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PERFORMANCE EVALUATION AS AN INSTRUMENT TO SUPPORT THE MANAGEMENT OF THE ADMINISTRATIVE COORDINATION OF THE CAMPUS OF A FEDERAL PUBLIC UNIVERSITY: A CONSTRUCTIVIST MULTICRITERIA PERSPECTIVE

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ABSTRACT

Purpose of the study: To build a multicriteria model of performance evaluation to support the management and support the decision making of the Administrative Coordination of a campus of a Public University, according to the perception of the Administrative Coordinator.
Methodology/approach: This is a case study. The Constructivist Decision Support Multicriteria Methodology (MCDA-C) was adopted for the construction of the model that took place through interviews with the Campus administrative coordinator, which allowed identifying the important aspects for evaluating the performance of the activities of the Coordination Administrative.
Originality/Relevance: As for the originality of the work, it is based on the development of solutions for internal problems found within a university campus with its own management, but which has very specific situations originating in the relationship with the University Rectory, located in different states. It is noteworthy that the descriptors (indicators/KPIs) constructed for the research were not identified in the literature.
Main results and contributions to management: 131 EPAs were identified, and 136 concepts were built, distributed in 15 Areas of Concern. Cognitive maps and 73 descriptors (indicators/KPIs) were made, which allowed the expansion of knowledge for the decision maker to be met. The built model allowed the definition of institutional priorities and the elaboration of actions for improvement that will increase the performance of the Administrative Coordination of Campus Laranjeiras do Sul.
Theoretical/methodological contributions: As a theoretical contribution, the work brings a view of Performance Assessment to the Public Sector, with emphasis on higher education institutions, for a specific context, an aspect neglected in the literature.

Keywords: administrative management, public university, performance evaluation, MCDA-C, constructivist approach

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Avaliação de Desempenho como Instrumento de Apoio ao Gerenciamento da Coordenação Administrativa do Campus de uma Universidade Pública Federal: uma perspectiva Multicritério Construtivista

Resumo

Objetivo do estudo: construir um modelo multicritério de avaliação de desempenho para apoiar a gestão e subsidiar as tomadas de decisões da Coordenação Administrativa de um campus de uma Universidade Pública, segundo a percepção do Coordenador Administrativo.
Metodologia/abordagem: Trata-se de um estudo de caso. Adotou-se a Metodologia Multicritério de Apoio à Decisão Construtivista (MCDA-C) para a construção do modelo que deu-se por meio de entrevistas com o coordenador administrativo do Campus, onde permitiu identificar os aspectos importantes à avaliação do desempenho das atividades da Coordenação Administrativa.
Originalidade/Relevância: Quanto a originalidade do trabalho baseia-se no desenvolvimento de soluções para os problemas internos encontrados dentro de um campus universitário com gestão própria, mas que tem situações muito específicas originadas na relação com a Reitoria da Universidade, situadas em estados diferentes. Ressalta-se que os descritores (indicadores/KPIs) construídos para a pesquisa não foram identificados na literatura.
Principais resultados e contribuições para a gestão: Foram identificados 131 Elementos Primários de Avaliação (EPAs), e 136 conceitos foram construídos, distribuídos em 15 Áreas de Preocupação. Foram confeccionados mapas cognitivos e 73 descritores (indicadores/KPIs), que permitiram atender a ampliação de conhecimento para o decisor. O modelo construído possibilitou a definição das prioridades institucionais e a elaboração de ações para o aperfeiçoamento que elevarão o desempenho da Coordenação Administrativa do Campus Laranjeiras do Sul.
Contribuições teóricas/metodológicas: Como contribuição teórica o trabalho traz um olhar da Avaliação de Desempenho ao Setor Público, com ênfase nas instituições de ensino superior, para um contexto específico, aspecto negligenciado na literatura.

Palavras-chave: gestão administrativa, universidade pública, avaliação de desempenho, MCDA-C, abordagem construtivista

La Evaluación del Desempeño como Instrumento de Apoyo a la Gestión de la Coordinación Administrativa del Campus de una Universidad Pública Federal: una perspectiva Multicriterio Constructivista

Resumén

Objetivo: construir un modelo de evaluación de desempeño multicriterio para apoyar la gestión y subsidiar la toma de decisiones en la Coordinación Administrativa de un campus de una Universidad Pública, según la percepción del Coordinador Administrativo.
Metodología/enfoque: Este es un estudio de caso. Para la construcción del modelo se adoptó la Metodología de Apoyo a la Decisión Constructivista Multicriterio (MCDA-C), la cual se llevó a cabo a través de entrevistas al coordinador administrativo del Campus, las cuales permitieron identificar aspectos importantes para evaluar el desempeño de las actividades de Coordinación Administrativa.
Originalidad/Relevancia: La originalidad del trabajo se basa en el desarrollo de soluciones a problemas internos que se encuentran dentro de un campus universitario con gestión propia, pero que presenta situaciones muy específicas originadas en la relación con la Rectoría

Universitaria, ubicada en diferentes estados. Es de destacar que los descriptores (indicadores/KPI) construidos para la investigación no fueron identificados en la literatura.
Principales resultados y aportes a la gestión: Se identificaron 131 AAE y se construyeron 136 conceptos, distribuidos en 15 Áreas de Preocupación. Se crearon mapas cognitivos y 73 descriptores (indicadores/KPIs), que permitieron al decisor ampliar conocimientos. El modelo construido permitió definir prioridades institucionales y desarrollar acciones de mejora que aumentarán el desempeño de la Coordinación Administrativa del Campus de Laranjeiras do Sul.
Aportes teóricos/metodológicos: Como aporte teórico, el trabajo analiza la Evaluación del Desempeño en el Sector Público, con énfasis en las instituciones de educación superior, para un contexto específico, aspecto descuidado en la literatura.

Palabras clave: gestión administrativa, universidad pública, evaluación del desempeño, MCDA-C, enfoque constructivista

Introduction

The public sector has undergone changes both in the aspects related to democracy and in the aspects of (Krudicz et al, 2023; Monfardini, 2010)management . Regarding management, this is because the services provided to the population imply a number of involved, which makes it difficult to control and guarantee quality for citizens (Thiel, Ensslin & Ensslin, 2020). Meeting the needs of the population is one of the characteristics of Public Management. For this, it needs to be structured in order to improve its performance, give transparency to the management, seek efficiency and effectiveness to the action of the State in carrying out public services. In this context, to achieve its goals and objectives, performance measures are required, which are used by organizations to evaluate, control and improve organizational (Ghalayini & Noble, 1996)processes.

Inserted in this context of public management are public universities, which seek new practices, techniques and internal procedures that evaluate performance, to certify the correct application of available resources, to demonstrate the results achieved, provide more transparency of the acts and reduce the informational asymmetry between the entity and its users and decision making (Ruschel et. al, 2023; Araújo, Matos & Ensslin, 2021; Valmorbida et al., 2014).

Over the past few decades, the methods of evaluating performance have changed. This is due to changes in organizational structure, culture, strategies and needs of organizations, since changes in both the environment and strategy should lead to the need for new and updated measures and performance metrics (Balen et al., 2022; Back et al., 2022; Bititci, Garengo, Dörfler & Nudurupati, 2012; Ghalayini & Noble, 1996; Krudycz et al., 2023; Melnyk et al., 2014; Matos et al., 2019; Martins, Ensslin & Dutra, 2018; Martins & Ensslin, 2020).

SMelnyk et al. (2014) Second it is necessary to review the measures and metrics used, because the performance evaluation systems must be adaptable to the constant changes in the environment, they should consider the characteristics and particularities of the organizations and the environment in which they are inserted. To minimize the challenges faced by managers, it is indicated the adoption of Performance Evaluation Systems that contemplate metrics that really translate the reality of each organization, in this case, of universities, avoiding the use of indicators that do not reflect their (Thiel et al., 2020; Martins & Ensslin, 2021)performance .

Public services cannot be considered efficient or effective by the standards used for private companies, their management must be understood from their specificity, their own logic and their (Martins et al., 2018; Leitão, 1987)processes. It is noteworthy that there is a combination of different actors, each with their own values, perceptions, different objectives, interacting in asymmetric power relations (Ensslin et al., 2000). The theory of decision has always considered the decision-making process independent of the decision-maker, being at the center the decision-making process, the mental activities of a decision-maker, which must be found within the decision-making process and not outside it (Tsoukiàs, 2008)

Thus, traditional models of performance evaluation end up not meeting the needs of managers. An alternative to the use of traditional models of performance evaluation is the use of models with a constructivist approach (Balen et al, 2022; Enslin et al, 2022). Among the potentialities identified through the constructivist approach, there is the ability to structure the subjective situation of decision makers, the construction of value functions for decision makers, the generation and evaluation of actions for the context object of study, knowledge of construction and understanding of the situation; besides generating an interactive system of learning and improvement (Valmorbida et al., 2013).

Given this context, we have the following research question: What criteria are considered in the Performance Assessment process to support management and subsidize decision-making of the Administrative Coordination of a Public University campus? In order to answer the proposed question, the general objective of this work is to build a multi-criteria model of performance evaluation to support management and subsidize the decision-making of the Administrative Coordination of a campus of a Public University, according to the perception of the Administrative Coordinator.

In order to meet the objective, it was necessary to build a performance evaluation model. Given the limitations presented by the known methods, we adopted the multicriteria methodology to support the Constructivist Decision (MCDA-C), because its constructivist characteristic allows the decision maker, structure the subjective situation and the construction

of value functions for decision makers, generate and evaluate actions for the context of the object of study, the knowledge of construction and understanding of the situation; generate an interactive system of learning and (Krudycz et al., 2023; Valmorbida et al., 2013)improvement.

The relevance of this work is mixed with the importance of Performance Assessment in all sectors, with metrics that are appropriate to the management of Universities, and it is intended to develop theoretical contribution on the evaluation of organizational performance of public universities. It will bring practical contribution through the construction and application of the performance evaluation model for the management of a specific campus of a federal university, aiming to assist the decision-making process of the Administrative Coordination, which performs the management function of the university.

As for the originality of the work it is based on the development of solutions to the internal problems found within a university campus with its own management, but which has very specific situations originated in the relationship with the University Rectory, located in different states. The research is considered viable and justified the choice of the institution, considering the availability and interest of the decision maker, Administrative Coordinator of the campus, for the expansion of knowledge related to the context of the administrative coordination, as well as the possibility of a tool with descriptors (indicators) that will support the management activity of the Campus Laranjeiras do Sul of UFFS.

As a contribution, the work brings a look of Performance Assessment to the public sector, with emphasis on higher education institutions. It is expected that the model will serve as a reference for the analysis of the performance of the management and decision-making of the coordination.

As a theoretical contribution, the work brings a look of Performance Assessment to the public sector, with emphasis on higher education institutions. It is expected that the model will serve as a reference for the analysis of management performance and decision-making of the board, the application of public resources and, as an incentive for the continuity of improvement of the management processes of the campuses of this and other universities.

This article is organized as explained below. After this first section of introductory character, the second section presents the theoretical basis that guide the research with the theme on Performance Evaluation in Universities. Section 3 presents the research methodology, divided into two parts that present the methodological framework of the present article and the MCDA-C methodology, tool indicated for the Performance Evaluation. In the fourth section, it is presented the construction of the constructivist model and all its phases: Structuring Phase, Evaluation Phase and Recommendation Phase. Finally, section 5 presents the final

considerations, where reflections are also presented on the results found and makes recommendations for future research, based on the limitations of this study.

2 Review of the literature

2.1 Evaluation of Performance in Universities

The use of performance measurement and its indicators in higher education has raised criticism, due to the fact that the roots of modern performance measurement are in industrial production, and the use of instruments to measure performance in universities is considered problematic, mainly due to the difficulties of defining and measuring performance outside the for-profit contexts (Kallio et al, 2020). The performance measurement practices were gradually integrated into the classic principles of political and budgetary decision-making, where the search for efficiency has always been a concern, not in terms of profit, but in the search for procedural economicity(Vakkuri & Johanson, 2020).

Some criticisms received are technical, because they question the ability of performance indicators to often simple, to measure the performance in an environment as complex as Higher Education (Alach, 2017). Studies have shown that there are some dilemmas in measuring university performance. Accurate measurement of clearly defined targets and indicators, always remembering that performance measurement is neither apolitical nor technical, and that issues such as what to measure, what performance measure and measure for what purpose are political decisions that are subject to change (Woelert & Yates, 2015). Still the literature examined shows that performance measurement is a field with many uncertainties, with significant differences between academic and administrative staff and a low belief in its benefits (Alach, 2017).

According to Tanveer, Karim and Mahbub (2020), universities are forced to adopt measures based on agency theory to implement performance management, where clearly a more targeted approach is taken. However, when the performance measurement is carried out internally, one can create more effective indicators for the improvement of services, while external indicators may not portray reality and risk destroying the performance culture that has been developed (Broad, Goddard & Von Alberti, 2007). Given the difficulties encountered in measuring performance in public universities, some studies have brought contributions about the methods available to perform performance evaluation in universities.

Alach (2017) sought to use components of a seven-element model to examine the development of performance measurement maturity in New Zealand universities in the period 2008-2013, when analyzing the annual reports, he realized that universities showed strong

points in aligning measures with strategic direction and in the use of results structures. It also observed the breadth and quality of the measures and their use to guide institutional decision-making, providing useful information on the real use of performance measurement in universities.

Tanveer et al. (2018) in its study, which focused on analyzing and gathering data on performance management performance in higher education institutions, seeks to examine the role of an educational system in its natural context. The authors realized that the concept of performance measurement in higher education needs to be improved and adapted to the needs and vision of universities, which need to implement performance measurement procedures, where it is necessary to take into account the performance of all at the university, including academics along with administration.

Kallio, Kallio and Grossi (2017) made empirical findings that demonstrate that internal practices of performance measurement in universities resulted in quality quantification, sub-optimization and *free*-riding. The authors concluded that the quality indicators were being quantified unilaterally, and that the easiest way to achieve the goals is to decrease the quality with more accessible targets and with more flexible criteria. In their study, the authors suggest the restructuring of the current university performance measurement systems by introducing new, more comprehensive and more balanced indicators.

However, there seems to be a shortage of technical quality analysis of performance measurement methods (Krudicz et al. al, 2023). This makes it difficult to distinguish between good and bad performance management models, wasting expenses on models whose effects are questionable and making the use of performance measures challenging. This is the case, therefore, the measurement systems are uncertain and with partial scope, where the possibility of capturing all the complexity of organizational reality is deprived (Kure, Noreklit & Roge, 2021).

A constant in the studies analyzed is the fact that the models used find great difficulty contemplating all the specificities of the organization. As a result they can compromise the success of the performance evaluation. Faced with this difficulty, the relevance of the construction of unique models, still incipient in the literature focused on universities, which recognizes the organization as unique both in terms of its managers, as well as its potential and vulnerability.

2.2 Intervention Instrument – Multi-criteria Methodology for Decision-Constructivist Support (MCDA-C)

The MCDA-C methodology, used in this case study, was developed by the Laboratory of Multicriteria Methodologies for Decision Support (LabMCDA) of the Federal University of Santa Catarina (CARDOSO et al., 2017). The MCDA-C approach seeks to expand the knowledge of the decision-maker in complex, conflicting and uncertain scenarios (Martins et al., 2018; Ensslin et al., 2000). This involves investigating the context of decision-making to create models that provide the parties involved with a basis for their choices, considering their perceptions and values (Martins et al., 2018; Ensslin et al., 2000). Therefore, the constructivist approach analyzes the object according to the researcher's perspective (Roy, 1993).

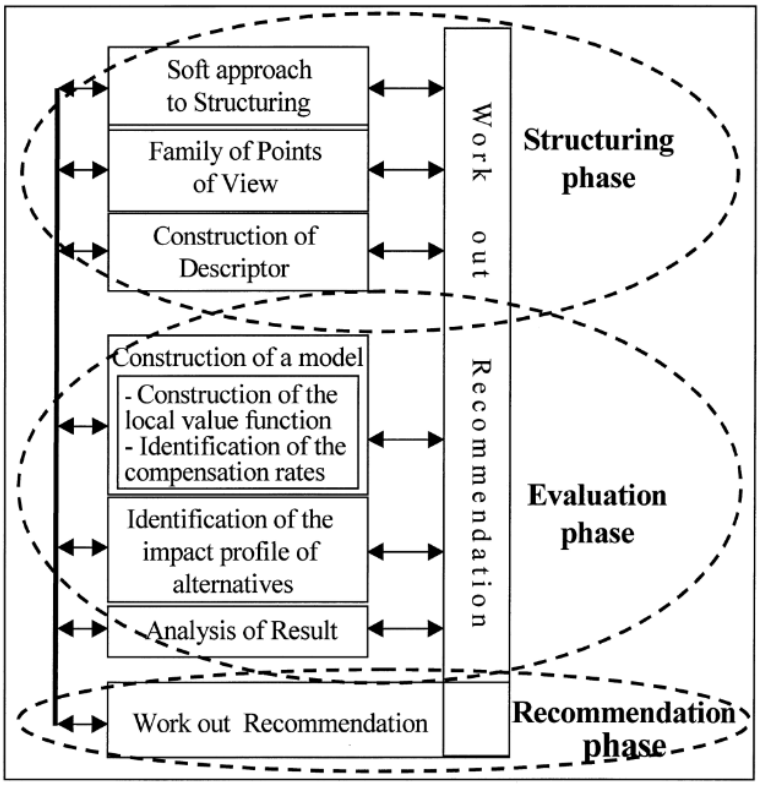
Among the potentialities identified in the MCDA-C methodology, we include the ability to structure the subjective situation of decision makers, the construction of value functions for decision makers, generate and evaluate actions for the context object of study, knowledge of construction and understanding of the situation; generate an interactive learning and improvement system (Ruschel et al., 2023; Martins & Ensslin, 2018; Ensslin et al., 2000).

The MCDA-C methodology also contributes to the integration of decision support tools, as well as to the process used to transform the poorly defined real context into a controllable scientific model (Lacerda, Ensslin & Ensslin, 2011). The MCDA-C is useful as a basis for the definition and implementation of improvement policies to evaluate the performance of public services, policies that can generate greater efficiency in order to enable a better quality service to the general population (Ensslin et al., 2000).

The construction of the performance evaluation model through the MCDA-C methodology is composed of three different phases, but that relate to each other (Ensslin et al., 2000). (i) Structuring Phase; (ii) Evaluation Phase; and, (iii) Recommendations Phase, as shown in Figure 1.

Figure 4

Phases of the MCDA-C methodology



Source: Ensslin et al., 2000, p.81

As shown in Figure 1, it is noted that the proposal of the MCDA-C is to support the decision in a continuous and interactive way, and the most appropriate way to conduct this process should be cyclic and dynamic, indicated by the arrows of all crucial steps considering the overlays of ellipses, among the three fundamental phases (Ensslin et al., 2000; Martins & Ensslin, 2018).

2.2.1 Structuring phase

The structuring phase takes place in a dynamic and interactive way (Bortoluzzi, Enslin & Ensslin, 2010). This interaction is of fundamental importance in the learning process, since it aims to promote understanding about the context in which it is inserted, identifying, characterizing and organizing the factors considered relevant to the decision support process (Azevedo, Lacerda, Ensslin, Jungles & Ensslin, 2013). This phase consists of the steps: Soft approach for structuration; Tree of views; and construction of descriptors (Bortoluzzi et al., 2010; Azevedo et al., 2013).

In the first stage of the structuring phase, the soft approach to structuring aims to explain the context and reach an understanding of the problem to be discussed, understand what is to

be evaluated and what the organization needs to evaluate based on its satisfactions and dissatisfaction (Azevedo et al., 2013; Bortoluzzi et al., 2010).

In the sequence it is necessary to identify the actors that are part of this context, the decision-makers, actors, facilitators and agents, because it is these actors that directly or indirectly influence the construction of the model, and from this identification the authors are provoked to delimit the research problem based on the values and preferences of the decision maker (Ensslin et al., 2000).

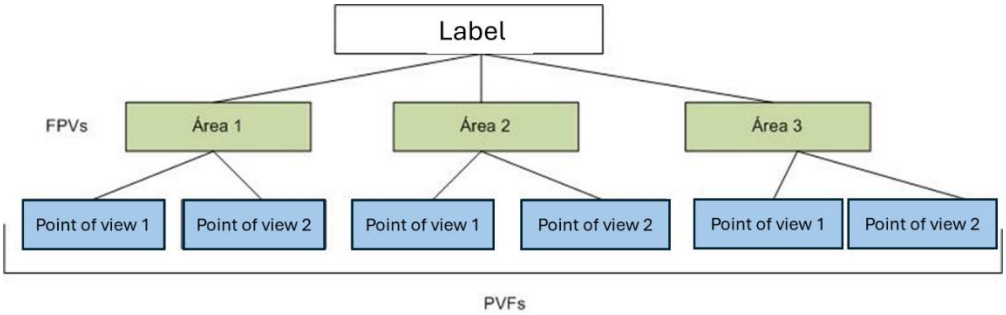
The following is to determine the label of the model, a name that represents the main fundamental concerns of the decision maker regarding the problem (Martins & Ensslin, 2018; Azevedo et al., 2013).

In the next stage, the Construction of the Family of Points of View, there is a more effective participation of the decision maker, which allows to build the criteria that best align with its values (Bortoluzzi et al., 2010). Semi-structured interviews are conducted, with the elaboration of open questions adapted to the context, seeking that the decision maker identify the concerns that directly or indirectly influence the research focus problem (Ensslin et al., 2022). Through these interviews, it is possible to identify the Primary Evaluation Elements (EPAS), being characteristics or properties of the context of what the decision maker thinks impact their values (Bortoluzzi et al., 2010).

After identifying the EPAS, the MCDA-C recommends expansion for elements that demonstrate the desired preference (present pole) and the one that is not desired (psychological pole), for this it is necessary to conceptualize each EPAS, to facilitate its meaning (Bortoluzzi et al., 2010). The concepts that constitute corresponding concerns can be grouped into areas of concern, constituting the Point of View Family (as shown in Figure 2). The concerns that constitute the subareas are called Fundamental Point of View (PVFs) (Azevedo et al., 2013). Each area of concern will receive a name that should reflect the main concern of the decision maker in the best possible way (Ensslin et al., 2010).

Figure 2

Point of View Family Structure



Source: adapted from Ensslin et al, 2010.

According to Figure 2, where similar concepts appear grouped, in order to further expand knowledge, it is necessary to build cognitive maps, which is a hierarchy of concepts, related by influence links between means and ends (Enslin et al., 2010) these Maps are built individually for each Area of Concern, where the concepts are grouped into clusters and subclusters, which must be independent from each other (Azevedo et al., 2013). After the creation of cognitive maps, where clusters are identified and, in each cluster, branches according to the lines of argumentation of each map, showing similar concerns about the decision-making context (Ensslin et al., 2010). It is essentially a content analysis that takes into account the ideas expressed in the concepts, aiming to identify the points of view that the decision maker wanted to consider in the multicriteria model (Azevedo et al., 2013).

With the help of cognitive maps it is possible to make the transition to the hierarchical value structure, together with the decision maker and with the help of the concepts it is possible to construct the descriptors (Bortoluzzi et al., 2010).

In the construction stage of the descriptors, an ordinal scale is constructed, according to the judgment of the decision maker, in order to represent the aspects that the decision maker deems most relevant for the coordination, this scale receives the name of descriptors (Ensslin et al, 2010). The construction of the ordinal scales allows the performance of each Elementary Point of View to be measured qualitatively (Ensslin et al., 2000). Descriptor is configured as the scale that measures the degree with which an objective is achieved, in order to allow the measurement and evaluation of the local performance of the organization in each element. (Bortoluzzi et al., 2010). In order to identify the Reference or Âncora levels, called Good Level, which represents the level above which the decision maker judges the performance as Excellent, and Neutral Level, below which the performance is compromising (Ensslin et al, 2010).

2.2.2 Evaluation Phase

The Evaluation phase aims to translate the perception of the decision maker into a mathematical model, through data collection and the measurement of the items identified in the structuring phase. This phase is subdivided into five stages: (i) analysis of ordinal and cardinal independence; (ii) construction of value functions for each descriptor; (iii) identification of compensation rates; (iv) identification of the impact profile of the alternatives; and (v) sensitivity analysis. (Lacerda et al., 2011; Azevedo et al., 2013).

The MCDA-C methodology uses compensatory models composed of the sum of criteria to measure the performances, to ensure that the compensation rates remain constant, it is necessary that the respective Points of View are preferably, mutually independent (Bortoluzzi et al., 2010).

For these models to have scientific basis their compensation rates must be constant (Lacerda et al., 2011). Measurements for the constructed range are preferably cardinally independent (Lacerda et al., 2011). Thus all scales must be tested for the interval between the reference levels for Cardinal Preferred Independence before proceeding to the construction of the cardinal scales and their integration (Bortoluzzi et al., 2010).

To ensure the feasibility of the integration of the criteria, the decision-maker is questioned as to the differences in attractiveness between the levels of the ordinal scales, the decision-maker's preferences are incorporated into the judgment matrix and they can be classified as: Very weak, weak, moderate, strong, very strong and extreme. To assist at this time, the MACBETH method (Measuring attractiveness by a categorical Based Evaluation Technique) will be used, which enables the transformation of qualitative scales (ordinal) into quantitative scales (cardinal), called value functions (Enslin et al., 2000; Lacerda et al., 2011).

With the help of the Measuring Attraction software by a categorical Based Evaluation Technique (MACBETH), the ordinal (qualitative) scales are transformed into value functions, which are cardinal (quantitative) scales, the judgment is made by the decision-maker as to the difference of attractiveness between the criteria for the identification of compensation rates. These rates will demonstrate the contribution of each indicator to the global model considering the perception of the decision maker (Cardoso et al., 2017; Enslin et al., 2000). At this stage, the purpose of this study is to inform the difference in attractiveness between the reference levels of the descriptors.

In the stage of identification of compensation rates, it is considered the construction of compensation or substitution rates, which express the contribution of each Fundamental Point

of View (PVF) and Elementary Point of View (PVEs), according to the judgment of the decision-maker (Ensslin et al., 2000).

To calculate compensation rates, it is necessary to create potential actions that represent the contribution of the transition from Neutral to Good level in each of the criteria that are to be determined rates, as well as a benchmark action with Neutral Performance for all viewpoints (Bortoluzzi et al., 2010). The compensation rates will be identified through the construction of the trial matrix between the differences in attractiveness of the alternatives, will also be identified through the use of MACBETH software. To calculate replacement rates, a software is used, based on the decisions of the decision maker, where potential actions are created that represent the contribution of the transition from Neutral to Good level for each of the criteria, thus creating compensation rates for the whole model (Bortoluzzi et al., 2010)

It should be noted that the hierarchical structure by complete must pass through the process of identification of substitution rates (Bortoluzzi et al., 2010). According to the MCDA-C methodology, soon after obtaining the compensation rates of each criterion, the value of the evaluation of each criterion should be transformed into values of a global evaluation and to trace the current performance, enabling the graphical determination of the performance of potential actions and their impacts (Ensslin et al., 2010).

With the compensation rates determined, it is necessary to identify, along with the decision maker, the status quo of the evaluated criteria, with this information it can be observed where are the most competitive functions and those with performance that require improvements (Azevedo et al., 2013).

Concluding the Evaluation phase with global equation, which is realized by the sum of the partial values of the criteria listed, all weighted by the compensation rates found in the previous stages (Azevedo et al., 2013). The generic equation representing the local value for the action “a” is calculated according to the following equation.

$$V_{Global}(a) = \sum_{j=1}^{n} Kj * V_j[g_j(a)]$$

:here one has

V(a) = global value of alternative “a”

gj (.) = Descriptor of PVj

gj(A) = Impact of alternative a on the gj descriptor

VJ(gj(A)) = Partial value of alternative a in PV j

KJ PVP compensation rate j

n: number of criteria used in the model.

With this information in hand it is possible to use the model to support the decision process, understanding the degree of compatibility of the activities with the objectives defined by the decision maker.

2.2.3 Phase of recommendations

The recommendations phase aims to demonstrate the process of generating potential possibilities that aim to improve performance in relation to the current situation, with the understanding of where it is convenient to act, provides the means for the decision maker: (i) identify where it is appropriate to act; (ii) develop a process that manages improvement actions; (iii) visualize the consequences of implementation at local or operational level (Bortoluzzi et al., 2010; Enslin et al., 2010).

Based on the identification of the situation of the indicators where the model is being built, it is necessary to propose actions that can positively influence the performance of the context under study, such actions start in search of improvements in the indicators in which the organization presents a compromising level, in order that the generated information can subsidize the management activity, thus creating alternatives and identifying its possible impacts, generating improvement actions, the problematic context that portrays compromising indicators become identified as a field of opportunity (Bortoluzzi et al., 2010; Lacerda et al., 2011).

2.3 Previous studies on the multicriteria methodology for Decision Support in Universities

With regard to previous studies using this methodology, numerous studies have been identified in the most diverse areas. However, for the context of universities, eight studies were identified.

Torico et al. (2018), which sought to build a performance evaluation model of the relationship of the Federal University of Technology of Parana - Pato Branco Campus with companies, through the multicriteria methodology to support the Constructivist Decision. Among the main findings, 53 indicators were identified.

Perez et al, (2022), which proposes the structuring of a multi-criteria evaluation model to support the management of sustainable purchases at the Federal University of Rio Grande. As a result, the evaluation model developed in the research allowed to identify the current performance of sustainable hiring in the institution and point out its potential for improvement, based on the established indicators. The model resulted in 29 performance indicators for sustainable public contracting at the institution and, after evaluation, 11 indicators with

unsatisfactory performance were pointed out, for which MCDA-C recommends directing efforts to leverage performance, improvement actions were proposed.

Schlickmann and Bortoluzzi (2023) built a performance assessment model of environmental education for an undergraduate degree from a public university. With interviews with the Course Coordinator, complemented by questionnaires and documentary analysis. The built model allows the decision maker to understand the environmental education linked to the course, evaluate the current situation and the desired final state, as well as the actions necessary for its management. In addition to the constructivist perspective, the model meets the Stakeholders Theory; it explains the advantages, using participatory approach methodologies and performance indicators have characteristics of a functional system.

Matos, Valmorbida and Ensslin (2018) built a support model for monitoring the management of the Internal Audit Department of the Federal University of Santa Catarina, using the perceptions and particularities of the responsible manager. The MCDA-C methodology was used, developing a knowledge generation model to support decision making, in order to allow transparency and coherence of the manager's actions. The built model was composed of performance indicators, which present the necessary and sufficient aspects for the manager, allowing a holistic view of the current situation. The MCDA-C allowed the identification of 33 primary evaluation elements, which are expanded and developed in the form of knowledge. The complete model was structured with a composition of two fundamental points of view, operationalized by 18 criteria. With a global score of 16 points, improvement actions were developed with the aim of improving the evaluated context, offering the manager a sequence of actions necessary to achieve the highest levels of performance.

Araújo, Matos and Ensslin (2021) aimed to structure a model of support for the management of the coordination of bidding processes of the University Hospital Professor Polydoro Ernani de São Thiago, Federal University of Santa Catarina. As results pointed out by the authors, the structure of the system allowed the development of a hierarchical structure of values and qualitative indicators of performance. The development of performance indicators allowed an effective monitoring of the activities developed by the sector, leading to efficient management and a better application of public resources. It also allowed the visualization of aspects in levels of commitment, market and excellence, highlighting the relevant factors for management.

Martins and Ensslin (2018) had as objective to build a multi-criteria model of support to constructivist decision for performance evaluation and support of decisions related to payment management, of the Federal University of Latin American Integration (UNILA).

Through semi-structured interviews, 17 criteria (indicators) were constructed, which allowed a global performance evaluation, which indicated 21.89 points (on a scale from 0 to 100). In 6 of the 17 criteria, Unila performs below the expectations of the decision maker (head of the Accounting and Finance Coordination). In order to highlight how the model can support the decisions of payment management, the process of creation of improvement actions was illustrated. The built model incorporated unique aspects of Unial and expanded the possibilities of performance evaluation and support for decisions related to payment management, a fact not previously found in the literature.

Krudycz et at., (2023) built a multi-criteria performance evaluation model to support the budget management of a Brazilian public university, based on the needs and perceptions of its budget manager. This instrument allowed the identification of 34 descriptors considered relevant by the decision maker, the understanding of the impact of their decisions and the recommendation of improvement actions. As a contribution, the model provides a new tool to support the manager in making decisions regarding the use of public resources, as well as serving as a reference for other institutions and in the development of new research.

Martins, Ensslin and Damke (2023) qualitatively structured a performance evaluation model for a public university without a tradition in research. They used as an intervention instrument the *Multi-criteria decision aid constructivist* methodology (MCDA-C), guided by a constructivist approach. Thus, they built the necessary knowledge to identify the 37 indicators for evaluation of courses, teachers and students, which represent necessary and sufficient aspects by the chief coordinator of the Research area of a public university, located in the southern region of Brazil. Due to the fact that the Performance Assessment is a social phenomenon, the knowledge and information generated by the structured model served as a channel of communication and possible modification of the behavior of teachers/students from the stimulus to research, with a view to a more competitive organizational performance.

Thus, although the environment of public universities has already been used in previous research, the context of Administrative Coordination has not been identified. Following, the research methodology is presented.

3 Research Methodology

Regarding the design of the research, this study is classified as exploratory nature, aiming to generate knowledge about the Administrative Coordination of the Laranjeiras do Sul Campus, based on the perceptions of the coordinator. This is a case study (Yin, 2015) of an

exploratory and descriptive nature. The inductive research logic was adopted, using primary and secondary data, having the qualitative and quantitative approach.

The approach is qualitative, because it comprised the structuring and recommendation phase, being necessary to know the context of Administrative Coordination, in order to identify the objectives and make the scales for measuring performance, management, and later in the suggestions for improvement. The quantitative approach is present in the "Evaluation Phase", where the transformation of ordinal scales into cardinals, the construction of compensation rates and the equations of the model are calculated. These phases are composed of the multicriteria Model of Support to Constructivist Decision (MCDA-C)

In the data collection procedure, primary data were considered from interviews with the Administrative Coordinator, which subsidized the construction of the model. The interviews were conducted with the Administrative Coordinator of the Laranjeiras do Sul Campus of the Federal University of the Southern Frontier (UFFS), in order to know the activities of the Administrative Coordination of the Campus and what can influence the performance of these activities for the construction of the model.

Semi-structured interviews were conducted, with the elaboration of open questions, adapted to the context, seeking that the decision maker identify the concerns that directly or indirectly influence the problem focus of the research (Ensslin, Giffhorn, Ensslin, Petri & Vianna, 2010). The interviews were conducted over 12 months, approximately two to three interviews per month, according to the need to understand the environment and the stages of the construction of the performance evaluation model, both by the authors and by the decision maker. The interviews lasted approximately 1h and 30 minutes each.

For the evaluation of the organizational performance of the institution object of study, it was necessary to build a performance evaluation model using the multicriteria methodology to support the Constructivist Decision (MCDA-C).

3.1 Multi-criteria Methodology to Support Constructivist Decision (MCDA-C)

Ensslin et al. (2000) describe that the MCDA-C methodology may be useful when dealing with complex situations. The MCDA-C methodology also contributes to the integration of decision support tools, as well as to the process used to transform the poorly defined real context into a controllable scientific model (Lacerda, Ensslin & Ensslin, 2011).

Among the potentialities identified in the MCDA-C methodology, we include the ability to structure the subjective situation of decision makers, the construction of value functions for decision makers, generate and evaluate actions for the context object of study, knowledge of

construction and understanding of the situation; generate an interactive learning and improvement system (Valmorbida et al., 2013).

For the construction of the performance evaluation model, semi-structured interviews were used for data collection. The interviews were conducted with the Administrative Coordinator of the Laranjeiras do Sul Campus of the Federal University of the Southern Frontier (UFFS), in order to know the activities of the Administrative Coordination of the Campus, the variables that respond for the performance of these activities to build the model. In this process, the intention of the interviews was to encourage the decision-maker to discuss aspects judged important for the evaluation of the coordination. As the research progressed, new interviews were conducted in order to capture the need of the decision maker.

The MCDA-C methodology also contributes to the integration of decision support tools, as well as to the process used to transform the poorly defined real context into a controllable scientific model (Lacerda, Ensslin & Ensslin, 2011). The MCDA-C is useful as a basis for the definition and implementation of improvement policies to evaluate the performance of public services, policies that can generate greater efficiency in order to enable a better quality service to the general population (Ensslin et al., 2000).

The construction of the performance evaluation model through the MCDA-C methodology is composed of three different phases, but that relate to each other (Krudycz et al, 2023; Ensslin et al., 2000). (i) Structuring Phase; (ii) Evaluation Phase; and, (iii) Recommendations Phase.

The structuring phase takes place in a dynamic and interactive way (Martins et al, 2023; Bortoluzzi, Enslin & Ensslin, 2010). This interaction is of fundamental importance in the learning process, since it aims to promote understanding about the context in which it is inserted, identifying, characterizing and organizing the factors considered relevant to the decision support process (Azevedo, Lacerda, Ensslin, Jungles & Ensslin, 2013).

The Evaluation phase aims to translate the perception of the decision maker into a mathematical model, through data collection and the measurement of the items identified in the structuring phase (Ruschel et al, 2023; Lacerda et al., 2011; Valmorbida, Ensslin, & Ensslin, 2013).

The recommendations phase aims to demonstrate the process of generating potential possibilities that aim to improve performance in relation to the current situation, with the understanding of where it is convenient to act, provides the means for the decision maker: (i) identify where it is appropriate to act; (ii) develop a process that manages improvement actions;

(iii) visualize the consequences of implementation at local or operational level (Martins et al, 2018; Bortoluzzi et al., 2010; Enslin et al., 2010).

The choice of this decision support methodology is due, among other attributes, to its ability to provide conditions to identify, operationalize, measure and qualify the actions that represent the perception of the Administrative Coordinator regarding the possibilities of meeting the demands of the sector, also enabling, suggestions for the improvement of actions in which the performance was not compatible with the desired.

The search results are presented in the following section and follow the order presented in this methodology. Initially it is described the construction and results of the structuring phase, with each of its stages. The results of the Evaluation Phase and, of the Recommendations Phase are presented.

4 Constrution of the constructivist model of Performance Evaluation

4.1 Context of the construction of the Constructivist Performance Evaluation Model

On the Laranjeiras do Sul campus, the Federal University of the Southern Frontier (UFFS) is the Administrative Coordination, among its competences are: (1) To assist the Director of the Campus in the exercise of administrative functions, especially with regard to the realization and monitoring of the activities of finance, accounting, equity, infrastructure, accountability and people management; (2) to provide and forward the provision of equipment, material resources and outsourced services necessary for the proper functioning of all academic/administrative activities, as well as to coordinate the actions of asset management, transportation of services; (3) to monitor the university's information technology policy and coordinate the actions related to the implementation of computerization and communication systems within the campus; to coordinate and monitor the implementation of campus civil construction projects; (4) To coordinate the elaboration of the planning and annual monitoring of the actions of the Campus, the daily, the processes and the flows; (5) to assist in the scope of its competence the Campus Direction with regard to people management and conflict resolution.

4.2 Structuring phase

The structuring phase of the MCDA-C methodology contributed to identify the problematic situations in the context experienced by the decision maker (Krudicz et al, 2023), in this case, the Administrative Coordinator. Through semi-structured interviews it was possible

to define the label of the model under construction, as well as the actors involved. As the label was defined: "Performance Evaluation Model to support the Administrative Coordination of the Laranjeiras do Sul Campus.

Table 1 presents the actors who have a list of members that make up the high head of the campus and the University, but this hierarchy relationship does not interfere in the construction of the model, because the decision maker enjoys autonomy in the decisions of the activities contained in the model. Servers, outsourced and students, categorized as agents, are participants of the problem and those who suffer the influences of decisions made by the decision maker. The actors involved in the context of coordination that may influence the decision of the Manager are presented in Table 1.

Table 1

Subsystem of actors

Stakeholders	Decisor	Administrative Coordinator of Campus Laranjeiras do Sul
	Stakeholders	General Director of the Campus
		Academic Coordinator of the Campus
		Rectory of UFFS
	Facilitator	Author of the work
Acted		Servers
		Outsourced
		Students

After the contextualization, the Primary Evaluation Elements (EPAS) were identified, reflecting the initial concerns of the decision maker. Based on the interviews, 131 EPAS were identified for the construction of the model in question. With these EPAS, 136 concepts were built. Table 2 shows some EPAS and their generated concepts as a sample.

Table 2

EPAS and Constructed Concepts

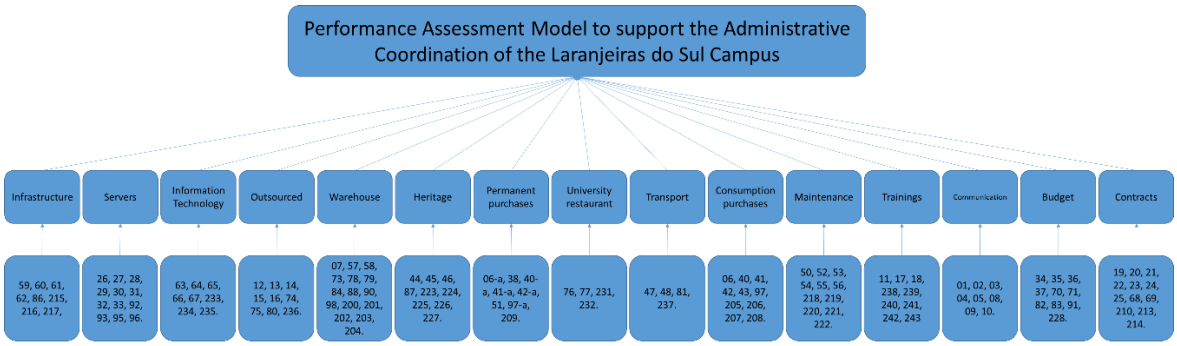
EPAS	n.º	Present Hub	(...)	Opposite psychological hub
Communication	005	Ensure that the information reaches all servers	(...)	Make it difficult to access crucial information for important work movements
Servers	028	Ensure the quality of service to the public	(...)	Generate complaints and discontent from the public
Budget	034	Ensure that budget execution is efficient and effective	(...)	Leave some demand unmet
Permanent purchases	038	Plan the acquisition of permanent goods	(...)	Compromise the execution of the operational activities of the Campus
Consumption purchases	043	Plan the acquisition of consumer goods	(...)	Compromise the execution of the operational activities of the Campus
Warehouse	200	Ensure that the control of the inputs necessary for the smooth progress of the campus	(...)	Disrupt the progress of activities
Contracts	210	Ensure the general management of campus contracts	(...)	Compromise the progress of campus activities and functioning
Infrastructure	215	Ensure that the campus has an adequate structure for the development of activities	(...)	Compromise all campus activities
Maintenance	218	Ensure that the maintenance of buildings and equipment meets the needs of the academic community	(...)	Disrupt the progress of campus activities
Heritage	223	Ensure the property management of the Campus	(...)	Compromise all campus activities
University Restaurant	231	Ensure that food services are provided to the academic community	(...)	Avoid administrative procedures
I.T.	233	Ensure quality support in the Information Technology Area	(...)	Compromise campus operational activities
Outsourced	236	Ensure the cleaning services maintenance and safety of the campus	(...)	Compromise the execution of the operational activities of the Campus
Transport	237	Ensure efficiency and effectiveness in the use of campus vehicles	(...)	Expend financial resources wrongly.
Training	238	Ensure the training/qualification of the servers to perform everyday tasks	(...)	Compromise the quality of the services provided

Table 2 presents some concepts with their present pole and their opposite psychological hub, and the ellipsis (...) that should be read as “instead of”. The concepts developed were distributed, according to the decision maker's understanding, and resulted in 15 major areas of concern: (i)Warehouse; (ii) Purchase Consumption; (iii) Purchase Permanent; (iv) Communication; (v) Contracts; (vi) Infrastructure; (vii) Maintenance; (VIII) Heritage; (IX) Budget; (x) University Restaurant; (XI) Servers; (xii) Information Technology; (xiii) Third

Parties; (xiv) Transport; and (xv) Training. These grouped areas form the hierarchical value structure with their Fundamental Views (PVFs), which were tested in relation to their need and sufficiency as highlighted in Figure 3

Figure 3

PVF tested for necessity and sufficiency

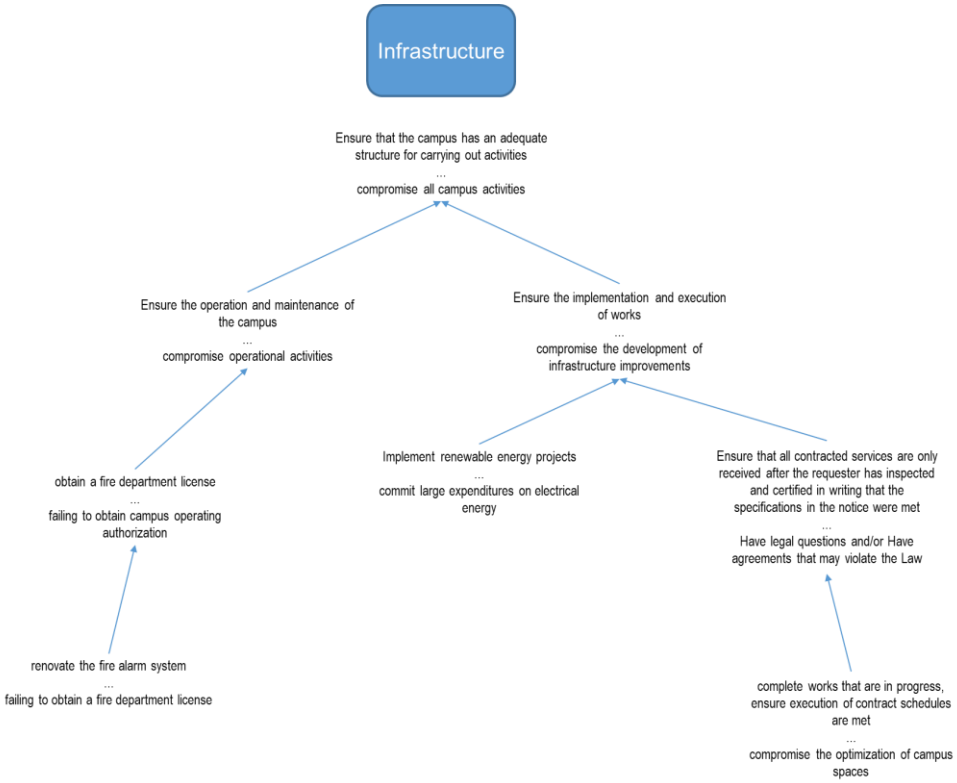


It is clear in Figure 3 that all concepts were somehow associated with PVF, thus being considered tested when needed and sufficient. It is also illustrated the areas of concern regarding the performance of the Administrative Coordination being those related to the activities performed in the sector. In this way, the decision-maker needs to understand and evaluate which issues are necessary for the provision of quality public services.

The later stage consists of the construction of Cognitive Maps, which are a hierarchy of concepts, related by links of influence between means and ends (Ensslin et al., 2013), for each area of concern, a tool that facilitates and allows the expansion of knowledge, it allows the decision maker to visualize in a broader way its objectives. Figure 4 shows the cognitive map for the Infrastructure Concern Area. In this stage, new concepts, identified as essential by the decision maker, were included so that there is meaning between the relations presented.

Figure 4

Cognitive map for the area of concern Infrastructure



In the assembly of cognitive maps, the decision-maker was encouraged to describe his or her longings in relation to the activities performed in the sector, as well as that he could achieve success and the reason for the importance of these concepts .

For analysis of Cognitive Maps, *clusters and subcluster are elaborated*, where the concepts are grouped, thus facilitating their analysis and understanding. The information generated through the construction of maps, clusters and *subcluster* is transferred to the Hierarchical Value Structure (EHV), name given to the representation of the areas of concern and their Fundamental and Elementary Points of View depending on their hierarchical location in context . In Figures 5 and 6, the cognitive map with its clusters and subclusters and the hierarchical value structure of the Infrastructure Concern Area are presented respectively.

Figure 5

Cognitive Map with Clusters and Subclusters of the Area of Concern Infrastructure

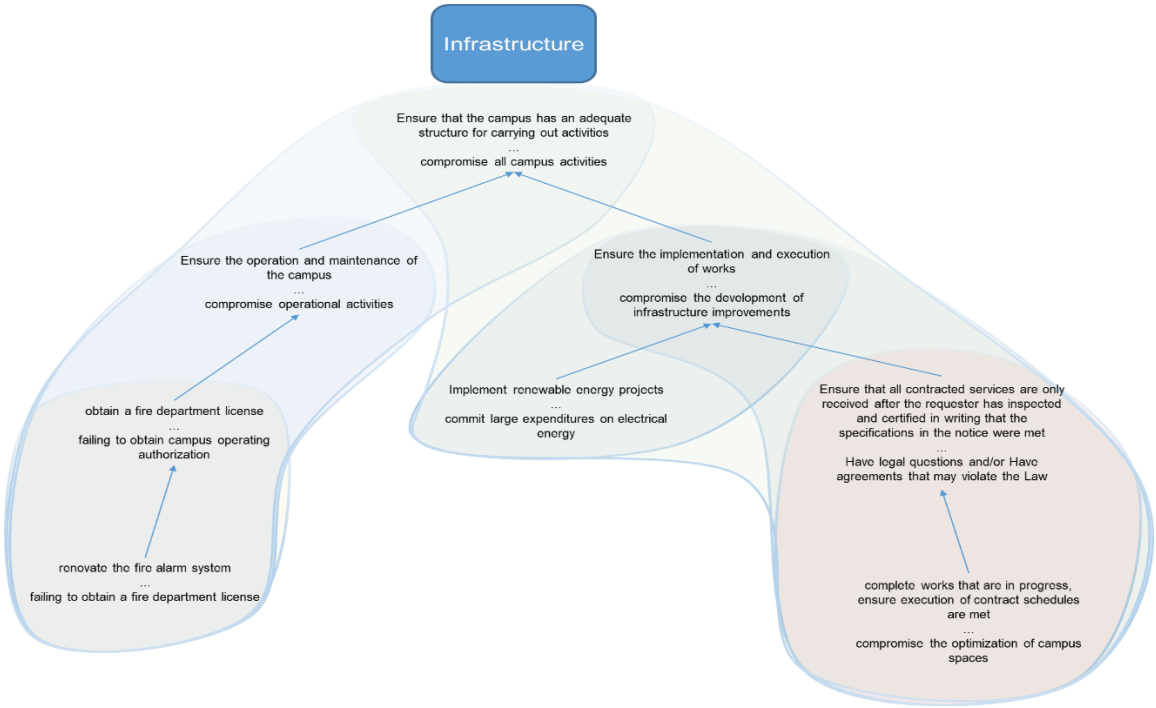
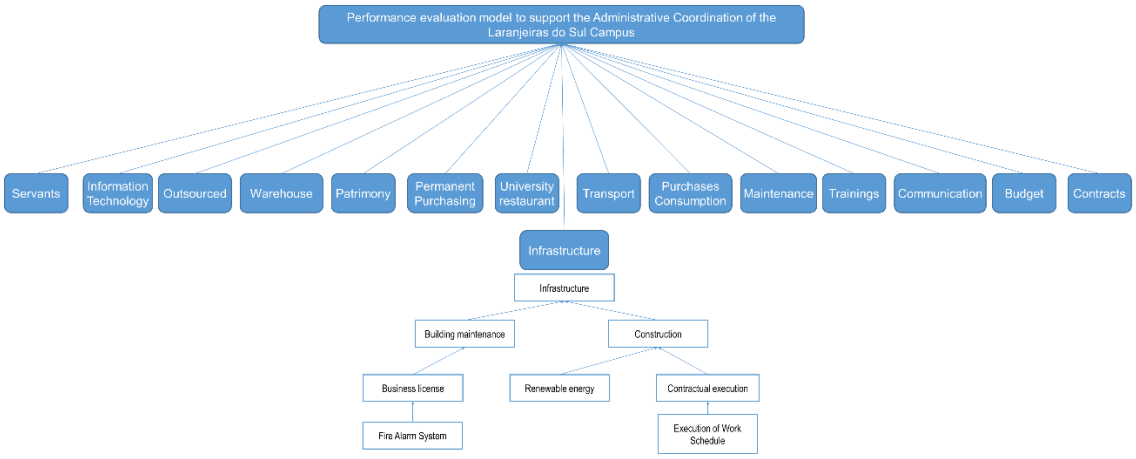


Figure 6

Hierarchical structure of values of the Area of Concern Infrastructure

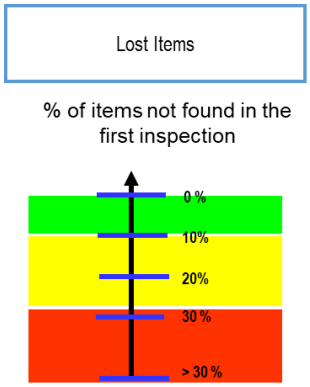


After completing the construction of the Hierarchical Value Structure, for each Elemental Point of View (PVEs) formed, an ordinal scale (descriptors) is constructed in order to measure and simplify more complex criteria (Krudicz et al, 2023). Descriptor is configured as the scale that measures the degree with which an objective is achieved, in order to allow the

measurement and evaluation of the local performance of the organization in each element. (Bortoluzzi et al., 2010) These scales reflect the preferences of the decision maker according to each situation, having as Good and Neutral reference levels, allowing the comparison between descriptors. Next, Figure 7 presents, for example, the descriptor “misplaced items”. The graphic model of the descriptor is presented as suggested by the MCDA-C. methodology

Figure 7

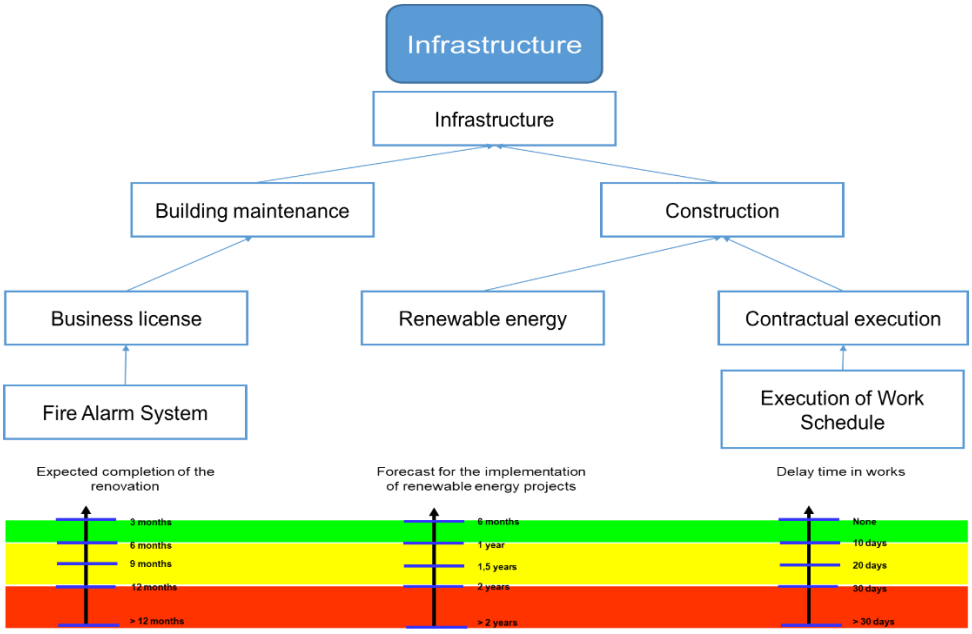
Descriptor with Reference Levels according to the decision maker



Reference levels are determined for each of the descriptors . After determining the reference levels, it is possible to trace the performance profile of the current state of the Administrative Coordination of the Campus Laranjeiras do Sul. Figure 8 shows the EHV and descriptors built with the respective status quo of the Infrastructure concern area.

Figure 8

EHV, Descriptor and Status Quo of the Infrastructure Concern Area



To evaluate the Administrative Coordination of the Laranjeiras do Sul campus, 73 descriptors were created, ending the model structuring phase. This phase allowed the decision maker to expand their knowledge about their reality and build descriptors according to their values and preferences. However, for the decision maker to measure the impact levels of the alternatives and visualize the differences of attractiveness between the criteria of the descriptors it is necessary to transform the descriptors from ordinal to cardinal scale, which will be effective in the Evaluation phase.

4.3 Evaluation Phase

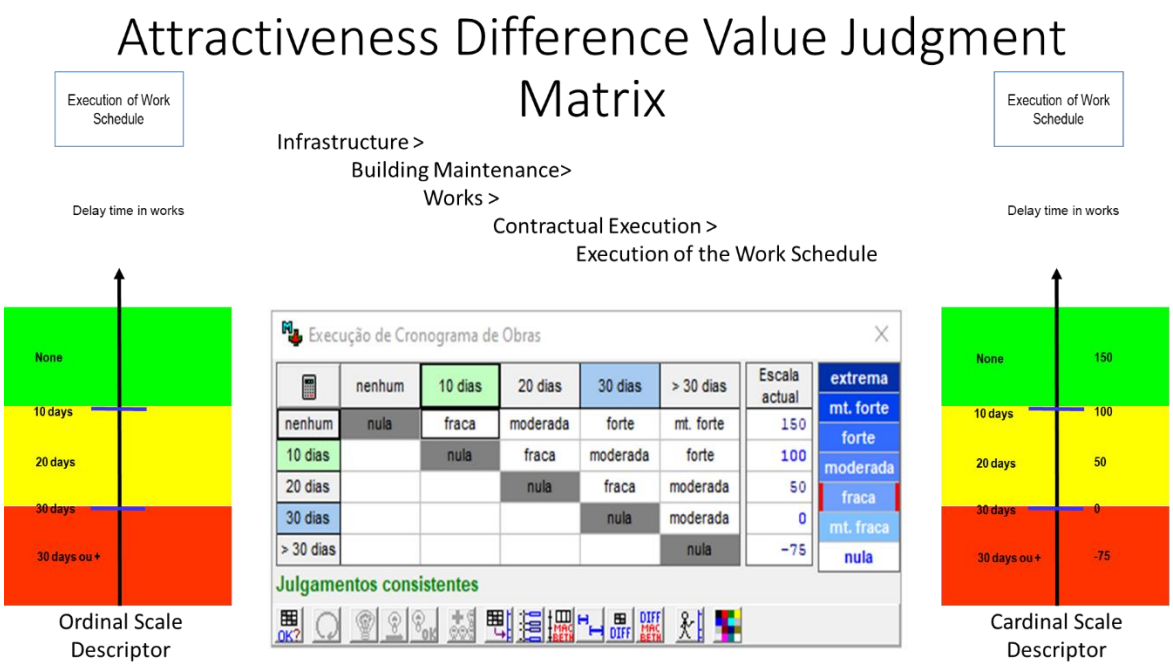
The first stage of the Evaluation phase has as its function to transform the ordinal scales into cardinals, through interaction with the decision maker that manifests its perception as to the differences in attractiveness between the levels of descriptors built in the previous phase.

At this point it is necessary to use the MACBETH tool (*Measuring attractiveness by a categorical Based Evaluation* Technique), which allows the transformation of qualitative scales (ordinal) into quantitative scales (cardinal), called value functions (Ensslin et al., 2000; Lacerda et al., 2011, Bana e Costa & Vansnick, 1994 Bana & Costa & Vansnick, 1995). For this, two elements are compared at a time, requesting only one judgment from the decision maker. The matrix of judgment is composed of: very weak, weak, moderate, strong, very strong and extreme. Figure 9 illustrates the process of transformation of ordinal scales into cardinal

scales for the descriptor "Execution of the Works Schedule" of the Area of Concern "Infrastructure". The transformation of the scale of the other descriptors is found in the Appendices of the work.

Figure 9

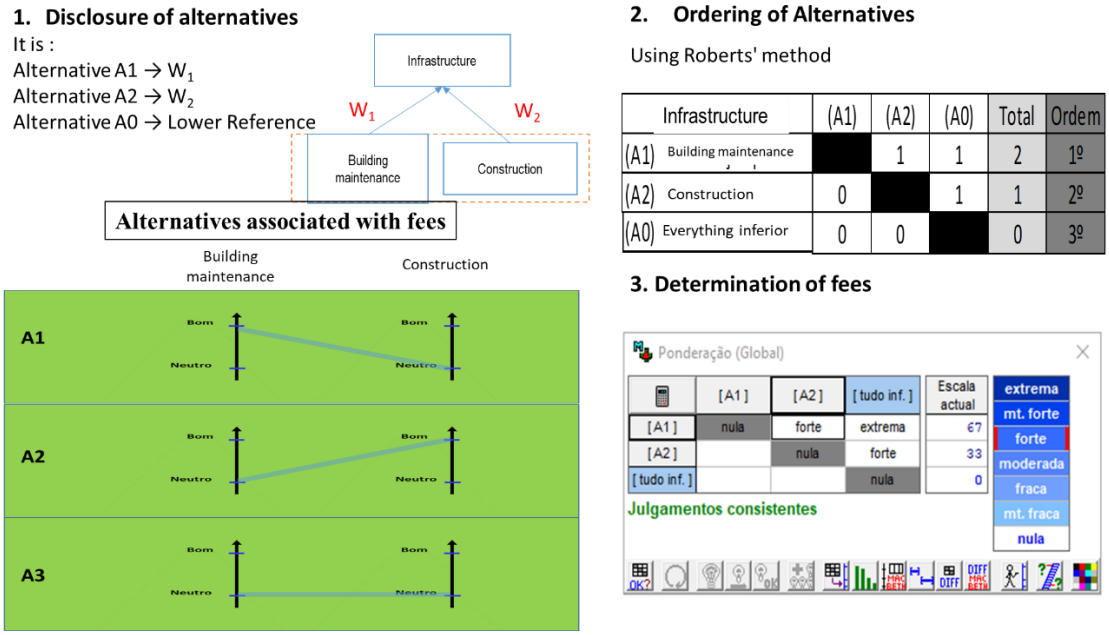
Construction of the value function for the descriptor "Execution of the Works Schedule"



With all cardinal scales defined and legitimized by the decision-maker, it goes to the stage of identification of compensation rates responsible for the disclosure of the relative contribution of each criterion to the model as a whole. These rates will demonstrate the contribution of each indicator to the global model considering the perception of the decision maker (Cardoso et al., 2016; Enslin et al., 2000). The construction of compensation rates takes place in three steps (Ensslin et al., 2000): (i) evidence of the alternatives, with the determination of the alternatives associated with the rates; (ii) ordering of the alternatives; and (iii) determining the rates. To make the judgment regarding the difference in attractiveness between the indicators of the built model was requested to order the decision maker to order the descriptors constructed according to his preference. Figure 10, on its left side, clarifies the first step that is the disclosure of the alternatives.

Figure 10

Evidence of Alternatives and Ordination of Alternatives

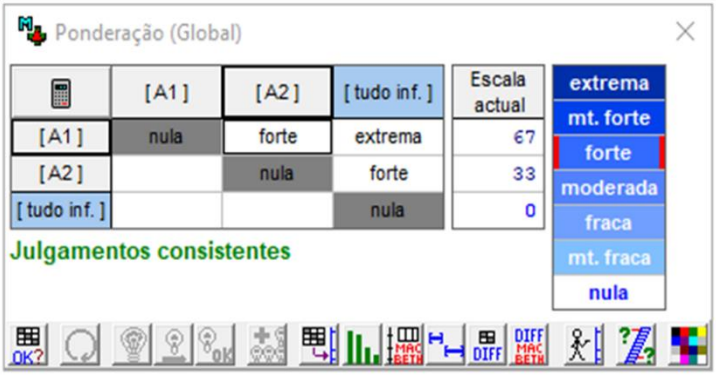


After identification of the alternatives, the Roberts matrix is used, as directed by Ensslin et al, (2000), where it is suggested the crossing of each of the alternatives, to better demonstrate which alternatives have greater influence for the model. The facilitator, according to the decision maker's preferences, organizes the criteria in Roberts' matrix, comparing the alternatives, whenever the decision maker chose one over another, the chosen one received the value 1 in its line, otherwise it received the value 0. At the end, the values of the line were added and the alternatives were classified according to their sum. Thus, it obtained the hierarchization of the alternatives, whose order reflects the preference of the decision maker in each LVP, presented in Figure 10, on its right side.

Again, with the help of MACBETH, from the ordering of the alternatives, it was performed the judgment of the difference of attractiveness between the descriptors, in order to determine the compensation rates associated with each alternative. The return obtained through the use of MACBETH represents the contribution factor from each point of view to its superior point of view and to the global model. Figure 11 represents the determination of rates through MACBETH software.

Figure 11

Determination of fees

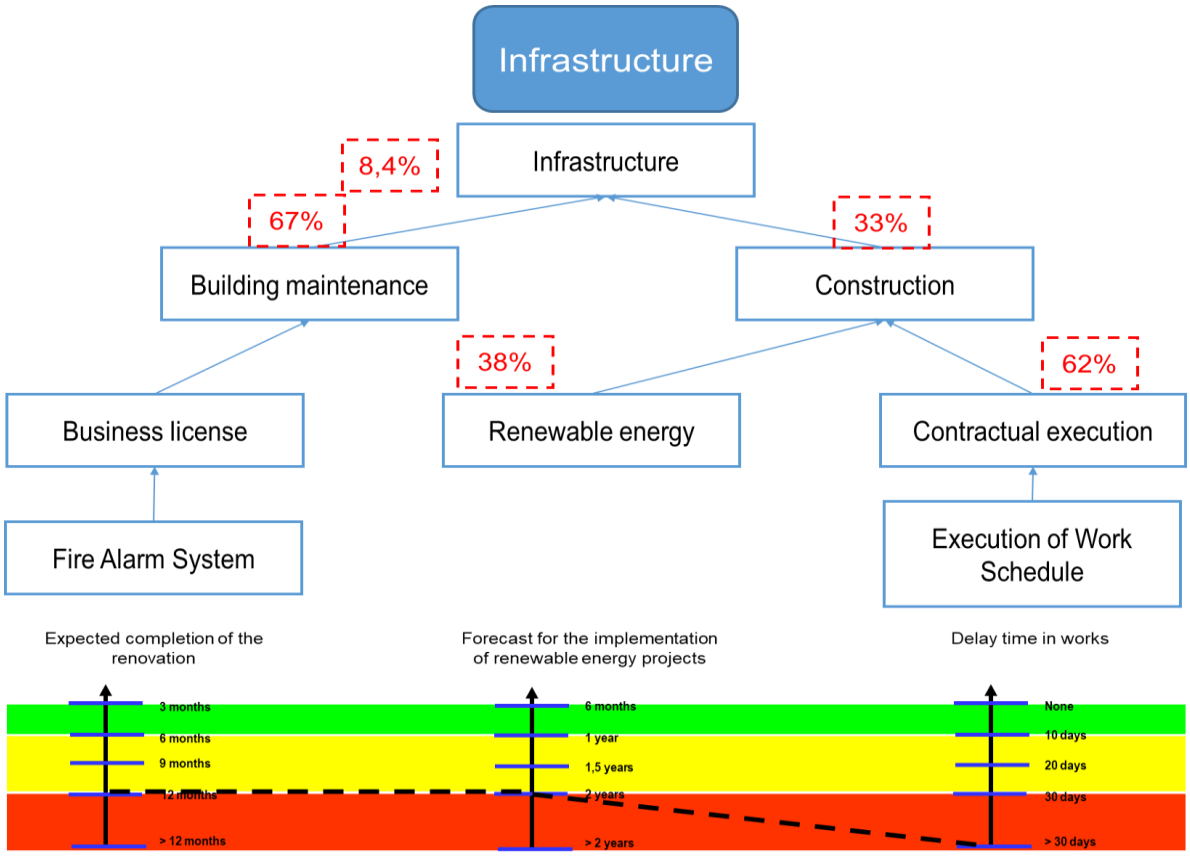


Thus, after the judgments made, it has to be that for the PVE – Infrastructure, the compensation rate attributed to the PVE – Building Maintenance is 67%, for the PVE – Works is 33%.

This process was carried out for all hierarchical structures of value, at all levels, which allowed the realization of the overall evaluation of the model through the equation for Administrative Coordination of the Campus Laranjeiras do Sul.

More succinctly, the overall assessment is determined by the weighting of all Vista Points developed for the model. Figure 12 shows, the measurement of *the status* quo for the PVF infrastructure.

Figure 12
1
PVF Infrastructure Current Performance Profile (status quo)



With the value functions and compensation rates built, the possibility arises of the use of the additive aggregation model to evaluate the performance profile of the Administrative Coordination of the Campus Laranjeiras do Sul. As an example,it will be presented below the equation that allowed the calculation of the status quo (SQ) for the PVF infrastructure.

Thus, for the values presented, there is the result of the equation for the PVF – Infrastructure, whose graphic representation is evidenced in Figure 12.

$$V_{PVF-Infraestrutura}(a) = 0{,}67 * V_{PVE-Manutenção.Predial}(a) + 0{,}33 * V_{PVE-Obras}(a)$$

Being

$$V_{PVE-Obras}(a) = 0{,}38 * V_{PVE-Energia.Renovável}(a) + 0{,}62 * V_{PVE-Execução.Contratual}(a)$$

Thus:

$$V_{PVF-Infraestrutura}(a) = 0{,}67 * V_{PVE-Manutenção.Predial}(a) + 0{,}33 * (0{,}38 * V_{PVE-Energia.Renovável}(a) + 0{,}62 * V_{PVE-Execução.Contratual}(a))$$

Replacing with the SQ in each of the equations, we obtain:

$$V_{PVF-Infraestrutura}(a) = 0{,}67 * 0 + 0{,}33 * (0{,}38 * 0 + 0{,}62 * -75)$$

$$V_{PVF-Infraestrutura}(a) = 0 - 15{,}35$$

So,

$$V_{PVF-Infraestrutura}(a) = -15{,}35$$

The general equation covers all areas of concern in which the decision maker considers relevant in the context of the Administrative Coordination of the Laranjeiras do Sul campus (CAD-LS). The function of the global status quo is obtained by multiplying the score obtained through the function of each PVF by the compensation rates relative to the overall model of the same.

The Global Model Equation for A (CAD-LS), which takes into account all PVFs and their respective compensation rates, is presented below.

$$V_{CAD-LS}(a) = 0{,}032 * V_{PVF-Almoxarifado}(a) + 0{,}067 * V_{PVF-Compras.Consumo}(a) + 0{,}079 * V_{PVF-Compras.Permanente}(a) + 0{,}003 * V_{PVF-Comunicação}(a) + 0{,}0117 * V_{PVF-Contratos}(a) + 0{,}084 * V_{PVF-Infraestrutura}(a) + 0{,}0109 * V_{PVF-Manutenção}(a) + 0{,}052 * V_{PVF-Patrimônio}(a) + 0{,}0121 * V_{PVF-Orçamento}(a) + 0{,}06 * V_{PVF-Restaurante.Universitário}(a) + 0{,}04 * V_{PVF-Servidores}(a) + 0{,}0101 * V_{PVF-Tecnologia.Informação}(a) + 0{,}094 * V_{PVF-Terceirizados}(a) + 0{,}014 * V_{PVF-Transportes}(a) + 0{,}027 * V_{PVF-Treinamentos}(a)$$

Replacing with the SQ in each of the equations, we obtain:

$$V_{CAD-LS}(a) = 0{,}032 * 87{,}48 + 0{,}067 * 86{,}6 + 0{,}079 * 70{,}5 + 0{,}003 * 19{,}68 + 0{,}0117 * 86 + 0{,}084 * -15{,}35 + 0{,}0109 * 51{,}98 + 0{,}052 * 93{,}03 + 0{,}0121 * 110{,}42 + 0{,}06 * 67 + 0{,}04 * 105{,}38 + 0{,}0101 * 91{,}50 + 0{,}094 * 92{,}11 + 0{,}014 * 62 + 0{,}027 * 47{,}56$$

Performing the calculations

$$V_{CAD-LS}(a) = 2{,}80 + 5{,}80 + 5{,}57 + 0{,}06 + 1{,}01 - 1{,}29 + 0{,}57 + 4{,}84 + 1{,}34 + 4{,}02 + 4{,}22 + 0{,}92 + 8{,}66 + 0{,}87 + 1{,}28$$

Soon $V_{CAD-LS}(a) = 40{,}66$

According to the equation suggested in the model, it reached the global value of 40.66, obtained by multiplying all scores obtained by each indicator by the compensation rate established in each of the LVP's and PVF's.The global value found represents the evaluation of the model and highlights the situation of the Administrative Coordination of the Laranjeiras do Sul Campus, in front of each indicator built.

With this calculation it was also possible to measure the performance of each of the fundamental points of view of the model. Where it was possible for the Coordinator to observe where the functions with the most productive results are and those with performance, according to the perception of the decision maker, which require improvements and interventions to seek improvements.

By analyzing the global assessment, you can realize that the areas of Budgets, Infrastructure and Training are the ones that most compromise the results of Administrative Coordination and require a more proactive action of the Coordinator. Obviously, the PVF infrastructure, due to its negative score is clearly a factor of concern for the manager, since the area contributes with 8.4% in the overall evaluation. And so, improvement actions are indicated.

Another point of concern is the Training Area, which appears with a tiny use of 19.68 of evaluation. It is also suggested, in addition to recommending improvement actions in the criteria at the compromising level, to pay attention to those criteria that, even if not at the compromising level, can be improved with a low cost or commitment.

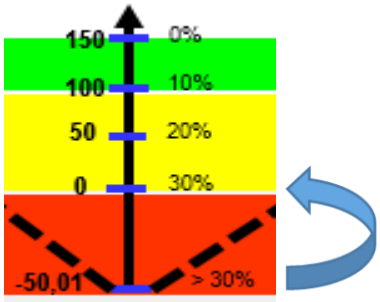
4.4 Recommendation Phase

In the Recommendation phase, the decision maker is given the opportunity to visualize how to improve the management of *its status* quo . 15 criteria were identified between the neutral level and below it, considered compromising. The improvement or improvement actions for the criteria at the compromising level are illustrated in Figures 13 and 14.

In the elaboration of the evaluation phase and the calculation of *the status* quo, the PVE-idleness was identified as compromising, given its negative score. In Figure 13, some actions are presented to improve this Elementary Point of View (LVP).

Figure 13

Actions for the Improvement of PVE idleness

PVE	Criterion	Proposed Actions
Idleness	**Percentage of products without demands in the last 3 years** 	• Consultation of the material requester regarding the possibility of using idle items instead of similar items. • Prevent further purchases of similar materials that could be used idle items. • Relocation of materials to other campuses in order to give flow to stranded stock.
Responsible	Warehouse sector and coordination laboratories	
Deadline for service	12 months	
Resources required	Time of servers for contacts with those involved	
Impact on descriptor	It would move from the compromising level to the neutral	
Frequency	Monthly	

It is noticed that the actions proposed in Figure 13 are operational, requiring only existing resources, that is, the time of the servers. Be the direct responsible servers, as is the case of the servers of the Warehouses or indirect as servers of laboratories, Professors and other campuses of the University. The indication of laboratory personnel is due to the fact that most stranded items are laboratory in nature.

The next criterion analyzed is the PVE-Horizontal Communication, because it also presented a compromising level and is related to the frequency of multisectoral activities. Figure 14 shows some actions to improve the indicator.

Figure 14

Actions of Improvement of the PVE Horizontal Communication

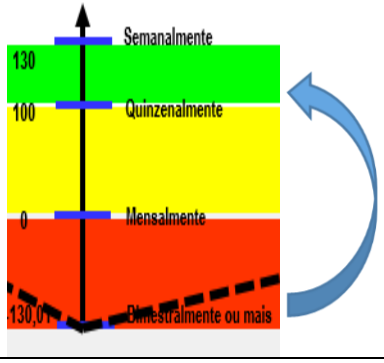
PVE	Criterion	Proposed Actions
Horizontal communication	**Frequency of activities / events / multisectoral meetings** 	• Consult the heads of industry regarding the availability to attend meetings events periodically. • Organize events by related activities of assembling homogeneous groups. • Set up schedule of activities/events/meetings.
Responsible	Administrative Coordinator and Sectoral Heads	
Deadline for service	12 months	
Resources required	Availability of those involved	
Impact on descriptor	It would move from the compromising level to the good	
Frequency	Monthly	

Figure 14 brings very peculiar actions to management positions, basically requires the Coordinator an improvement in the practices of interaction with the other servers. The actions also indicate a participation of the leaders of the sector to assist in the development of such activities.

Finishing the items with compromising levels Figure 15 brings the PVE-execution of Works Schedule.

Figure 15

Performance of Works Schedule

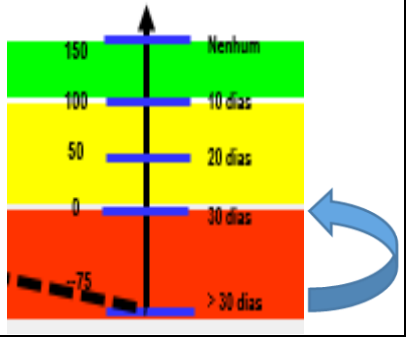
PVE	Criterion	Proposed Actions
Execution of Works Schedule		• Avoid in bids overestimating the financial and execution capacity of the companies involved in bidding processes. • Allow in contracts more concrete and heavy penalties to the default companies of term.
Responsible	Infrastructure Advisory.	
Deadline for service	12 months	
Resources required	Availability of those involved	
Impact on descriptor	It would move from the compromising level to the neutral	
Frequency	By work	

Figure 15 brings one of the most relevant items when it comes to public bodies, which are the Works. In this more specific case brings the delay of the schedule of the works in execution. As actions suggest to the sector responsible for monitoring bidding procedures. But specifically, with regard to the monitoring of the execution of contracts, to faithfully verify the financial capacity of the companies involved and to apply the necessary penalties in order to demolish the companies from the possibilities of delays.

All actions proposed for compromising items have in common the fact that it does not require financial expenses for their execution, this obviously facilitates the proposed referrals. In Table 3, it is possible to visualize the impact that the other criteria will have on the global model if they are dedicated to them their due attention. It should be noted that all are at neutral level and for the preparation of the table was considered the level of excellence as desired.

Table 3

Criteria with the possibility of improvements to a competitive level

Description	Current status quo	Desired level	Impact on global value
Working Permit	0.00	100	5.63
Maintenance Laboratories	0.00	100	3.61
Contractual Execution	-75	100	3.01
Electrical and Civil Maintenance	0.00	100	2.48
Contract Administrative Tax	0.00	100	2.46
Labor obligations	0.00	100	1.98
Renewable Energy	0.00	100	1.05
Better Results	0.00	100	0.89
Training Managers	0.00	100	0.76
Review of Procedures	0.00	100	0.57
Execution of Security Activities	0.00	100	0.57
Control of Fleet Maintenance	0.00	100	0.53
Idleness	-50.01	100	0.38
Need for training	0.00	100	0.32
Horizontal Communication	-130	100	0.15
Vertical Communication	0.00	100	0.09

Table 3 shows that there is room for improvement in several items, and that although they are not with their indexes at the compromising level, their improvement, in some cases, would have a considerable impact on the overall equation of the model. If all the items indicated had their improvement to the optimum level (100), their increase would be 24.47 points in the global equation.

5 Final considerations

Given the lack of performance evaluation tools to improve management and decision-making relevant to services provided to the population, as well as the need for specific tools that contribute to performance evaluation, considering the particularities of public universities, which may be useful in the decision-making context, it was suggested the construction and structuring of a Performance Evaluation model that supported the management of the Administrative Coordination of the Laranjeiras do Sul Campus, Federal University of the Southern Frontier, and that meets its particularities and contributes to the generation of improvement actions.

In this context, the following research question emerged: What criteria are considered in the Performance Assessment process to support management and subsidize decision-making of the Administrative Coordination of a Public University campus? To answer the research question, it was established as general objective the construction of a multi-criteria model of performance evaluation to support management and subsidize the decision making of the

Administrative Coordination of the Campus Laranjeiras do Sul, based on the needs and perceptions of the Coordinator.

To meet the objective, the construction of the Performance Assessment Model of the Administrative Coordination of the Laranjeiras do Sul campus, of the Federal University of the Southern Frontier was carried out by means of the intervention instrument Methodology Multicriteria for Support to the Constructivist Decision (MCDA-C). The construction of the model was based on the values, beliefs and world understanding of the Administrative Coordinator, responsible for decision making related to this sector. Thus, the indicators that make up the model are specific to the context and were legitimized for the decision-making context.

The important aspects were identified for the evaluation of the performance of the activities of the Administrative Coordination, according to the perception of the responsible manager. From semi-structured interviews with the Coordinator over the course of 12 months, 131 Primary Evaluation Elements (EPAS) were identified, and 136 concepts were constructed. The concepts developed were distributed in 15 areas of concern: (i)Warehouse; (ii) Purchase Consumption; (iii) Purchase Permanent; (iv) Communication; (v) Contracts; (vi) Infrastructure; (vii) Maintenance; (Viii) Heritage; (ix) Budget; (x) University Restaurant; (xi) Servers; (xii) Information Technology; (xiii) Third Parties; (xiv) Transport; and (xv) Training, where cognitive maps were made.

With the creation of cognitive maps, the concepts were segregated into clusters and subclusters, which gave rise to the Value Tree with the Elementary Views (PVEs). With the PVEs, 73 descriptors (qualitative ordinal scales) were constructed that allowed the perception of the information of what is important for the decision maker in each of these scales, as well as their order of preference. In the sequence, the reference levels (with Good and Neutral) were defined and the performance profile (status quo) was identified.

The Evaluation phase created cardinal scales for each of the descriptors, identifying their said compensation rates for each of the PVEs, enabling the integration of the model and the knowledge of the performance profile of the status quo and its impact on the overall evaluation. Improvement actions were suggested for 15 descriptors for the criteria where coordination was found in performance at the compromising level. Such actions would allow the coordination performance profile to be leveraged to better performance conditions.

Despite the identification of researches that operationalized the multicriteria methodology of decision support – constructivist (MCDA-C) in the public university

environment as presented previously, the context of Administrative Coordination was not identified. Following, the research methodology is presented.

Regarding the limitations of the research, it can be cited the fact that some of the improvement actions find difficulties in its implementation, either for budgetary reasons or other institutional restrictions. The direct replication of the model built in another decision-making context is not adequate in view of the constructivist character of the adopted methodology. This feature takes into account the values and concerns of each decision maker with its decision-making context. It is suggested, for future studies, the development of the performance evaluation model for universities as a whole, or for Campus in its entirety.

With this study, the authors of the research believe that the Administrative Coordination of Campus Laranjeiras do Sul, has a tool that will help in the decision-making process, in order to expand their understanding about the context of action, considering the relevant and inherent aspects of the existing context. In addition, this work contributed to the scientific community by filling the gaps identified in the literature and by demonstrating the construction of a constructivist evaluation model that considers the characteristics and peculiarities of the application context.

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