


COSTS IN THE PUBLIC SECTOR: A PROPOSAL FOR THE IMPLEMENTATION OF THE COST SYSTEM OF THE FEDERAL RURAL UNIVERSITY OF THE SEMI-ARID

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ABSTRACT

Federal Universities need to constantly develop their management instruments to achieve their objectives aiming at quality spending, social responsibility and transparency with public resources. In this sense, the Federal Rural University of the Semi-Arid (UFERSA) established a commission that prepared the Cost Calculation Manual (MAC) with the definition of its cost system that has not yet been implemented. The general objective of this work is to elaborate the action plan to implement the cost calculation system provided for in the UFERSA Cost Calculation Manual. Regarding the methodology, the present research is classified as to the approach of the problem in qualitative research, as to the nature it was an applied research, in terms of the objectives, a descriptive research, and with regard to the procedures, interviews, bibliographic, documentary research and case studies were carried out. The results of the study allowed the description of the Cost Manual; the survey of each process involving costs according to the Diminutive Equity Variations with the current flow and the flow according to this proposal; it was presented how cost information should be treated to be allocated to undergraduate and graduate courses; an Action Plan was proposed for the implementation of the system and Cost Calculation; and, finally, a multiple-choice questionnaire was prepared so that the requesters can correctly generate the respective cost center code.

Keywords: Efficiency. Cost System. Action Plan.

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INTRODUCTION

For public management to be satisfactory, it is necessary for the manager to know how and where to apply financial resources in order to meet the needs of the population. Optimization and control are important factors for an efficient and effective administration, since due to the scarcity of resources and the constant change in the demand for the services provided, the manager needs to define the priorities to be considered, however, always seeking quality and timeliness in the provision of services (Soares *et al.*, 2013).

The Brazilian Public Administration has been changing, in view of the objectives of administrators and especially the search to satisfy the needs of society, which increasingly demands its rights and is aware of the importance it has in the control of public actions (Silva, 2013).

Cost accounting is, therefore, an important tool in any organization, as it helps managers in the decision-making process and in the control of expenses. Likewise, it is its importance in the public sector, given that a cost system supports decision-making, managerial control, and transparency of the public service, in addition to assisting XXIX Brazilian Congress of Costs – João Pessoa, PB, Brazil, November 16-18, 2022 in managing efficiently and carrying out effective public management (Mauss & Souza, 2008).

Medeiros and Duarte (2018) state that universities do not have an adequate system for calculating and analyzing the costs of their activities. Without such a system, managers do not have adequate information that makes it possible to evaluate the performance and rationality in the use of resources.

At UFERSA there is no cost system implemented. Currently, only the information of a generic cost center is carried out at the time of settlement of the expense, that is, it is not possible to allocate the costs in a discriminated way. However, the UFERSA Cost Manual – MAC was prepared by an internal institutional committee, but despite the commission's work being completed, the MAC is not yet being used, so that the need arises to establish an action plan for its implementation. The UFERSA Cost Calculation Manual aims to establish the cost calculation system that is capable of enabling the user interested in the preparation of reports of the University's costs by Campi, Cost Unit, Type of Costs, Macroprocesses and cost objects, thus allowing a global view of the UFERSA Value Chain, in order to contribute to the evaluation of the efficiency of the actions developed by the University,

To achieve its institutional mission and maximize efficiency in the application of public resources (UFERSA, 2020).

In view of this, the work presented herein seeks answers to the following research problem: how to implement the cost calculation system provided for in the UFERSA Cost Calculation Manual?

Considering the context presented, it will be established as a general objective to prepare the action plan to implement the cost calculation system provided for in the UFERSA Cost Calculation Manual.

This research becomes relevant since society is increasingly attentive to how Public Administration expenses are being carried out, so the UFERSA cost calculation system to be implemented has the purpose of establishing criteria and methods to measure these expenses, which are currently not so simple to understand.

The present study is justified by the need to increasingly seek to measure, to have control of the institution's costs, and in turn, to outline strategies in order to reduce its costs, while maintaining the quality of its services, in order to promote efficiency, efficacy and effectiveness regarding the actions of the Federal Rural University of the Semi-Arid Region. In addition, this study is justified by the need for the effective implementation of the UFERSA cost system, proposed by MAC, as a way to finalize the process initiated by the commission that prepared the aforementioned manual.

METHODOLOGICAL PROCEDURE

TYPE OF RESEARCH

To carry out this research, the first step was the description of UFERSA's cost calculation model; the second, the survey of the institution's information flows for the calculation of costs, from the requisitions until the XXIX Brazilian Congress of Costs – João Pessoa, PB, Brazil, November 16 to 18, 2022, the moment of settlement of expenses in the financial sector; the third, to ascertain how the information on cost calculation should be treated to compose the cost matrix and feed the cost calculation system; finally, an action plan was proposed, based on the results, that would allow the institution to implement the cost calculation system provided for in the UFERSA Cost Calculation Manual. The goal is for the requester to have the ability to classify the cost in the safest way possible, even without having much knowledge of the cost area; and that users can extract cost reports in an accurate and detailed way.

The present research was classified as to the approach of the problem in qualitative research, as to the nature it was an applied research, in terms of objectives it was a descriptive research, and with regard to the procedures, interviews, bibliographic and documentary research and case studies were carried out.

The case study adopted as a methodology strategy in the search for answers to the research problem. This research had a descriptive character, since it sought to demonstrate the operationalization of UFERSA's cost system, identifying barriers and proposing improvements, aiming at the implementation of the institution's cost modeling.

Documentary research was carried out to obtain data using the UFERSA Cost Calculation Manual as a research source. In addition, a semi-structured interview was conducted with a civil servant who works with requisitions, and with a civil servant who works in the Accounting and Finance Directorate of the University in question.

DATA COLLECTION AND PROCESSING

To carry out this research, semi-structured interviews were conducted with the civil servant who receives the requisitions, that is, starting from the beginning of the process of acquiring materials and services for the institution.

An interview was also conducted with the Accountant responsible for the institution in order to have the knowledge to carry out the survey of information regarding the costs involving Diminutive Equity Variations. Due to the moment the world is going through, because of the COVID-19 pandemic, the interviews were carried out remotely, through the Google Meet platform.

The Requisition phase was the moment to insert the code related to the cost object in which the expense was identified. The user requesting the expense, even without being properly trained and qualified, can determine, for example, the source of funds to be consumed and whether the expense is of the finalistic type (Teaching, Research, Extension) or support (administrative activities).

SIPAC is the system in which Requesters register their requests. He works at all administrative levels of the university. In this way, the University's requests are registered in this system, but the budget and financial execution is done directly in the SIAFI system. Therefore, it was relevant to analyze whether SIPAC can be adjusted to insert the cost center code at the time of registration of the Requisition, or if it will be necessary to create a new system for the insertion of these codes.

According to Ribeiro and Xavier Júnior (2020), the implementation proposal uses the cost model of public services in Santos (2014) to calculate the cost of undergraduate and graduate courses at the Federal Rural University of the SemiXXIX Brazilian Congress of Costs – João Pessoa, PB, Brazil, November 16 to 18, 2022 Árido. The motivation for choosing the model for calculating the costs of Santos (2014) was because it presented an advance in relation to the model of Machado and Holanda (2010). The model of Santos (2014) uses the equity information provided by the Diminutive Equity Variations, not requiring adjustments to arrive at the result, as is the case of the model of Machado and Holanda (2010).

ANALYSIS AND DISCUSSION OF THE RESULTS

UFERSA'S COST CALCULATION MODEL

As stated in the Manual, the starting point for calculating costs is the diminutive equity variations - VPD. The Trial Balance of the VPD's must be analyzed in order to identify which of these are Cost elements and which are not. The elements that do not constitute costs are those that do not contribute to the performance of services, such as: retirements, pensions, interest and late payment charges, intergovernmental transfers, transfers to private institutions, disincorporation of assets, funeral assistance, among others

Table 1. Cost Elements by Class

	VPD Code	Description of the Input	Detailed input
Staff and Charges	3.1.1.0.0.00.00	Personal remuneration	Salaries and salaries, Allowances bonuses, bonuses, vacations.
	3.1.2.0.0.00.00	Employer assignments	Employer's contribution to the Provident Fund System Of Servers and Social Security Contributions of the National Institute of Social Security.
	3.1.3.0.0.00.00	Personal Benefits	Assistance Preschool; Help-Transport; Food Allowance; Health Care.
Social Security and Assistance Benefits	3.2.9.0.0.00.00	Other social security and assistance benefits	Birth aid.
Use of goods, services and fixed capital cons.	3.3.1.0.0.00.00	Use of consumables	Immediate consumption material, consumption of fuels and lubricants, consumption of stored materials – warehouse.
	3.3.2.0.0.00.00	Services	Interns; professional technical services; educational and cultural services; cleaning and conservation; vigilance; exhibitions, congresses and conferences; electricity, water and sewage and communication services; transport services, passage, locomotion and accommodation.
	3.3.3.0.0.00.00	Depreciation, amortization, and depletion.	Depreciation of movable and immovable property.
Tax	3.7.2.0.0.00.00	Contributions	Employers' obligations for third-party services and contribution to public lighting.
Other equity variations diminutives	3.9.4.0.0.00.00	Incentives	Scholarships in the country and grants for the development of studies/research.

Source: UFERSA (2020).

The premises of the model to be implemented at UFERSA are listed below:

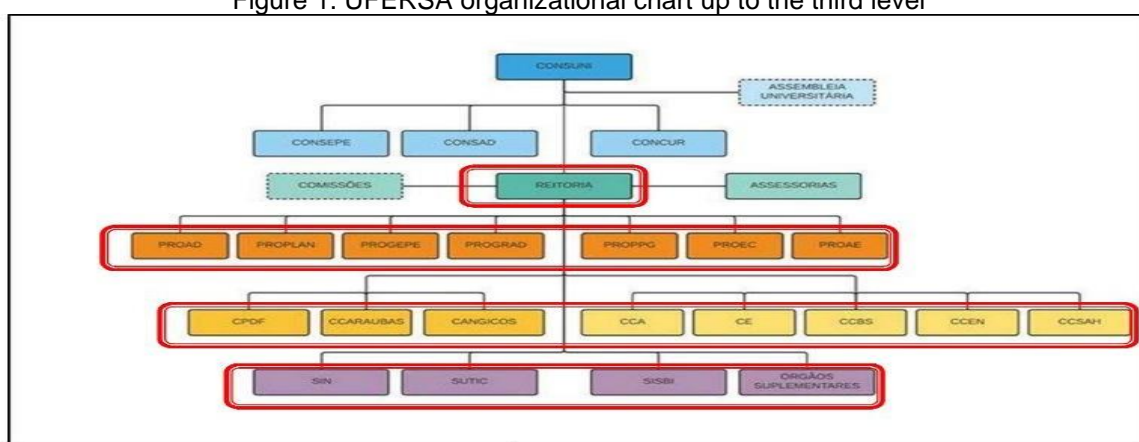
- Cost Object – Undergraduate and graduate courses.
- Cost Accumulation System – By process.
- Costing system – Historical costing, Estimated costing.
- Costing method – Absorption Costing.
- Cost Elements – Diminished Equity Variations.
- Area of operation of costs – Finalistic or Support.
- Calculation period – Annual.

As for cost centers, their use makes it possible to measure and evaluate the accumulation of costs of a given item, thus allowing to see the behavior of this cost in a

more analytical or detailed way. The cost modeling adopted by UFERSA defines the Administrative Units as Cost Units.

In view of the various levels of hierarchy found in the UFERSA organizational chart, according to Figure 1, it was decided to calculate the costs up to the third level, that is, up to the academic centers and pro-rectories and the two Superintendencies existing in the institution (Superintendence of Infrastructure – SIN – and the Superintendence of Information and Communication Technology – SUTIC).

Figure 1. UFERSA organizational chart up to the third level



Source: UFERSA (2020).

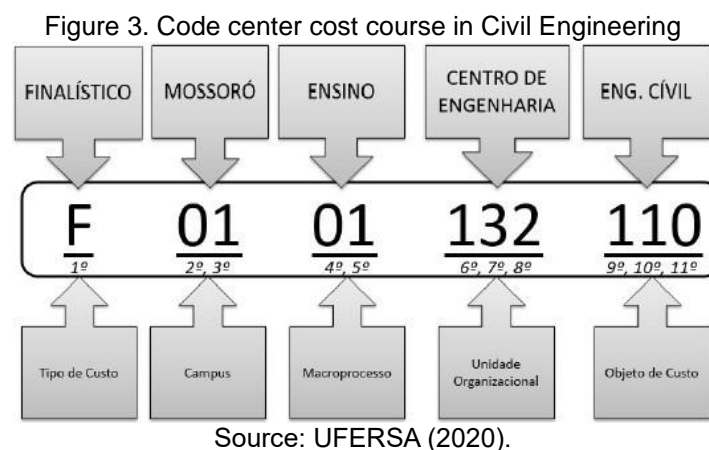
Figure 2 shows what the cost center coding looks like.

Figure 2. Cost Center Coding

DIGITO	DESCRIÇÃO
1º	Tipo de Custo
2º	Campus
3º	
4º	Macroprocesso
5º	
6º	
7º	Unidade de Custo
8º	
9º	
10º	Objeto de Custo
11º	

Source: UFERSA (2020).

Being composed of 11 digits, Figure 3, below, is an example of a cost center code of an undergraduate course in Civil Engineering, showing specifically where a certain cost is going. In this case, the aforementioned course is a cost object.



Thus, the cost center F0101132110 refers to a finalistic cost (F), of the Teaching macroprocess (01), of the Engineering Center cost unit (132), and to the Cost Object of the Undergraduate Course in Civil Engineering.

Another issue that the Manual exposes is the fact that some costs need to be apportioned to be directed to cost units and, subsequently, to cost objects. Chart 4 presents the cost elements and their respective apportionment criteria, and other criteria may be used, which are more appropriate to the cost element, as long as it is duly justified. The cost report must inform which apportionment criteria were used.

Table 2. Apportionment Criterion vs. Cost Elements.

Apportionment Criterion	Cost Element
Number of civil servants	Remuneration to personnel; employer charges; personal benefits; other social security and assistance benefits.
Occupied area	Property maintenance; depreciation of real estate; water and sewage supply, electricity, gas and other services.
Number of beneficiaries	Aids, scholarships, food.
Daily rates per unit	Daily.
Ticket prices per unit	Tickets and accommodation.
Number of stations per unit	Outsourcing and leasing of labor.
Matriz Andifes	Untraceable services.
Aluno Equivalent	Allocation of the costs of academic centers for undergraduate and graduate courses.

Source: Adapted from MAC-UFERSA (2020).

To direct the costs allocated in the cost units for undergraduate courses, the number of equivalent students of each of the courses will be used, and for graduate courses, the annual average of enrolled students will be used as an apportionment criterion, assigning

the weight of an equivalent undergraduate course. It is worth noting that the criteria will only be used in cases where it is not possible to allocate costs directly to cost units.

After the implementation of UFERSA's Cost System, the cost centers will promote the direct allocation of costs without the need to use the cost apportionment criteria. However, as the SIAFI only allows informing one cost center for each settlement of the expense, the cost elements that are common to more than one Cost Unit, such as Personnel Compensation, will have to be apportioned based on the Cost apportionment criteria. Cost elements may, even if allocated directly to cost units, require apportionments to be allocated to cost objects.

ACTION PLAN

The following is the Action Plan with the proposals for the implementation of the Cost Calculation System – UFERSA:

Proposal 01 – Cost Center for Treatment

At the time of settlement of the expense, the server that performs the assignment, in SIAFI, places a generic cost center, so that all expenses are allocated in one place.

In view of the purpose of allocating costs in a discriminated way, referring to the Type of Cost, Campus, Macroprocess, Cost Unit and Cost Objects, one of the propositions of this research is the addition of an apportionment identifier, since there are VPD's that need apportionments, so that the cost center code cannot be included directly. Table 3 illustrates this proposition.

Table 3. Cost Type

DIGIT	DESCRIPTION	STRUCTURE	CLASSIFICATION
First	Cost Type	F	Cost of Finalistic Activities
		The	Cost of Support Activities
		R	Cost to be prorated

Source: Prepared by the author (2022).

Following the same way, with regard to the Campus, the corresponding digits are the 2nd and 3rd, and the codes are: 01 – Mossoró; 02 – Angicos; 03 – Caraúbas; 04 – Pau dos Ferros; and 05 bringing the option of "cost to be prorated".

The digits 4th and 5th correspond to the finalistic and support macro-processes, through the Teaching, Research and Extension codes, reaching option 15 "cost to be

prorated". The digits 6th, 7th and 8th correspond to the cost units of UFERSA, they are the Rectory, Office, Advisory, Committees, Pro-Rectories, Academic Centers, starting with code 100, reaching code 999, providing the option of cost to be prorated.

The digits 9th, 10th and 11th refer to the cost objects, which are all undergraduate and graduate courses at UFERSA. Starting with code 100, reaching code 999, providing the option of the cost to be prorated.

Proposal 02 – Creation of a multiple-choice questionnaire in the requisition

When the requester is going to use the system to register a Requisition, he can use a questionnaire containing simple questions about the destination of the expenses that are being requested, so that, even if the server is not aware of costs, he will be able to generate the cost center code.

Figure 4. Custodial Center Code – Custodial Type

Código de Centro de Custo		
Nível	Pergunta	Resposta
Tipo de custo	Essa despesa contribuirá para atividade de Ensino, Pesquisa e Extensão ou será para as atividades administrativas?	R
Campus	Para qual Campus se refere esta despesa?	F A C
Macroprocesso	Esta despesa atenderá atividades primárias ou de suporte?	05
Unidade de Custos	Esta despesa está relacionada com qual setor da UFERSA?	116
Objeto de Custos	A despesa é para algum Curso específico da UFERSA?	999
R0105116999		

Source: Prepared by the author (2022).

Based on the Cost Type, the Campus, the Macroprocess, the Cost Unit and the Cost Object, it becomes possible for the user or Requester to answer the questions below and generate the Cost Center Code, even if they do not have technical knowledge about Costs. Below is a template of what the quiz will look like with the questions and answer options.

Proposal 03 – Creation of a cost division or commission

At the moment, UFERSA does not have a cost system in place. With the proposal, the University Management will be able to analyze and choose the one that is the most viable.

Option 01: Create a new Division within the Accounting and Finance Department. Being the Cost Calculation Division. It would be composed of two or three civil servants,

who would work analyzing, in the SIAFI system, all the institution's expenses, and locating those expenses that have the cost center for treatment. Then I would perform all the calculations to treat the expense in order to allocate it to the cost object.

Advantage: The work would be carried out in a timely manner, with information that is always up to date, and can extract reports that are always up to date.

Disadvantage: Difficulties of Universities in general in hiring new employees or even relocating them from other sectors within the institution, but with insufficient staff, other services could be impaired.

Option 02: Annually create, by means of an Ordinance, a Commission in order to determine the costs of UFERSA. It would not need to hire or relocate new servers, it would only appoint servers according to the finity with the cost area. This commission would work from January to March, analyzing all the cost centers of the previous year and carrying out the apportionment procedures for those expenses that need it.

Advantage: There would be no need to modify the structure of the sector, nor to appoint or relocate civil servants.

Disadvantage: There may be work overload for the servers involved. The information would only be updated annually after the Commission's work.

Proposal 04 – Creation of a computerized system

Propose a computerized system to compile all cost centers that needed apportionment and separate from those that do not; this system could apportion the costs from the Cost Type to the Cost object, by inserting some data by the servers that would work with this system.

FINAL CONSIDERATIONS

The present research presented as a question the following problem: how to implement the cost calculation system provided for in the UFERSA Cost Calculation Manual? Considering the context presented, the general objective was to prepare the action plan to implement the cost calculation system provided for in the UFERSA Cost Calculation Manual. The present work is classified according to the approach to the problem of qualitative research, and, in turn, interviews, bibliographic and documentary research and case studies were carried out.

The implementation of the cost system can improve the institution's planning and management process, drive the decisions of university managers, in addition to providing transparency to the academic community. As far as the practical issue for the institution is concerned, it is a matter of continuing the work carried out by the cost committee, which prepared the MAC, but it remains to carry out its proper implementation.

To carry out this research, the first step was the description of UFERSA's cost calculation model; the second was the survey of the institution's information flows for the calculation of costs, from the request to the moment of settlement of the expense in the financial sector of UFERSA; the third was the analysis of how the information on cost calculation should be treated to compose the cost matrix and feed the cost calculation system; and as a product of this research, an action plan was proposed in order to allow the institution to implement the cost calculation system provided for in the UFERSA Cost Calculation Manual.

For each of these VPD'S, two mappings of the information flows were carried out: the first with the description of how the flow of information currently occurs at UFERSA and the second flow according to the proposal of the present research. The VPD's that were worked on are: personnel expenses, use of consumables, services, depreciation, contributions and incentives.

When the UFERSA server is going to register a certain request, it must inform the cost center code in the system, so that when the expense is settled, the resource is allocated to the given code, and no longer using a generic cost center. Another issue that the Manual exposes is the fact that some costs need to be apportioned to be directed to cost units and, subsequently, to cost objects.

In turn, an instrument was proposed that will help generate the cost center code. When the requester uses the system to register a Requisition, a questionnaire will be displayed for him to answer and, through his answers, that cost will be properly allocated. Therefore, even if the server does not have knowledge of costs, it will be able to generate the cost center code. Through the SIC-UFERSA proposal, the server, at the time of settlement, will include a definitive cost center code or for treatment, that is, indicating that a certain expense cannot be allocated directly to the cost object, needing to go through an apportionment process.

At the moment, UFERSA does not have a cost system in place. With the proposal, the University Management will be able to analyze and choose the one that is the most

viable. The first option would be to create a new Division within the Accounting and Finance Department. Being the Cost Calculation Division. It would be composed of two or three civil servants, who would work analyzing, in the SIAFI system, all the institution's expenses, and locating those expenses that have the cost center for treatment. Then, it would perform all the calculations to treat the expense in order to allocate it to the cost object. The advantage would be that the work could be carried out in a timely manner, with information that is always up to date, and that it can extract reports that are always up to date. The disadvantage would be the difficulties of Universities in general in hiring or even reallocating servers from other sectors to compose this Division, in addition to the difficulty of a server with expertise in the area.

The second option would be to create, by means of an Ordinance, a Commission with the aim of determining the costs of UFERSA on an annual basis. It would not need to hire new employees, it would only appoint employees belonging to the institution with affinity with the cost area. This commission would work from January to March, analyzing all the cost centers of the previous year and carrying out the apportionment procedures for those expenses that need it. The advantage would be the fact that it would not need to modify the structure of the sector, nor appoint new civil servants. The disadvantage would be related to the overload of work for the servers involved; and the information would only be updated annually after the Commission's work.

And, finally, as a suggestion, propose a computerized system to compile all the cost centers that needed apportionment and separate those that do not. Verify with SUTIC the possibility of apportioning the costs from the Cost Type to the Cost object, by inserting some data by the servers that would work with this system.

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