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## **PUBLIC WORKS: A PROPOSAL TO IMPROVE THE QUALITY OF ACCOUNTING INFORMATION**

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### **ABSTRACT**

Public works stoppages tend to reduce social well-being, promote loss of expected benefits, environmental impacts, various risks, among other losses. However, there are still hidden problems in the set of accounting information. This technological article aims to propose devices to improve the quality of accounting information for public works. The methodological procedure used was the data sharing technique and knowledge management strategies. As a result, the article innovates by presenting an accounting flow for integrated communication of public works information to the Internal Control System (ICS). Additionally, it proposes data standardization mechanisms for all entities of the federation, new information quality controls, increased transparency and the creation of a single database. The proposal contributes both internally and administratively, as well as creating public value through efficient delivery of public goods and increased transparency.

**Keywords:** Public works; Internal control; Quality of accounting information; Public sector.

**JEL:** H41, H83, D83

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## **1. THE GENERAL SCENARIO OF PUBLIC WORKS INFORMATION IN BRAZIL**

The aim of this technological article is to propose ways of improving the quality of accounting information on public works. To this end, two approaches are taken, one in the internal environment of the public entity and the other at an external level. In the internal environment, the idea is to systematize the control of works by adopting a data-sharing flow. In the external environment, guidelines are proposed for standardization, controls on all accounting accounts and the modernization of current Public Sector Accounting (CASP) instruments.

The importance of systematizing and qualifying accounting information can be seen in the risk of public works being halted, as identified in the various government information bases. According to a recent study carried out by the National Confederation of Municipalities (CNM, 2022), at the time of the survey there were 6,932 work stoppages in Brazilian municipalities, amounting to approximately R\$9.32 billion. When this figure is compared to the total amount of construction work carried out by Brazilian municipalities in 2021, which was R\$33.5 billion, there is an approximate equivalence of 28% of new investments in stalled construction work (STN, 2022a).

The study carried out by the CNM (2022) required access to five different databases, each with its own parameter for stalled work. In the context of works with a source of federal funds, at all levels of government, the Federal Court of Auditors (TCU, 2021) diagnosed, with data from 2018, more than 14,000 paralyzed works. The survey accessed seven databases, amounting to more than R\$144 billion. The update of the TCU (2021) survey, for 2020 data, reported the existence of 7,000 stalled works totaling R\$15 billion. The TCU report (2021) concludes by warning that the existence of several databases and the constant updating of their parameters have prevented historical monitoring and comparison between the figures.

There is a problem with governance, which is seriously detrimental to transparency and the identification of the effective impact of these stoppages on public accounts, social well-being and local, regional and national economic effects. For the Brazilian Chamber of the Construction Industry (CBIC, 2018), work stoppages generate opportunity costs, additional financial and economic costs, loss and frustration of expected benefits, environmental impact, risks, among other negative impacts.

Another issue inherent to public works concerns the nomenclatures adopted in CASP. In the Chart of Accounts Applied to the Public Sector (PCASP), for the nature of asset informa-

tion, works are referred to as real estate in progress, as they incorporate real estate that has not yet been completed. With regard to the nature of budgetary information, there is the terminology works and installations, which can be segregated into works in progress and other works and installations. In this context of the multiplicity of terms for public works, it can be difficult for citizens to understand when it comes to control and transparency, as well as making it possible for data to be distorted statistically.

Furthermore, unlike CASP's other types of information, the control type does not prioritize the recording of public works, i.e. there are no specific accounts for their recording. In view of this, we are alert to the possible lack of attention paid to the public asset "works" in the CASP account structure. This can be seen in the absence of any mention of public works in the discussion of fixed assets in the National Public Sector Balance Sheet (STN, 2022b). This omission occurred despite budget execution, which generated a positive asset variation for subnational entities in 2021, of R\$64.5 billion (STN, 2022a).

According to Pigatto *et al.* (2010), there is a lack of incorporation and disclosure of works by some public entities. At this juncture, there may be a possible undervaluation, omission or improper classification in the *disclosure of* public sector real estate. There is also an obstacle linked to non-compliance with accrual-based accounting guidelines, due to the disconnection between the data on the physical execution of works and internal budgetary financial controls.

Based on the above, this technical article is justified, proposing devices to solve a problem experienced by some public entities regarding the accounting treatment of public works. The practical implications can be seen by *stakeholders* in terms of filling data gaps, information accuracy and accounting qualification, more relevant information for decision-making, greater transparency, internal control of works to promote public value, data to support the development of public policies and the delivery of goods and services (Bisogno; Cuadrado-Ballesteros, 2022; Ingram et al., 2022; Kud, 2023; Laihonen; Kork; Sinervo, 2023; Raschendorfer; Figueira; Furtado, 2023).

## 2. INNOVATION AT CASP: STEPS TOWARDS THE QUALIFICATION OF ACCOUNTING INFORMATION

The public sector is increasingly moving towards private sector management practices. To a certain extent, factors such as *accountability*, sustainability, risks, social demand and scarcity of resources have motivated the change from traditional management to one that is essen-

tially managerial (Al-Yami; Ajmal, 2019), so that this scenario requires fast, reliable and useful information.

The conceptual framework establishes society as the primary user of accounting information (IPSASB, 2014). This concept breaks down barriers that once prioritized the generation of information only for accountability to control bodies. Contributing to the discussion, Sousa *et al.* (2013) point out that the adoption of the new paradigm of government accounting should focus on the performance of internal and external information users.

There is also the recent research on government infrastructure assets that highlights a significant gap between the information published in financial statements and that consumed internally by managers (Lombardi *et al.*, 2021).

Among the innovations in the public sector is accrual accounting, an accounting system that involves recording and recognizing events and transactions in the respective accrual period according to the triggering event (STN, 2021).

Implementing procedures in favor of accrual accounting is associated with reducing the mismatch between budgetary and asset information in the public sector. Therefore, reading the accounting information tends to broaden the understanding of the government's real capacity and sustainability in generating public goods and services (Pigatto *et al.*, 2010).

The authors also point out that disregarding *accrual basis* accounting leads to a distorted view of the cost and operational capacity of the public sector. Therefore, drawing up a plan to implement accounting changes with a ceremonial view only of the coercive aspects imposed by regulations, external control bodies or international funding mechanisms can lead to the real benefits for the public sector being lost.

That said, to talk about the issue as a mere technical or technological reform in the accounting area is to limit its potential to induce management and control mechanisms. Some authors have reported on the experience of implementing competency-based accounting around the world, such as Mbelwa, Adhikari and Shahadat (2019), in Romania, and Ijeoma and Oghoghomeh (2014), in Nigeria.

The *Organization for Economic Cooperation and Development* (OECD) reported that 73% of its member countries issue their annual reports based on accrual accounting, while another 9% were in the process of transitioning (OECD, 2017).

In Brazil, provisions were made for transparent and responsible fiscal management, centralization to standardize the consolidation of national accounts, the adoption of international standards by all Federation entities, the implementation of patrimonial procedures, as well as

concern for Information Technology (IT) systems, as shown in Chart 1.

Chart 1 - Legal and infra-legal provisions for accounting transparency

Year	Device	Main highlights
2000	Complementary Law 101/2000 (Fiscal Responsibility Law)	<ul style="list-style-type: none"> <li>Responsible and transparent fiscal management;</li> <li>Heritage preservation;</li> <li>Coordination of the rules for consolidating and standardizing CASP information.</li> </ul>
2009	Complementary Law 131/2009 (Transparency Law)	<ul style="list-style-type: none"> <li>Detailed transparency of budget and financial execution in real time;</li> <li>Adoption of an integrated administration and control system.</li> </ul>
2013	STN Ordinance No. 634/2013 (Convergence Process)	<ul style="list-style-type: none"> <li>General rules for the consolidation of national accounts;</li> <li>Accounting Procedures Instructions (IPC), MCASP, PCASP, DCASP and the Brazilian Public Sector Accounting and Fiscal Information System (SI-CONFI).</li> </ul>
2015	STN Ordinance No. 548/2015 (PIPCP)	<ul style="list-style-type: none"> <li>Establishment of the implementation plan for asset accounting procedures.</li> </ul>
2020	Federal Decree No. 10.540/2020	<ul style="list-style-type: none"> <li>Definition of the minimum standard and implementation deadline for the Single Integrated Budget Execution, Finance and Control System (SIAFIC).</li> </ul>

Source: Prepared by the authors (2023)

In addition to effectively complying with this accounting regime or compliance, accounting can and should be seen as an important instrument for creating responsible value. Furthermore, adopting transparency and real-time accounting policies provides quality accounting information, i.e. useful for decision-making.

However, these new procedures are not restricted to the accounting area, but to the various areas of public management, penetrating the Internal Control System (ICS). In this way, the ICS is part of the process of improving the quality of accounting information.

### 3. HOW THE MODERNIZATION OF INTERNAL CONTROL CAN AFFECT THE QUALITY OF ACCOUNTING INFORMATION

Recently, Dantas and Calvo (2017) called the new government accounting model “control accounting”, responsible for internal decision-making and providing information to the various external *stakeholders*. This association between accounting and control is much broader than the adoption of control accounts in the PCASP. This is because internal control now plays an essential role as a tool for providing useful, reliable, timely and comparable accounting infor-

mation, among other attributes.

As a result, this article looks at strategic experiences in the areas of knowledge management and information systems that have proved successful in the context of modernizing internal control. Thus, once internal control is more cohesive and efficiently systematized, it can exercise its qualitative role of inducing accounting information.

The modernization of the public administration's internal control, with the subsequent solution to problems of poor information quality, is linked to tackling them harmoniously within the institution. This means that specific problems need to be assessed in an integrated and systematic way. In this sense, Laihonon and Kokko (2023) point out that governance procedures, as well as consonant knowledge management, provide decision-making based on shared knowledge.

In the United Arab Emirates, there is experience of the positive relationship between knowledge management (creation, capture, storage, sharing and use of knowledge), innovation, information quality and operational performance (Balasubramanian; Al-Ahbabi; Sreejith, 2020). The practical implication of this study is very important as it reveals that these tools worked together favor the performance of public management in achieving objectives.

Complementing the environment of modernization and implementation of new controls, Nuhu, Baird and Appuhami (2019) highlight the attributes linked to organizational dynamic capacity, i.e. managers and employees. In this same study, which was carried out in public organizations in Australia, the importance of strategic flexibility and professional training are focused on implementing change.

Thus, the most recent advance in CASP in Brazil was the definition of standards and the deadline for implementing SIAFIC in all sub-national entities. This implies a broad process of data sharing between the accounting and control areas, requiring the application of knowledge management tools in order to achieve the objectives. The scope of SIAFIC includes the integration of accounting with structuring systems for public procurement, assets, human resources, personnel management, tax collection, among others.

Likewise, the systematization of internal control is presented as an instrument of governance and institutional strengthening, correcting deviations, reducing risks and expanding the scope of the entity's objectives (PwC; IIA Brasil, 2017). In addition, in his research, Eskin (2020) concludes that the effectiveness of internal control is linked to the incorporation of all processes. Therefore, this technological article is based on the adoption of knowledge management tools for sharing data between the ICS and accounting, with a view to reducing risks,<sup>8</sup>



improving processes and the quality of accounting information.

#### 4. DIAGNOSIS OF THE PROBLEM SITUATION IN A BRAZILIAN MUNICIPALITY

The problem of paralyzed works is real and can often be observed by a significant portion of citizens. However, uncovering accounting information on public works in Brazil is not an easy task. A recent example of this is reflected in both the CNM (2022) and TCU (2021) studies, which did not use accounting bases as a research source. This is because there is limited information on transparency portals and in the Accounting Balance Matrix (MSC).

In this scenario, exemplifying the need for qualified accounting information on public works is limited by the scarcity of data. In turn, this article illustrates the accounting information of Maracanaú, in Ceará, a municipality with the second largest share of the state's economy.

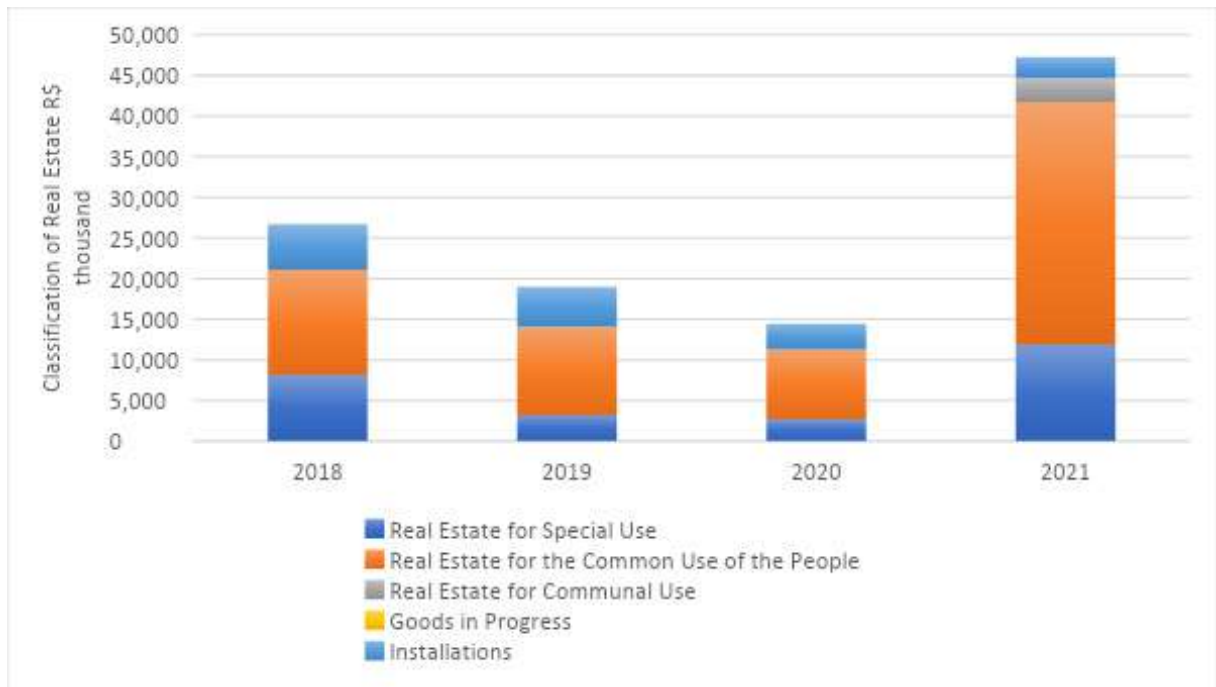
The Maracanaú *case was* chosen because it allowed access to internal accounting data from the general ledger and other management reports from the<sup>1</sup> accounting *software* adopted by the entity. Another criterion used in its choice is the classification in the quality ranking of Accounting and Fiscal Information (ICF), maintained by the STN (2022c). Given that this municipality obtained the “B” and “A” concepts in the 2019 and 2020 financial years, respectively. However, despite having the highest concept in the ranking, it has improprieties regarding the disclosure of public works.

To illustrate this, Figures 1 and 2 show the accounting data for the municipality of Maracanaú from 2018 to 2021.

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<sup>1</sup> The name of the software has been omitted for ethical reasons.

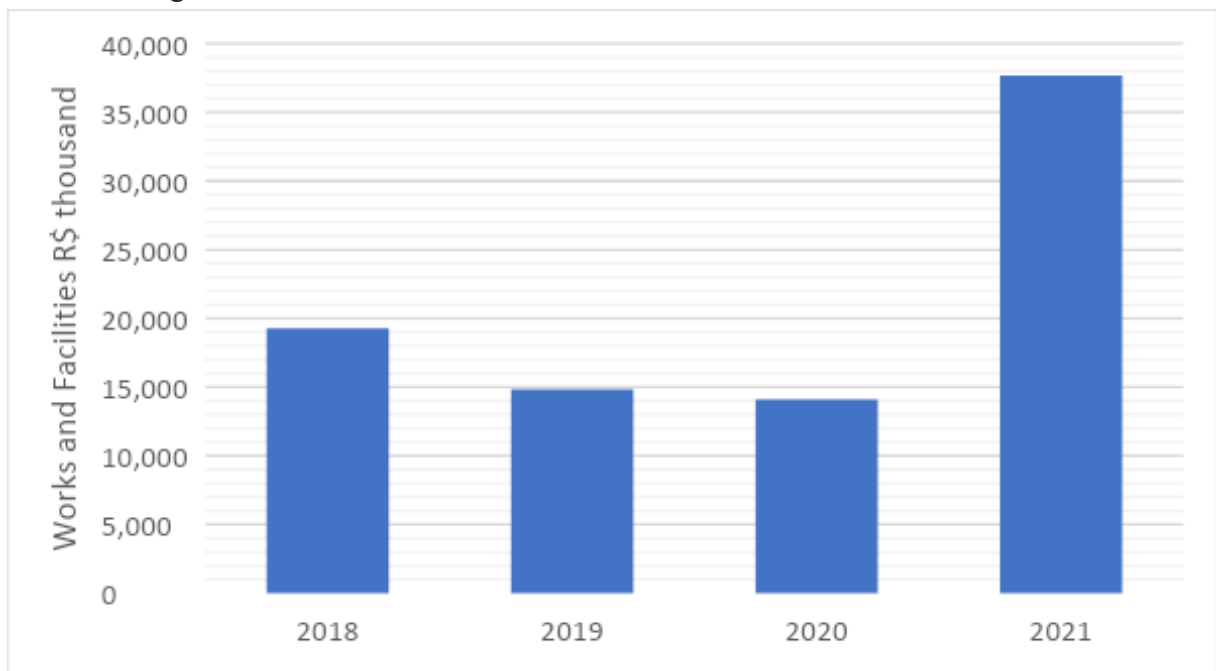
Figure 1 - Movement of real estate accounts according to the nature of asset information



Source: Own elaboration based on Accounting *Software* reports (2023)

According to Figure 1, the data shows that there is no execution of public works, in the category of goods in progress. However, Figure 3, which shows the budget execution of works, provides conflicting information to that shown in Figure 2.

Figure 2 - Budget execution in the expenditure element for public real estate works in terms of budget nature



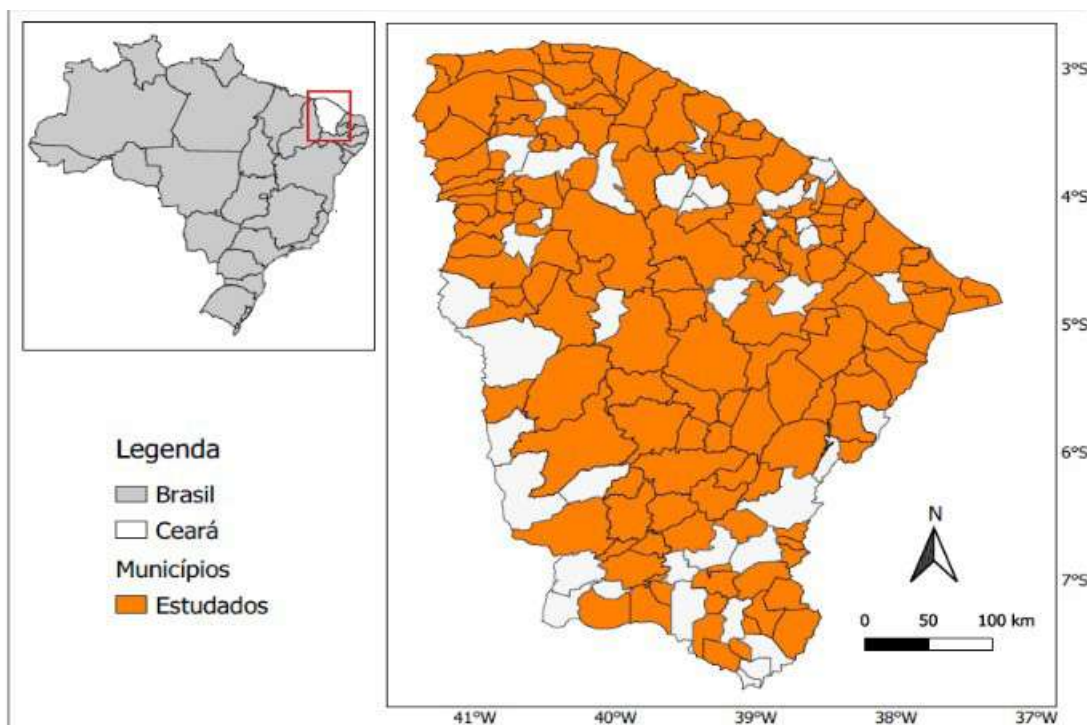
Source: Own elaboration based on Accounting *Software* reports (2023)

As a result, this openness of data reveals the misalignment of information and its compromise in terms of the quality of the accounting information presented in the Accounting Statements Applied to the Public Sector (DCASP).

In this specific case, public works have been omitted from their proper asset classification, since they are registered as completed properties. This artifice has merely been used to comply with an asset entry. As a result of the unavailability of internal control data on the physical execution of the works, which is essential for the correct accounting entry.

Although the misalignment of information observed in Maracanaú cannot be generalized to all entities, the situation is repeated with all users of the accounting *software*, as long as they have executed works. These entries are automated in the *software*. Therefore, the extension of this accounting treatment to public works in 2021 may have impacted approximately 78% of Ceará's municipalities, since the *software* has been adopted by 143 municipalities, as can be seen in Figure 3.

Figure 3 - Municipalities in Ceará using accounting software in 2021



Source: Own elaboration based on the Transparency Portal of the Municipalities of the Court of Auditors of the State of Ceará (TCE, 2022)

Accordingly, the lack of integrated, real-time data flow on the administrative facts of public works tends to compromise the essence of accounting entries. In the *case* analyzed, with the extension to the other 142 municipalities in Ceará that adopt the same accounting *software*, there is the same conflict of information illustrated in Figures 1 and 2. In other entities, there may even be integrity in the classification, but without automated integration, there is a time lag that diverges from what is established by accrual accounting and in real time. There is also the possibility of the omission of the asset entry of works in some public entities.

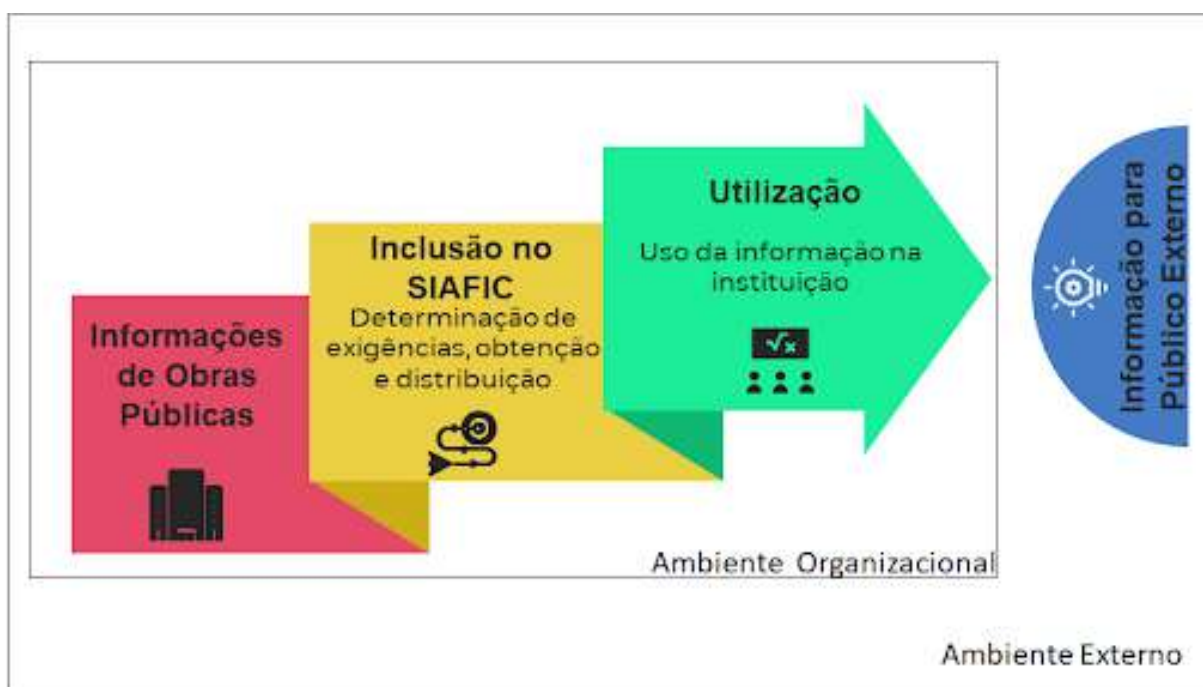
In view of the above, it is not correct to generalize Maracanaú's problem to other Brazilian municipalities. However, this *case has* opened up a black box of internal and restricted accounting information, adding to the problems already pointed out by the TCU (2021) and CNM (2022). Thus, we offer devices for improving the quality of accounting information from the point of view of public works.

## **5. PROPOSAL TO IMPROVE THE QUALITY OF ACCOUNTING INFORMATION FOR PUBLIC SECTOR WORKS**

In this context, given the current attributes of the internal and external environments of public entities, as well as the real problem identified, the qualification of accounting information requires the modernization of both environments. This means that a redesign of processes is required, systematizing the internal control of public works. In addition, in order for the proposed solution to go beyond the local institution, bringing efficient information to the external environment, it is also proposed to advance CASP's structure of accounts and controls.

Thus, in line with the recent research by Laihonen, Kork and Sinervo (2023), the methodology of data sharing is used based on knowledge management strategies. For these authors, knowledge should be treated as a strategic resource focusing on practices beyond internal management, translating into transparency and the involvement of all stakeholders in the delivery of public services. The data sharing flow model is illustrated in Figure 4, as established by Davenport (1998).

Figure 4 - Public Works information flow proposal



Source: Adapted by the authors based on Davenport (1998, pp. 51, 175)

As illustrated in Figure 4, the core of this proposal is to systematize the internal control of public works using SIAFIC, with automated integration with accounting. This means that it is not proposed to generate new data or rework its entry, but to obtain pre-existing data, automate it and share it with the accounting and control areas.

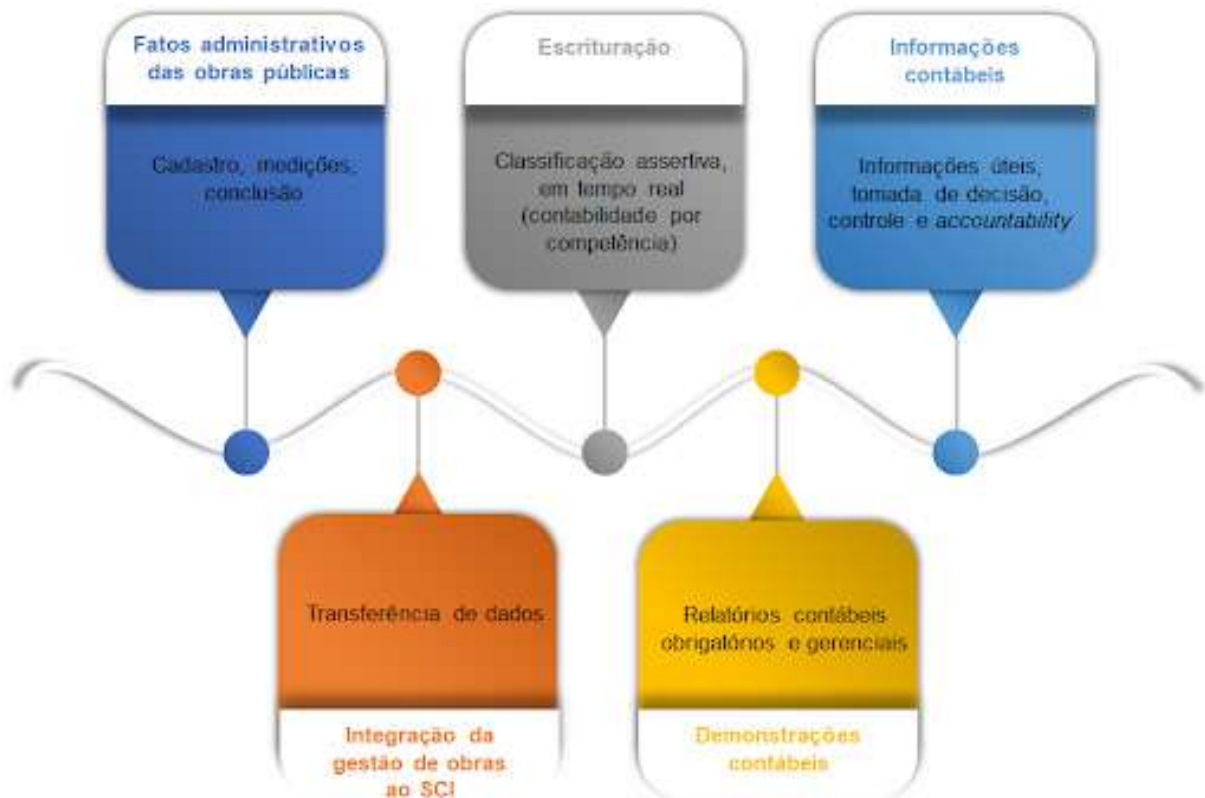
The idea is to break down internal communication barriers between the administration's own bodies, while preserving the integrity of the data and the autonomy of the players in each of the processes. Therefore, the use of knowledge management tools is evoked for the qualification of public works accounting information. In terms of determining requirements, there are the technical accounting requirements so that the information is timely, in accordance with its competence, and reliable, by representing the correct classification. The distribution of data between areas can have both an export flow to accounting and the reception of important data for the flow of works management, such as tenders, contracts, payments, among others.

To close the flow, after all the integrations have been duly parameterized according to technical specifications, the information will be ready for final use.

### ***5.1 Proposal for improving the quality of the public entity's internal accounting information***

The proposal to qualify accounting information on public works is based on meeting the attributes that make it useful. To this end, we sought to propose an internal data flow that would bring relevant administrative facts to accounting, with reliable, understandable, timely, comparable and verifiable representation (IPSASB, 2014). In addition to these characteristics, the application of data sharing techniques and knowledge management tools links construction management to the ICS in the form of the accounting information flow shown in Figure 5.

Figure 5 - Accounting flow of public works in the context of SIAFIC



Source: Prepared by the authors (2023)

The first stage of the proposed accounting flow for public works corresponds to identifying and mapping the administrative facts of public works that can affect the assets qualitatively or quantitatively. These include the start of the work, measurements, completion, as well as the status in order to identify works that have been stopped.

Once automated, the administrative facts that once existed and were restricted to the engineering area must be integrated into the SCI, comprising the data transfer stage. On this occasion, reliable data is generated internally and directly by the actors in the process, in real time. As a result, a communication process is created between the accounting and engineering areas, unaccompanied by the financial budget flow of the works, meeting the recognition of due

competence.

In turn, this second stage follows the proposal for knowledge sharing outlined in the literature by Laihonen, Kork and Sinervo (2023), Laihonen and Kokko (2023), Vardon, Burnett and Dovers (2016) and Davenport (1998). Although the proposal for the automated inclusion of public works assets in the SCI is innovative, it can be seen that it is a regular procedure with assets. These include warehouses, movable property and even completed buildings, as far as depreciation is concerned.

In view of this, the integration of construction management with the SCI aims to transfer data to accounting. This way, whenever a new construction project starts, accounting will receive the record and can carry out the appropriate asset classification. The automation of other processes, such as measurements and terms of completion of works, allows accounting to be carried out on an accrual basis and the property to be correctly reclassified. In addition, receiving data on the status of the work and recording it in the control accounts will make the volume of resources involved in stalled work transparent.

More specifically, this proposal makes it possible to improve bookkeeping by making the facts available in real time and bringing to asset recognition the measurements in liquidation that were previously only recorded at the respective stage of budget execution of the expense. On the other hand, the completion of the work, recognized through the issuance of a term of receipt of the work, becomes part of the accounting flow, and is an opportune data for the reclassification of work in progress as immovable property in the form of its respective use.

As for the status of the works, in addition to providing accounting with this essential information for planning and control, it can also make it possible to make impairment entries. The fourth stage of the public works flow provides evidence and *disclosure of* accounting statements, both mandatory and advisory and managerial, duly coated with qualitative characteristics of the information. This qualification is understood from the inclusion of relevant data, represented reliably.

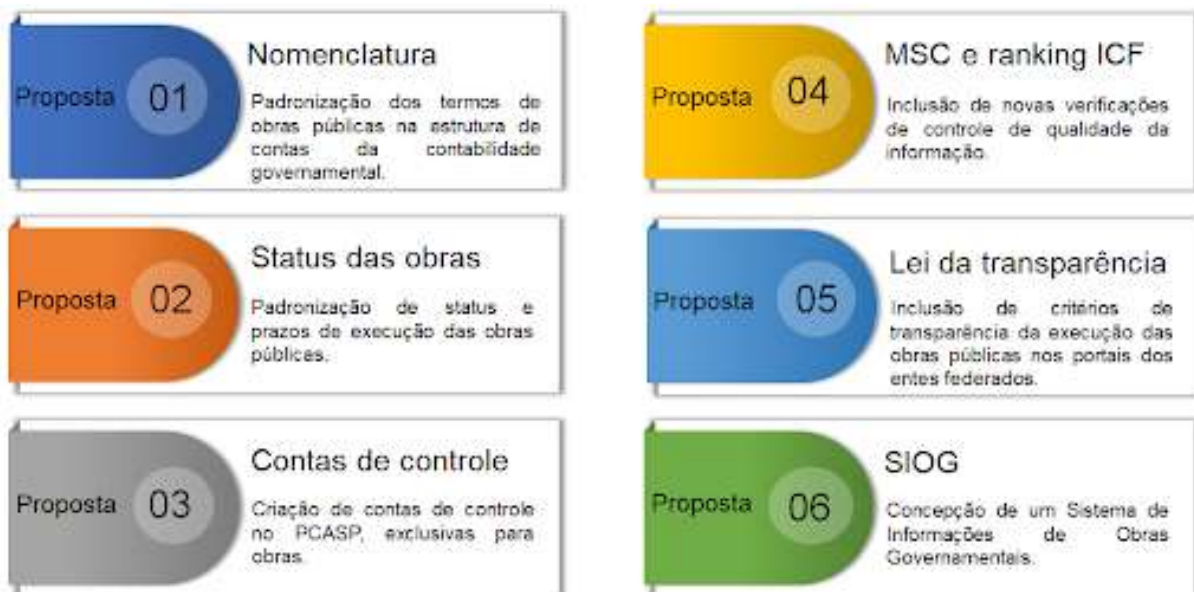
The last stage in the flow is the accounting information itself. Once the data has been recorded, it is transformed into accounting information that is useful to the organization's various internal and external audiences. Finally, closing the flow in the internal context of the organization, the model aims to deliver more qualified information for analysis, decision-making and *accountability*.

## 5.2 Guidelines for improving the quality of external accounting information

The proposal to improve the quality of accounting information across institutional boundaries is dependent on and complementary to the internal proposal discussed in the previous topic. In other words, this topic suggests procedures for creating and reorganizing structures and processes in order to provide qualified information with broad access to the various external *stakeholders*.

Figure 6 therefore offers six proposals that could be discussed, refined and transformed into an action plan in due course. However, in order for the objectives to be achieved, it is recommended that they be included as a policy to be led by the National Treasury Secretariat, in the context of its duties to consolidate national public accounts. In addition, the role of the Courts of Auditors in standardizing the transparency of public patient accounts is also fundamental in this process of requesting the new data, in a standardized way.

Figure 6 - Proposals for improving the quality of public works information for external stakeholders



Source: Prepared by the authors (2023)

The first proposal is to standardize the accounting classification nomenclature for public works in the CASP account structure, as shown in Table 2.



Table 2 - Standardization of public works nomenclature

Current nomenclatures		Proposed nomenclature	
Nature of budget information	4.4.90.51.XX	Works in progress	Public Works
Nature of asset information	1.2.3.2.1.06.00	Real estate in progress	
	1.2.3.2.1.06.01	Works in progress	

Source: Prepared by the authors (2023)

The aim is to simplify and broaden the reading and understanding of information on the execution of public works, including by members of society.

The second proposal is to standardize the terms and deadlines relating to the status of public works, as suggested in Box 3.

Table 3 - Suggested standardization of public works status

Suggested title	Function
Contractor	Includes the amount of public works contracted but without the issuance of a Service Order (OS).
In progress	Includes the amount of public works after the issuance of the Service Order - OS and with measurements issued within 45 days <sup>2</sup> .
Stop	Includes the amount of public works after the Service Order - OS, but without measurement after 46 days.
Paralyzed	Includes the amount of public works that have been issued with a stop-work order.
Completed	Includes the amount of public works after the Term of Receipt of the Work has been issued.

Source: Prepared by the authors (2023)

The aim is to make it possible to correctly compare the statuses of the various entities and periods. It also differentiates between works that have been officially halted and those that have been discontinued but not formalized.

The third proposal is to create control accounts in PCASP exclusively for monitoring the execution of public works, according to the classifications suggested in Chart 4.

<sup>2</sup> The 45-day deadline for a construction project to be considered stopped is only indicative of the reflection and subsequent standardized definition of an ideal deadline that represents it.

Table 4 - Suggested public works control accounts

Title	Type of balance
7.9.9.0.0.00.00 Other controls	Debtor
7.9.9.1.0.00.00 Control of the execution of public works	Debtor
7.9.9.1.1.00.00 Works contracted	Debtor
7.9.9.1.2.00.00 Execution of works	Debtor
7.9.9.1.3.00.00 Stopped works	Debtor
7.9.9.1.4.00.00 Works halted	Debtor
7.9.9.1.5.00.00 Works completed	Debtor
8.9.9.0.0.00.00 Other controls	Creditor
8.9.9.1.0.00.00 Execution of public works	Creditor
8.9.9.1.1.00.00 Works contracted	Creditor
8.9.9.1.2.00.00 Execution of works	Creditor
8.9.9.1.3.00.00 Stopped works	Creditor
8.9.9.1.4.00.00 Works halted	Creditor
8.9.9.1.5.00.00 Works completed	Creditor

Source: Prepared by the authors (2023)

The aim is to enable CASP to provide all federal entities with standardized information on works according to their execution status.

The fourth proposal is to improve the verifications of the SCM and the ICF Ranking by adopting new verifications, such as those proposed in Table 5.

Table 5 - Proposal to include new verifications in dimension IV - Accounting information vs. tax information in the STN's ICF ranking

- |  |
|--|
| <ul style="list-style-type: none"> <li>- Make the balance of the public works control accounts a verifiable item;</li> <li>- Check that the value of the budgeted execution of the works is equal to the value of the works in progress in the asset account group;</li> <li>- Check that there is a record in the works control accounts if there is a budget movement in the expenditure item that reports works;</li> <li>- Check that the value of completed works (control accounts) is the subject of a qualitative asset change in the asset accounts.</li> </ul> |
|--|

Source: Prepared by the authors (2023)

The aim is to make it compulsory to provide information on public works in the control accounts and to carry out checks on their quality.

The fifth proposal is to improve the Fiscal Responsibility Law (LRF) with a view to including transparency criteria for the physical execution of public works on the transparency portals of the federated entities, as shown in Chart 6.

Chart 6 - New data profile for public works transparency portals

Suggestions for information on public works to be made available on transparency portals
<ul style="list-style-type: none"> <li>- Identification of the work: name, address or location, executing unit;</li> <li>- Planning: timeframe, sources of funds;</li> <li>- Contract: date of signature, contract value, type and number of tender and contract, contracted company;</li> <li>- Amendment: type (term, value, other);</li> <li>- Financial execution: sources of funds, amounts paid;</li> <li>- Physical execution: date of service order, value measured, percentage executed;</li> <li>- Photographic report of the work.</li> </ul>

Source: Prepared by the authors (2023)

The aim is to fill the gap in the LRF, which prioritizes transparency in the budget execution of income and expenditure, by highlighting the works and their physical execution. It also demonstrates the results obtained by managers in the execution of public works.

The sixth proposal is to design an institutionalized Government Works Information System (SIOG) for all federal entities. The tool should include information on the physical, financial and budgetary execution and accountability of resources, similar to the procedures of the Public Health Budget Information System (SIOPS) and the Public Education Budget Information System (SIOPE).

The aim is to receive and consolidate information on public works in a single tool and with the same parameters; provide information to the various *stakeholders* on all public works in a single database; optimize resources used in the management and maintenance of Federal Government tools: Platform + Brazil, Integrated Monitoring, Execution and Control System of the Ministry of Education (Simec), Integrated System for Monitoring Agreements (Sismoc), Housing Management System (SisHab), Funasa and Growth Acceleration Program (PAC) databases.

## 6. DISCUSSION, BENEFITS AND RISKS

The results achieved through the central coordination of CASP regulations at national level are visible. Just look at the indicators provided by the STN regarding the amount of information provided by sub-national entities, as well as the improvement in its quality. In addition, there are countless guidelines, regulations, calls for technical hearings, among other initiatives focused on improving accounting information.

We therefore recognize the importance of all the steps taken so far. However, the process of improving accounting information must continue. In view of the problems involving public

works, there is also a need for progress in the protection and control of this public asset.

This technological article proposed devices for improving the quality of public works information. The set of proposals to meet the article's objective is in line with digital governance trends, establishing a redesign in the flow of public works data, its use and sharing. In addition to creating public value for its information by increasing transparency in the execution of public works. In this way, following in the footsteps of knowledge management and complying with the most recent mandates for integration with accounting, it is suggested that it be included in the body of SIAFIC.

To this end, the internal controls currently carried out in spreadsheets or even independent systems must undergo a modernization process, automatically integrating the flow of data to government accounting.

Although this initiative contains risks due to insecurity and resistance on the part of civil servants, as well as a wide range of questions, the steps to be taken are similar to those that have already been taken satisfactorily in other areas. For example, in the areas of material management (warehouse), movable and immovable property (assets), when they were automated.

An alternative for minimizing these risks is for the accounting and construction management teams to participate alongside the technology team so that the minimum requirements necessary for each area are met satisfactorily. Another initiative is to hold awareness and training meetings, empowering and involving the teams responsible for implementing this project.

Translating and transmitting this innovation and modernization to society should be the ultimate goal of managers. Especially when it comes to complying with the principles of public governance in terms of transparency, integrity and *accountability* (IFAC, 2001). With this in mind, the second part of the proposed solution included a set of six suggestions that could be improved and adopted at Federation level.

Generally speaking, the proposed measures presented as a solution to the problem of the poor quality of accounting information on public works offer numerous direct and indirect benefits. Some of the processes and/or results that could be achieved are listed in Table 7.

Chart 7 - Benefits expected from integrating public works management into SIAFIC

<b>Benefits</b>	<b>Sources</b>
Interaction with internal areas and actors, improvement of results, performance indicators, quality of information.	Laihonen, Kork and Sinervo (2023) Uddin et al. (2017) Andrews (2010)
Management control practices integrating physical execution, internal controls and financial budget execution, required in international credit operation contracts with development mechanisms such as the Inter-American Development Bank (IDB).	Jayasinghe and Uddin (2019) Van Helden and Uddin (2016)
It makes it possible to provide timely, understandable management information using graphs and non-financial variables.	Carlsson-Wall et al. (2022) Frezatti, Aguiar and Rezende (2020)
Reduction of information asymmetry between related areas (construction management) and other information-dependent areas (accounting, control) - User-based system.	Vardon, Burnett and Dovers (2016) Gulliksen et al. (2003)
Integration between different bases that make up SIAFIC, such as works, contracts and bidding, accounting and audit and control, broadening the understanding of real estate; shared knowledge.	Brazil (2020) Vardon et al. (2018) Laihonen e Kokko (2023)
Generation of accounting information by competence; timeliness with regard to the acts and facts of the works, enables correct classification.	Thanh Hoai and Nguyen (2023)
Generation of information for the process of reducing the recoverable value of public works.	STN (2021)
Reliable information directly from the actors in the process.	Vardon, Burnett e Dovers (2016)
Concern for the dissemination of information to external and non-managerial actors - Transparency, accountability, public engagement, generation of public value.	Laihonen, Kork and Sinervo (2023) Raschendorfer, Figueira and Furtado (2023) ; IPSASB (2014); Tello, Hazelton and Cummings (2016); Alvarenga et al. (2020); Laihonen and Kokko (2023); IFAC (2001)

Source: Prepared by the authors (2023)

Based on the set of expected benefits, the practical implications are improved processes, decision-making, reporting and public policies. However, we agree with Abdulkarim, Umlai and Al-Saudi (2020) that although civil servants will be able to see the benefits of accounting innovation, it is necessary to adopt a vertical implementation policy.

It is therefore important to coordinate local and national standards and control bodies in order to achieve the expected results. As far as the social implications are concerned, the proposal offers conditions for society to use simple information on the execution of works. Furthermore, replicating the scope of this proposal could reach other areas that are not yet part of the SIAFIC circuit, such as natural resources.

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