 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	20	17	35.09%	30.10%	4.99%	0.677	0.471
2	9	10	15.79%	17.60%	-1.81%	0.185	0.106
3	6	7	10.53%	12.50%	-1.97%	0.250	0.178
4	3	6	5.26%	9.70%	-4.44%	0.908	1.157
5	2	5	3.51%	7.90%	-4.39%	0.984	1.391
6	4	4	7.02%	6.70%	0.32%	-0.169	0.009
7	5	3	8.77%	5.80%	2.97%	0.677	0.868
8	2	3	3.51%	5.10%	-1.59%	0.245	0.283
9	6	3	10.53%	4.60%	5.93%	1.820	4.352
N	**57**	**57**	**100.00%**	**100.00%**	**0.00%**		
						X² Real	**8.815**
						X² Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 31. 2nd Digit Analysis of Balance Sheet - Senai 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NBL (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	14	7	24.56%	11.97%	12.59%	2.725	7.550
1	7	6	12.28%	11.39%	0.89%	0.003	0.040
2	4	6	7.02%	10.88%	-3.86%	0.724	0.782
3	9	6	15.79%	10.43%	5.36%	1.107	1.570
4	6	6	10.53%	10.03%	0.50%	-0.096	0.014
5	5	6	8.77%	9.67%	-0.90%	0.005	0.048
6	3	5	5.26%	9.34%	-4.08%	0.830	1.014
7	5	5	8.77%	9.04%	-0.27%	-0.160	0.005
8	3	5	5.26%	8.76%	-3.50%	0.700	0.796
9	1	5	1.75%	8.50%	-6.75%	1.589	3.051
N	**57**	**57**	**1**	**1.0001**	**-0.01%**		
						X² Real	**14.868**
						X² Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 32. 3rd Digit Analysis of Balance Sheet - Senai 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	12	6	21.05%	10.18%	10.87%	2.496	6.619
1	6	6	10.53%	10.14%	0.39%	-0.123	0.008
2	4	6	7.02%	10.10%	-3.08%	0.553	0.536
3	7	6	12.28%	10.06%	2.22%	0.337	0.279
4	6	6	10.53%	10.02%	0.51%	-0.093	0.015
5	8	6	14.04%	9.98%	4.06%	0.800	0.939
6	1	6	1.75%	9.94%	-8.19%	1.844	3.842
7	1	6	1.75%	9.90%	-8.15%	1.837	3.820
8	5	6	8.77%	9.86%	-1.09%	0.053	0.068

9	7	6	12.28%	9.83%	2.45%	0.399	0.348
N	**57**	**57**	**1**	**1.0001**	**-0.01%**		
						X² Real	**16.476**
						X² Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

6.2. Tables on the Reliability of the Financial Situation Analysis

6.2.1. Social Service of Trade (Sesc)

Table 33. Analysis of the 1st Digit on the Results Account in DVP - Sesc 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	7	7	31.82%	30.10%	1.72%	-0.057	0.022
2	3	4	13.64%	17.60%	-3.96%	0.208	0.196
3	1	3	4.55%	12.50%	-7.95%	0.806	1.114
4	1	2	4.55%	9.70%	-5.15%	0.457	0.603
5	4	2	18.18%	7.90%	10.28%	1.393	2.944
6	2	1	9.09%	6.70%	2.39%	0.022	0.188
7	2	1	9.09%	5.80%	3.29%	0.204	0.411
8	1	1	4.55%	5.10%	-0.55%	-0.366	0.013
9	1	1	4.55%	4.60%	-0.05%	-0.497	0.000
N	**22**	**22**	**100.00%**	**100.00%**	**0.00%**		
						X² Real	**5.490**
						X² Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 34. Analysis of the 2nd Digit on the Results Account in DVP - Sesc 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	2	2	10.53%	11.97%	-1.44%	-0.160	0.033
1	0	2	0.00%	11.39%	-11.39%	1.202	2.164
2	4	2	21.05%	10.88%	10.17%	1.056	1.807
3	3	2	15.79%	10.43%	5.36%	0.389	0.523
4	1	2	5.26%	10.03%	-4.77%	0.310	0.430
5	1	2	5.26%	9.67%	-4.41%	0.262	0.382
6	3	2	15.79%	9.34%	6.45%	0.572	0.846
7	3	2	15.79%	9.04%	6.75%	0.626	0.957
8	1	2	5.26%	8.76%	-3.50%	0.133	0.265
9	1	2	5.26%	8.50%	-3.24%	0.095	0.234
N	**19**	**19**	**1**	**1.0001**	**-0.01%**		
						X² Real	**7.643**
						X² Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 35. Analysis of the 3rd Digit on the Results Account in DVP - Sesc 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	4	2	18.18%	10.18%	8.00%	0.889	1.384
1	1	2	4.55%	10.14%	-5.59%	0.516	0.679
2	2	2	9.09%	10.10%	-1.01%	-0.197	0.022
3	0	2	0.00%	10.06%	-10.06%	1.214	2.213

4	1	2	4.55%	10.02%	-5.47%	0.500	0.658
5	6	2	27.27%	9.98%	17.29%	2.350	6.592
6	2	2	9.09%	9.94%	-0.85%	-0.223	0.016
7	0	2	0.00%	9.90%	-9.90%	1.198	2.178
8	3	2	13.64%	9.86%	3.78%	0.237	0.318
9	3	2	13.64%	9.83%	3.81%	0.242	0.324
N	**22**	**22**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**14.385**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 36. Analysis of the 1st Digit on the Results Account in DVP - Sesc 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	5	8	20.00%	30.10%	-10.10%	0.883	0.847
2	6	4	24.00%	17.60%	6.40%	0.578	0.582
3	3	3	12.00%	12.50%	-0.50%	-0.227	0.005
4	4	2	16.00%	9.70%	6.30%	0.726	1.023
5	1	2	4.00%	7.90%	-3.90%	0.352	0.481
6	2	2	8.00%	6.70%	1.30%	-0.140	0.063
7	1	1	4.00%	5.80%	-1.80%	-0.043	0.140
8	2	1	8.00%	5.10%	2.90%	0.205	0.412
9	1	1	4.00%	4.60%	-0.60%	-0.334	0.020
N	**25**	**25**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**3.573**
						X^2Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 37. Analysis of the 2nd Digit on the Results Account in DVP - Sesc 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	2	3	8.00%	11.97%	-3.97%	0.303	0.329
1	3	3	12.00%	11.39%	0.61%	-0.219	0.008
2	3	3	12.00%	10.88%	1.12%	-0.141	0.029
3	3	3	12.00%	10.43%	1.57%	-0.070	0.059
4	4	3	16.00%	10.03%	5.97%	0.661	0.888
5	1	2	4.00%	9.67%	-5.67%	0.621	0.831
6	3	2	12.00%	9.34%	2.66%	0.113	0.189
7	2	2	8.00%	9.04%	-1.04%	-0.167	0.030
8	0	2	0.00%	8.76%	-8.76%	1.196	2.190
9	4	2	16.00%	8.50%	7.50%	0.986	1.654
N	**25**	**25**	**1**	**1.0001**	**-0.01%**		
						X^2Real	**6.208**
						X^2Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 38. Analysis of the 3rd Digit on the Results Account in DVP - Sesc 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	3	3	12.00%	10.18%	1.82%	-0.030	0.081
1	1	3	4.00%	10.14%	-6.14%	0.686	0.929
2	3	3	12.00%	10.10%	1.90%	-0.017	0.089
3	4	3	16.00%	10.06%	5.94%	0.655	0.877

4	2	3	8.00%	10.02%	-2.02%	0.003	0.102
5	3	2	12.00%	9.98%	2.02%	0.003	0.102
6	7	2	28.00%	9.94%	18.06%	2.684	8.203
7	1	2	4.00%	9.90%	-5.90%	0.653	0.879
8	0	2	0.00%	9.86%	-9.86%	1.318	2.465
9	1	2	4.00%	9.83%	-5.83%	0.643	0.864
N	**25**	**25**	**1**	**1.0001**	**-0.01%**		
						X^2Real	**14.593**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

6.2.2. National Trade Learning Service (Senac)

Table 39. Analysis of the 1st Digit on the Results Account in DVP - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	9	9	31.03%	30.10%	0.93%	-0.093	0.008
2	7	5	24.14%	17.60%	6.54%	0.681	0.704
3	0	4	0.00%	12.50%	-12.50%	1.755	3.625
4	3	3	10.34%	9.70%	0.64%	-0.196	0.012
5	2	2	6.90%	7.90%	-1.00%	-0.144	0.037
6	2	2	6.90%	6.70%	0.20%	-0.329	0.002
7	3	2	10.34%	5.80%	4.54%	0.650	1.033
8	0	1	0.00%	5.10%	-5.10%	0.826	1.479
9	3	1	10.34%	4.60%	5.74%	1.034	2.081
N	**29**	**29**	**100.00%**	**100.00%**	**0.00%**		
						X^2Real	**8.981**
						X^2Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 40. Analysis of the 2nd Digit on the Results Account in DVP - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	3	3	10.34%	11.97%	-1.63%	-0.016	0.064
1	3	3	10.34%	11.39%	-1.05%	-0.115	0.028
2	4	3	13.79%	10.88%	2.91%	0.206	0.226
3	4	3	13.79%	10.43%	3.36%	0.289	0.314
4	4	3	13.79%	10.03%	3.76%	0.366	0.409
5	4	3	13.79%	9.67%	4.12%	0.437	0.510
6	2	3	6.90%	9.34%	-2.44%	0.133	0.185
7	1	3	3.45%	9.04%	-5.59%	0.726	1.003
8	1	3	3.45%	8.76%	-5.31%	0.683	0.934
9	3	2	10.34%	8.50%	1.84%	0.023	0.116
N	**29**	**29**	**1**	**1.0001**	**-0.01%**		
						X^2Real	**3.790**
						X^2Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 41. Analysis of the 3rd Digit on the Results Account in DVP - Senac 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	2	3	6.90%	10.18%	-3.28%	0.278	0.307
1	3	3	10.34%	10.14%	0.20%	-0.271	0.001

2	7	3	24.14%	10.10%	14.04%	2.201	5.658
3	1	3	3.45%	10.06%	-6.61%	0.875	1.260
4	4	3	13.79%	10.02%	3.77%	0.367	0.412
5	3	3	10.34%	9.98%	0.36%	-0.244	0.004
6	4	3	13.79%	9.94%	3.85%	0.383	0.433
7	0	3	0.00%	9.90%	-9.90%	1.474	2.871
8	2	3	6.90%	9.86%	-2.96%	0.224	0.258
9	3	3	10.34%	9.83%	0.51%	-0.219	0.008
N	**29**	**29**	**1**	**1.0001**	**-0.01%**		
						X²Real	**11.213**
						X²Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 42. Analysis of the 1st Digit on the Results Account in DVP - Senac 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	12	9	41.38%	30.10%	11.28%	1.122	1.226
2	4	5	13.79%	17.60%	-3.81%	0.295	0.239
3	3	4	10.34%	12.50%	-2.16%	0.070	0.108
4	1	3	3.45%	9.70%	-6.25%	0.824	1.168
5	1	2	3.45%	7.90%	-4.45%	0.545	0.727
6	1	2	3.45%	6.70%	-3.25%	0.329	0.458
7	4	2	13.79%	5.80%	7.99%	1.444	3.194
8	1	1	3.45%	5.10%	-1.65%	-0.018	0.155
9	2	1	6.90%	4.60%	2.30%	0.147	0.333
N	**29**	**29**	**100.00%**	**100.00%**	**0.00%**		
						X²Real	**7.608**
						X²Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 43. Analysis of the 2nd Digit on the Results Account in DVP - Senac 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	5	3	17.24%	11.97%	5.27%	0.588	0.673
1	4	3	13.79%	11.39%	2.40%	0.115	0.147
2	4	3	13.79%	10.88%	2.91%	0.206	0.226
3	1	3	3.45%	10.43%	-6.98%	0.926	1.355
4	3	3	10.34%	10.03%	0.31%	-0.253	0.003
5	6	3	20.69%	9.67%	11.02%	1.694	3.642
6	2	3	6.90%	9.34%	-2.44%	0.133	0.185
7	2	3	6.90%	9.04%	-2.14%	0.079	0.147
8	1	3	3.45%	8.76%	-5.31%	0.683	0.934
9	1	2	3.45%	8.50%	-5.05%	0.643	0.871
N	**29**	**29**	**1**	**1.0001**	**-0.01%**		
						X² Real	**8.184**
						X² Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 44. Analysis of the 3rd Digit on the Results Account in DVP - Senac 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	3	3	10.34%	10.18%	0.16%	-0.278	0.001

1	2	3	6.90%	10.14%	-3.24%	0.271	0.301
2	1	3	3.45%	10.10%	-6.65%	0.881	1.270
3	4	3	13.79%	10.06%	3.73%	0.360	0.402
4	3	3	10.34%	10.02%	0.32%	-0.251	0.003
5	1	3	3.45%	9.98%	-6.53%	0.864	1.240
6	3	3	10.34%	9.94%	0.40%	-0.237	0.005
7	3	3	10.34%	9.90%	0.44%	-0.231	0.006
8	5	3	17.24%	9.86%	7.38%	1.022	1.602
9	4	3	13.79%	9.83%	3.96%	0.405	0.463
N	**29**	**29**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**5.293**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

6.2.3. Social Service of Industry (Sesi)

Table 45. Analysis of the 1st Digit on the Results Account in DVP – Sesi 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	10	8	38.46%	30.10%	8.36%	0.716	0.604
2	3	5	11.54%	17.60%	-6.06%	0.554	0.543
3	6	3	23.08%	12.50%	10.58%	1.334	2.327
4	2	3	7.69%	9.70%	-2.01%	0.015	0.108
5	0	2	0.00%	7.90%	-7.90%	1.130	2.054
6	1	2	3.85%	6.70%	-2.85%	0.190	0.316
7	3	2	11.54%	5.80%	5.74%	0.832	1.476
8	1	1	3.85%	5.10%	-1.25%	-0.155	0.080
9	0	1	0.00%	4.60%	-4.60%	0.652	1.196
N	**26**	**26**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**8.704**
						X^2Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 46. Analysis of the 2nd Digit on the Results Account in DVP – Sesi 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	1	3	3.70%	11.97%	-8.27%	1.027	1.541
1	4	3	14.81%	11.39%	3.42%	0.257	0.278
2	3	3	11.11%	10.88%	0.23%	-0.270	0.001
3	2	3	7.41%	10.43%	-3.02%	0.199	0.237
4	3	3	11.11%	10.03%	1.08%	-0.133	0.031
5	3	3	11.11%	9.67%	1.44%	-0.072	0.058
6	2	3	7.41%	9.34%	-1.93%	0.014	0.108
7	3	2	11.11%	9.04%	2.07%	0.040	0.128
8	1	2	3.70%	8.76%	-5.06%	0.589	0.788
9	5	2	18.52%	8.50%	10.02%	1.522	3.188
N	**27**	**27**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**6.359**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 47. Analysis of the 3rd Digit on the Results Account in DVP – Sesi 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	6	3	23.08%	10.18%	12.90%	1.850	4.248
1	1	3	3.85%	10.14%	-6.29%	0.738	1.016
2	2	3	7.69%	10.10%	-2.41%	0.082	0.149
3	3	3	11.54%	10.06%	1.48%	-0.075	0.056
4	3	3	11.54%	10.02%	1.52%	-0.069	0.060
5	3	3	11.54%	9.98%	1.56%	-0.062	0.063
6	1	3	3.85%	9.94%	-6.09%	0.711	0.971
7	1	3	3.85%	9.90%	-6.05%	0.705	0.963
8	5	3	19.23%	9.86%	9.37%	1.274	2.316
9	1	3	3.85%	9.83%	-5.98%	0.695	0.947
N	**26**	**26**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**10.789**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 48. Analysis of the 1st Digit on the Results Account in DVP – Sesi 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	10	8	37.04%	30.10%	6.94%	0.576	0.432
2	2	5	7.41%	17.60%	-10.19%	1.138	1.594
3	4	3	14.81%	12.50%	2.31%	0.073	0.116
4	4	3	14.81%	9.70%	5.11%	0.573	0.728
5	2	2	7.41%	7.90%	-0.49%	-0.262	0.008
6	1	2	3.70%	6.70%	-3.00%	0.238	0.362
7	1	2	3.70%	5.80%	-2.10%	0.054	0.205
8	2	1	7.41%	5.10%	2.31%	0.108	0.282
9	1	1	3.70%	4.60%	-0.90%	-0.237	0.047
N	**27**	**27**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**3.773**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 49. Analysis of the 2nd Digit on the Results Account in DVP – Sesi 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	3	3	11.11%	11.97%	-0.86%	-0.159	0.017
1	2	3	7.41%	11.39%	-3.98%	0.349	0.376
2	4	3	14.81%	10.88%	3.93%	0.348	0.384
3	3	3	11.11%	10.43%	0.68%	-0.199	0.012
4	2	3	7.41%	10.03%	-2.62%	0.133	0.185
5	1	3	3.70%	9.67%	-5.97%	0.723	0.994
6	3	3	11.11%	9.34%	1.77%	-0.014	0.091
7	5	2	18.52%	9.04%	9.48%	1.382	2.683
8	1	2	3.70%	8.76%	-5.06%	0.589	0.788
9	3	2	11.11%	8.50%	2.61%	0.141	0.217
N	**27**	**27**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**5.747**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 50. Analysis of the 3rd Digit on the Results Account in DVP – Sesi 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	1	3	3.70%	10.18%	-6.48%	0.795	1.112
1	3	3	11.11%	10.14%	0.97%	-0.152	0.025
2	1	3	3.70%	10.10%	-6.40%	0.784	1.094
3	7	3	25.93%	10.06%	15.87%	2.421	6.756
4	3	3	11.11%	10.02%	1.09%	-0.132	0.032
5	1	3	3.70%	9.98%	-6.28%	0.767	1.066
6	5	3	18.52%	9.94%	8.58%	1.168	1.999
7	3	3	11.11%	9.90%	1.21%	-0.111	0.040
8	1	3	3.70%	9.86%	-6.16%	0.750	1.038
9	2	3	7.41%	9.83%	-2.42%	0.100	0.161
N	**27**	**27**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**13.323**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

6.2.3. National Industrial Learning Service (Senai)

Table 51. Analysis of the 1st Digit on the Results Account in DVP – Senai 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	9	8	32.14%	30.10%	2.04%	0.030	0.039
2	3	5	10.71%	17.60%	-6.89%	0.709	0.754
3	4	4	14.29%	12.50%	1.79%	0.000	0.071
4	2	3	7.14%	9.70%	-2.56%	0.138	0.189
5	2	2	7.14%	7.90%	-0.76%	-0.202	0.020
6	4	2	14.29%	6.70%	7.59%	1.228	2.405
7	1	2	3.57%	5.80%	-2.23%	0.100	0.240
8	3	1	10.71%	5.10%	5.61%	0.921	1.731
9	0	1	0.00%	4.60%	-4.60%	0.711	1.288
N	**28**	**28**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**6.737**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 52. Analysis of the 2nd Digit on the Results Account in DVP – Senai 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	3	3	10.34%	11.97%	-1.63%	-0.016	0.064
1	0	3	0.00%	11.39%	-11.39%	1.638	3.303
2	2	3	6.90%	10.88%	-3.98%	0.391	0.423
3	6	3	20.69%	10.43%	10.26%	1.504	2.927
4	1	3	3.45%	10.03%	-6.58%	0.871	1.252
5	1	3	3.45%	9.67%	-6.22%	0.820	1.161
6	5	3	17.24%	9.34%	7.90%	1.143	1.938
7	7	3	24.14%	9.04%	15.10%	2.512	7.312
8	4	3	13.79%	8.76%	5.03%	0.630	0.839
9	0	2	0.00%	8.50%	-8.50%	1.308	2.465
N	**29**	**29**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**21.685**

						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 53. Analysis of the 3rd Digit on the Results Account in DVP – Senai 2019

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	0	3	0.00%	10.18%	-10.18%	1.469	2.850
1	3	3	10.71%	10.14%	0.57%	-0.212	0.009
2	5	3	17.86%	10.10%	7.76%	1.049	1.668
3	3	3	10.71%	10.06%	0.65%	-0.199	0.012
4	4	3	14.29%	10.02%	4.27%	0.437	0.508
5	3	3	10.71%	9.98%	0.73%	-0.186	0.015
6	4	3	14.29%	9.94%	4.35%	0.453	0.532
7	2	3	7.14%	9.90%	-2.76%	0.172	0.215
8	1	3	3.57%	9.86%	-6.29%	0.799	1.123
9	3	3	10.71%	9.83%	0.88%	-0.160	0.022
N	**28**	**28**	**1**	**1.0001**	**-0.01%**		
						X^2 Real	**6.955**
						X^2 Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 54. Analysis of the 1st Digit on the Results Account in DVP – Senai 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
1	8	8	28.57%	30.10%	-1.53%	-0.030	0.022
2	6	5	21.43%	17.60%	3.83%	0.284	0.233
3	2	4	7.14%	12.50%	-5.36%	0.571	0.643
4	3	3	10.71%	9.70%	1.01%	-0.138	0.030
5	1	2	3.57%	7.90%	-4.33%	0.499	0.664
6	3	2	10.71%	6.70%	4.01%	0.472	0.673
7	2	2	7.14%	5.80%	1.34%	-0.100	0.087
8	1	1	3.57%	5.10%	-1.53%	-0.062	0.128
9	2	1	7.14%	4.60%	2.54%	0.191	0.394
N	**28**	**28**	**100.00%**	**100.00%**	**0.00%**		
						X^2 Real	**2.874**
						X^2 Limit	**15.507**

Source: prepared by the author based on the entity's financial statements.

Table 55. Analysis of the 2nd Digit on the Results Account in DVP – Senai 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	1	3	3.57%	11.97%	-8.40%	1.078	1.650
1	2	3	7.14%	11.39%	-4.25%	0.410	0.443
2	4	3	14.29%	10.88%	3.41%	0.275	0.299
3	1	3	3.57%	10.43%	-6.86%	0.878	1.263
4	2	3	7.14%	10.03%	-2.89%	0.194	0.233
5	4	3	14.29%	9.67%	4.62%	0.507	0.617
6	2	3	7.14%	9.34%	-2.20%	0.075	0.145
7	6	3	21.43%	9.04%	12.39%	1.957	4.754
8	5	2	17.86%	8.76%	9.10%	1.368	2.645
9	1	2	3.57%	8.50%	-4.93%	0.596	0.800
N	**28**	**28**	**1**	**1.0001**	**-0.01%**		

	X² Real	**12.848**
	X² Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 56. Analysis of the 3rd Digit on the Results Account in DVP – Senai 2018

Digit	Absolute frequency observed	Absolute frequency NBL	Relative frequency (po)	NB (p_e)	Deviation ($p_o - p_e$)	Z test	X^2
0	5	3	17.86%	10.18%	7.68%	1.031	1.621
1	2	3	7.14%	10.14%	-3.00%	0.212	0.248
2	4	3	14.29%	10.10%	4.19%	0.421	0.486
3	4	3	14.29%	10.06%	4.23%	0.429	0.497
4	3	3	10.71%	10.02%	0.69%	-0.192	0.013
5	3	3	10.71%	9.98%	0.73%	-0.186	0.015
6	2	3	7.14%	9.94%	-2.80%	0.179	0.220
7	2	3	7.14%	9.90%	-2.76%	0.172	0.215
8	3	3	10.71%	9.86%	0.85%	-0.165	0.021
9	0	3	0.00%	9.83%	-9.83%	1.430	2.752
N	**28**	**28**	**1**	**1.0001**	**-0.01%**		
						X² Real	**6.089**
						X² Limit	**16.919**

Source: prepared by the author based on the entity's financial statements.

Table 57. Accumulated Income Account in DVP - Sesc e Senac – 2018 e 2019

	Sesc		Senac	
	2019	**2018**	**2019**	**2018**
Cons (1)	1,485,302,474.17	3,900,265,324.32	-423,969,943.45	-376,216,182.64
AN/DN	96,552,516.99	276,872,657.86	77,980,563.31	91,878,098.72
AC	8,590,272.62	6,444,449.63	-4,341,814.08	-7,189,015.25
AL	*	21,328,751.28	1,316,086.06	2,699,378.74
AP	30,259,342.51	6,366,055.41	-79,675.61	-116,942.34
AM	17,881,591.36	11,939,729.49	10,840,234.38	5,588,222.23
BA	2,408,354.58	216,694,837.48	16,668,759.33	753,445.46
CE	129,271,735.26	-13,440,045.18	19,814,196.94	30,343,597.37
DF	*	33,296,303.96	-995,108.30	-3,392,523.79
ES	6,651,237.52	10,513,414.66	-24.289.195.19	-17.385.509.25
GO	1.909.495.90	250.299.862.01	2,142,308.05	9,690,052.02
MA	12,534,084.97	-9,263,591.85	12,616,507.84	10,797,364.69
MT	6,698,212.87	79,581,900.23	11,549,003.79	15,830,304.38
MS	17,062,174.48	82,167,811.14	-9,058,938.13	-14,733,144.04
MG	580,944,209.32	-36,637,546,36	15,131,287.45	22,156,746.74
PR	73,690,578.00	56,568,296.91	25,945,597.14	10,162,998.43
PB	2,450,535.72	40,633,560.61	1,825,870.37	12,982,976.98
PA	4,253,175.46	-2,438,176.28	64,052.66	1,846,843.54
PE	*	*	-26,270,315.15	-25,835,411.36
PI	*	*	2,113,366.55	7,968,637.12
RN	7,469,237.96	19,211,542.04	6,327,701.76	22,451,004.16
RS	57,249,962.62	8,726,689.26	9,268,974.02	-12,074,166.46
RJ	*	*	5,427,344.85	14,488,544.96

RO	*	4,663,569.22	-5,343,414.16	-6,503,645.83
RR	5,596,370.63	44,384,876.13	10,080,644.99	4,104,637.44
SC	22,138,050.93	223,824,160.58	24,943,176.89	-10,743,727.11
SE	*	*	-25,254,534.32	842,347.12
SP	138,901,685.42	1,973,349,496.78	72,446,889.77	75,330,450.56
TO	5,043,782.79	44,096,375.94	-4,522,892.28	-1,051,635.08

Source: prepared by the author based on the entity's financial statements (DVP).

Notes: (*) lack of information; (1) consolidated.

Table 58. Accumulated Income Account in DVP - Sesi e Senai – 2018 e 2019

	SESI		SENAI	
	2019	**2018**	**2019**	**2018**
Cetiqt (1)	-	-	13,407,392.73	-17,450,608.14
AN/DN	298,445,198.73	163,986,469.46	26,193,457.39	73,324,010.04
AC	*	*	*	*
AL	*	154,926.71	-2,326,290.74	5,642,221.16
AP	1,807,118.26	1,959,946.63	-386,182.60	-960,815.00
AM	4,525,088.63	-4,315,211.32	-8,061,478.04	-6,539,044.08
BA	32,559,932.41	24,302,998.07	17,274,158.81	12,379,403.91
CE	35,138,202.85	17,628,552.84	12,162,128.13	-9,267,372.06
DF	14,079,370.07	10,286,951.43	1,739,665.61	1,940,587.63
ES	11,074,317.08	14,877,552.94	6,892,283.84	2,402,841.97
GO	6,980,434.53	12,681,888.14	-3,627,084.69	-4,125,782.05
MA	11,710,935.62	8,264,995.77	-5,355,874.43	-3,507,027.15
MT	10,380,448.50	11,962,582.81	-8,728,096.97	187,960.59
MS	21,099,578.00	8,776,680.00	8,372,421.00	-22,215,293.00
MG	130,521,862.61	39,127,792.99	46,436,065.33	12,045,388.60
PR	472,791.97	16,676,686.86	-6,691,301.45	4,737,540.91
PB	12,816,243.39	5,878,650.01	4,865,117.55	2,751,524.78
PA	8,696,106.96	6,930,530.05	-1,756,310.73	-4,779,301.19
PE	-7,551,093.68	-723,138.61	16,128,917.48	8,886,980.78
PI	764,701.07	324,630.44	1,322,076.16	1,883,699.94
RN	3,903,697.36	4,016,518.55	5,727,204.93	6,822,031.97
RS	29,479,739.99	41,919,161.21	20,952,346.46	24,166,247.20
RJ	3,788,671.98	-577,756.58	-33,354,476.01	-35,098,446.46
RO	7,156,523.17	2,739,431.44	67,455.95	7,858,958.61
RR	1,238,542.57	1,638,660.56	1,262,920.44	27,139.04
SC	39,367,631.95	-4,369,298.70	37,874,874.90	-20,691,029.35
SE	14,621,981.78	900,102.02	6,850,662.16	6,526,386.75
SP	138,421,684.10	37,473,938.67	7,049,602.22	118,376,675.45
TO	3,744,277.67	3,338,751.65	1,572,069.41	-1,758,830.89

Source: prepared by the author based on the entity's financial statements (DVP).

Notes: (*) lack of information; (1) Senai Chemical and Textile Industry Technology Center (Cetiqt).