

Factors That Impact The Planning Of Service Contracts: An Ahp Approach

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Abstract:

Background: Federal Public Administration institutions use part of their budget to contract services. To this end, it is imperative to comply with legislation, especially Normative Instruction No. 05/2017. This study therefore proposes a management approach to help managers at federal institutions who are responsible for planning service contracts make decisions.

Materials and Methods: For these reasons, this study, seeing the need to encourage the emergence of balanced solutions to help public management, proposed a hybrid approach involving a survey and the multi-criteria Analytic Hierarchy Process (AHP) method, which has great potential to contribute to the management and operation of public institutions. In this way, this study uses this hybrid approach to develop a proposal that allows different actors to have a voice, integrating their opinions to produce solutions that meet specific management demands.

Results: Among the results, the factor "Adherence to standards" was widely preferred by stakeholders (66.4%), with the sub-factor "Existence of internal formal instruments" standing out, with 47% preference considering the overall ranking of the sub-factors. With regard to the alternatives, "Defining work processes" received 58.7% of the preference according to the stakeholders' judgment. Another important aspect of the result refers to the creation of instruments that contribute to achieving efficiency in the process of contracting services. Associated with this is the training of the civil servants directly involved as an essential factor.

Conclusion: The study contributes to the literature by proposing an approach that is adaptable to different contexts and situations and can be used primarily in management, although it can also be used in the private sector. In the research process, the authors list attributes in terms of their relative importance, which could help companies/organizations to initiate or offer expanded spaces for discussion in their management models.

Key Word: Public management. Planning service contracts. AHP.

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I. Introduction

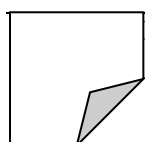
Public institutions and bodies can establish contracts with private companies granting them the right to provide services under the indirect execution regime in order to support the performance of their core activities. In this sense, the main objectives of indirect execution are to reduce costs and increase operational efficiency (Barbosa, 2018; Carvalho, 2018).

When contracting, the Federal Public Administration (FPA) bodies, which include the Federal Institutes of Espírito Santo (FIES), must comply with the legislation on public bidding and procurement, in accordance with the constitutional provision, in honor of the principle of legality and always in search of the most advantageous proposal (Brasil, 1988; Neves & Moré, 2020).

When it comes to contracting services, carrying out a robust planning stage can bring benefits to the Public Administration. From this perspective, it is necessary to comply with the legal provisions. Therefore, the public agent is faced with a set of factors that can interfere with decision-making during the process.

However, it is not always easy for public managers to translate the rules into administrative practice. For various reasons, it is common for managers to act to speed up procedures related to planning, establishing a mistaken relationship between speed and efficiency, which can be detrimental to this stage and, consequently, to the contract (Santos, 2018).

In this regard, it can be seen that the practice of managers responsible for planning contracts is often characterized by the reproduction of artifacts produced by officials from other bodies. Sometimes, the preparation of such artifacts is an activity carried out only to comply with legal determinations without paying attention to the



real needs of the agency. In certain situations, significant importance has been attached to the procedures to the detriment of the contracting objectives, prioritizing formalism over purpose, which will have an impact in the future and make the agents involved in monitoring the execution of the contract accountable (Santos, 2018).

Thus, the study aimed to identify the most important factors to be considered in the planning stage of public procurement, from the perspective of the stakeholders, in order to provide elements that help the decision making of the managers involved. To this end, the participation of stakeholders was fundamental, as these agents deal directly with the process of producing the artifacts that make up the planning stage, translating the legal provisions into administrative routine. The overall aim of the study was therefore to propose a management approach to assist the various decision-making processes of managers in federal institutions and bodies responsible for planning service contracts.

II. Material And Methods

In this study, the methodological approach uses aspects that influence and can promote improvements in the planning process for contracting services, according to the perception of the stakeholders who made up the sample of respondents, through descriptive research using a survey (Rocha, 2020). In this way, according to Santos (2021), the methodological path employed notes found in the literature and in the legislation governing the contracting of services by the public administration, with a hybrid application of a survey and the Analytic Hierarchy Process (AHP) method. This process took place through six complementary stages.

The first stage consisted of examining the literature and aimed to identify elements with the potential to impact on the planning of service contracts. Considering that the subject in question is governed by a robust legal framework (laws, decrees and normative instructions), which to a large extent binds managers' decisions, we also consulted the legislation in detail. This was followed by a preliminary selection of factors and sub-factors that influence the planning of service contracts. Subsequently, a pre-test was carried out using a survey, the content of which was extracted from the literature and legislation (Khurniawan et al., 2021). The questionnaire was submitted to the evaluation of 5 experts, which made it possible to refine factors and sub-factors in order to operationalize the AHP method (Sharma & Sharma, 2019; Rocha, 2020).

The next stage focused on defining the population, sample and data source (Cristea & Cristea, 2021). Thus, the sample calculation, confidence level, representativeness and admitted error were determined (Santos, 2021). At this stage, the variables for selecting the population were defined based on observing the level of knowledge and experience, as well as the feasibility of reaching the respondents.

In the third stage, the collection instrument was produced in the form of a survey built on adjustments that took into account the suggestions made by the experts who took part in the pre-test (Gonçalves, 2016; Sharma & Sharma, 2019). As a result, the new version consisted of pairwise comparisons of the factors, sub-factors and alternatives listed in the pre-test, and was applied to a portion of the population as a test, with the aim of making adjustments to the wording of the survey, which were necessary to carry out the AHP (Khurniawan et al., 2021).

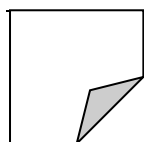
Thus, the collection instrument was adjusted based on the contributions received by the test respondents, which, when finalized, was applied to the target audience in the form of an electronic form (Rocha, 2020). This concluded the fourth stage, which consisted of constructing the definitive version of the hierarchical structure (factors, sub-factors and alternatives) for use in the AHP. (Santos, 2021).

After applying the final version of the survey, data was collected and sorted, followed by its consolidation and processing (Gonçalves, 2016; Khurniawan et al., 2021). To do this, the quantitative data was coded and, using a spreadsheet and the Statistical Package for the Social Sciences (SPSS) software, version 23.0 (Sharma & Sharma, 2019), the qualitative information was transformed into quantitative data, with the aim of preparing it for the AHP method (Rocha, 2020).

Within this context, and despite the AHP being an efficient method for aiding decision-making, the pairwise comparisons made by the stakeholders can reflect uncertainties arising from the subjectivity of the decision-makers (Abdel-Basset et al., 2018). Therefore, in order to check for outliers and missing values, SPSS software was used to perform the statistical treatment of the primary data and characterize the sample (Eshtaiwi et al., 2018; Gonçalves, 2016; Rocha, 2020; Santos, 2021). With regard to missing values, it was decided to only use "complete questionnaires" (Montagna et al., 2018; Santos, 2021), in order to minimize possible distortions in the results. To verify the significance of the sample, a maximum limit of 10% was adopted (Lang & Little, 2018; Rocha, 2020), extrapolation of which would imply the need for a new collection.

In order to guarantee the reliability of the questionnaire, its internal consistency was tested using the Cronbach's alpha coefficient (Cronbach, 1951). According to the literature, a Cronbach's coefficient (C_α) greater than 0.7 indicates an adequate composition of the scale of the questions, and the higher the index, the greater the correlation between the items in the questionnaire (Cronbach, 1951; Cristea & Cristea, 2021; Pauzuoliene et al., 2022).

Finally, the sixth stage involved running the AHP method using the software Expert Choice in its Trial version (Khurniawan et al., 2021). This consisted of analyzing and checking for possible inconsistencies in the



judgments made by the participants in this study (Gonçalves, 2016; Khurniawan et al., 2021; Rocha, 2020; Santos, 2021).

III. Result

Following the premises established in the methodological approach, the final version of the survey was submitted to a universe of 191 civil servants for consideration, based on findings found in literature and legislation (Table 1), with 80 questionnaires being returned. Thus, after processing the data using SPSS software, 17 outliers were identified, all of which were removed from the sample; on the other hand, no missing values were detected. Therefore, the valid sample was composed of 63 questionnaires, which corresponds to approximately 33% of the total eligible population, a quantity significantly higher than the calculated sample size (51). As a result, the data collection instrument presented internal consistency (C_α) de 0.95, coefficient considered appropriate for carrying out data analysis (Cronbach, 1951; Pauzuoliene et al., 2022).

Table 1 – Relevant attributes to assist in service contracting planning

Factors	Subfactors		Alternatives	
	Description	Reference in literature / experts	Description	Reference in literature / experts
Competence (COM)	Server training (ST)	Brasil (2017); Assante (2018)	Implement training/qualification (ALT1)	Brasil (2019a); Brasil (2019b); reaffirmed by experts in the pre-test
	Training of servers (TS)	Brasil (2017); Assante (2018); Marçal (2018); Moreno (2018); Rocha (2018); Silveira (2021); Silva (2022)		
Organizational structure (OST)	Structure of the Area(s) responsible for Contracting (SAC)	Brasil (2021b); Assante (2018); Moreno (2018); Rocha (2018); Carvalho (2019); Figueiredo (2020); Silveira (2021); Silva (2022)	Define work processes (ALT2)	Appointed by experts in the pre-test
	Server Availability (SA)	Appointed by experts in the pre-test; Marçal (2018); Moreno (2018); Carvalho (2019)		
Adherence to standards (STD)	Alignment with the Annual Hiring Plan (AAP)	Brasil (2022); Hennigen (2018); Rocha (2018); Cruz (2019); Chagalima et al. (2021); Silveira (2021)	Ensure availability and integration (ALT3)	Appointed by experts in the pre-test
	Alignment with Strategic Planning (ASP)	Brasil (2017); Cruz et al. (2020); Chagalima et al. (2021); Silveira (2021)		
	Existence of internal formal instruments (EIF)	Appointed by experts in the pre-test; Assante (2018); Moreno (2018); Carvalho (2019); Cruz (2019); Figueiredo (2020); Silveira (2021); Silva (2022)		

Source: Authors (2024).

Thus, the investigations revealed that the “Adherence to standards” (STD) factor, as pointed out by the judges, is the most impactful in relation to the planning of service contracts, with 66.4% of preference (Figure 1). Considering that STD refers to the adequacy of planning actions to the rules that regulate their procedures, the expressiveness of this preference may be related to the subordination imposed by the principle of legality on public servants in the execution of their activities.

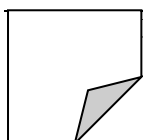
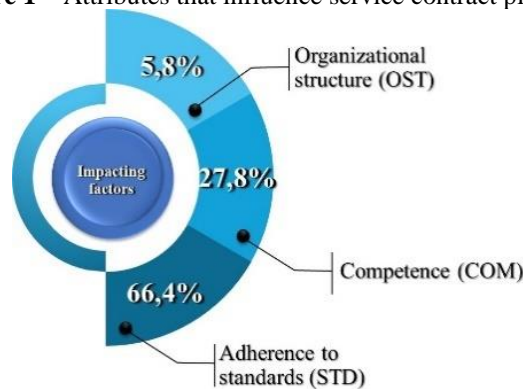


Figure 1 – Attributes that influence service contract planning



Source: Authors (2024).

Therefore, this result allows us to infer that the planning of contracting services can be influenced by the server's fear of being punished or held responsible for carrying out some action that does not comply with the relevant standards. A possible justification for this fear and, consequently, the preference for the STD factor, can be attributed to the progressive increase in inspection institutions that aim to exercise control over public administration, in addition to the growth of the normative apparatus, which impose sanctions on public servants, generating several times a feeling of shock (Campana, 2017; Changalima et al., 2021).

On the other hand, according to Nunes et al. (2021), excessive formalism may not contribute to achieving efficiency in public procurement. However, distancing service contract planning from formalism can cause problems for the institution, as stated by Silveira (2021). In this sense, the preference for the STD factor aligns with the results found by Hennigen (2018) and Silva (2022) who identified that the lack of standardization of procedures can affect the effectiveness of hiring processes.

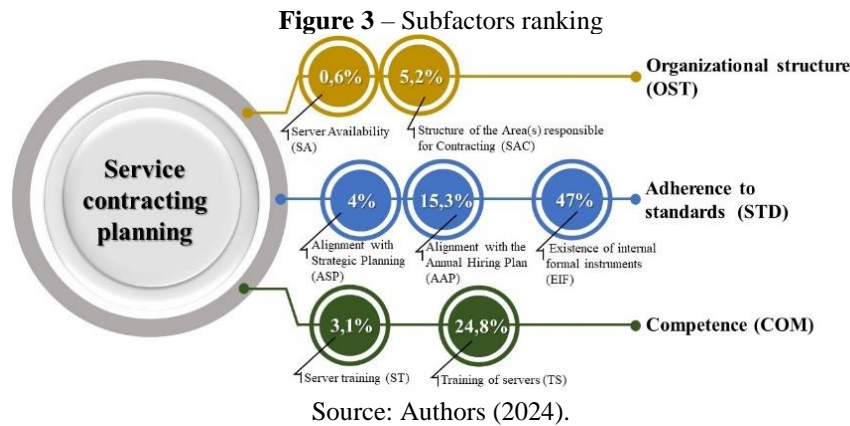
Considering the sub-factors that make up the STD factor, the judges' high preference for the sub-factor "Existence of internal formal instruments" (EIF) stands out, with 70.9% (Figure 2), which, according to Figueiredo (2020), refers to the existence of internal rules or procedures that guide the civil servant in planning the procurement of services.

Figure 2 – Adherence to standards (STD): subfactors



Source: Authors (2024).

The combination of the preference of the EIF sub-factor with that expressed by the STD factor, as suggested by Cruz (2019) and Silva (2022), may be related to the need for civil servants to have their actions guided by the institution to which they belong through formal mechanisms (guides, manuals, among others). In this sense, carrying out activities guided by standardized document models can provide the civil servant with considerable security and reduce rework and the possibility of making mistakes (Assante, 2018; Figueiredo, 2020). According to Silva (2022), the absence of internal institutional guidelines makes it difficult to achieve a satisfactory result in the planning phase. In view of this, the preference for the EIF sub-factor may also reflect the civil servant's desire to carry out their activities in a legally secure environment, in which the institution provides them with an apparatus of formal procedures that guide their actions in a way that does not expose them to risks of error (Moreno, 2018; Carvalho, 2019). Considering the list of all the sub-factors and their respective relative preferences (Figure 3), EIF also had the highest percentage among civil servants (47%).



According to Changalima et al. (2021), in public management there is a diversity of contracts and legal provisions, something that portrays the hermetic nature of different government demands. Corroborating this view, the results revealed that a high majority of employees responsible for planning service contracts believe that it is important to comply with the standards that support the contracting processes. And, this applies, both from the point of view of enforcing compliance with the principle of legality, and by assisting in the organization and management of purchasing and contracting processes.

The respondents' preference for the AAP sub-factor (15.3%) reinforces the importance of complying with the principle of legality in the conduct of public servants, since the execution of the Annual Procurement Plan (APP) is an obligation of the federal public agency, according to Law No. 14,133/2021 (Brazil, 2021a) and Decree No. 10,947/2022 (Brazil, 2022). Thus, aligning the agency's procurement planning with the APP can be understood as a binding action by the public manager and not an option (Hennigen, 2018; Rocha, 2018; Cruz, 2019; Changalima et al., 2021). The results also showed that establishing and applying an annual procurement calendar is a management tool that acts to systematize planning. This, according to Assante (2018), Rocha (2018), Changalima et al. (2021) and Silva (2022) can influence the efficiency of tenders and contribute to reducing waste in public procurement. In addition, drawing up the APP tends to help guide the management of service contracting, something that occurs based on pre-established guidelines (Moreno, 2018; Cruz, 2019). Thus, the civil servants' preference for the AAP sub-factor indicates that it is important to comply with Law 14.133/2021 (Brasil, 2021a) and Decree 10.947/2022 when planning the procurement of services.

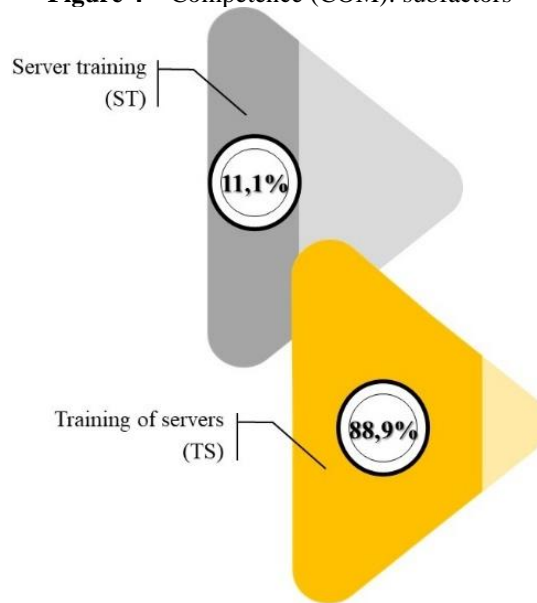
On the other hand, although the "Alignment with Strategic Planning" (ASP) sub-factor had a lower percentage of preference, its importance should be emphasized. This is because it is important for professionals working in public procurement to understand that procurement must be aligned with the institution's strategic perspective, and that everyone's involvement is fundamental to achieving results (Changalima et al., 2021). Therefore, compatibility between the procurement planning process and strategic planning is essential for effective procurement.

The second factor in order of preference is "Competence" (COM), which is related to aspects such as education, skills and training (Figure 1). With regard to the composition of its sub-factors (Figure 4), there is a strong preference for "Training of servers" (TS) over "Server training" (ST).

Although a significant proportion of civil servants have higher education than that required for the position, the "Server training" (ST) sub-factor had a low rate of preference (11.1%). This result shows that, in the perception of civil servants, this sub-factor is not a relevant condition for impacting on the planning of service contracts. On the other hand, the sub-factor "Training of servers" (TS), which refers to the training and/or capacity-building actions related to the planning of service contracting carried out by FIES, was highly preferred by the stakeholders taking part in the survey (88.9%).

The presence of flaws in contracting processes is often related to the lack of training of civil servants, and the existence of periodic training actions, mainly through the implementation of training and qualification policies, can improve purchasing and contracting processes (Figueiredo, 2020; Silveira, 2021; Silva, 2022).

Figure 4 – Competence (COM): subfactors



Source: Authors (2024).

With regard to the "Organizational structure" (OST) factor, there was a disproportionate amount of preference given to its sub-factors (Figure 5). The "Structure of the Area(s) responsible for Contracting" (SAC) sub-factor received 88.9% of the preference, to the detriment of 11.1% for the "Server Availability" (SA) sub-factor.

In addition to being provided for in Normative Instruction 40/2020, the effective participation and integration of civil servants in the technical and demanding areas is one of the conditions within the institution that can determine the successful implementation of a preliminary technical study and, consequently, the entire planning process (Brasil, 2020; Silva, 2022). In this sense, the precariousness of the bidding and purchasing sectors and the reduced number of civil servants can have a negative impact on the conduct of processes (Silveira, 2021).

The high turnover of the team, the discontinuity of activities, the lack of motivation, the lack of a list of institutionalized skills, the failures in communication between auctioneers and employees assigned to the requesting sectors, are deficiencies that have a negative impact on the hiring planning process (Carvalho, 2019). Therefore, a possible solution is to create conditions to enable involvement between the purchasing sectors and those requesting services, in order to encourage the exchange of information and experiences to improve the contracting process (Rocha, 2018; Cruz et al., 2020).

Figure 5 – Organizational structure (OST): subfactors



Source: Authors (2024).

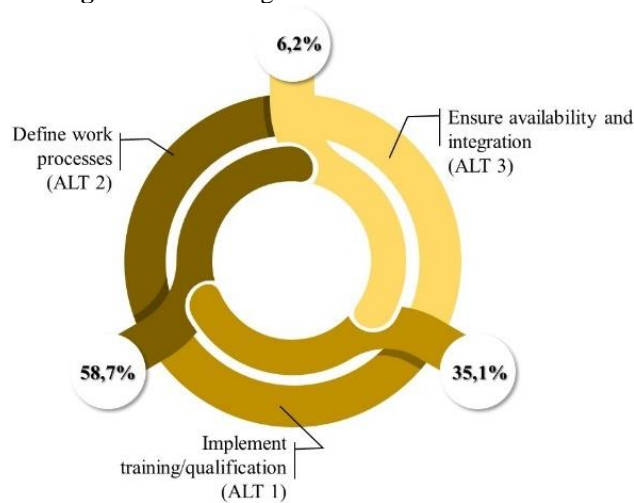
The organizational structure must enable planning to be carried out in accordance with the guidelines of regulatory provisions and provide effective means of communication between interested parties, for example, through the creation of a specialized sector responsible for providing support to other departments and strategies for the effective involvement of the actors who participate in the process, with a view that specialization leads to efficiency and productivity (Moreno, 2018; Carvalho, 2019; Figueiredo, 2020; Silva, 2022).

The analysis of the judgments related to the alternatives (Figure 6) in parallel with the preferences attributed to the factors and sub-factors (Figures 1 and 3) allows us to infer the need to observe the principle of legality in the performance of the duties of FIES employees who work or have worked in the planning of service contracts. This can be seen in the respondents' greater preference for the alternative "Define work processes" (ALT

2), with 58.7% in relation to the general objective. The alternative in question refers to the definition of formal work processes, such as administrative process flows related to the planning of service contracts, definition of the roles/functions of each member of the planning team, among other activities.

The significant preference for the ALT 2 alternative indicates consistency with the choice of the STD factor, since both concern the formal aspects of planning service contracts.

Figure 6 – Planning service contracts alternatives



Source: Authors (2024).

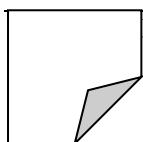
If, on the one hand, excessive formalism can generate negative consequences for public bodies, such as, for example, the lack of incentive to participate in a bidding process or even more expensive charging for a service by a supplier in an attempt to compensate for a lengthy hiring process (Rocha, 2018; Nunes et al., 2021), on the other, internal processes, consisting of procedures, activities and tasks, or even support manuals to support the implementation of the hiring planning process, with definitions of roles and attributions of the agents involved, can contribute to achieving institutional results (Assante, 2018; Marçal, 2018; Moreno, 2018).

The alternative “Implement training/qualification” (ALT 1) had a prominent preference among the judges, totaling, with reference to the general objective, 35.1%. This result is in line with literature findings that point to training as a relevant factor in relation to planning service contracts (Silveira, 2021; Silva, 2022). Furthermore, it is consistent with the normative aspects that govern the subject, such as Decree No. 9,991/2019 (Brazil, 2019a) and Normative Instruction No. 201/2019 (Brazil, 2019b).

Although it was highlighted by experts in the pre-test, the alternative “Ensure availability and integration” (ALT 3) was not significantly mentioned by respondents (6.2%). Even so, the irrelevant percentage should not mean disregard for the alternative, as the literature points to the high importance of developing actions to assist in the interaction and engagement of the different sectors involved in hiring (Brasil, 2017; Moreno, 2018; Carvalho, 2019; Figueiredo, 2020).

To guarantee the reliability of the judgments, as they are made subjectively, a sensitivity analysis was carried out on the results, as recommended in the literature (Saaty, 1990, 2008; Santos, 2021). Thus, using the Expert Choice software, increases of +5% and -5% were made in the weights of each factor judged (Gonçalves, 2016; Rocha, 2020).

Therefore, fluctuations were promoted in all factors, with changes in alternatives not reaching 2%, not interfering in the order of preference. This demonstrates the reliability of the judgments made by the respondents, ruling out any possibility of prejudice to the interpretation of the results.



IV. Conclusion

The planning and contracting of services in the public sector has guidelines and legislation that indicate the paths to be taken. However, in this study it was possible to identify gaps that show which paths can be taken to meet these guidelines and legislation. In this way, factors were identified that have an impact on this planning and contracting, as well as alternatives that can contribute to its operational improvement.

The results of this study showed that "Adherence to standards" is the factor that has the greatest impact on the planning of service contracts in the public sphere. This evidence confirms, according to the perception of the participating stakeholders, the inseparability between administrative practices related to planning and the formal aspects of public administration. In addition, there is the possibility of inferring that regulatory and normative bodies should continue to make efforts to regulate planning procedures in general, without, however, leading to a clampdown on civil servants' activities.

Furthermore, the literature has shown, and the results of the survey have also shown, that the public bodies responsible for regulatory actions (ministries and special secretariats) should issue general guidelines (such as Normative Instruction No. 05/2017 and other rules), leaving the detailed formalization of administrative procedures to the executive bodies that contract services, which is in line with the judges' preferred alternative "defining work processes".

Although the use of the AHP method is primarily intended to prioritize factors and alternatives, the literature and "good practice in the field" point out that due importance should be given to factors that have a lower priority. For example, there is a strong preference for the "Competence" factor and the "Staff training" sub-factor, which also have a significant influence on the contracting of services. This result is in line with other studies on the subject, which indicate that training civil servants is considered a fundamental contributory practice for public bodies to achieve their institutional objectives.

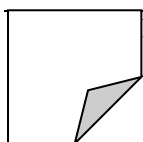
Furthermore, the stakeholders' preferences show an attachment to formalism in public administration practices, which is in line with the subordination to the principle of legality. In this sense, the results suggest ways in which the public administration can improve the process of planning service contracts in order to promote savings in public resources and efficiency in the services contracted.

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